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Marketing Effectiveness of Lactose-Free Milk: is it Influenced by the Factors of Product and Price of a Marketing Mix? An Investigative Study at a Milk Cooperative Company in East Delhi

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Abstract

The concept of marketing mix is of great importance in the domain of Marketing Management through which the companies analyze the effectiveness of the Marketing program of their products and services. A conscious effort has been made in this study to explore the 2 Ps of marketing mix namely Product and Price and their respective impact on the Marketing program effectiveness.
The product chosen in this study is Lactose-free milk and the company is a milk cooperative company, in East Delhi. A list of product and price variables and the Marketing program variables have been found in the Literature Review. The Research gap indicated that the relationship between these two concepts needs to be explored in the field of Marketing of Lactose-free milk. In this regard, the objectives of this study have been developed in such a manner that they would identify the factors' associated with Product and Price. On the marketing of Lactose-Free Milk and to investigate the relationship between the explored Product and Price factors and the effectiveness of a marketing program. The independent variables were Latent Demand, Feature, Durability, Value Pricing, Product- Quality, and Price-Qualit y inferences and the dependent variables were Needs, Target, Brand image, and Satisfaction. A questionnaire has been made and administered to 150 respondents in East Delhi region. An exploratory factor analysis discovered the factors namely Quality Consciousness, Subsistence & Good value and Assessment. Thus the multiple regression indicated that significant variable on the marketing program of Lactose-free milk has been revealed to be Quality Consciousness with a strength of association of 30.3 % that can be increased by several points with the help of several additional parameters.

Keywords: Lactose-free milk, Value pricing strategy, Product- Quality, Price-Quality inferences, Needs, Target, Brand image, and Satisfaction, Quality Consciousness

1. Introduction

Background

Due to confidentiality issues and unavailability of NOC from the company, the name of the company, chosen for this research, cannot be disclosed in this study. The chosen milk cooperative company is located in East Delhi and distributes over a million liters of milk every day. It additionally gathers, processes different milk items, for more than a thousand towns and consumed significantly by over a million individuals.

Milk Free from lactose

Lactose-free milk is ordinary milk without the sugar, lactose. Lactose-free milk has lactose content below 0.01%, has protein, calcium, and nutrients without lactose that help in the simple absorption of milk for lactose-bigoted individuals. Normal milk contains the milk sugar lactose, while without lactose milk does not. Lactase, a compound created by the stomach, separates the milk sugar galactose which one can ingest. It is exclusively intended for lactose-intolerant milk consumers.

Lactose intolerance is caused by diminished or missing movement of lactase that anticipates the part

of lactose (where lactase is lacking). Lactase inadequacy may exist because of its existence by birth or a few other reasons. Lactose Intolerance is a condition that has influenced about 60-70% populace in India. Lactose-Free Milk can take care of Lactose Intolerance that causes issues in the assimilation of milk. The lactose intolerance may cause abdominal pain, Diarrhea and Nausea.

Business Strategy for Lactose-Free Milk and Competitors

While marketing a Lactose-free milk product, the most important aspect for a milk company is analyzing its competitors and consumers. When summer is at its pinnacle and there is a constrained limit, it results in high sales. The online sales of Lactose-Free Milk, contribute around 20 percent. However, in overall sales, this product does not even contribute one percent. Also, online grocers, as well as some hyper-local online retailers, are already selling this product as major competitors exist in the milk market. The areas covered for competitor analysis were East Delhi. After visiting various shops and parlors, it was found that there are more than 15 brands in the area of Delhi NCR. Another big competitor in the same segment is the loose milk seller who claims to sell fresh cow milk. People in less developed areas have less knowledge about the processing of milk and how these milk sellers manipulate them.

Purpose of this study

A conscious effort has been made in this study to explore the 2 Ps of marketing mix namely Product and Price and their respective impact on the Marketing program effectiveness. The buyers are the ones who are predominantly Lactose intolerant and the seller is the milk cooperative company, who wishes to know the feedback, perspectives and opinions of its consumers with respect to the product features and pricing. This may pave the way for the company to modify its existing sales strategies, increase its consumer base and capture the major share of the market in this segment. This study may facilitate the company in developing a marketing effectiveness model for Lactose- free milk.

2. Literature Review

Product and Price of Marketing and its Implementation for Lactose-free Milk (Philip Kotler, 2015): While Product refers to entities in the form of goods or services that an organization offers to consumers, price is the cost that the consumers pay for a product entity. It is inclusive of Latent Demand, Feature, Durability, Value Pricing, Product- Quality, and Price-Quality inferences

The Effectiveness of Marketing program (Philip Kotler et al, 2017): It is measured through analyzing Needs of the well-being of an individual, Brand image, Target and Satisfaction.

According to Khaniwale, M. (2015), the purchasing conduct ought not to be contemplated and thought about just while selling the items; rather, it ought to be mulled over in the underlying stage. Associations ought to recognize the purchasing conduct when they process novel items. The marketing research is very expensive and time- consuming. Shockingly, various new items don't succeed when they are propelled into the market.

Scrimshaw, N. S., et al. (1988) describe that Most people, as different vertebrates, steadily lose the intestinal protein lactase at the early stages itself along with the capacity to process lactose, the rule sugar in milk. Sooner or later during ancient times, a hereditary change happened and lactase action continued in a lion's share of the grown-up populace of Northern and Central Europe. The rate of lactose maldigestion was typically found by the organization in the fasting condition of a 50-g portion of lactose in water. It was measured through blood glucose or extra hydrogen existing in the breath. Once in a while it was recognized by estimating lactase movement legitimately in a biopsy test from the jejunum (Scrimshaw et al., 1988).

Chevalier, J., & Mayzlin, D. (2004) state that Consumer oral messages causally affects the buying behavior. The retailer also benefits from this. However, there is no significant evidence to depict that customer feedback alone affects the sales.

Rings, E. H., et al. (1994) explains that lactose intolerance is due to low level of lactase enzyme in the small intestine and damage of intestinal mucosa which causes lactase deficiency. Abnormal population is the one who have reduced lactase in childhood genetically and Normal population is the one who have high levels of lactase enzyme throughout their life.

Perino, A., et al. (2009) provides information on Lactose malabsorption. This illness is broadly orchestrated by the lack of intestinal lactase. Primary lactose malabsorption is a deficiency that does exist in most people, whereas, secondary hypolactasia is a deficiency that is brought about due to disease of the intestine. Lactose malabsorption may also result in gastrointestinal symptoms leading to lactose intolerant condition. There are two states namely Lactase non-persistence and Lactose persistence. While Lactase non-persistence is related to the state of family, Lactose persistence is significantly related to the dietary pattern of the population. The affected patients of lactase non-persistence can be treated in the presence of intolerance symptoms. When no specific recommendations are given, the standard treatment can be regarded as the exclusion of consumption of milk and other related products in the daily food ration. As for that, however, this treatment may lead to versions of malnutrition.

3. Consolidated Research Gaps

On the basis of review of a few articles on Lactose-free milk, the following research gaps have been found

- Since it's a niche product, there is need to establish a specific target market for Lactose-free milk in which the consumers may be targeted based on their geographical location, demographics related to age, gender, income, etc., psychographic aspects or behavioral aspects as per the case may be.
- The prominence of the company or product's name may change the dynamics of the Lactose-free milk business.
- Reinforcement of perceptions of key brand image associations may increase awareness of Lactose- free milk.
- A list of product and price variables (Latent Demand, Feature, Durability, Value Pricing,Product- Quality, and Price-Quality inferences) and the Marketing program variables (Needs, Target, Brand image, and Satisfaction) have been found in the Literature Review. The relationship between these two concepts needs to be explored in the field of Marketing of Lactose-free milk.

4. Research Objectives

- As noted in the gaps from the literature reviewed above the following are some of the research objectives that could be formulated for this study
- To achieve the above objective the following hypotheses will be used in testing the effects of Product and Price on the marketing of Lactose-Free Milk.
- With the purpose of exploring the correlations between the analysed Product and Price variables and the efficiency of a marketing program.

5. Research Methodology

Research Design: Descriptive

Survey: Questionnaire Administration through personal interaction with the respondents.

Eligibility of respondents: Consumers in East Delhi who had purchased Lactose-free milk from the chosen company.

Questionnaire design:

Independent Variables

Latent demand (Philip Kotler et al, 2015): It is primarily the need for a product that a consumer is unable to satisfy as a result of he/she is unable to purpose it out or doesn't understand what is missing until pointed out. This need cannot be satisfied by current products or services and therefore consumer himself cannot articulate the sort of product that can facilitate him.

Feature (Philip Kotler et al, 2015): Most of the merchandise is often offered with varied options that support their basic attribute.

Durability (Philip Kotler et al, 2015): Expected operative life of a product.

Value Pricing (Philip Kotler et al, 2015): It is a process of charging a reasonably lower price for a high-quality product to win loyal customers.

Product-Quality (Philip Kotler et al, 2015): It is the degree of excellence of Products or services under the reach of a consumer.

Price-Quality inference (Philip Kotler et al, 2015): It is a premium pricing strategy adopted by a few brands for maintaining exclusivity and uniqueness.

Dependent variables

Needs of the well-being of an individual (Philip Kotler et al, 2015)

Brand image (Philip Kotler et al, 2015)

Target (Philip Kotler et al, 2015)

Satisfaction (Philip Kotler et al, 2015)

Sampling

The Target population was all the consumers in East Delhi who purchased Lactose-free milk from the chosen company in the study period. The Sampling frame was the list of all the consumers purchasing Lactose-free milk from the chosen company. The respondents were chosen by finding out the total number of such consumers in East Delhi. The responses were recorded. According to the type of the survey conducted the number of consumers who purchased the lactose free milk and responded to the survey was approximately 150.

Methodology for Objective 1

Principal Component Analysis with Exploratory Factor Analysis and Varimax Rotation: The variables that have been used to be converted into Principal Components (Factors) through Varimax Rotation Are Latent demand, Feature (Shelf life), Feature (No sugar content), Durability, Value pricing, product quality, and Price-quality inference.

Null Hypothesis: Population is said to have zero correlation (Finally, we have the correlation matrix of the population, which is an identity matrix)

Methodology for Objective 2

Equation is: dependent variable = constant value +β1F1+β2F2+β3F3+ +βkFk. Assuming that Y is the dependent variable "α" is equal to the intercept.

Free variables (F1, F2, F3,)

β1, β 2, β 3, the following are some of the most important points: β k represents the slopes linked to F1, F2, F3, β k.

Conclusion on a specific slope (β)

So H0: βi=0, according to the Null Hypothesis. In other words, H1: γi ≠0, we can say that Fi is a substantial explanatory variable.

F-test:

H0: γ1=β2= βk=0.

6. Analysis of Data

Table 1

Criteria for minimum responses

Number of metric variables	Number of variables multiplied by 5 is the minimum number of answers needed. (Dash and Malhotra, 2009–10)
11	55

Table 2

Coefficient of reliability (alpha Cronbach)

Coefficient of reliabilitv
0.692

Data Analysis for Objective 1

Factor Analysis

One could therefore conclude that there is enough evidence to reject the null hypothesis meaning that variables in the population are related given the highly significant chi-square value of 52. 727 in Table 3

Table 3: Bartlett's Test and KMO

An adequate sampling method known as the Kaiser-		6360
The Sphericity Test Conducted by Bartlett	CS	52.727
	Probability	0.000

4 Table: Explanation of the Total Variance

Component	Eigenvalues Initial			Using Rotated Sums and Squared Loads		
	Sum	A proportion of the variation		Total	The percentage of variation	Percentage Cumulative
1	2.563	36.613	36.613	1.967	28.100	28.100
2	1.210	17.289	53.902	1.586	22.651	50.751
3	1.001	14.294	68.196	1.221	17.445	68.196
4	0.892	12.749	80.945			
5	0.557	7.956	88.901			
6	0.434	6.198	95.099			
7	0.343	4.901	100.00			

Table 5: (Varimax) Rotated Component Matrix

Component	Variable Name	Component		
		1	2	3
1	Latent Demand	0.669	0.105	0.365
2	Feature (Shelf Life)	0.798	0.060	-0.129
3	Feature (No sugar)	0.468	0.308	0.679
4	Durability	-0.008	0.938	0.011
5	Value pricing	0.271	0.275	0.771
6	Product Quality	0.623	0.153	0.025
7	Price Quality	0.450	0.705	0.124

Table 6: Rotated Factor Summary

Factor 1	**Factor 2**	**Factor 3**
Latent Demand		
Feature (Shelf Life)		Value pricing
Product Quality		Feature (No sugar)
	Durability	
	Price Quality	

Factor 1: The above factor can be identified as Quality Consciousness since all the variables reflect the concern that pertains to level of quality expected for Lactose-free milk.

Factor 2 – The above variables suggest sub, Subsistence and Good value to be market by the company in marketing Lactose-free milk. The two variables help the consumer while buying Lactose-free milk in that they offer an added advantage to the consumer.

Factor 3: The above factor has been named as Assessment since the variables included show the worth of the consumer undertaken before consuming Lactose-free milk.

Data Analysis for Objective 2

A Multiple-Step Regression

Model

Multiple regression analysis was then utilized to carry forward the factor scores which was labeled as F1, F2 and F3 to predict the dependent variable.

Y= Marketing program Effectiveness (Mean of the Marketing program effectiveness variables namely need, target, brand image, and satisfaction)

F1 = **Quality Consciousness**

F2 = **Subsistence and Good value**
F3 = **Assessment**

Factor 1 (including Latent Demand, Feature (Shelf Life), and Product Quality) is found acceptable.

Table 8: Model Overview

Square Root of COD	COD	SE
0.550	0.303	0.65172

Table 8: Analysis of variance (F-test)

	SOS	D OF	MS	AOV	P-Value
Reg.	6.633	3	2.211	5.205	0.0044
Residual	15.921	36	0.425		
Total	21.923	39			

We can conclude that Y is affected by one of the Fi's because the previously proposed hypothesis can be rejected because the F value of 5.205 is highly significant at 0.004 (the value of p).

Table 9: The regression coefficients are as follows:

		b	SE	β	t	Sig.
1	(Constant)	3.159	0.103		34.147	0
	Factor score 1 for analysis of regression 1	0.382	0.104	0.510	3.663	0.001

Y (Mean Marketing Effectiveness) = 3.159+0.382 F1 (Quality Consciousness)

Since the Beta value of F1 is significant at 0.001 (value of P), FS-1 is significant.

7. Discussions and Conclusions

Objective 1
Explored factors are quality consciousness, sustainability, good value and evaluation

Objective 2
The stepwise multiple regression analysis indicates that the marketing effectiveness of Lactose- free milk depends on the variable namely Quality Consciousness.

8. Scope

Focus on Quality Consciousness during the marketing program will ensure its effectiveness. The analyses have revealed that Latent Demand, Feature (Shelf Life) and Product Quality must be studied thoroughly while designing the marketing program for Lactose-free milk.

Limitations: This is not a comparative study between Lactose-free milk and other traditionalmilk products. The sample size was restricted to East Delhi customers only. The other regionsmay result in different conclusions.

9. Appendix

1. With its current features, lactose-free milk completes the **latent demand** which is not currently fulfilled by existing milk products.	1 2 3 4 5
2. **The feature** (shelf life) of Lactose-free milk is more convenient for consumers as compared to other milk products.	1 2 3 4 5
3. **The feature** (No sugar content) of Lactose-free milk will cater to the needs.	1 2 3 4 5
4. **Durability** (a measure of the product's expected operating life) of Lactose-free milk is a valued attribute that impacts consumer purchasing decisions.	1 2 3 4 5
5. Lactose-free milk offers **Value pricing** (charging a low price for a high-quality offering) which is an essential factor in the purchasing decision of consumers.	1 2 3 4 5
6. **Product-Quality** of Lactose-free provides good quality with affordable price.	1 2 3 4 5
7. **Price-Quality inferences** (Price as an indicator of quality) of Lactose-free milk at this price and features are suitable and impact positively purchasing the decision of the consumer.	1 2 3 4 5
8. Lactose-free milk caters to the needs of the **well-being** of an individual.	1 2 3 4 5
9. Design, features, and packaging create a distinctive **brand image.**	1 2 3 4 5
10. Lactose-free milk creates value for its **target** consumers who are lactose intolerant.	1 2 3 4 5
11. Lactose-free milk contains all necessary ingredients that are required for providing **satisfaction.**	1 2 3 4 5

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Exploring the Relationship between Strategic Human Resource Management Practices and Performance in Cooperative Hospitals: The Influence of Organizational Change Processes

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Abstract

Aim: The pivotal role of Strategic human resources as catalysts for organizational change underscores the significance of understanding how SHRM practices can facilitate and support change initiatives. **Objective**: This study delves into examining both the direct and mediated relationships between Strategic human resource management (SHRM) practices and organizational performance, with a particular focus on the mediating role played by the organizational change process. Our proposed model incorporates key SHRM practices, elements of organizational change, organizational performance metrics, employee retention, and factors contributing to organizational abandonment. **Research Methodology**: The study Employees a descriptive Research design, Data were collected via a survey questionnaire administered to 120 employees in the cooperative hospital's south region and central region subdivision. Structural equation modeling was employed to assess the validity of the model and test hypotheses. The findings reveal that SHRM practices exert a direct influence on organizational performance while also exerting an indirect influence through the organizational change process. Furthermore, the study underscores the consistency of both direct and mediated effects, highlighting the significance attributed by healthcare employers to the adoption of effective SHRM practices and adept management of organizational change processes as drivers for achieving superior outcomes. **Conclusion:** These empirical insights offer valuable guidance for policymakers, stakeholders, and healthcare managers on leveraging appropriate SHR practices to enhance Cooperative Hospitals Performance.

Keywords: SHRM practices, cooperative hospital performance, operational performance, employee retention.

1. Introduction

In today's dynamic economic landscape, organizations must demonstrate the positive impact of their functions on overall performance. Managing a cooperative hospitals most crucial asset—its human capital—is the responsibility of Strategic Human Resource Management (SHRM). Effective management of human capital contributes significantly to achieving organizational objectives. Particularly in the service sector, where employee skills and competencies are paramount, coherent SHRM practices are essential for driving superior organizational performance. Cooperative hospitals, serving vulnerable and dependent patients, face increasing pressure to meet patient needs efficiently and effectively. Despite significant government investments, the growing demand for healthcare services due to population growth and improved access exacerbates challenges within the sector. While delivering quality services demands substantial financial resources, human capital remains the

primary resource due to the unique nature of healthcare services, such as the need for empathy. Inadequate financial resources and poorly managed human capital can diminish organizational effectiveness. Adopting a performance-oriented approach in healthcare services necessitates reviewing SHRM practices to support organizational change and achieve performance objectives, balancing financial and human resources efficiently.

However, an efficiency-based approach, while reducing costs, may compromise service quality and lead to staff turnover and organizational abandonment. High staff turnover and organizational abandonment can significantly impact user satisfaction and service quality. Hence, healthcare organizations must prioritize workforce adaptability in an uncertain environment. Effective SHRM practices can enhance employee retention, reduce abandonment rates, improve patient satisfaction, efficiency, and organizational effectiveness.

Recent SHRM research emphasizes the perceptual approach, based on Social Exchange Theory, suggesting that employee perceptions positively influence attitudes and behaviors affecting organizational performance. Implementing appropriate SHRM practices enhances human capital management, motivation, commitment, and organizational culture, positively impacting SHRM performance indicators (employee retention and organizational abandonment), as well as operational and financial performance indicators (organizational efficiency and effectiveness).Furthermore, recent studies explore the influence of SHRM practices on organizational performance during periods of radical change, investigating various mediating variables. This paper aims to bridge the literature gap by examining the mediating role of the organizational change process in the relationship between SHRM practices and organizational performance, focusing on employees' perceptions in Romanian healthcare organizations. It seeks to provide insights into the effectiveness of SHRM practices in healthcare and identify mediating factors between SHRM practices and performance, aiding healthcare organizations in designing and implementing effective SHRM practices and managing organizational change to enhance performance.

The paper comprises six sections, including an introduction, literature review, methodology, research results, discussion, and conclusions.

2. Research questions

What is the impact of strategic human resource management (SHRM) practices on the overall south and central region performance of cooperative hospitals?

How do organizational change processes mediate the relationship between SHRM practices and hospital performance?

What are the key SHRM practices adopted by cooperative hospitals during periods of organizational change?

How does employee engagement in cooperative hospitals influence the effectiveness of SHRM practices amidst organizational change?

What role does leadership play in aligning SHRM practices with the organizational change processes in cooperative hospitals?

How do cooperative hospitals balance the need for flexibility in SHRM practices with the stability required during organizational changes?

What challenges do cooperative hospitals face in implementing SHRM practices during times of organizational change, and how do these challenges affect performance outcomes?

In what ways do cooperative hospitals modify their SHRM practices in response to internal or external organizational changes?

3. Literature Review

In a constantly changing world, organizations must adapt to new market conditions, innovate, and constantly grow to survive and remain competitive. To meet these challenges, many organizational leaders choose to implement change. However, implementing change can be a difficult and complex process that affects organizational performance, employee retention, and abandonment. Therefore, evaluating how HRM practices influence the organizational change process, organizational performance, employee retention, and organizational abandonment is essential. SHRM practices are activities that manage employees' competencies to increase work productivity Nabe (2003) examines potential strategies for overcoming healthcare challenges in Kerala. Firstly, investing in the public sector through increased tax revenue can aid in system improvement. Secondly, decentralization efforts, like Kerala's radical decentralization policy, can make healthcare more responsive to local needs. Thirdly, fostering cooperation between public and private sectors is essential to meet healthcare demands effectively.

Scheffler et al. (2015) identify barriers to healthcare delivery, impacting service quality and user satisfaction. Despite efforts to organize care in alignment with district health policies, providers face challenges in service provision, affecting accessibility, affordability, and adequacy, leading to unmet needs and low satisfaction levels. Mathai (2016) assesses the health-related quality of life (HQoL) of nurses in Bangalore hospitals. Results indicate below-average mental well-being scores for nurses in trust and private hospitals compared to government hospitals. Improving work environments is crucial to enhance nurses' health and productivity. Gillani (2017) conducted a study on pharmacy students' acceptance of clinical pharmacy services. A longitudinal intervention study revealed a positive shift in attitude towards clinical pharmacists' roles in healthcare teams after six months. Improvements in awareness, attitude, and competency were observed, suggesting the potential for enhanced patient care.

Lee (2021) explores nurses' perceptions of clinical alarms and patient safety culture's impact on alarm management. Higher perceived patient safety culture predicted better alarm management practices. Female, charge nurses, and those with fewer work hours demonstrated more effective alarm management practices. Veerakumaran (2019) examines Kerala's cooperative healthcare model, emphasizing accessibility and affordability. While successful, challenges like competition and capital constraints exist, threatening the model's sustainability. Collaborative efforts are needed to address these challenges and sustain the cooperative healthcare system.

Zanotto (2021) reviews value-based healthcare initiatives' outcomes, highlighting the importance of patient-centered outcome measures. While many studies focus on cost savings, there's a gap in measuring outcomes important to patients. Advancements in technology and cultural change management are necessary for comprehensive value-based healthcare implementation. Perez (2021) discusses leadership styles for clinical professionals transitioning into leadership roles. Transformational leadership showed positive associations with employee retention, organizational commitment, and job satisfaction, suggesting its effectiveness in healthcare leadership.

Van Gorder (2022) recounts experiences of workplace violence in healthcare settings. Highlighting

the persistent issue of violence, especially in emergency departments, the paper emphasizes the need for effective safety measures and violence prevention strategies in healthcare. Robbins et al. (2022) analyze the impact of administrative fellowships on career attainment in healthcare management. Their study reveals differences in career attainment by gender and highlights the potential role of fellowships in career advancement, especially for women in healthcare leadership.

Based on these theoretical considerations, the paper proposes the following hypothesis investigated in the empirical study:

Hypothesis H1:
Employees' perception of cooperative hospital shows that SHRM practices positively influence operational performance and employee retention and negatively influence organizational abandonment.

Hypothesis H2:
Employees' perception of cooperative hospital shows that SHRM practices positively influence the organizational change process.

Hypothesis H3:
Employees' perception of cooperative hospital shows that the organizational change process positively influences operational performance and employee retention and negatively influences organizational abandonment.

Hypothesis H4:
Organizational change significantly mediates the relationship between SHRM practices, operational performance, employee practice, and organizational rejection in the perception of healthcare organizations' employees.

4. Methodology

The study is prominently empirical in nature. The strategic SHRM policies and practices as in mode and the perception of employees of the select cooperative hospitals were taken into consideration for empirical analysis.(South Zone -Kattappana Cooperative Hospital Kattappana ,Highrange Super specialty Cooperative Hospital Thaghamani, Central Zone Indira Gandhi Cooperative Hospital,Cochin,Ns Cooperative Hospital,Kollam)

Sample Design
A definite plan is persevering for collecting sample from the population. Bearing in mind that the people of the study is known. Slovin's Sampling formula has been applied. The formula used to fix the sample size is
$n = N/ (1 + Ne^2)$ Where n= Number of samples N = Total population e= Error tolerance i.e. 0.05
n = 645 / (1 + 645) * 0.05 ^ 2 n = 645/1 + (645 * 0.0025) n = 645/5.42 n = 119 \approx 120

Sampling Technique
Systematic Stratified Random Sampling method was used to select samples from the populace. The process of applying stratification first and then simple random sampling is known as stratified random sampling. The population in the study comprises the employees working in south and central regions in Kerala. The cooperative hospitals are divided into homogenous strata or sub-groups namely; Group i, Group ii as classified by the Registrar of Cooperative Societies (RCS) based on the professional performance.

Conceptual model. Source: developed based on prose review.
We utilized structural modeling (SM) to investigate the direct relationships and the mediator role of the cooperative hospital change process in the connections between SHRM practices and organizational performance. SM enables the evaluation of relationships between latent variables, constructed based on observable exogenous variables. Table 1 presents the latent variables, the questionnaire items representing exogenous variables, and the measurement scales. We utilized five-point rating scales to measure the variables describing SHRM practices, an organizational change process, and organizational performance.

To empirically investigate the hypotheses of the proposed theoretical model, we conducted a questionnaire-based survey of employees. The sample comprised 120/441 employees from cooperative hospital organizations. We assured respondents of the confidentiality and anonymization of their identity and their organizations. Additionally, we provided an informed consent form along with the questionnaire. The questionnaire included items on personal perceptions without soliciting personal or confidential information about the employing organization. The sampling uses a layered random method, considering three socio-demographic variables: gender, age, and education.

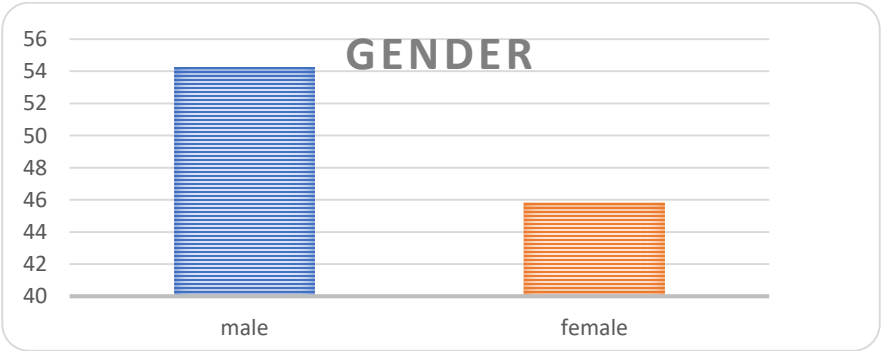
Table 1 presents the frequencies of socio-demographic variables-Gender wise classification of the respondents

(Source: Primary Data)

Gender	Number Of Respondent	Percentage Of Respondent
Male	65	54.2
Female	55	45.8
Total	**120**	**100.0**

Inference: The table 4.1 shows the gender of the respondents in which the 54.2% of the respondents are Male and 45.8% of the respondents are Female. This show's job opportunities were highly given to male in the cooperative hospital.

Gender wise classification of the respondents



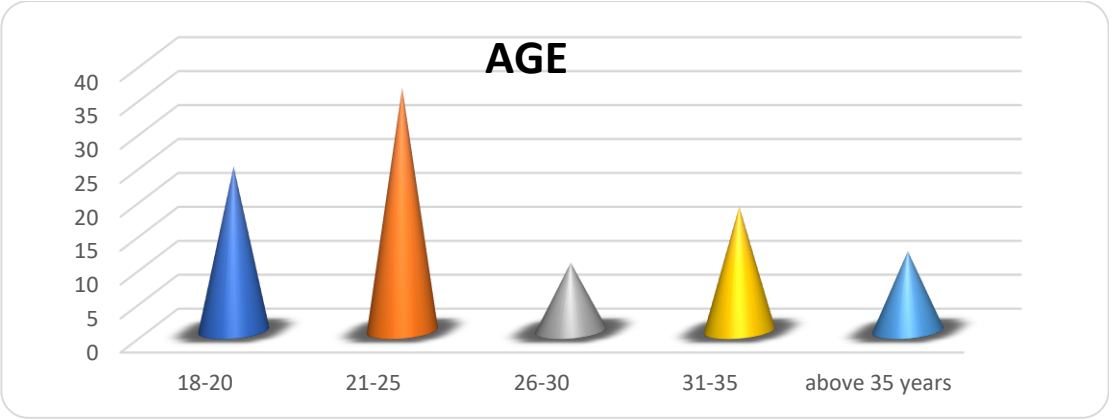
Age wise classification of the respondents
Age plays as important factor in knowing the profile of the respondents and it is categorized on upto18-20, 21-25, 26-30, 31-35above35 years

Age wise classification of the respondents -Source: Primary Data

Age	Number Of Respondent	Percentage Of Respondent
18-20	29	24.2
21-25	43	35.8
26-30	12	10.0
31-35	22	18.3
Above 35years	14	11.7
Total	**120**	**100.0**

Inference: The table 4.2 shows the age of the respondents in which the 24.2% of the respondents are 18-20 years, 35.8% of the respondents are 21-25 years, 10.0% of the respondents are 26-30 years, 18.3% of the respondents are 31-35 years, 11.7% of the respondents are above 35 years. This show's job opportunities were highly given to above21-25 year's age in cooperative hospital.

Figure-Age wise classification of the respondents



Marital status wise classification of the respondents

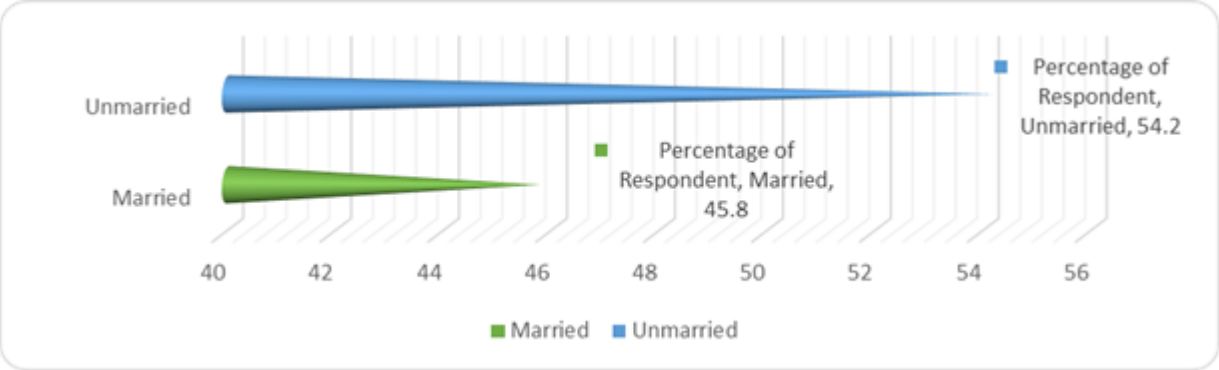
Marital Status	Number Of Respondent	Percentage Of Respondent
Married	55	45.8
Unmarried	65	54.2
Total	120	100.0

Source: primary data

Marital status plays as important factor in knowing the profile of the respondents and it is categorized on married and unmarried.

Inference: The table 4.3 shows then marital status of the respondents in which the 54.2% of the respondents unmarried and 45.8 %, of the respondents of the married This shows job opportunities were highly given to unmarried in cooperative hospital.

Marital status wise classification of the respondents



Qualification wise classification of the respondents

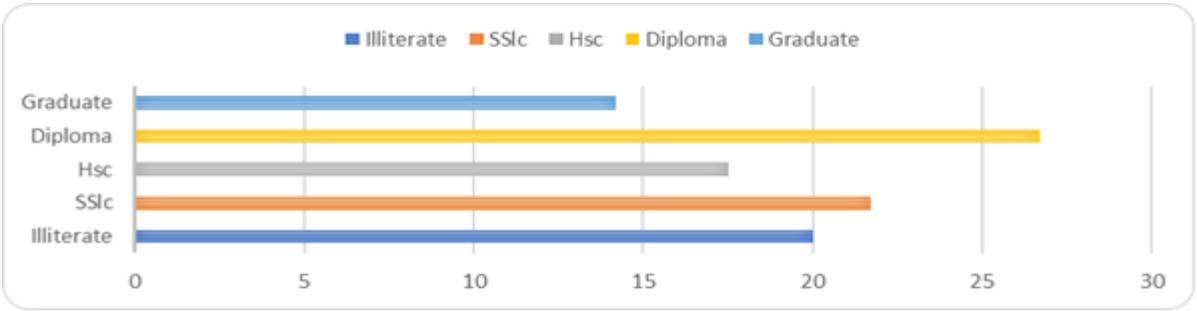
Qualification plays as important factor in knowing the profile of the respondents and it is categorized Illiterate, SSLC, HSC, Diploma, and Graduate.

Marital Status	Number of Respondent	Percentage of Respondent
Illiterate	24	20.0
SSLC	26	21.7
HSSC	21	17.5
Diploma	32	26.7
Graduate	17	14.2
Total	120	100.0

Source: Primary Data

Inference: The table 4.4 shows the qualification of the respondents in which the 53.3% of the respondents are illiterate 20.0%, SSLC 21.7% of the respondents are HSC, 17.5% of the respondents are Diploma, 26.7% of the respondents are Gradute14.2% of the respondents are Graduate Degree. This shows job opportunities were highly given to SSLC in cooperative hospital.

Qualification wise classification of the respondents



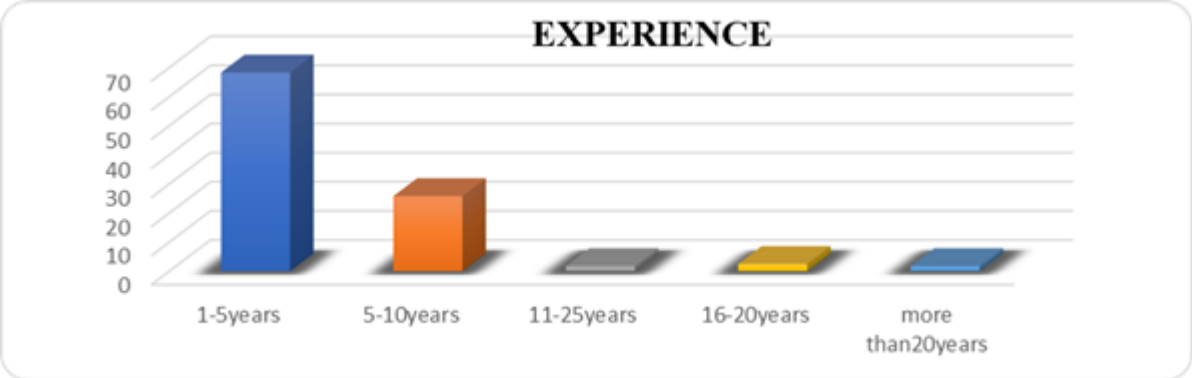
Experience wise classification of the respondent

Experience plays as important factor in knowing the profile of the respondents and it is categorized below 1-5year, 5- 10 years, 11 to 25 years, 16 to 20 years, more than 20 years.

Experience	Number of Respondent	Percentage of Respondent
1-5years	82	68.3
5-10years	31	25.8
11-25years	2	1.7
16-20years	3	2.5
more than20years	2	1.7
Total	120	100.0

Source: Primary Data

Inference: The table 4.5 shows the experience of the respondents in which the 68.3% of the respondents are 1 to 5 years, 25.8% of the respondents are 5-10 years, 1.7% of the respondents are below 11-25 year, 2.5% of the respondents are 16 to 20 years, 2.5% of the respondents are more than 20years. This shows job opportunities were highly given to 1 to 5years in cooperative hospital.



Employee promotion wise classification of the respondents

Employees promotion	Number of Respondent	Percentage of Respondent
Agree	**94**	**78.3**
Strongly agree	**26**	**21.7**
Total	**120**	**100.0**

Source: Primary Data

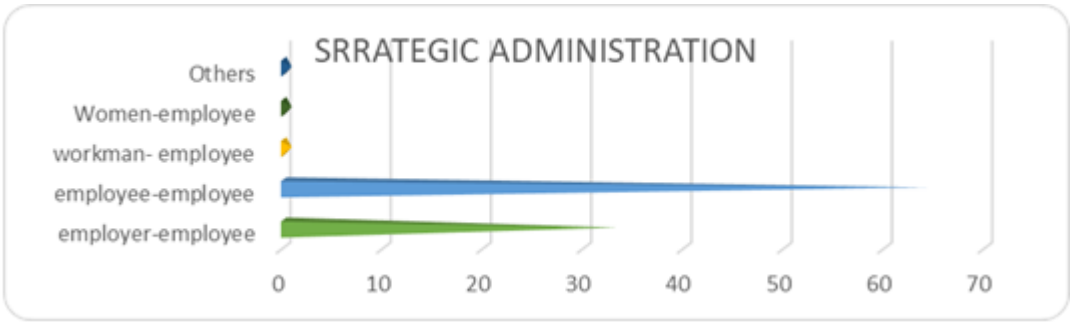
Inference The table shows that 120 respondents 78.3% of the respondents are agreeing prefer for their, 46.7% of the respondents are strongly agreeing in the effectiveness of employee promotion.

Strategic administration of the respondents: The table shows that 120 respondents 64.2% of the respondents are prefer for their employer-employee, 33.3% of the respondents are prefer for their employee-employee,8% of the respondents are prefer for a workman-employee, .8% of the respondents are prefer for their pared workl,.8% of the respondents are prefer for a women-employee. 8% of the respondents are prefer for their pared workl, .8% of the respondents are others. in the employee's strategic administration in cooperative hospital. It is concluded from the study that majority 64.2% of the respondents are getting information from their friends and relatives.

Strategic administration	Number of Respondent	Percentage of Respondent
Employer-Employee	40	33.3
Employee-Employee	77	64.2
Workman- Employee	1	.8
Women-Employee	1	.8
Others	1	.8
Total	120	100.0

Source: Primary Data

Strategic Administration of the Respondents



Strategic Human Resource Management Practices and Performance in Cooperative Hospitals

SHRM -Practices and Performance	Number of Respondent	Percentage of Respondent
Satisfied	36	30.0
Highly satisfied	84	70.0
Total	120	100.0

Source: Primary Data

Inference: The table shows that 120 respondents 70.0% of the respondents are highly satisfied, 30.0% of the respondents are satisfied with Employee service provided by management.

5. Discussion

The managerial literature extensively explores the correlation between strategic human resource management (SHRM) practices and cooperative hospital performance, recognizing the unique intricacies of the healthcare sector. Within healthcare organizations, SHRM practices play a pivotal role in enhancing organizational performance amidst the continuous evolution of the industry. Our study examined four hypotheses, considering the mediating role of the organizational change process in elucidating both direct and indirect relationships between SHRM practices and cooperative hospital performance.

Regarding hypothesis H1, our analysis concurs with prior research, demonstrating a significant direct relationship between SHRM practices and cooperative hospital performance, employee retention, and organizational abandonment. Notably, SHRM practices like recruitment, training, performance appraisal, and rewards exert a positive influence on organizational performance and employee retention, while mitigating organizational abandonment. Moreover, organizational change emerges as a crucial mediator in this relationship, emphasizing the importance of aligning SHRM practices with organizational change efforts. Therefore, healthcare managers should prioritize both SHRM practices and organizational change initiatives to bolster cooperative hospital performance.

Exploring hypothesis H2, we confirm the significant influence of SHRM practices on organizational change, aligning with previous studies [4,5,6,9,2,3]. These findings underscore the necessity of robust organizational cultures and employee loyalty to effectively communicate the impact of SHRM practices. Consequently, healthcare organizations should integrate these considerations into their SHRM strategies to facilitate successful organizational change. In essence, our research supports the notion of a substantial relationship between SHRM practices and organizational change processes, urging organizations to develop SHRM practices conducive to achieving sustainable and successful change.

Moving to hypothesis H3, our investigation reveals a direct correlation between the organizational change process and organizational performance, echoing conclusions drawn by other scholars [4,1,2,8,11]. Successful changes are linked to enhanced organizational performance, while unsuccessful ones correlate with performance decline. This relationship stems from the ability of the change process to refine organizational processes and practices, thereby bolstering productivity and efficiency. Consequently, healthcare organizations should invest in change management programs to foster cooperative hospital development, focusing on strategies that enhance employee retention and diminish organizational abandonment. By prioritizing initiatives such as career development and improving workplace conditions, organizations can drive better performance, higher retention rates, and lower costs associated with abandonment.

Lastly, hypothesis H4 underscores the complex and multidirectional relationship between SHRM practices, organizational change, and organizational performance, consistent with prior research [4,6,1,2,14,4,1] Effective SHRM practices contribute to successful change processes, subsequently enhancing organizational performance. Conversely, organizational change presents an opportunity to refine SHRM practices by enhancing communication and employee involvement. Thus, organizations must navigate these interactions adeptly to mitigate adverse effects on employees.

In conclusion, our empirical investigation underscores the significant contribution of change management components to cooperative hospital performance, quality of health services, and user satisfaction. While the direct impact of SHRM practices on cooperative hospital performance is substantial, the mediation effect through organizational change is also significant, emphasizing the pivotal role of HR in change management for improving organizational performance, as highlighted by previous research [14,12,3].

6. Theoretical Implications

Human resource management (SHRM) practices and cooperative hospital performance, with a particular focus on the dynamics of organizational change within healthcare settings. Unlike previous studies that often overlook the impact of cooperative hospital change, our research emphasizes its pivotal role in shaping the effectiveness of SHRM practices and, consequently, organizational performance in healthcare.

Health organizations are unique in their composition, comprising diverse personnel whose interactions are integral to delivering healthcare services. The dynamic nature of the healthcare environment, compounded by public health crises like epidemics or pandemics, necessitates systematic cooperative hospital change processes. Therefore, it is imperative for healthcare organizations to adeptly manage organizational change, leveraging appropriate HRM practices to enhance patient health outcomes. Our findings corroborate previous research by Bolton et al., highlighting that sound SHRM practices positively influence various aspects of performance and mitigate cooperative hospital abandonment. Furthermore, our study unveils significant relationships between SHRM practices, operational performance, and HR performance indicators. Despite being a pressing concern for HR professionals, limited research has delved into the nexus between SHRM practices and performance within the healthcare sector. By employing a perceptual approach to gauge healthcare employees' perceptions of SHRM practices and organizational performance, our study illuminates how these concepts interrelate directly and through mediating change processes.

On the managerial front, our findings have profound implications for healthcare organizations striving to optimize their performance amid dynamic environments. While existing empirical research has made strides in elucidating the links between SHRM practices and cooperative hospital

performance, there remains a need for robust theoretical frameworks to underpin these relationships [6]. Wright and Haggerty advocate for research that explores both personal and organizational resources conducive to superior performance, particularly in environments characterized by change and dynamism.

7. Limitations and Further Research

While our study contributes valuable insights, it also presents several limitations and avenues for further research. Firstly, the cross-sectional approach adopted in our empirical study restricts our ability to analyze effects longitudinally. Given the dynamic nature of the economic environment, a longitudinal study would be beneficial to track trends in the relationships observed. Secondly, relying on self-administered questionnaires may introduce bias into the research process. To address this, we have implemented methodological and statistical techniques recommended for mitigating common method biases. Thirdly, our study could benefit from the incorporation of additional variables related to SHRM practices, the organizational change process, and cooperative hospital performance. Variables such as organizational culture, employee satisfaction, and commitment could serve as potential mediators or moderators in the relationships examined. Expanding the scope to include these variables could enrich our understanding of the complexities inherent in these constructs.

8. Conclusions

In conclusion, our research underscores the importance of implementing effective SHRM practices and adeptly managing organizational change to enhance cooperative hospital performance while simultaneously reducing employee turnover and organizational abandonment. Therefore, organizations must recognize these interconnections and take proactive measures to improve performance. Specifically, within the healthcare sector, our findings highlight the mediating role of the organizational change process in the relationship between SHRM practices and organizational performance. By prioritizing employee involvement and providing comprehensive change management training, cooperative hospital organizations can enhance their performance effectively.

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Inclusive Growth: Examining Corporate Social Responsibility in Cooperative Structures – A case study of MILMA - ERCMPU

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Abstract

Social responsibility is imbedded in the working of cooperative structures which has fostered the inclusiveness aspect in their activities. The study focus on MILMA – ERCMPU which is a foremost milk producers and marketers union in Kerala. The way down of MILMA – ERCMPU depicts their social responsibility not only towards farmers but towards the upliftment of the rural community. The research was undertaken as a case study focusing on different parameters like socio economic life, environment and sustainability practices of MILMA – ERCMPU. The findings of the study highlighted various practices adopted by ERCMPU towards farmers and general public and majority of the profits were set aside for such social responsibility activities. To conclude, the study would recommend that ERCMPU will have to focus more on education sector as well as sustainability practices. The working of cooperatives lays down a noble illustration for all organisations towards social responsibility and commitment.

Keywords: MILMA – ERCMPU, Social responsibility, cooperative sector, sustainability, milk producers

1. Introduction

Constituted in 1980, The Kerala Co-operative Milk Marketing Federation (KCMMF), widely recognised as 'Milma, is a major milk producing and marketing unit in Kerala. It operates as a three-tiered organization. Since taking over from the former KLD&MM Board in 1983, farmer memberships have surged from 45,000 to over 10.4 lakh by March 2022, spread across 3,076 milk co-operatives. TRCMPU in Thiruvananthapuram, ERCMPU in Ernakulam, and MRCMPU in Malabar are the 3 regional cooperative milk producers union of this society. The society oversees operations from its direct units and hose managed by regional unions from its headquarters in Thiruvananthapuram. The firm assemble and disseminate disinfected, Vitamin-A embellished milk, diverse formula related staples, & mango drinks across the state. Kerala. Milma's vital role has marked the way to attain the self-sufficiency in milk production. Apart from this, Milma has also contributed towards socio-economic progress for dairy farmers through milk procurement, processing, and marketing. It is evident that the per capital milk consumption rates is very high in Kerala.

Profile of ERCMPU
The Ernakulam Regional Cooperative Milk Producers' Union Ltd., commonly known as 'Milma,' is a professionally managed and rapidly expanding organization specializing in the procurance, transforming, and merchandising of milk and dairy products. With an annual turnover exceeding Rs. 982 crore, it operates across the districts of Ernakulam, Trichur, Kottayam, and Idukki in Central Kerala.

Registered on September 12, 1985, the Ernakulam Milk Union is one of the three regional unions affiliated with the Kerala Co-operative Milk Marketing Federation Ltd. (KCMMF). A significant

intention while establishing KCMMF in 1980 was to upgrade financial and social status among farmers by effective milk procurement, processing, and marketing. The mission of Milma aligns with the goal which focus on "farmer prosperity through consumer satisfaction."

Operating on a democratic model of "of the farmer, by the farmer, and for the farmer," the Ernakulam Milk Union has an elected Board and employs its own staff, including the Managing Director. The Union procures 337 TLPD (Thousand Liters Per Day) of milk from approximately 939 Anand Pattern Dairy Cooperatives (APCOS) and traditional societies, ensuring a steady and fair price for producers, even during the Covid-19 pandemic when it maintained full procurement despite lockdowns.

Milma markets 430 TLPD of milk through 183 supply routes to 11,563 outlets across the four districts, holding a 45% market share in liquid milk sales. Liquid milk sales contribute 81.22% of the Union's turnover of Rs. 982 crore.

There are 4 dairy plans operating under the Ernakulam Milk Union. Additionally, it runs a Products Dairy in Edappally, producing ghee, butter, peda, ice cream, paneer, yogurt, and other items, as well as a Bakery & Confectionery Unit in Chalakudy, which makes pudding cakes, cookies, bread, and buns. All of the Union's dairies and its head office are certified under ISO 9001:2015 and ISO 22000:2018.

Few initiatives of ERCMPU

National Programme for Dairy Development

- Enhancing Milk Chilling Facilities at Village, Block, District Level
- AMC Units for Dairy Co-operatives
- Establishment of State Level Laboratory for Milk & Milk Products
- HACCP/ISO Certification & Accreditation of Dairy Establishments Enhancing Information & Communication Technology Networking
- Training to Farmers, DCS Staff, Dairy Staff on QMS
- Research & Development Activities

Dairy Processing Infrastructure Development Fund

- 2 MW Solar Power Plant at Ernakulam Dairy
- Processing & Production Equipment – Products Dairy

Revitalizing Producers' Owned Institutions - NDDB- RPOI

- Strengthening of Milk Procurement Operations and Institution Building
- Strengthening of Market Operations
- Dairy Processing Infrastructure
- Training & Capacity Building

Milma being a cooperative have played a significant role in upliftment of lives of its members, the farmers in various ways. Eventhough there is no mandatory rules imparted by the Government as there is corporate sector regarding social responsibility, the sector provides many schemes which directly and indirectly proves to be their part of social responsibility and commitment. The various decisions taken from not being a profit motive organisation itself states its role of commitment to the society.

2. Objectives of the study

Examine how MILMA's - ERCMPUs Social Responsibility initiatives contribute to inclusive economic development, particularly focusing on marginalized and rural communities.

3. Case description

The social commitment and responsibility in the cooperative sector is not underlined with any hard and fast rules. The streamline of cooperative principles itself states the role of its commitment to social welfare. The study focus on MILMA's social responsibilty programs with special reference to ERCMPU unit. The study will throw light towards the following initiative taken by MILMA:

- Support to dairy farmers – its members
- Environment sustainability initiatives
- Community development programmes
- Special initiatives for women farmers
- Disaster relief efforts

4. Research methodology

Qualitative & Quantitative research methods – interview, document analysis Data collection – interview with MILMA officials, review of annual reports

5. Findings

Support to farmers

- **Veterinary Services:** Milma provides free or subsidized veterinary care to its farmer members. This includes regular health camps, vaccination drive:, and treatment of livestock to ensure the well-being of the animals and enhance milk production.
- **Training and Education:** Milma conducts regular training programs for farmers to educate them about best practices in dairy farming, animal husbandry, and modern farming techniques. This helps in improving productivity and sustainability.
- **Supply of Fodder and Feed:** To support dairy farmers, Milma supplies quality cattle feed and fodder at subsidized rates. This ensures that the livestock are well-nourished, leading to better milk yield and quality.

The ERCMPU has been consistently providing great support to its farmers in various forms which are listed below;

- Summer Incentive
- Head load charge for farm sector farmers
- Financial assistance of Rs.15,000/- each to cow death without insurance cover
- Services of Veterinary doctors in 18 De-centralized Veterinary Units (DVUs) spread across 4 districts
- Accidental Death Insurance Scheme for Farmers and their Family Members
- Interest subsidy on bank loan for purchase of milch cows
- Special Programme livestock Immunization
- Distribution of Paddy Straw/Silage at subsidized rate
- Premium Subsidy for Cattle Insurance
- Subsidy for various types of machinaries for Dairy Farmers
- Building Grant for APCOS
- Different Training programs for farmers, APCOS Employees and Presidents

- Distribution of Steel Cans to 20,000 Dairy Farmers
- Insurance Scheme for APCOS Buildings
- ISO certification for selected Bulk Milk Chilling Units
- Subsidy for Milk Testing Equipment in Dairy Co-operatives
- Camps for Medical Insurance
- Scheme to improve milk quality by Farmers
- Veterinary assistance through telemedicine
- Cash Subsidy of Rs. 2500 each per cow given to farmers who are purchasing cows taking loans.
- Insurance subsidy (Mediclaim)
- Subsidy for Silage distribution
- Subsidy for purchasing milking machines
- Initiative to start Vetinary units
- Special financial aid to farmers who does not have insurance and if they lose cows, a special aid is given.

Environmental Sustainability

- **Eco-friendly Practices:** Milma is committed to adopting eco-friendly practices in its operations. This includes waste management in dairy plants, minimizing the use of plastic in packaging, and upgrading the farming practices by adopting sustainable energy origins.
- **Preservation of water:** Given the importance of water in dairy farming, Milma promotes water conservation techniques among farmers, such as rainwater harvesting and efficient irrigation methods, to ensure sustainable water use.
- **Organic Farming:** Officials of MILMA provides training and assistance to its farmers about organic farming practices and encourage them to adopt such practices to improve the quality of milk. An awareness sessions are also provided to educate the farmers about use of organic items and their impact on environment etc.

Community Development Programmes

Rural Development

- Employment Generation: The institution provides great scope for employment to the people especially in rural zones. They have a special provision to accommodate the family relatives and legal heirs of existing employees as their staff thus creating a sense of belongingness among employees. Majority of the farmers falls under the Women category and they are provide with training and empowernment sessions.
- Economic Upliftment: The support of MILMA to farmers includes, reasonable and apt payments. They play a significant role in ensuring fiscal steadiness and raise the standard of living of rural community which enhances the development of rural sectors and economy.
- Community Infrastructure: The organisation has also provided aid in developing the infrastructure of rural areas. The infrastructure aid includes construction of ways, roads, Milma has also been involved in developing basic infrastructure in rural areas, such as roads, drinking water facilities, etc. which lead to development of entire community not only to their farmers alone.

Consumer and Public Health

- Quality Assurance: The organisation assures that their dairy products are delivered with high quality and undertake high safety measures in marketing as well as procurement of milk products. This is achieved through rigorous quality control measures at every stage of milk collection, processing, and distribution.

- Awareness Campaigns: Milma conducts public awareness campaigns about the benefits of consuming safe and nutritious milk. These campaigns also address broader issues like health, nutrition, and the importance of supporting local farmers.
- Affordable Products: Milma ensures that its products are reasonably priced, making quality milk and dairy products accessible to all sections of society, thereby contributing to public health.

Support to Tribal and Women farmers:

- A special focus was given to empower the SC/ ST and women farmers and in this purview, the unit has adopted a village in Rajamala, an Eco Tourism booth - free canopy was distributed to 50 beneficiaries and now they have a sales of average Rs. 2 lakhs monthly.
- Free cows, manures and feed was given to Tribal communities
- To promote women empowerment, self employment schemes was initiated, they were trained and motivated to undertake farming
- Support through the societies and collection centres
- On the other hand employability in the offices are given priority to the farmers and their relatives either for permanent vacancy or temporary basis.

Disaster Relief Efforts

In response to emergencies, the MILMA - ERCMPU unit has financially supported various disaster relief efforts over the years as part of their social responsibility. However, there were no specific regulations provided on how to implement these disaster relief schemes.

6. Analysis

Table : 1.1 Table showing net profit of ERCMPU

Year	2020 - 21	2021 - 22	2022 - 23
Net Profit	1.56 lakhs	73 lakhs	57 lakhs

(source: Annual reports of ERCMPU)

Table 1.2 Table showing sales of ERCMPU

Year	2020 - 21	2021 - 22	2022 - 23
Sales	694 crores	763 crores	900 crores

(source: Annual reports of ERCMPU)

7. Conclusion

Impact of Milma's SR Initiatives

- **Improved Livelihoods:** Milma's SR activities have significantly improved the livelihoods of thousands of dairy farmers and their families in Kerala.
- **Sustainable Practices:** The cooperative's focus on environmental sustainability has led to the adoption of better farming practices that are not only beneficial to the farmers but also to the environment.
- **Community Development**: Milma has provided various infrastructure development

activities especially for their farmers and their residing places which are majority being located in rural areas. Such contribution has indirectly lead to the inclusive development of whole community.

Recommendations

Cooperatives in general has been acting as a leading instance and illustration for all organisations in the area of social commitment and responsibility. ERCMPU - MILMA has shed truly commendable efforts in the areas of CSR and it act as a practical model for other organisations. The very instance that inspite of lowered profits, MILMA makes sure that there is no compromise in fulfilling their social commitments. The study will however, will highlight few areas where the organisation can focus their efforts to progress, like they have to look upon the education part of the farmer's children and also has to look upon the calamity assistance policies. Weightage must be also set to educate and train farmers as well as public about environment and sustainability factors.

The following list depicts the recommendations of this research study:

Augment Educational Funding:

1. To implement various scholarship and education aid for the kids of farmers as well as organize educational programs in the rural community.

2. Collaborate with educational and other institutions in supporting and guiding the students from rural sector towards career counselling and employment opportunities.

Fortify Calamity Aid process:

1. To launch a separate policy for calamity aid and relief towards the affected parties and areas and set aside few funds towards such disaster relief activities.
2. To participate and volunteer in such calamities, employees and farmers should be provided training and assistance.
3. A devoted calamity response squad can be set up in the organization who can handle and synchronize such relief activities during crises.

Develop Training Series for Farmers:

1. Host wide ranging training methods for farmers to ensure that they could adopt finest strategies in the area of milk production.
2. Farmers should be imparted training regarding usage of technology use in the area of farming.
3. The awareness campaigns in the areas of environment issues, sustainability practices and need to adopt eco-friendly practices must be undertaken.

Endorse Ecological Consciousness:

1. Organize consciousness crusades about ecological concerns and viable farming practices.
2. Device steps to motivate farmers to implement green technologies and go green concept to shrink the environment impact and also to contribute towards sustainability.

Review and Assess Impact:

1. Frequent or periodical review of the various programmes organized by the organization so as to assess the impact of these activities to the actual beneficiaries.
2. To gather response from beneficiaries and stakeholders to rethink and restructure the policies and take corrective actions and to map the deviations.

Escalate Community Development:

1. Enhance community development and inclusion activities by organizing various activities and providing opportunity for the farmers and general public to express their desires and proposals.
2. Arrange community related activities and programmes to announce and revel the contributions of farmers.

The above recommendations will augment the social commitment activities of ERCMPU - MILMA's and will enhance the sustainable and inclusive progress and improvement within the farming community.

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Is Harmonisation of Cooperative Legislation a must for Cooperative Development in India?

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Abstract

Cooperative Legislation is foundational to the growth, development and spread of cooperatives. It has significant influence on the formation, promotion, governance, leadership development and operations of cooperatives to transform community-owned business units into viable enterprises and self-regulatory organisations. Cooperative legislation in India is 120 years old. The principal Cooperative Societies Act of 1904 & 1912 have undergone amendments with the change in time and need. Being a State subject, the cooperative legislations witnessed comprehensive amendments to the Act of 1912 during 1960s. Lack of uniformity in Cooperative laws was witnessed due to dissimilar objects divergent focus attached to formation and promotion of cooperatives across States/ Union Territories (UTs).

The need of that time also prompted the Union government to enact the Multi-State Cooperative Societies (MSCS) Act in 1984 to look after the cooperatives having area of operation in more than one state. The MSCS Act 1984 was last amended in 2002 and recently in 2023. While the State laws are enforced by Registrar of Cooperative Societies (RCS) in respective States, the MSCS (Amended) Act 2023, comes under the purview of Central Registrar of Cooperative Societies (CRCS), Ministry of Cooperation, Govt. of India.

With globalization, industrial transformation, and ongoing technological advancements, the requirements of cooperatives have evolved. In response to these changes, both State/UT and Central Governments have attempted to update cooperative legislations. For instance, in 1995, several States enacted the Mutually Aided Cooperative Societies (MACS) Act to provide more flexibility in cooperative registration, operation, and governance. Additionally, the 97th Constitutional Amendment in 2011 called for reforms to enhance transparency and accountability in cooperative development. However, despite these efforts, the legislative reforms have not significantly impacted cooperative laws.

Given this context, there is a pressing need to revisit and harmonize cooperative law provisions. It is essential to align these laws with other competitive legislations to foster renewed development and growth in the sector. The present paper aims to justify and explore this necessity by studying the similarities and dissimilarities in the Cooperative Acts followed in various States and UTs. By mapping existing legal provisions and identifying areas where cooperative laws can be synchronized with broader legislative frameworks, the paper suggests ways to remove bottlenecks and achieve uniformity in the States/UTs and Multi-State Cooperative Societies Act. This harmonization is crucial for boosting the cooperative sector, promoting a more conducive environment for cooperative development and innovation, and ensuring sustainable growth.

1. Introduction

Cooperatives as defined by the International Cooperative Alliance (ICA) are autonomous bodies of associations of people in which people voluntarily come together to meet their common social,

cultural, economic needs and aspirations. This is achieved by forming a jointly owned democratic enterprise with the underlying values of self-help, self-responsibility, equity, equality and mutual cooperation with belief in the ethical values of honesty, openness, social responsibility and caring for each other.

There are more than one billion cooperative members worldwide, who use cooperatives at least partially to better their living situations. Cooperative enterprises range from small and medium sized enterprises to very large entities, from single to multi-purpose; they have homogeneous memberships or are composed of so-called multi-stakeholder groups *(Henry, 2018)*.

Cooperatives exist as of great importance such as; they can have an important role to play in times of economic turmoil and crisis including COVID-19 Pandemic (Dave, M. 2021; ILO, 2009). For example, in the late 70's and early 80's, a time of modest job growth, cooperatives experienced a much faster rate of employment growth than the economy as a whole *(Smith S. and Rothbaum J., 2013)*. They can directly address community needs and make adjustments for regional issues, play a role in poverty reduction, important for stabilization of markets, boosting the economy of the nation, etc. But, knowing the meaning of cooperatives, its importance, and its working principle is not enough because there is a need to understand that how it become operational or to know that what is essential for operation of cooperatives and i.e., cooperative legislation and regulation as it is foundational for the growth and development of cooperatives and has significant influence on the formation, organization, and operation.

Cooperative legislation refers to the principal legislature that is based on the cooperative principles of the various legal authorities granted to them or made available to the relevant government agency in cooperative administration. It tends to do away with cooperatives as institutions in the legal sense. Cooperative legislation has great concern with globalization and sustainable development so these paradigms should be necessary to be considered. The most decisive element of globalization for cooperative legislation is a double shift of emphasis in the economy from the production of goods and services to the highly capital intensive and high value-adding production of knowledge and from the internationalization of trade of goods and services to the globalization of the production itself. Without neglecting more traditional economic activities, it is fair to say that this double shift is likely to set the parameters for the direction of legislation (*Henry, 2012*). In case of sustainable development, the seventh principle i.e., Concern for Community itself says that "Cooperatives work for the sustainable development of their communities through policies approved by their members." It has been recognized by the International Court of Justice since 1997 as a concept of public international law sustainable development presupposes the possibility of development. The central aspect of sustainable development is social justice. It regenerates most effectively through democratic participation in the decisions on what and how to produce and how to distribute the produced wealth. The factors of globalization render the state and the labor market partners, who used to organize this kind of participation, ever less capable of doing so. This is why attention must shift toward enterprises that allow for democratic participation, like cooperatives (*Henry, 2018)*.

As the concern for this study is primarily cooperative legislation so we should know the basics or the initial phases about the legislation. Cooperative legislation has developed in two, partially overlapping stages, one from the middle of the 19th century to the present and the other one starting in the 70's. Cooperatives are distinguished from stock firms in the first, while stock companies are approximated in the second. In the nations that were then industrializing, the first laws were enacted in the second half of the 19th century. Modern cooperatives had already begun to develop in these nations before this legislation. In other nations, particularly in the former colonies, events occurred in the opposite order and about fifty years later. Other nations experienced the establishment of

cooperatives and their regulation concurrently, primarily as a result of immigration from Europe or eclectic borrowing.

Indian Cooperative Legislation and Harmonization

In the Indian perspective, the evolution of cooperative law also has a vast history.In addition to the report of the Famine Commission, 1901, the studies conducted by Sir Fredric Nicholson to investigate the viability of establishing a system of agricultural or other land banks in Madras and by Mr. Dupernex in Uttar Pradesh highlighted the necessity of establishing "*cooperation as a means"* to protect farmers from the exorbitant interest rates they are required to pay to moneylenders on their borrowings. On October 23, 1903, Sir Denzil Ibbetson introduced the "cooperative credit societies bill" before the Governor General Council. After a detailed presentation and discussion on Sir Frederick Nicholson Report (1895), Sir Edward Law committee Report, the motion was passed, led to the introduction of the **first legislation** on cooperation, i.e., the **Cooperative Credit Societies Act, 1904.**

But it was found that the Act 1904 was narrow in its scope as it permitted registration of primary credit societies alone and left non-credit societies and federal organizations of primary cooperative societies out of its purview. These shortcomings were removed by the Cooperative Societies Act, 1912, which replaced the Cooperative Credit Societies Act, 1904.

The constitutional reforms outlined in the Montagu-Chelmsford Report (1918), formed the basis of the Government of India Act 1919 where cooperation was made a provincial/ state subject. Then Bombay State gave a lead in this regard and passed the first State cooperative Act - Bombay Cooperative Societies Act, in 1925. It was followed by Madras, Bihar, Odisha and Bengal, which passed their Acts in 1932, 1935 and 1940 respectively.

Further, the attainment of independence by the country in 1947 led to the emergence of new States in the Indian Union formed largely by the integration of several Princely States since there was no legislation governing cooperatives. As a result, therefore, from 1947 to 1954 several of the new States either adoptedthe 1912 Act or such other Act as was in force in another State, or enacted new legislation of its own, which was based on the existing legislation in force in States, like Bombay or Madras. The conference of RCS held in December, 1939 considered the issue and appointed a sub-committee which unanimously recommended that the central govt. may introduce a separate legislation for the cooperative societies extending their area of operation to more than one State. In pursuance of this recommendation the govt. of India enacted the Multi-Unit Cooperative Societies Act, 1942. During the period from 1940s to 1990s, there were many committees appointed for initiating reforms in the functioning of the cooperatives of all types in view of the changing socio-economic development scenario of our country. In 1972, the Govt. of India constituted an expert committee on legislation for Multi-State Cooperative Societies which lead to the introduction of the Multi-State Cooperative Societies Act, 1984 that replaced the Multi-Unit Cooperative Societies Act, 1942.

The cooperatives faced major challenges due to structural reforms in 1991 with the advent of Liberalization, Privatization and Globalization of the Indian economy. To keep pace with these changes, the Model Cooperative Act 1990 was enacted and as result a Mutually Aided Cooperative Society Act (MACS) 1995 was passed to give more autonomy and independence to cooperatives. This MACS also known as “Self-Reliant Cooperative Societies Act”, passed in the eight States/ UTs (Andhra Pradesh, Bihar, Chhattisgarh, Jammu & Kashmir, Jharkhand, Karnataka, Telangana, and Uttrakhand) as parallel legislation besides their traditional cooperative societies Act.

In its quest for legislative reforms, the Government of India came up with new institutional form i.e., Farmer Producers Company (FPC) Act 2002 (by amending Indian Companies Act 1956). These two different forms of legislation i.e., MACS Act 1995 and FPC 2002, but unfortunately these two Acts also couldn't provide a solution to fundamental problems of the cooperative law completely. MACS Act is applicable to such cooperative organizations that do not receive any financial help from the government.

Efforts by the National Cooperative Union India and other National Level Cooperative Federations to get the 1984 MSCS Act, amended finally bore fruit when in 2002, the Multi State Cooperative Societies Act, 2002 was notified. On the whole this Act is a vast improvement over the Multi-State Cooperative Act, 1984 and is a step towards autonomous, democratic and professional functioning of cooperatives. Between 1990 to 2005, there were many committees appointed at different points of time by the Government of India (like Mirdha Committee 1996; JagdishKapoor Committee, 2000; VikhePatil Committee, 2001; V. S. Vyas Committee, 2001 and 2004; Vaidyanathan Committee, 2004, etc.) to suggest strategies for addressing the key concerns highlighted and strengthening cooperative legislation and its performance. *Recently, Multi-State Cooperative Society Act 2023 has been notified which is formed by amending Multi-State Cooperative Society Act 2002 to align the existing legal provisions in line with 97th Amendment part IX(B) of the constitution of India and to strengthen the governance, improve transparency and bring structural reforms among the MSCS.*

Need of Harmonization

With globalization and market expansion, development requires a market-enabling political and legal framework which may fall short to be effective if not complemented by the development and strengthening of institutions based on self-help and self-responsibility. Hence, cooperatives are gradually being rediscovered as a channel in their members' hands to achieve goals which companies do not find profitable or governments are no longer able or willing to achieve. At the same time, this rediscovery has been highlighting the fact that the gap between cooperative values and principles, on one hand, and legal reality on the other, leaves cooperative self-help potential severely underutilized. To mend this situation there is a need for institutional support with structural adjustment measures. This needs to be done in relation to the universally recognized cooperative values and principles harmonizing with the legal reforms of a particular region. Harmonizing cooperative laws would significantly benefit already-existing cooperatives and make the cooperative option more appealing to groups launching enterprises. This would streamline these regulations, promoting a more standardized and efficient cooperative sector.

Moreover, there is no such attempt made to review the various sections and provisions of the old traditional cooperative law (Acts/Rules) followed across the country. This comparative study of cooperative law will help to identify the similarities and dissimilarities, restrictive provisions hampering the growth of cooperatives, and providing suggestions or measures, which can be considered to bring uniformity in functioning of the cooperative societies or making the legislation harmonized. This would further improve the problems being faced by cooperatives for years and thereby ensure the all-inclusive and sustainable development of cooperative movement in India.

In the overall context, the present paper aims to study the similarities and dissimilarities in the Cooperative Acts followed in States and UTs and suggest ways to remove bottlenecks and achieve uniformity in States/ UTs and Multi-State Cooperative Societies Act or making these legislations harmonized in order to boost the cooperative sector.

2. Review of Literature

Henry, H. C. K. (2018), studied the trends in cooperative legislation to know what things need harmonization and for approaching his objective of the study, this paper is divided in the sub-headings to clearly provide the required suggestions. The initial part of the paper has an introduction where it considers the brief legal history of cooperatives on a global basis like how cooperatives were being valued as the legal form of enterprises. Then there is a section of result and discussion which is a crucial part of any research paper, here it mentioned the trends in the cooperative legislation since its beginning in which the first trend covers number of divides between nations, which are still exists today, the second trend discusses how companization causes cooperatives to disregard their non-economic goals, and the third trend, which emerged after 1989, is characterized by widening social inequities and a declining ability of the welfare state and labour market participants to provide social justice. Furthermore, it points out the certainties and uncertainties as concerns cooperative law (i.e., 1995 International Cooperative Alliance Statement on the co-operative identity (ICA Statement), and the 2002 International Labour Organization Recommendation No. 193). In this context, this paper comes to the conclusion that **some level of harmonization is necessary for the effective execution of current regional and international rules**. It is **necessary to harmonize how cooperatives are defined, their ideals** (definition of cooperatives), **and their guiding principles**, on the one hand, **and to develop cooperative legal concepts that will guide lawmakers**, on the other side. Further, it is concluded that **rather than attempting to incorporate independently created cooperative legal principles into the legal systems, harmonization will be more successful the more we define how the cooperative principles could fit into the world of existing, widely accepted legal principles**, such as the principle of equal treatment, the principle of solidarity, and the principle of democracy.

Hans-H.Münkner (2014) studied the worldwide regulations of cooperative societies. He stated that to ensure a supportive legal framework for the appropriate development of cooperatives the trend should be to keep a co-operative law as short and concise as possible. The role of co-operative law is to shape and protect the co-operative model of organization, defined by the internationally recognized co-operative principles, and to protect co-operators and the public. The **law should encourage good practice and prohibit bad practice**. It **should give co-operative societies autonomy to adjust the general provisions of the law** to the needs of the individual society. Despite such autonomy to make bye-laws, co-operatives should be obliged to remain within the type-specific organizational model and should be discouraged to deviate from this model.

The law-makers have to offer a type of organization that works and to translate co-operative principles into legal norms. For those who want to form cooperatives, the existence of such a model saves effort and cost for legal advice. **Co-operatives need a clear profile that distinguishes them from commercial companies and social organizations**. They must be flexible to adjust themselves with the changing conditions while keeping their profile and following their principles. Deviations from these principles should only be allowed within limits. Moreover, cooperatives are driven by the self-help force, so, the self-help cycle has to be put into motion and to be kept in motion to make the members feel promoted by their co-operative and the cooperative grows organically. Often the democratic management structure is diluted allowing deviation from cooperative principles to increase the economic efficiency but to achieve economic viability need-specific cooperative tools should be use rather than following what a company does. Hence, it concludes that an **enabling environment rather than a supportive environment should be followed** to develop autonomous cooperatives.

Hans-H.Münkner (1985) studied the shortcomings of cooperative legislation of the time against the

background of general problems of law-making in developing countries. The cooperative law of the time of many countries had too strong of a control of government administration granting exemptions to the powerful group and being interpreted by the administrative regulations making it impossible for the ordinary citizen and even difficult for the expert to know about all of them. Moreover, they suffer from the problem of implementation. It states that **effective law-making can be done by opting for a participative approach**. For this the involvement of the target population is necessary. It is so, because the cooperatives are seen as private business organizations for the promotion of the economic and social needs of their members and not as semi-public or public institutions serving as development tools in the hands of the government.

Participative lawmaking can be tool to mobilize the people with their resources for themselves and prevent the overindulgence of government in the institution by promoting the development of self-managed, self-financed and self-controlled cooperatives serving primarily the interests of their members and in doing so contributing indirectly to the overall development of the country. This could be done by setting up a forum for dialogue with the target population followed by evaluating these in logical order with the prevailing framework and relate them to government's view of cooperative development, forming the statement of object and reasons for new laws, drafting and taking suggestions and recommendations for the new law before formulating the final draft. Furthermore, it is stated that participative law-making can only be effective, if the opinions and recommendations expressed by the target population are seriously taken into consideration by the government and the cooperative law should be based on a joint effort of the people for a law of the people rather than a law for the people.

Hagen Henry (2012) gave the third edition of guidelines for cooperative legislation to incorporate new developments that are impacting how cooperative law is being developed. With globalization, a number of political effects have led to a crossroads in cooperative legislation such as towards companization, going back toward the traditional cooperative principles or to formulate a new cooperative law. It is to be decided by the lawmakers which option to choose which can further be adapted by the pressures from the financial market. Beginning with the elaboration of the framework for cooperative legislation, the ILO rejected the idea of presenting a model law as they were of the opinion that model laws which are meant to just provide a guideline to construct cooperative law often lead to simply being transferred without the legislator adapting their underlying legal concepts to the particularities of its jurisdiction making it ineffective. Furthermore, only guidelines for universal use might carry the necessary weight to contribute to counterbalancing the "uniformization" and "companization" of all forms of business organizations.

Additionally, one needs to consider the **laws to be flexible in nature providing fewer mandatory rules in the cooperative law.** But in general this has led to a further complication of the legislation. It is suggested that legal policy-makers use globalization and the sustainable development models while developing cooperative laws. The aspects to be considered for sustainability are economic security indicated by their longevity and a low number of bankruptcies, ecological balance which is maintained more easily by enterprises, like cooperatives, which are not legally required to maximize the financial return on investments, returns which are produced by using non-renewable energies, social justice which relates to cooperative's democratic structure and political stability which is a function of social justice and the possibility of participating democratically in decision-making processes which affect everyday life. The legislator must consider whether the law should only apply to cooperatives or also to other forms of self-help and/or social economy actors. It is also imperative to consider whether there would be one law for all types of activities and cooperatives as it further affects the legislative procedure. However, the trend favors single law for all types of coops, possibly with specific parts/chapters as it provides for more autonomy to the cooperatives since the degree of

detail in such a general law will be lower than in a multitude of laws. Furthermore, it is suggested that law making should also be done with a participatory approach (as mentioned by Hans-H. Münkner, 1985)

Adv. Anjali GopalPatil and Dr. Asmita A. Vaidya (2021) analyzed the existing legislations in the context of women empowerment and gender equality. After analyzing it was found that an appropriate legislative framework to promote women participation and empowerment in the credit co-operative sector is not sufficient. **Women are least represented in meetings, voting, leadership and managerial positions of credit co-operative societies**. This is due to their limited access to education, training, socio-economic status, household responsibility, unawareness of credit cooperative structure and many more, women cannot access the resources and are unable to grab the opportunities. The existing constitutional and legal provisions are inadequate for participation and representation of women which is not a favorable scenario for the democratic governance of the cooperatives.

To achieve economic and social empowerment and to **increase the participation of women, access to economic resources and legislative support is essential**. It is the government's responsibility to govern the society by the law, and ensure procedures and means of implementation. And, the provision for women reservation in cooperative societies is for two seats to be reserved on the committee of each society consisting as members and having members from such class or category of person, to represent the women members, may be elected, co-opted or nominated, like in the Maharashtra Co-operative Societies Act, 1960, must be enhanced up to 50% to represent the actual contribution of women who are almost 50% of the population. For social and economic empowerment of women such provisions of reservation are imperative and have to be included in the legislation and constitutional mandate. It further suggests that policies and schemes must be adopted for effective participation of women as committee members. The co-operative leaders, legislators, regulators have to be sensitized to know the complexities of gender issues.

Ajibola Anthony Akanji (2022) reviewed environmental policies with cooperativism which examined from the lenses of the co-operatives and up scaled legal frameworks with emphasis on international laws, national and sub-national legislation; it is noted that the legal frameworks affect the level of effectiveness or otherwise of cooperatives as a mechanism for the naturalization of sustainable development. Consequently, the global-north where the cooperatives are key participants in the relevant sectors of the economy has robust legal and administrative frameworks at the regional, sub-regional, national and sub-national levels. It is concluded that to upscale the global legal framework for cooperatives goal number 16, the provision of access to justice for all sectors and to build effective, accountable and inclusive institutions at all levels of SDGs should be emphasized. It is proposed that the utilization of cooperatives for environmental management is reconciled into the core value of goal 16 of the SDGs on the structure of a binding international legal instrument. Moreover, a standard on the template of a Universal Charter for the Cooperatives is being considered that would be imposed on the national and sub-national legal frameworks for cooperatives, in the same vein the Universal Declaration on Human Rights ‘‘imposes’’ a standard for social and political rights in a comprehensive blend. *Hans-H.Münkner (2002)* analyzed the supportive environment for co-operatives in the context of the current political, economic, social, demographic and ecological environments. The transformation of former socialist countries into those of democratic states together with structural adjustment programmes and reforms has given shape to such an environment in which co-operatives are no longer perceived as state financed development tools in the hands of government but rather as private initiatives of citizens who are encouraged to mobilize their own resources in order to improve their own situation. Although this has made the state supported and state-controlled co-operatives feel abandoned and difficult to survive in the new environment, the

chances of autonomous co-operatives based on self-help are greatly enhanced.

Further this study mentions that with the current scenario of globalization, member-driven organizations like cooperatives can only survive if they, at all levels, amalgamate the strategies of networking, horizontal and vertical integration and build up their own corporate identity as a viable alternative to investor-driven enterprises. This can only be implemented if they are driven by professional managers who have the skills required to succeed in the global market and know about doing the business in a co-operative way. A supportive economic environment for co-operatives has to give co-operatives free access to markets, capital, general support services, training programmes, information, public tenders, and allow vertical and horizontal integration and networking at all levels, exempting user-owned and user-controlled enterprises from restrictions of competition law. Moreover, the **audit and supervision must be done in such a way that it protects the interests and rights of the members, creditors and general public**.

Cooperatives are not just restricted to pursuing economic objectives but also cover the social aspects. A supportive social environment must allow informal self-help organizations, associations and co-operatives to co-exist so that people can choose the organizational pattern that suits them best. To achieve these goals **more efforts need to be made to formulate clear and well-founded concepts for the self-help mechanism and designing of a supportive and enabling environment for co-operatives** and for the success of all efforts in the field of co-operative development.

Timothy Guinnane and Susana Martinez- Rodriguez (2011) studied the cooperative law of Spain and traced its roots in business law and its connections to broader questions of the freedom of association, the formation of joint-stock enterprises and the liability of investors in business and cooperative entities. Cooperatives were legally introduced in Spain in1867 as variable capital corporations and were explicitly embedded in the commercial code with the formalization of the Company Law. This led to the development of cooperative law. However, the uncertain position of the cooperatives between company law and civil law, and between a privileged entity and a tolerated one was highlighted as the Commercial Code company law and civil law, and between a privileged entity and a tolerated one but the draft Commercial Code published in 1869 and enacted in 1885 indicated a clear intention to treat cooperatives as a type of corporation.
The Spanish Commercial law was created on the concept of profit which eventually made the cooperatives to be treated as a species of business entities awkward. On the other hand, France and other countries treated cooperatives as a species of business enterprise, Spain did not. The Spanish Law on Associations(1887) stripped cooperatives of the economic benefits gained with the law of 1869. They note that the 1906 Agricultural Trade Act 1931 and the 1869 Cooperatives Act were advantageous to the development of cooperatives in Spain. It is concluded that the cooperatives are tie with one or other social or ideological movement to combine individuals to attain shared goals and hence, function as a partnership, corporation or business enterprise.

Ville Ponka (2019) examined how cooperative membership shapes the legal rules and distinguishes cooperatives from mainstream companies. He states that cooperatives perform a double role as on one hand, members own, finance, and administer the cooperative together while on the other, they engage into transactions with the society as consumers, providers, and/or workers. This highlights the primary characteristic of the cooperatives of member participation and democracy. But this should also reflect in its legal characteristic by giving foremost consideration to its cooperative identity. Though, membership participation is essential for cooperative growth but some attributes like member's limited liability, asset distribution, the veil piercing doctrine, how the funding is to be collected and the balance of power remain under-researched for the development of an effective legal framework to uphold the cooperative as a member-centred, democratic service organization different

from other businesses especially companies. To do this **it is important to first understand the disputes related to cooperatives, only then it can be identified what needs to be improved to enforce a comprehensive and profound legislation.**

After reviewing a number of literatures, it is concluded that **to develop cooperative law, first the focus should be on member-centred strategy** to uphold the cooperative identity followed by the efficiency strategy and then the stakeholder strategy or else dominant use of efficiency strategy or stakeholder strategy can dilute the meaning of cooperatives. Thus, it is necessary to keep the rules related to membership flexible allowing the cooperatives to decide themselves in membership-related matters and only those rules which maintain the cooperative identity need to be mandatory at the national level. It further states that ideally, the lawmakers should refer to PECOL (2017) which provides a comprehensive understanding of cooperatives and the legal principles on which such entities rely.

Martin Minogue (2001) examined what is meant by regulations, their developing nature and 'governance of regulation' to understand the strengths and weaknesses of regulatory policy and practice. He denotes that as provided by Ogus (2001), regulation is based on rules which may give strict directives, or be broadly enabling in ways which permit further negotiation; rules may also be framed in ways which concede discretion over their detailed application. Hence, it is necessary to understand beforehand that what are the institutions of rulemaking, how are rules implemented, and by whom, what are the forms of accountability which surround (and promote) rulemaking and how is compliance obtained, and by who, etc. Regulations often are intertwined with the economics, politics and law (McGregor et al 2000 p.3) hence, it becomes necessary to develop a comprehensive analytical framework which allows to embrace all the complexity of economic policy making and management by the modern state. This requires a practical politics that can ensure that the conflicting views are mediated through negotiation, radical policies are constrained by electoral cycles and substantial changes in rules operate over long rather than short time scales. Political factors can also be significant in their effects on regulation between levels of government. To understand 'governance of regulation', it is necessary to analyze the formal structures and institutions of public management along with examining the process of public policymaking to focus on real decision scenarios which determine the choice and action in the policy options defining the implementation results and deficits. Corporate governance is being highlighted given its benefits like flexibility, the capacity to utilize appropriate expertise, responsiveness to changing conditions, and lower institutional complexity. But it also has its drawbacks like potential for abuse and bias, lack of transparency, and an orientation to private rather than public interest. However, among the two, which overshadows depends upon the trust which seems to be an essential underpinning for effective regulatory institutions and practice.
Baldacchinoa P., Falzonb M., Grima S. (2017), conducted a study by taking semi-structured interviews to understand the cooperative regulatory framework with special reference to the small state of Malta. There have been various attempts by Maltese stakeholders to determine and address possible deficiencies in the legal framework regulating Maltese co-operatives, that is, in the Co-operative Societies Act (CSA) and related subsidiary legislations (KM, 2010) but no substantial changes have been materialized. It is observed that a **number of changes to the CSA are required particularly in the field of co-operative financing, distribution of returns, with the remaining areas necessitating fine-tuning.** It has been found that there is a **need for a law which is "wide enough"** to face not only the realities of co-operatives at the time of the drafting of the law, but also new circumstances that emerge in the due course of time. Furthermore, in the study it is suggested that **inclusion of the principles in the laws might not be favorable as any breach of them would add up to non-compliance with the laws.** Instead, a 'comply or explain' approach regarding the principles can be considered to uphold the cooperative identity. This would also provide an alternative for social auditing.

3. Methodology

This empirical study follows 'descriptive research design'. The State specific cooperative laws and their practices including the provisions of Mutually Aided Cooperative Societies Act and Multi-State Cooperative Societies Act were obtained from the respective cooperative departments of the State/UT and Central Government. The Indian Companies Act 1956, as amended in 2013 also obtained from the Ministry of Corporate Affairs, Government of India and their extant implementation was reviewed.

The officials of the selected cooperation departments and sectoral experts were also consulted to understand the operational issues and challenges in the promotion and regulation of the cooperatives. The twenty one provisions comprising of registration of cooperatives, amendments of bye-laws, membership, partnership of cooperatives, election, recruitment, accounts & auditing, inquiry & inspection, dispute settlement, and liquidation of cooperatives, were studied.

4. Results and Discussion

After studying all the provisions and sub provisions of the sections of the State Cooperative Acts including Multi State Cooperative Society Act in a comparative way, this study reveals that there are many similarities and dissimilarities among Cooperative Laws of different States/UTs which may needs to be harmonized in order to bring uniformity.
The 21 major provisions which were studied have been further considered under five broader sub-themes as follows:

- **Ease of Doing Business**
- **Management and Electoral Reforms**
- **Transparency and Accountability**
- **Professionalism**
- **Progressing Role of Government**

Ease of Doing Business
Ease of doing business is the measure of how ease or difficult or challenging it is to start or operate a business. In the case of cooperatives, it is observed that there is a need to resolve the problems that are creating hurdles for members in smooth operation of business. In this category we have categorized two major provisions i.e., Registration and Amendment of bye-laws which further have sub-provisions including Online Platform, Duration of Registration, Provisional Registration, Acceptance/Rejection of Amendment, Deemed Registration and amendment to improve ease of doing business.

Registration

Sl. No.	Provision	States/ UTs
1.	**Online Platform**	Bihar, Himachal Pradesh, J&K, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Rajasthan, Tripura, and MSCS

2.	**Duration of registration**	Varies State to State (30 -120 days)
3.	**Provisional Registration**	Gujarat and Odisha
4.	**Deemed to be registered**	Assam, CG, Daman & Diu, Delhi, Haryana, H.P, Jharkhand, KA, M.P., Maharashtra, Meghalaya, Mizoram, Rajasthan, Tamil Nadu, U.P., Uttarakhand and MSCS

Amendment of Bye-laws

Sl. No.	Provision	States/ UTs
1.	**Period for Acceptance/ Rejection**	Varies between 30-90 days (30 Days in State of Andhra, Telangana and U.P.)
2.	**Deemed Acceptance**	Arunachal Pradesh, Goa, Karnataka, M.P., Maharashtra, Rajasthan, Mizoram, Odisha, Tamil Nadu, Haryana, Delhi and MSCS

Management and Electoral Reforms

Management is the most essential part for the operation of a cooperative not only in India but in any other nation as well so strong management is one the significant major aspect to consider here. In addition to this, elections are also one of the important aspects in a cooperative as they are democratic organisation, so the electoral reforms also need to be done to strengthen the sector. Here we have considered four major provisions i.e., Membership, Subsidiary, Partnership, Collaboration of societies, Ground for disqualification, and Elections under which the various sub-provisions are further considered.

Membership

Sl. No.	Provision	States/ UTs
1.	**Deemed to be member**	Andhra, Assam, Chhattisgarh, Haryana, J&K, Karnataka, M.P., Maharashtra, Manipur, Mizoram, Nagaland, Odisha, Tamil Nadu, Telangana) – period vary between 30 days – 90 days

2.	**Expulsion of Members**	In all states with resolution passed by 2/3rd or 3/4thmajority at general meeting. But with final approval by the Registrar in Delhi, Gujarat, Haryana, Maharashtra, Daman & Diu, Manipur, Puducherry, Rajasthan, Sikkim, T.N., and Tripura
3.	**Re-admission of expelled member**	One to Six Years (Max. in M.P., 5years in Assam/Nagaland; and 2years in Bihar, Gujarat, Uttarakhand, U.P.)
4.	• **Who may become member** • **Type of members** • **Voting Powers of members**	Not clearly mentioned (discrepancies are there)
5.	**Membership to self-help groupsor group of individuals or any class or association of persons**	A&N, Goa, Gujarat, Haryana, Kerala, T.N., U.P., Mizoram, Odisha, U.K., W.B, Jharkhand, Andhra, Telangana, Tripura, Maharashtra
6.	**Ground for disqualifications of members:-**	
	• member fails to transact such minimum business or utilize minimum services or facilities in a year or 2 consecutive years	• Andhra, Karnataka, Maharashtra, Telangana, Delhi,Mizoram, Rajasthan, T.N, Puducherry, MSCS
	• fails to attend two-three consecutive General body meetings	• Andhra, Mizoram, MSCS, Rajasthan, Telangana
	• has been sentenced to imprisonment for an offence under the Protection of Civil Rights Act.	• Andhra, Chhattisgarh, M.P.
	• has been sentenced for any offence, other than an offence of a political character or an offence not involving moral turpitude and a period of five years has not elapsed from the date of expiry of sentence	• Andaman, Andhra, Chhattisgarh, Karnataka, M.P, Odisha, Puducherry, Sikkim, T.N., Telangana, Tripura

Subsidiary, Partnership, and Collaboration

Sl. No.	Provision	States/ UTs
1.	**Subsidiary Organization**	Goa, Kerala, Mizoram, Odisha, Telangana, West Bengal and MSCS
2.	**Deemed to subsidiary**	Kerala, Odisha, Telangana and MSCS

3.	**Collaboration by Societies**	Chhattisgarh, MP, Karnataka, Maharashtra, Telangana, Goa
4.	**Partnership of Cooperatives**	Andhra Pradesh, Arunachal Pradesh, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Odisha, Puducherry, Tamil Nadu, Telangana, and Tripura

Ground for Disqualification from being a Member of the Board

Sl. No.	Provision	States/ UTs
1.	is carrying on business of such kind as the Registrar may, by general or special order, declare to be a business which is in conflict with the objects, or interests of the Society	Andhra Pradesh, Maharashtra, Daman & Diu
2.	is an employee of the State or Central Government or an employee of any institution receiving aid from the funds of the State or Central Government or an employee	Andhra Pradesh and Telangana
3.	holds the office of more than one Apex Society, One Central Society and one Primary society	Chhattisgarh, M.P, Rajasthan
4.	if he holds any such office on a committee of another coop society of the same type	Delhi, Gujarat, Kerala, Sikkim
5.	absented himself for three consecutive meetings of the board of such society, without leave of absence	Karnataka, Mizoram, MSCS
6.	he is in default in any co-operative society in respect of any sum due from him to the co-operative society or owes to any co-operative society an amount exceeding maximum credit limit	Andaman, Andhra, Gujarat, Jharkhand, Karnataka, Maharashtra, Daman, Mizoram, MSCS, T.N., Telangana, Tripura, W.B
7.	is of unsound mind and stands so declared by competent Court, a deafmute or a leper	Andhra, Assam, Mizoram, MSCS, Nagaland, Puducherry, Sikkim, Telangana, Tripura, W.B

Elections

Sl. No.	Provision	States/ UTs
1.	**Separate Election Authority**	Andhra Pradesh, Bihar, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Rajasthan, Tamil Nadu, Telangana, U.P., West Bengal, and MSCS
2.	**Size of Management Board** Min. 5 and Max. 21 (one member shall be SC/ST and two shall be women)	Reservation for women members is only in 13 states and for SC/ST in 15 states
3.	**Two Co-opted Members**	Gujarat, Meghalaya, Arunachal, Goa, Punjab, Assam, Mizoram, Meghalaya, Rajasthan, U.P., MSCS
4.	**Functional Directors**	Tamil Nadu, Telangana, Arunachal, MSCS
5.	**Quorum for general body meeting**	Varies State to State between 1/10th to 1/3rd
6.	**Adjournment of meeting in the want of quorum**	Varies State to State from 15 minutes on the same day to 21 days
7.	**Term of Board** (in majority of the States 5 Years), but 3 Years in:-	Delhi, J&K, Nagaland, Puducherry, and Tripura
8.	**Expelled member is re-eligible to contest election (**one year in majority of States/ UTs)	**2 Years in**:- Bihar, Gujarat, Haryana, H.P., Jharkhand, Odisha, Puducherry, U.P. **3 Years in:-**Delhi, Mizoram, Tamil Nadu, Uttarakhand **5 Years in:-**Assam, Tripura **6 Years in :-** M.P.
9.	**Tenure of Chairman (10 Years)**	Gujarat, M.P., Puducherry, Sikkim, Telangana, Tripura, U.P., and MSCS

Transparency and Accountability

Accountability and transparency are linked to good governance and socially responsible behavior, both of which are extremely pertinent when discussing cooperatives. Appropriate internal and external supervision methods are needed in cooperatives to meet the demands for accountability and openness. In this context, we have considered two major provisions: Accounts & Auditing and Properties & Funds, which further contain sub-provisions that can be involved in promoting transparency and accountability

Accounts and Auditing of Cooperative Societies

Sl. No.	Provision	States/ UTs
1.	**Specific Qualification of the Auditor**	Goa, Rajasthan, and Telangana
2.	**Special Audit**	Chhattisgarh, Delhi, Jharkhand, Madhya Pradesh, Mizoram, Odisha, Nagaland, Punjab, Rajasthan and MSCS
3.	**Concurrent Audit**	MSCS, Odisha

Properties and Funds (Disposal of Net Profit)

Sl. No.	Provision	States/ UTs
1.	**Maintenance of Reserve fund (25% of the net profit shall be transferred)**	Majority of States/UTs
2.	**Contribution to Education Fund**	Varies between 1-10% from State to State
3.	**Reserve for meeting unforeseen losses/ Bad Debt Reserve Fund (5-20%)**	Andhra Pradesh, Bihar, Gujarat, Haryana, Jharkhand, Mizoram, Nagaland, Telangana, West Bengal and MSCS
4.	**Payment of bonus to members on the amount or volume of business done by them with the society**	Andhra Pradesh, J&K, Odisha, Uttarakhand, U.P., Karnataka, Rajasthan, and Telangana
5.	**Cooperative Rehabilitation, Reconstruction and Development fund**	MSCS

Professionalism

The capacity to perform as required and produce high-quality work because of a person's innate motivation to do so is what is known as professionalism. The cooperative must be professionally managed to enable it to deliver the required services, ensuring independence, efficiency, and transparency. And, for this HR policy and Recruitment provision is considered.

HR Policy and Recruitment

Sl. No.	Provision	States/ UTs
1.	**Separate Authority for Recruitment of employees**	Bihar, J&K, Kerala, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal.
2.	**Service Rules for Employees**	Andhra Pradesh, Delhi, Haryana,

	of Co-operative Societies	Karnataka, Kerala, Telangana, and Tripura

Progressive Role of Government

Progressive role of Government shall be significant for strengthening any sector, not only the cooperatives and here in the case of cooperatives, it is essential for the strengthening of cooperative movement. Here, four major provisions with their sub-provisions are considered i.e., Inquiry & Inspection, Amalgamation & reorganisation, Dispute Settlement, and Winding up of cooperative society.

Inquiry and Inspection

Sl. No.	Provision	States/ UTs
1.	**Inquiry & Inspection by the Registrar, Federal Society (district/Apex), Financing Bank, Vigilance Officer**	Arunachal Pradesh, Assam, Bihar, Daman & Diu, Gujarat, Jharkhand, Karnataka, Kerala, Maharashtra, Meghalaya, Odisha, Rajasthan, Puducherry, Telangana, West Bengal
2.	**Rectification of defect in inquiry**	In majority of the States i.e., 19 States/UTs
3.	**Recovery of Cost**	In majority of the States i.e., 16 States/UTs
4.	**Inspection of working of society**	Maharashtra
5.	**Constitution on recognition of federal authority to supervise working of societies**	Maharashtra, Gujarat, Arunachal, Manipur

Amalgamation, division and re-organisation of coops for welfare of members

Sl. No.	Provision	States/ UTs
1.	**Amalgamation, division and re-organisation as per the opinion of the Registrar**	In majority of States i.e., in 25 State and MSCS

Disputes Settlement

Sl. No.	Provision	States/ UTs
1.	**Provisions of constitution and power of tribunal for dispute**	In majority of the States i.e., 25 States/UTs

2.	**Procedure for appeal against the registrar's decision, which should be made within two months to the tribunal**	Andhra Pradesh, Arunachal Pradesh, Goa, Gujarat, Maharashtra, Manipur and Tripura
3.	**Procedure for recovery of money**	Andhra, Arunachal, Bihar, Goa, Gujarat, Jharkhand, Karnataka, Maharashtra, Manipur, Mizoram, Sikkim, Telangana, and Tripura
4.	**Cooperative Ombudsman and Cooperative Information Officer**	MSCS

Winding Up/ Liquidation of Societies

Sl. No.	Provision	States/ UTs
1.	**Majority of the members voting at the general meeting for the winding up of the society**	Varies State to State (2/3rd to 3/4th)
2.	**Time within any member can appeal against the winding up**	Varies State to State (30-90 days)
3.	**Time period varies for termination of liquidation proceeding**	Varies State to State (2 – 6 Years)

5. Discussion

The cooperative model is an effective tool for development but this can only be true when it is backed by competent legislative policy. This requires frontward effort by the government in law-making, checking for excessive intervention at the same time. A strong structure of rules and regulations will ensure a strong institution for governance and administration and would be a solution to deal with excessive control of the government. In this context, the result of this study indicates that there is a need of some harmonization in the traditional cooperative legislation i.e., the State Cooperative Society Act/Rules followed as this study involves the comparisons on the basis of these legislations to bring the uniformity in the legislation. It presents the major provisions of the cooperative legislation in the State and identifies which State has that particular provision so that we can understand the cooperative legislation in a better and simple way. As this study considers most of the major provisions categorized in the broader categories mentioned above, it reveals that there are many essential provisions which are only present in a few States/UTs but should be present in others as well; for example "the online platform for registration" is only there in nine States and MSCS but in this era of technology and advancement it should be necessary that these kind of online facilities should be there in the overall cooperative sector to make it more stronger like corporate and other sectors. The provision for provisional registration is only there in two States i.e., Gujarat and Odisha

Further, the provision for subsidiary organization and collaboration of societies is also there only in very few States and in many States/UTs not clearly mentioned where it gets registered so, it is necessary to explicitly mention the provisions that it should be registered under any of the law time being in force. As per our analysis in the matter of membership in cooperatives, it is found that 14 States provide deemed membership to the applicant if there is no communication made from the side of authority concern but in the case of Sikkim and West Bengal States, it gets refused to be admitted as a member if no communication is made. In addition, in 16 States there is a provision for the membership of self-help groups or group of individuals or any class or association of persons. While in the case of expulsion of members, members get expelled on the basis of 2/3rd to 3/4thmajority but in 11 States/UTs there is a need of final approval by the Registrar.

Furthermore, as the results reveal, in the case of elections and recruitment the separate authority is only there in twelve and nine States/UTs respectively while, rest of the States/UTs have no such separate authority so their elections and recruitment are conducted by other authority such as Registrar or Board of the society. The size of the board varies from State to State in between minimum 5 and maximum 21 member in which only 13 States has reservation for women and 15 States have for SC/ST members as well as 10 and 3 States and MSCS has provision for the appointment of co-opted members and functional directors respectively. It is also observed that the time period for the same thing varies State to State such as the time of registration of society, amendment of bye-laws, expulsion of members, appeal, and termination of liquidation. Other provisions like disqualification of members from the board or general membership may also vary from State to State.

Moreover, it is also observed that the overall procedures for major provisions such the procedure for registration, amendment of bye-laws, amalgamation, election, recruitment, audit, inspection (while inspection of working of society is only there in Maharashtra State), inquiry, etc., are more or less similar in the legislations but as we have already discussed many specific provisions are somewhere creating hindrance in cooperatives and needs harmonization. In addition, as per the MSCS 2023 amendment, there is addition of provisions for the appointment of Cooperative Ombudsman and Information Officer for addressing the complaints and for providing information to the members respectively, which is a great initiative and needs to be there in other States as well.

Participative approach for an effective law-making is a pre-requisite which requires involvement of the target population (*Hans-H.Münkner, 1985)*. Cooperatives are a means to fulfill social and economic needs of the members through resource mobilization serving their interests and in turn contributing to overall development of a country. Hence, the laws should be wide enough to include all types of cooperative, providing autonomy to them and at the same time ensuring that they do not deviate from their specific objectives of the existence. Moreover, the regulations need to be as concise and explicit as possible to ensure that not only the government administration can implement it effectively but also the general public can interpret it properly. A supportive economic environment for co-operatives has to give co-operatives free access to markets, capital, general support services, training programmes, information, public tenders, and allow vertical and horizontal integration and networking at all levels, exempting user-owned and user-controlled enterprises from restrictions of competition law. The audit and supervision must be done in such a way that it protects the interests and rights of the members, creditors and general public *(Hans-H.Münkner, 2002).*

Suggestions

On being more specific to modify the provisions of legislation as per our result's analysis, the following things can be adopted such as **simplification of registration procedure** as it will help in ease of doing business in cooperatives, **HR policy** for the better functional management, introduction of **online platform** (for registration, amendment and other compliances), **Registration of service**

rules should be with Registrar at the time of registration or within a year, **Establishment of Cooperative Tribunal, Recruitment Board** and **Election Authority** for proper jurisdiction, recruitment of competent personnel, and transparent elections respectively. The appointment of **Functional Registrars/Officers** should be there to manage sectoral cooperatives effectively and efficiently. Furthermore, there is a need to have the mandatory provisions without any exceptions for **training and capacity building** of board members for inculcating the cooperatives as well as entrepreneurial spirit. There should be mandatory attendance for annual general meetings and board meetings. The appointment of **Cooperative Ombudsman** and **Cooperative Information Officer** should be there for the redressal of complaints and for providing information required by the members respectively. Moreover, the provision for **who may become a member, type of members**, and **voting powers of members** should be explicit and clear in order to enhance the participation of members in decision making and overall activities of cooperatives. As well as there should be the provision for the **revival of sick societies.**

It is also observed that a cooperative can only be regulated when the government take lead in making government policy regarding the cooperative and is being clear with the objectives of the law that is being made. But government control is only constructive, if it gives the legal characteristic to the cooperative and protects the interests of the members or else too much control can be detrimental as it kills the democratic character of the institution. Thus, in the overall context it can be suggested that or maybe it is must that the legislation and regulations in the cooperatives should be firmed up, evolved or we can say harmonized as per the changing scenario and developing environment of business to bring uniformity.

6. Conclusion

The paper illuminates important information concerning cooperative legislations that are presently operating the entire cooperatives i.e., the State Cooperative Society Acts/Rules and Multi-State Cooperative Society Act including MACS. The need of harmonization in legislation has mainly focused here along with the inter-relation of some cooperative principles with harmonization. Further, the paper first compares all the major provisions of the legislations in order to find out the discrepancies and shortcomings of the legislations. These compared provisions are further categorized in broader categories to develop a better understanding in the context of cooperative legislation and regulation.

The primary purpose of this paper was to understand the legal environment or legislation already followed in cooperatives so that it helps to identify the shortcomings leads to their improvement. Most importantly, the paper pointed out many positive aspects, approaches or we can say the best practices of cooperative legislation, administration and regulation that are already present in some States/UTs and needs to be incorporated in all. Based on that, the papers provided some of the suggestive measures that can be beneficial for the cooperative sector, such as there should be effective law making by participative approach, effective participation of women members, HR policy, Separate authority for recruitment & election, online platforms, and many more.

This study can be helpful in the modification of existing and incorporation of new approaches in the Indian cooperatives as per the current requirements, for the improvement of Cooperative Legislation framework in India by filling up the gap in the current framework and building of strong structure of rules and regulations. Such strong structure will ensure a strong institution for governance and administration. Additionally, it helps to provide the mechanism which can be utilized to formalize a firm base for cooperatives especially in India incorporating both social and economic characteristics. This all will help in overall strengthening of the cooperative movement in India and providing great

support to the mantra of *"Sahakar Se Samriddhi."*

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Cognitive Biases and Critical Factors to Circular Economy for Cooperatives: Hybrid PLS-SEM and Fuzzy-DEMATEL approach

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Abstract

This study focuses to find out and analyse the cognitive biases and key elements that affects the incorporation of the circular economy practices by cooperatives, while prioritizing the factors and exploring their interdependency. A hybrid methodology has been used in the paper, combining PLS-SEM with a Delphi-oriented fuzzy DEMATEL. This study ventures with a rigorous literature review to determine the key biases and variables affecting the incorporation of circular economy. Then, with the help of PLS-SEM, primary data regarding employees in cooperatives is analysed for the significance of these factors. Further ranking and the development of interrelations among the factors are conducted by the application of the fuzzy-DEMATEL technique to a second set of data from cooperative experts. These findings point out that economic, organizational, sociocultural factors, herding bias, and availability bias have a favourable effect on the incorporation of the circular economy. Furthermore, biases are driven by economic and sociocultural factors. This research underlines how cognitive biases and critical factors shape cooperative practices in the perspective of behavioural economics and organizational psychology. The above-mentioned findings have given the strategic framework for prioritization of key elements with practical recommendations for managers and policy-makers. The research finally contributes to an inclusive growth and social justice-oriented circular economy initiative in the cooperatives.

Keywords: Circular economy, cognitive biases, cooperatives, PLS-SEM, F-DEMATEL

1. Introduction

The notion of the closed loop economy is a break from the conventional linear economy, which has been built on a linear model. Contrasting with this, a circular economy focuses at extending the life cycle of resources by creating maximum value. It has the aspiration for a regenerative system in which there is minimal creation of waste, but a constant reintegration of materials into the economy, therefore separating the utilization of resources from economic expansion. The circular economy is a sustainable model since it addresses environmental impacts of industrialization and consumption, although it equally drives innovation and creates more economic resilience. Circular Economy strategies offer substantial benefits to organizations by promoting efficient resource management through appropriate policies and opportunities for handling diverse products (Laso et al., 2018). In the background of unsustainable systems of production and consumption, circular economy practices are being increasingly adopted by different countries and organizations with the aim of making resources efficiently used. Cooperatives in India, De Los Rios & Charnley, 2016 report, have contributed greatly to the pursuit of sustainable development, and it has also made inroads in the rural settings of India. In organic farming, waste recycling, and resource use efficiency, for instance, circular practices in agriculture, textiles, and waste management by Indian cooperatives are growing increasingly widespread. According to Rajput (2020), such initiatives contribute to environmental sustainability and create jobs for the local communities, thereby decreasing their reliance on external

sources. They emerge from a governmental interest in fostering cooperative practices that emphasize solidarity and collaboration. Cooperatives as affinities are organized to work democratically for mutual betterment, addressing shared economic and social requirements (International Cooperatives Alliance, nd). These cooperatives are formed through the collective efforts of their members, who unite around common objectives to achieve better outcomes. When considering both cooperatives and unions alongside circular economy principles, it becomes evident that these concepts align closely with the goals of sustainable production. However, these organizations face significant challenges when transcending from a linearity to a closed loop economy model. The shift towards a closed loop economy faces several obstacles that discourage organizations from fully embracing circular economy practices. The advantages and methods for implementing circular economy ideas into practice have been researched much, but the influence of cognitive biases on the adoption of these practices within cooperatives remains largely unexplored. Previous research has mostly concentrated on the technical and financial components, paying little attention to the behavioural and psychological variables that could help or hinder this shift. Furthermore, while cooperatives are widely regarded as major drivers of sustainable development, there has been little research into how cognitive biases affect their decision making in the backdrop of closed loop economy. Considering the aforementioned scenario, the subsequent research focus are discussed.

1. What cognitive biases influence cooperatives' incorporation of closed loop economy practices?

2. What are the pertinent variables influencing the incorporation of closed loop economy measures by cooperatives?

3. How can these identified factors be prioritized in terms of their influence on circular economy adoption by cooperatives?

4. What are the inter relationships among the identified cognitive biases and critical factors?

In line with above mentioned research question, this study seeks to determine and evaluate the impact of cognitive biases and critical factors affecting cooperatives' incorporation of the circular economy practices. It also aims to prioritize these factors and understand the cause-and-effect relationships among them.

2. Review of Literature and Hypotheses development

This section examines how cognitive biases align with critical constructs that influence the incorporation of a closed loop economy within cooperatives. It draws on existing literature to develop related hypotheses.

Circular Economy

The notion of a “circular or closed loop economy” offers a replacement to the old “linear" economy by increasing the lifespan of resources and maximizing their value (WRAP, 2017). Two primary strategies for achieving this include stopping resource loops by recycling and slowing the rate of resource consumption (Bocken et al., 2017). However, CE still is a debated concept. The definition given by Skene 2017 and Korhonen et al. 2018 suggests that the sustainable economy is described as an economic system with business models displacing the conventional approach of 'completions of product life' with practices of minimization and reutilization of materials. This should be directed towards the sustainable development of present and upcoming generations, comprised of environmental betterment, economic advancement, and social equality (Kirchherr et al., 2017).

Although the closed loop economy has gained political and business support, its practical implementation remains in early stage (Ghisellini et al., 2016). Environmentally, the transition to more circularity could reduce emissions, limit resource losses, and decrease pressure on ecosystems worldwide. But it is not only environmental sustainability that is driving the attention of academia and policy makers towards the CE; economic and business benefits are also being recognized. Beyond pure cost savings, closing the loop between production and waste, along with increased reuse and recycling, would decrease demand for first-use materials. This in turn may dampen demand price swings in raw material markets such as iron ore and reduce supply volatility.

Circular Economy for Cooperatives

Cooperatives and unions are prevalent business models globally (Candemir et al., 2011). These entities can be defined and classified in various ways, but they share a common characteristic: they operate with an organized plan and clear duties, which enhances efficiency and effectiveness. By consolidating economic power and workforce, cooperatives can exert significant control over markets and prices (Cook, 1995). This economic influence allows those within the cooperative to steer market trends and sector developments in their favour. Apart from that, the pooled capital and collective labour force allow cooperatives to embark on projects that would otherwise be unaffordable or too intensive to manage. As stated by the International Cooperative Alliance, a cooperative can be described as a voluntary collaboration of persons joined to meet their mutual cultural, social, and economic requirements through a socially managed organization. That probably underlines that it is associated with cooperation, sharing goals, noted within this definition. The interaction between industry and environment can be judged pretty important when understanding the subject of sustainable economy business models in-depth Henry et al. (2020). The studies associated with closed loop economy issues in cooperatives find a natural synergy among the principles of the closed loop economy and those values specific to cooperatives, namely community well-being, democratic governance, and long-term sustainability. Cooperatives are in the best position to apply the circular economy practices such as recycling, upcycling, and extending product lifecycles through repair and refurbishment, which contribute to environmental sustainability and monetary value creation (Bocken et al., 2017; Kirchherr et al., 2017). However, challenges such as initial implementation costs, the need for specialized expertise, and market dynamics can pose significant barriers (Rizos et al., 2015). Despite all the barriers, such possible benefits as reduction in supply risk, reduced dependence on virgin materials, and improved economic resilience make the circular economy a promising framework for cooperatives wishing to pursue sustainable development (Ghisellini et al., 2016).

Cognitive Biases and Critical Factors influencing Circular Economy

Cognitive bias is a result of systematic errors in human decision-making because of heuristics, mental shortcuts, and rules of thumb. However, these cognitive shortcuts, while facilitating the process of decision-making, generally lead to errors and misjudgement in the process. These biases, according to Mata, 2012, and Gigerenzer & Gaissmaier, 2011, in light of closed loop business models, are big challenges. The failure of the societal and cultural needs of customers create hindrance for the wide transmission of circular economy practices. This is partly because customers have developed negative perceptions towards such models influenced by their cognitive biases (Singi & Giacosa 2019). Therefore, scholars increasingly seek to explain how cognitive biases shape decision-making processes and hinder the adoption of closed loop practices within the circular economy. Availability bias occurs when decisions are made based on information that is most immediately available or memorable, rather than carefully weighing all relevant data and considering long-term benefits. This cognitive bias can powerfully influence the incorporation of circular economy practices, as decision makers anchor on the most salient examples they remember rather than making a holistic evaluation. Where successful case studies, media coverage, or industry reports about the Circular Economy are

widely shared and discussed, they become top-of-mind for decision-makers. The fact that competitors have implemented circular practices successfully and benefited from it in cost savings or increased brand value or even compliance with regulations may lead other firms to implement it. This, in turn, can create a positive feedback look which will facilitate wider diffusion of the economy practices across industries. This is as suggested by Bocken et al., 2017. Media plays a very important function in influencing the availability of information on issues relating to the circular economy. Finally, the consistent and positive media coverage of the examples in circular economy initiatives increases their visibility and hence makes them more likely to guide organizational decision-making.

H1. There is a significant positive association between the availability bias (AV) and the incorporation of circular economy practices (CE) among cooperatives.

Herding bias can influence the incorporation of the practices of a closed loop economy in that people and organizations move with the tide when bigger groups move. The social influence that triggers the herding behaviour-whereby choices would be made based on one's social networks, peers, and public opinion-can only make such a decision to act even more appropriate. In industries where peer pressure is strong, companies may feel compelled to align themselves with the perceived direction of their peers-especially with the feeling of being left behind or perceived as outdated if they fail to adopt circular economy practices (Jackson, 2005). The result is to make choices based on the observable behaviours of others rather than an independent, rational choice. Social influence, as well as that coming from family and friends to public figures, seems promising for increasing awareness in circular economy matters (Gonella et al., 2024). When such an influential organization or when leaders in an industry start to adopt sustainable economy practices, others are likely to follow, creating a momentum effect that can make these practices the norm. The more companies that start to adopt closed loop economy practices, the greater the pressure on others to do so, potentially catalysing the shift to a sustainable economy by reinforcing the perception that adopting such practices is both desirable and necessary for remaining competitive.

H2. There is a significant positive association between the herding bias (HD) and adoption of circular economy (CE) practices among cooperatives.

Status quo bias is one's tendency or that of organizations to like things as they are and not to appreciate change. This cognitive bias may greatly impede the incorporation of circular economy practices, as it makes people stick to existing linear economy models in preference to circular alternatives, even if the latter offer some long-term benefits. This was shown by Samuelson and Zeckhauser (1988). The perceived risks arising from change usually reinforce such bias. Moving to the circular economy does come with its own share of challenges, such as high upfront costs, a shift in skill and technology, and a change in the culture of the organization. More often than not, these risks of continuity feel less daunting compared to unfamiliar risks of discontinuity, pressing people not to give up the current state.

H3. There is a significant negative association between the status quo bias (SQ) and adoption of circular economy (CE) practices among cooperatives.

Closed loop economy strategies in agricultural firms have deep roots in sociocultural factors, such as cultural norms, attitudes, and behaviours. These elements shape business strategy, industry practices, and consumer preference (Khan and Mahajan, 2023). In a cooperative, where choice making lies in the hands of groups and shared values, the cultural views and social conventions have a pivotal role to play. Societies where sharing resources, recycling, and reuse are part of the traditions are more open to embracing circular economy practices. This is according to Schröder et al., 2020.

Cooperatives can apply the circular economy framework to practically promote sustainability by striving for the reduction of waste, efficiency in resource use, and prolonging the lifecycle of materials. Economic factors also prevail in driving the adoption of circular economy techniques. Higher incomes often enable investment in green practices and technologies that might be used to further circular economy strategies. Conversely, areas of low income or economies in flux struggle to finance such initiatives, and therefore their adoption is poor (Geissdoerfer et al., 2017). For businesses and cooperatives, economic stability is crucial to sustaining long-term investments in circular economy practices without the fear of financial losses or market volatility (Rizos et al., 2015). Awareness and education further leads to the adoption of sustainable economy. Higher education is associated with a better understanding of resource efficiency and sustainability and hence increased adoption rates, so Kirchherr et al. (2017) claimed. In addition, the role of government regulations and policies becomes very important. Incentives for recycling, improving resource efficiency, and reducing waste could encourage businesses and cooperatives to shift toward a circular economy; Mazzanti and Zoboli (2008) second this.

H4. There is a significant positive association between the sociocultural factors (SC) and incorporation of circular economy (CE) practices among cooperatives.

Financial accessibility plays a crucial game in the adoption of closed loop economy strategies. Grants, loans, and investment capital can incentivize businesses and cooperatives to invest in sustainable projects that align with closed loop economy principles (Kirchherr et al., 2018). Financial institutions and government initiatives offering favourable financing options for green technologies further enhance the ability of cooperatives to enact sustainable economy projects. In addition to traditional funding, cooperatives may benefit from alternative financing methods such as member-based financing mechanisms and crowdfunding. These approaches align well with the member-focused ownership and community-oriented objectives of cooperatives. Moreover, financial benefits like reduced material consumption, increased energy efficiency, and lower waste management costs often serve as strong motivators for incorporating sustainable business setups (Bocken et al., 2016). Economic incentives also play a significant role in promoting circular practices. Reduced duties on energy-efficient machinery, tax reductions for waste-reduction projects, and subsidies for using recycled materials encourage businesses and cooperatives to transition toward a circular economy (Mazzanti and Zoboli, 2008). Financial advantages remain a primary driver of adoption, with financial transactions also providing indirect support for circular economy efforts by reducing uncertainties through assurance and certification requirements (Dossa et al., 2020). The incorporation of a closed loop economy and sustainability within the food supply chain is also considerably helped by the involvement of government and regulatory agencies, stakeholders, dynamics, and costs of supply chains (Mangla et al., 2018b). All of these elements together facilitate the movement toward a more environmentally friendly and take care of both the direct and indirect economic drivers for the incorporation of the circular economy.

H5. There is a significant positive association between the economic factors (EC) and the incorporation of circular economy (CE) practices among cooperatives.

The main drivers of circular economy activities are organizational variables: corporate culture, internal communication, leadership commitment, training and skills, policy, and network support. These aspects become crucial for cooperatives given the communal structure and shared values. Implementing a circular economy and sustainability as a strategic approach within a cooperative also significantly requires leadership commitment to the cause. In resource allocation, setting priorities, and promoting the circular economy, leaders are pivotal (Lüdeke-Freund et al., 2019). Also, an organizational culture that is highly supportive of innovation, sustainability, and continuous

development is likely to adopt the sustainable economy policies (Lozano, 2015). The cultures that emphasize resource efficiency, environmental care, and welfare of the entire group will have a much higher rate of circular economy adoption in cooperatives. Successful implementation of corporate environmental standards requires effective internal communication and high level of employee involvement. Employee and member knowledge and support are raised when the goals and benefits of closed loop economy activities are communicated well (Bocken et al., 2014). Open lines of communication can aid in the sharing of best practices and ideas on closed loop economy for those cooperatives where members are supposed to be active. Businesses that make room for innovation, education, and uptake of new technology are more suited to use circular economy principles (De Jesus & Mendonça, 2018). The combined competencies and experiences of members will make the cooperatives more innovative to help them devise new ideas on resource efficiency and sustainable manufacturing. The governance and the procedures for decision making inside an enterprise also affects the incorporation of a circular economy to a great extent. Alignment of the circular economy objectives with the mission of the cooperative may facilitate consensus-based decision-making in cooperatives, where governance is often decentralized and participatory (Frankenberger et al., 2013). This connection makes members more attached and committed to the cause of sustainability, knowing full well that circular economy activities reflect the goals and values of the cooperative.

H6. There is a significant positive association between the organizational factors (OR) and adoption of circular economy (CE) practices among cooperatives.

Environmental issues have a very significant influence on business priorities, regulatory compliance, and societal expectations; all factors that have come to drive the way business adopt circular economy strategies. Ecological concerns, legal frameworks, resource availability, and climate change are the major environmental variables which have been compelling enterprises and cooperatives to implement different business practices in ways to reduce their environmental footprint. There is increased awareness about ecological issues such as pollution, loss of resources, and reduction in biodiversity encourages cooperatives and other organizations to give priority to sustainable resource management, which is important in the conservation of natural ecosystems and ensuring long term viability (Geissdoerfer et al., 2017). Circular economy adoption is majorly influenced by government rules and environmental policy. Circularity practices are employed in organisations in order to keep abreast with the stringent environmental rule and regulations on the use and disposal of waste management, emissions control, and product lifecycle responsibility (Kirchherr et al.,2018). Also, the organizational knowledge on sustainability has risen with the increasing necessity to adapt to the changes in environmental conditions and reduce GHG emissions. These sustainability goals are closely aligned to the practices of a closed loop economy. This is considered to be energy-efficient and reduces carbon footprints (MacArthur, 2015).

H7. There is a significant positive association between the environmental factors (EN) and adoption of circular economy (CE) practices among cooperatives.

3. Research Methodology

This present study has used the hybrid methodology extending into three stages, involving fuzzy DEMATEL and PLS-SEM as depicted in Fig.1. Initial stage is to determine the cognitive biases and important variables affecting the incorporation of the circular economy, particularly in cooperatives, by literature review (LR). These biases and the second step identifies the total effect of variables on the incorporation of the sustainable economy using PLS-SEM. In the last step, prioritization is done to identify cause-effect relationships of relevant biases and factors affecting the incorporation of a circular economy through Delphi-oriented fuzzy DEMATEL.

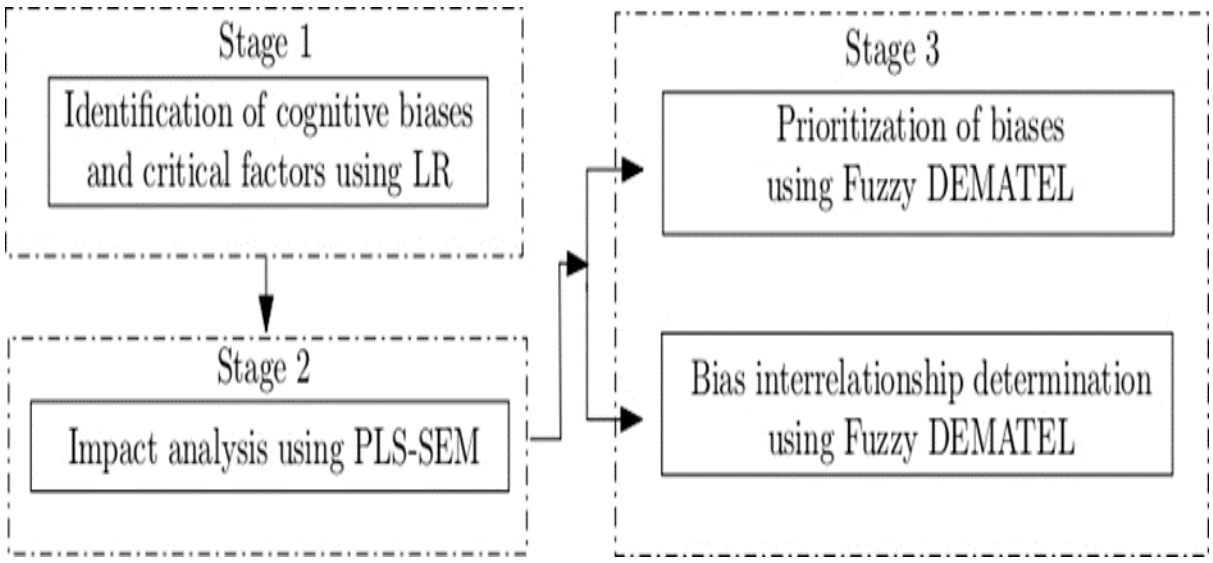

Figure 1: Research Methodology

Stage 1: Identification of cognitive biases and critical factors using LR

According to the literature, three cognitive biases, namely herding (HD), availability (AV), and status quo (SQ), along with four critical factors, namely sociocultural factors (SC), economic factors (EC), organisational factors (OR), and environmental factors (EN), were found to influence the incorporation of the closed loop economy (CE). The investigation of the underlying influence exerted by these biases and factors on the incorporation of a circular economy was based on a structured questionnaire with 30 items, including these cognitive biases and critical factors as independent variables, with a circular economy as dependent construct.

Stage 2: Data Analysis using Partial Least Squares Structural Equation Modelling

PLS-SEM, is a quantitative method for determining interactions between variables through the construction of route models which predict dependent variables variance using independent variables. PLS-SEM is ideal in exploratory research and predictive modelling studies because, unlike the CB-SEM, it employs an iterative approach which is robust to non-normal data and smaller sample sizes (Hair et al., 2017). It supports both reflective and formative assessment techniques, hence allowing flexibility when analysing complex constructs and interactions (Henseler et al., 2016). This study is partly exploratory since it seeks to identify how cognitive biases influence the incorporation of sustainable economy practices and other crucial factors. As it is one of the first studies on this topic, and due to the complexity by its very nature, the need to access a large pool of respondents in the cooperative sector, this study is limited in size. These conditions highlight the need for a method that is well-suited for handling small sample sizes and complex, exploratory models. Therefore, PLS-SEM was chosen for its ability to manage such scenarios effectively, given its flexibility in analysing complex relationships and robustness to non-normal data and smaller samples.

Sample design for PLS-SEM

The study targets cooperatives in Kerala, requiring participants to have at least five years of mid-level or managerial experience in the cooperative sector. Participants were selected through purposive sampling. Traditional CB-SEM criteria recommended a minimum sample size of 250, however PLS-SEM runs on lower sample sizes. Of the 428 surveys issued using purposive sampling (Zikmund et al., 2000), 257 were usable. After using common method bias reduction strategies (Malhotra et al.,

2006) and refining, 241 responses were analysed. According to Hair, size of the sample which is 5 to 10 times the total count of items used to define a construct is considered permissible (Hair et al., 2014). Therefore, with 30 items used in this study, a sample size of 150 is statistically acceptable.

Stage 3: Prioritization and bias interrelationship DEMATEL

The significant biases and factors identified by PLS-SEM are ranked based on their impact on circular economy adoption and are categorized into causes and effects using fuzzy DEMATEL. Fuzzy DEMATEL is a decision-making tool that uses fuzzy logic and DEMATEL to assess and visualise the interactions between variables in complex systems. Fuzzy logic efficiently manages the ambiguity and vagueness of expert opinions, while more sophisticated modeling of cause-effect interactions is possible. The method helps identify the most influential components in a system by mapping out interconnections and relationships. In this paper, the fuzzy DEMATEL technique analyses data from experts, collected using the Delphi method. A total of nine experts with over ten years of experience in the cooperative sector were selected for this study. Expert opinions are collected and represented on a fuzzy linguistic scale (Deng et al., 2015), and multiple iterations lead to a consensus among experts. These opinions then get converted into triangular fuzzy numbers to generate a direct-relation matrix. Utilising the BNP method, the data points get defuzzified and the values normalized by dividing them with the maximum defuzzified value. The total of the rows and columns in this matrix are used for prioritization and to distinguish between causes and effects. Positive differences between row and column totals point to causes, while negative differences indicate effects. The criteria are ranked based on the combined row and column totals.

4. Data analysis using PLS-SEM

In the first step, the measurement model, which is reflective in nature, is examined. This step ensures that the indicators accurately reflect the underlying theoretical constructs. In the subsequent step, the focus shifts to the structural model. This evaluation aims to analyse and understand how these latent variables interact with one another within the proposed model, providing insights into the underlying theoretical framework.

Reflective measurement model evaluation

Standardised outer loadings for indication reliability should preferably be at least 0.708; nevertheless, loadings in the range of 0.40 to 0.70 are acceptable as long as the minimum average variance extracted (AVE) is 0.5 (Leguina, 2015). Indicator reliability was confirmed in this instance by the fact that all AVE values were over the 0.5 threshold and 29 out of 30 indicators had loadings above 0.7, with one indicator falling between 0.5 and 0.6. Reliability is deemed good when Cronbach's alpha and composite reliability observations are in the range of 0.70 and 0.90 (Leguina, 2015). All of the CA and CR values in this investigation were higher than 0.70, indicating great internal consistency. Furthermore, convergent validity was verified by AVE observations larger than 0.50 (Table 1).

Table 1: Construct reliability and validity

Constructs	Items	Loadings	Cronbach's alpha	Composite reliability	AVE
	AV1	0.914			
AV	AV2	0.924	0.903	0.906	0.838
	AV3	0.908			
	CE1	0.882			

CE	CE2	0.867	0.894	0.894	0.759
	CE3	0.852			
	CE4	0.882			
EC	EC1	0.884	0.902	0.903	0.772
	EC2	0.894			
	EC3	0.879			
	EC4	0.858			
SQ	SQ1	0.506	0.873	0.705	0.609
	SQ2	0.971			
	SQ3	0.752			
	SQ4	0.819			
HD	HD1	0.861	0.883	0.884	0.740
	HD2	0.853			
	HD3	0.869			
	HD4	0.859			
OR	OR1	0.845	0.847	0.847	0.766
	OR2	0.893			
	OR3	0.886			
SC	SC1	0.885	0.912	0.913	0.791
	SC2	0.888			
	SC3	0.907			
	SC4	0.878			
EN	EN1	0.861	0.885	0.893	0.742
	EN2	0.853			
	EN3	0.869			
	EN4	0.859			

HTMT and Fornell-Larcker criterion were utilized to analyse the discriminant validity (Fornell & Larcker, 1981). The other criterion, HTMT, was suggested by Henseler et al. (2015), where it states that for the constructs to be judged distinct, the values of HTMT must be below 0.85. The discriminant validity was verified because in the study, as demonstrated that HTMT values stood below 0.85 and the square roots of AVE estimates exceeded inter-variable correlations (Table 2).

Table 2: Fornell Larcker Criterion and HTMT ratio

Cons	AV	CE	EC	SQ	HD	OR	SC	EN
AV	**0.915**	0.642	0.613	0.044	0.702	0.594	0.425	0.160
CE	0.578	**0.871**	0.808	0.097	0.796	0.810	0.655	0.232
EC	0.553	0.726	**0.879**	0.045	0.743	0.817	0.671	0.217
SQ	-0.033	-0.121	-0.024	**0.780**	0.076	0.102	0.038	0.221
HD	0.629	0.708	0.664	-0.059	**0.860**	0.786	0.601	0.125

OR	0.518	0.706	0.712	-0.118	0.682	**0.875**	0.660	0.137
SC	0.386	0.592	0.608	-0.012	0.543	0.581	**0.890**	0.179
EN	0.140	0.209	0.196	0.199	0.109	0.118	0.162	**0.862**

Note: The bold diagonal contains the square roots of the AVE. Above the diagonal, the HTMT ratios are given, while below the diagonal, the correlations among the variables are given.

Structural model evaluation

The assessment has several steps including collinearity check, relevance assessment of the link between the model connections, variance explanation, etc. Researchers commonly use the variance inflation factor (VIF) to verify for multicollinearity (Fornell and Bookstein, 1982). Ideally, VIF values for predictor variables should be below 5, and preferably under 3, to minimize collinearity effects on the model estimates (Leguina, 2015). The VIF observations for the 27 items in the outer model do not exceed 3, with three items being close to 3 (Table 3), indicating no multicollinearity issues.

Table 3: VIF outer model

Indicator	VIF	Indicator	VIF	Indicator	VIF
AV1	2.774	EC4	2.283	OR2	2.327
AV2	3.016	EN1	2.345	OR3	2.328
AV3	2.849	EN2	2.221	SC1	2.651
CE1	2.625	EN3	2.270	SC2	2.743
CE2	2.484	EN4	2.392	SC3	3.217
CE3	2.214	HD1	2.275	SC4	2.657
CE4	2.600	HD2	2.283	SQ1	2.033
EC1	2.683	HD3	2.417	SQ2	2.465
EC2	2.760	HD4	2.245	SQ3	1.977
EC3	2.571	OR1	1.755	SQ4	3.174

Bootstrapping with 5,000 samples from the original dataset were utilised to evaluate the vitality of paths in the structural model. A 1% significance level ($p < 0.01$) was applied, meaning relationships were considered significant if their p-values met this threshold. All hypotheses were found to be significant, except for H3 and H7. The results show that availability bias ($\beta = 0.112$, $p = 0.021$), economic factors ($\beta = 0.266$, $p = 0.000$), herding bias ($\beta = 0.242$, $p = 0.000$), organizational factors ($\beta = 0.200$, $p = 0.001$), and sociocultural factors ($\beta = 0.124$, $p = 0.011$) have a positive influence on the incorporation of a circular economy. However, the influence of status quo bias ($\beta = -0.089$, $p = 0.208$) and environmental factors ($\beta = 0.089$, $p = 0.208$) on adopting circular economy practices is not significant. These findings are detailed in Table 4 and Fig. 2.

Table 4: Structural model fitness

Hyp	Path	β	P value	Verdict
H1	AV→CE	0.112	0.021	Validated
H2	HD→CE	0.242	0.000	Validated
H3	SQ→CE	-0.089	0.208	Not Validated

H4	SC→CE	0.124	0.688	Validated
H5	EC→CE	0.266	0.000	Validated
H6	OR→CE	0.200	0.001	Validated
H7	EN→CE	0.089	0.066	Not Validated

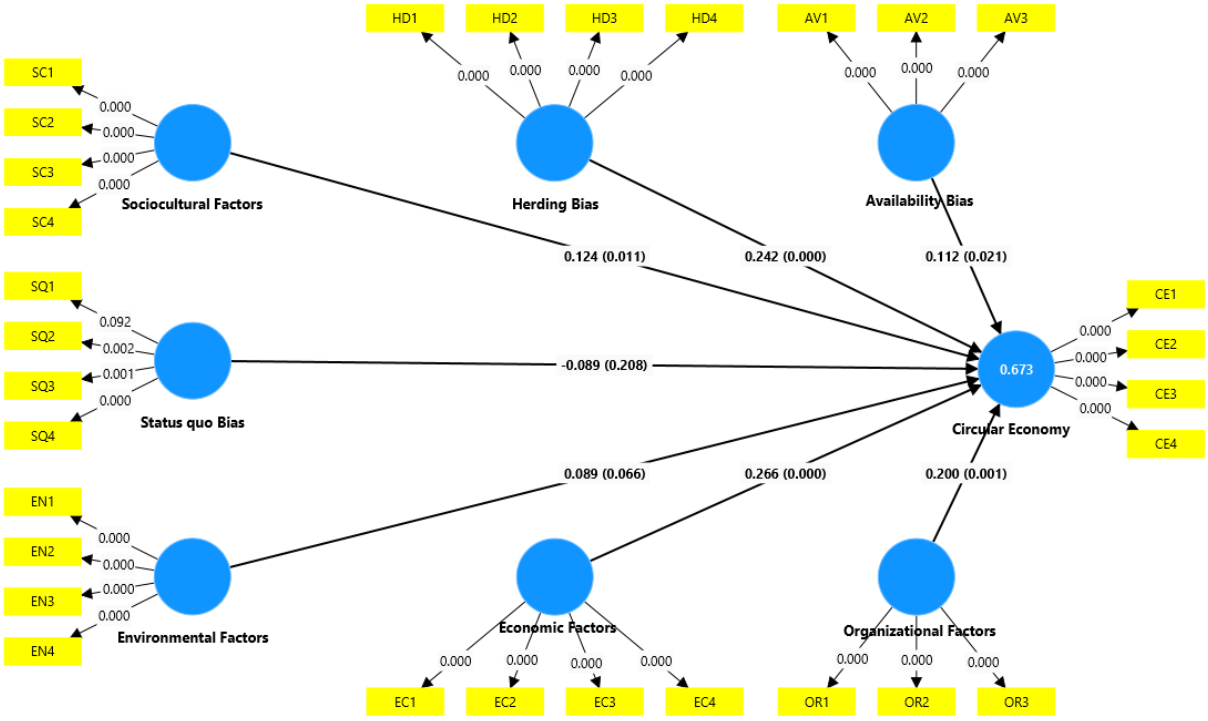

Figure 2: Structural model

Explanatory power assessment

The explanatory power, shown by the R^2 values, indicates a moderate level for circular economy adoption, with $R^2 = 0.673$ and adjusted $R^2 = 0.663$ (Sarstedt et al., 2021). The effect sizes (f^2) are: availability bias (0.022), economic factors (0.082), herding bias (0.071), organizational factors (0.048), and sociocultural factors (0.027), all indicating small effects (Table 5).

Table 5: f^2 values

Constructs	Circular Economy
Availability Bias	0.022
Economic Factors	0.082
Herding Bias	0.071

Organizational Factors	0.048
Sociocultural Factors	0.027

Predictive power assessment

The Q^2 (predictive significance) criterion is utilized to evaluate the model's capacity to accurately forecast the observed data for endogenous constructs. A Q^2 value above zero signifies that the model has predictive pertinence for a specific variable. Higher Q^2 values imply stronger predictive power. In this case, the Q^2predict value for the circular economy construct is 0.651, demonstrating substantial predictive relevance. The predictive power can be checked by utilising the MAE or RMSE. In this scenario, since all PLS-SEM values are indeed smaller than the LM benchmark values, the model exhibits strong predictive significance (Table 6).

Table 6: Predictive Power Evaluation

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_ RMSE	LM_ MAE	IA_ RMSE	IA_ MAE
CE1	0.492	0.904	0.653	0.934	0.701	1.268	1.053
CE2	0.478	0.92	0.659	0.983	0.721	1.273	1.053
CE3	0.499	0.861	0.614	0.939	0.672	1.217	0.987
CE4	0.502	0.849	0.638	0.914	0.696	1.203	0.972

5. Data analysis using fuzzy DEMATEL

The aggregate initial direct relation matrix (A) produced from nine experts using the Delphi technique (Table 7).

Table 7: Aggregate initial direct relation matrix

	SC	OR	HD	EC	AV
SC	0.083	0.528	0.556	0.444	0.306
OR	0.463	0.083	0.500	0.389	0.454
HD	0.444	0.389	0.083	0.389	0.278
EC	0.500	0.667	0.657	0.083	0.250
AV	0.194	0.213	0.231	0.250	0.083

Rankings and cause-effect attributes were ascertained using the total relation matrix from fuzzy DEMATEL, as indicated in Table 8. The factors that influenced incorporation of circular economy were ranked as economic factors, organizational factors, sociocultural factors, herding bias and availability bias, with economic factors and sociocultural factors being the aspects that led to the effects of herding bias and availability bias. Organizational factors have been both the cause and effect in this context. Fig. 3 depicts the ranking of the constructs and Fig. 4 displays the interdependencies between the constructs.

Table 8: Prioritization and cause-effect analysis

	R_i	C_i	$R_i + C_i$	Rank	$R_i - C_i$	Attribute
SC	4.39312	3.91712	8.31024	3	0.47599	Cause
OR	4.22063	4.25592	8.47656	2	-0.03529	Effect
HD	3.72937	4.56279	8.29217	4	-0.83342	Effect
EC	4.91794	3.63071	8.54866	1	1.28723	Cause
AV	2.32298	3.21749	5.54048	5	-0.89451	Effect

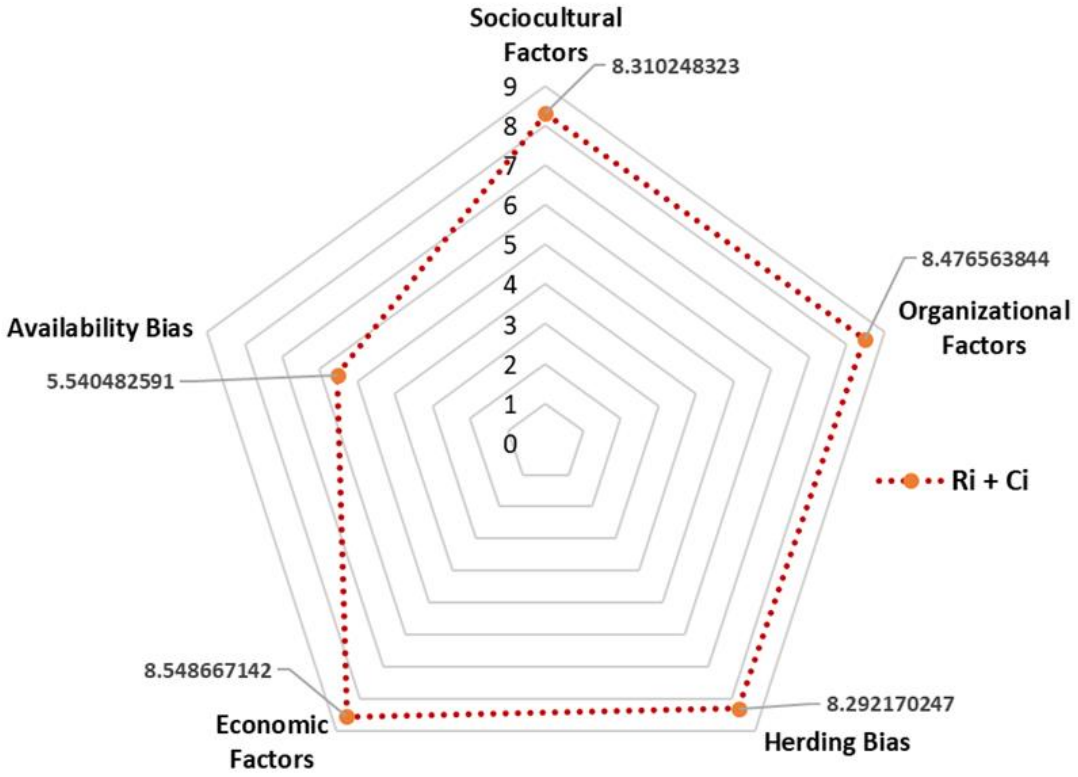

Figure 3: Radar chart showing ranks

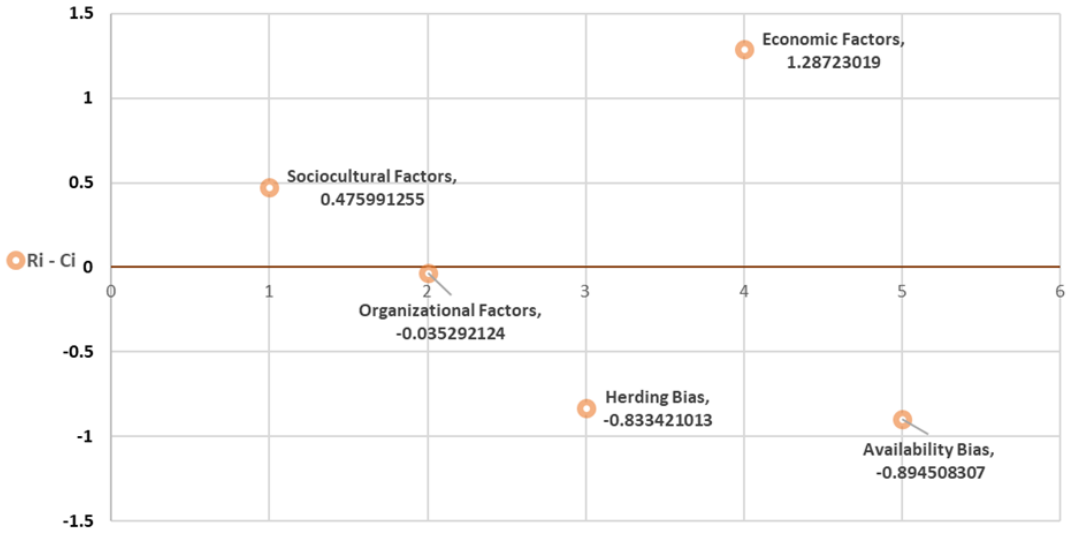

Figure 4: Cause-effect analysis

6. Results and Discussion

The results show that availability bias, economic factors, herding bias, organizational factors, and sociocultural factors have a favourable effect on the incorporation of closed loop economy practices (Dossa et al., 2020; Su et al., 2013; Xia & Ruan, 2020; Xia & Ruan, 2020; Xue et al., 2010). On the other hand, status quo bias and environmental factors are not significant. The results have a number of key implications for our understanding of what drives people to circular economy strategies. The outcomes reported that the choice of incorporation of the closed loop economy was effectively explained by the structural and psychological variables as obtained in its positive impact of the biases of availability, economic factors, herding bias, organizational factors and finally socio-cultural factors. This fact of availability bias implies timely and highly available information which lowers the burden of a DM assuming that exposure to circular economy techniques through media and success stories may make those techniques appear more achievable. Economic drivers also exist, in evidence of strong motivational drives of cost reductions, efficiency improvements, and profitability for both people and enterprises. Another driver is herding bias, due to the fact that enterprises often adopt circular techniques as a form of imitation towards rivals or sectoral leaders. This to a snowball effect that speeds up adoption. Additionally, through the creation of enabling environments in organizations and society, sociocultural factors such as social norms on sustainability and organizational factors such as innovation culture and leadership commitment facilitate sustainable economy practices. It is, however, pertinent to note that environmental drives and status quo bias are not significant. As a result of an increased awareness of the necessity for a transition away from linear economies and a better awareness of the situation regarding environmental issues, status quo bias may not be as important a barrier as previously believed. The insignificance of environmental factors may indicate that, though important, environmental concerns will have to be supplemented with other drivers, such as economic incentives or government pressure, in order to be more influential in adoption decisions. The strong explanatory power of the PLS-SEM. This can be gauged by a modest value of R^2 equating to 0.673 for this model. Besides, it indicates a strong predictive relevance as reflected by its Q^2predict value of 0.651. Moreover, since all the values for the PLS-SEM have surpassed the LM benchmark values, the model further satisfies good predictive accuracy criteria as well. The excellent predictive relevance makes this model robust, given the model has only provided moderate explanatory power. This indicates that there might be other factors at play, which are not visible. These findings suggest that stimulating the diffusion of the circular economy needs an

integrated approach focused on cognitive biases, incentives, organizational capabilities, and social contagion rather than relying exclusively on environmental awareness or reduction of resistance to change.

In order of the magnitude of the influence, economic factors, organizational factors, sociocultural factors, herding bias, and availability bias are some of the factors that affect the incorporation of a sustainable economy Abhijith and Bijulal, 2024. Economic and sociocultural factors have been considered the major drivers of the effects of herding bias and availability bias. Organisational factors, in this respect, are both the reasons and consequences of adopting a closed loop economy. Logically, the financial incentives, cost savings, and potentials for profits will drive more organisations and individuals to conduct activities in the circular economy because the economic rationale would have the most significant bearing. This research shows that economic viability remains a key determinant in decision-making since businesses are likely to adopt business practices that have financial benefits. Factors relating to organisations, which come in second, show their importance in the development of internal policies, cultures and tactics that strengthen the incorporation of closed loop economy practices. The idea of a feedback loop is suggested by the fact that the organisational factors act as both a cause and an effect of adoption. In other words, organisations may develop stronger sustainability cultures and policies due to the application of circular processes, which in turn would encourage increased adoption. The self-reinforcing nature of this link would seem to suggest that once businesses start on the path toward a circular economy, momentum within the organization supports and builds further commitment. Ranked third is sociocultural factors that involve society norms and ideals about sustainability. These often drive community expectations, legislation, and customer demand for businesses to adhere to broader societal goals. Identification of sociocultural and economic elements as the root causes of availability prejudice and herding bias has the implication that biases do not stand alone but depend on available social and economic situations. Herding bias may take place in businesses when they see other businesses within their sector enjoying fruits of adopting circular economy to inspire them to adopt. The prevalence of knowledge and success stories concerning the circular economy, as fuelled by societal and economic trends, could have a bias on availability.

7. Conclusions

These results underpin the need for promoting the uptake of circular economy principles through a multi-faceted approach that considers organizational dynamics, societal norms, and cognitive biases. The strategies should embed economic incentives to address cognitive biases and not rely on environmental knowledge or overcoming resistance to change. This means that policymakers give top priority to measures which clearly benefit companies implementing circular economy models financially, such as favourable rules, tax breaks, or subsidies. Similarly, the executives of a company should focus on creating organizational environments that nurture sustainability through creativity, leadership, and strategic alignment with circular approaches. The findings also highlight the importance of diffusing positive examples of the circular economy in order to positively influence cognitive biases. It may be able to capitalise on availability and herding biases in order to quicken the diffusion of closed loop models by making organisations that have adopted the switch visible. In a similar vein, socio- cultural changes to more sustainability-oriented approaches should be advanced via community participation, educational drives, and public outreach and awareness campaigns. Conclusion: A meeting point of organizational, cognitive, sociological and economic motivations will most likely impel the diffusion of the circular economy techniques. Hence, with the view to foster far-wider and more deep-set adoption, stakeholders need to take a comprehensive approach that incorporates these components. Together, policymakers and corporate executives can establish an environment that encourages and supports the circular economy, making the shift desirable and

practical for a variety of sectors and communities.

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The Role of Cooperative Models on Sustainable Development in the Next Industrial Revolution

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Abstract

This study investigates the role of cooperative models in fostering sustainable development in the context of the Fourth Industrial Revolution. Using a quantitative research approach, data were collected from 106 experts in sustainability management to examine the impact of technological adoption, governance structures, and external environmental factors on the sustainable development performance of cooperatives. The results show that technological innovation and effective governance structures significantly contribute to the advancement of cooperatives' sustainability goals. External environmental factors, including regulatory frameworks and market dynamics, also play a critical role in supporting these efforts. The study further identifies gender and education level as key demographic factors influencing cooperative members' perceptions of sustainability. The findings highlight the potential of cooperatives to align with Sustainable Development Goals (SDGs) and to enhance organizational resilience in the face of global challenges. Practical implications include recommendations for cooperative managers and policymakers to prioritize technological innovation, strengthen governance practices, and leverage external support for sustainability initiatives. The study offers valuable insights into how cooperatives can position themselves as leaders in sustainable development, providing a pathway for future research on the intersection of cooperative models and sustainability during the next industrial revolution.

Key words: Cooperatives, Sustainable development, Technological adoption, Governance structure, Fourth Industrial Revolution, Sustainability performance, Sustainable Development Goals (SDGs)

1. Introduction

In an era marked by rapid technological advancements and industrial transformations, the role of cooperatives in fostering sustainable development has never been more critical. The ongoing Fourth Industrial Revolution, characterized by automation, digitalization, and globalization, presents both opportunities and challenges for creating resilient and equitable economic systems. Cooperatives, with their unique principles of democratic governance, member participation, and community focus, are increasingly recognized as vital players in promoting sustainable innovation across social, environmental, and economic dimensions. The importance of cooperative models in sustainable development is underscored by their alignment with the United Nations Sustainable Development Goals (SDGs). This alignment highlights their potential to contribute meaningfully to global sustainability efforts, promoting inclusive growth, reducing inequalities, and ensuring responsible consumption and production patterns. According to research by Nima Norouzi (2022), cooperatives are particularly well-suited for stimulating and promoting sustainable practices, leveraging their collective ownership structure to drive innovation that benefits all stakeholders. Further emphasizing the significance of cooperatives, Fernandez-Guadaño et al. (2020) demonstrate how the principles underlying these organizations inherently support the achievement of the SDGs. This makes cooperatives a strategic choice for regions aiming to enhance their competitiveness through sustainable development. Additionally, the intangible assets within cooperatives—such as social capital, trust, and shared knowledge—are pivotal in driving sustainable outcomes. Castilla-Polo and

Sánchez-Hernández (2020) argue for a multilevel approach to understanding these impacts, which can significantly boost regional development and competitiveness. The material requirements of the technologies driving the Fourth Industrial Revolution also call for a sustainable approach to innovation. Annesi et al. (2021) highlight the biophysical limits of our planet, stressing the need for models of entrepreneurship that prioritize sustainability. Here, cooperative entrepreneurship stands out as a viable model, capable of addressing the material and ecological challenges posed by new technologies.

Despite these promising attributes, there remains a gap in understanding the specific mechanisms through which cooperatives can enhance sustainable development in the context of the next industrial revolution. This study seeks to address this gap by investigating the influence of technological adoption, governance structure, and external environmental factors on the sustainable development performance of cooperatives. Additionally, it examines how demographic factors such as gender and education level of cooperative members influence their perceptions of sustainability within their organizations. Cooperative models play a crucial role in sustainable development, especially in the context of the next industrial revolution. Research indicates that cooperatives are well-suited for stimulating and promoting sustainable innovation across social, environmental, and economic dimensions (Nima Norouzi, 2022). Additionally, the alignment of cooperative principles with the UN Sustainable Development Goals highlights their potential contribution to sustainable development (Fernandez-Guadaño et al., 2020). Intangible assets within cooperatives are recognized as key drivers of sustainable development, emphasizing the importance of a multilevel approach to understanding their impact on regional competitiveness (Castilla-Polo & Sánchez-Hernández, 2020). Furthermore, the analysis of the material requirements for technologies in the Fourth Industrial Revolution underscores the significance of sustainability in the face of biophysical limits, where cooperative entrepreneurship emerges as a model for addressing these challenges (Annesi et al., 2021). This study aims to measure the influence of technological adoption, governance structure, and external environmental factors on the sustainable development performance of cooperatives, while also exploring how demographic variables such as gender and education level affect members' perceptions of sustainability. Through this research, we seek to provide actionable insights that can enhance the role of cooperatives in driving sustainable development in the evolving industrial landscape.

Research question

R1. How does the adoption of technological innovations impact the sustainable development performance of cooperatives?
R2. In what ways does the governance structure of cooperatives influence their sustainable development outcomes?
R3. What role does the external environment, including government policies and market conditions, play in shaping the sustainable development performance of cooperatives?
R4. How do gender and education level of cooperative members affect their perceptions of the cooperative's contribution to sustainable development?

Significance of the Study

This study provides substantial insights into the role of cooperative models in advancing sustainable development within the context of the Fourth Industrial Revolution. By exploring the impact of technological adoption, governance structures, and external environmental factors on sustainable development performance, the research sheds light on how cooperatives can effectively align with the Sustainable Development Goals (SDGs). The findings reveal the potential of cooperatives to drive sustainability through their distinctive organizational principles and democratic governance. This is increasingly pertinent as cooperatives are recognized for their ability to foster inclusive growth and

tackle ecological challenges. Understanding these dynamics is crucial for leveraging cooperative models to meet sustainability targets and gain competitive advantage in a globalized economy. Additionally, the study offers practical guidance for cooperative managers and policymakers by emphasizing the importance of integrating technological innovations and robust governance practices into strategic planning. It highlights the need for supportive regulatory frameworks that can facilitate the advancement of sustainable cooperative initiatives. By examining the influence of external factors such as market dynamics and regulatory environments, the research contributes to a deeper understanding of how these elements can be utilized to support cooperative development. This knowledge is essential for formulating effective policies and strategies that promote sustainability across various sectors. Overall, this study enhances theoretical understanding and provides actionable insights that can guide future research, inform policy decisions, and support the strategic approaches of cooperatives. Its significance lies in its ability to help cooperatives balance economic, social, and environmental objectives amid the evolving landscape of the Fourth Industrial Revolution.

Objectives of the study

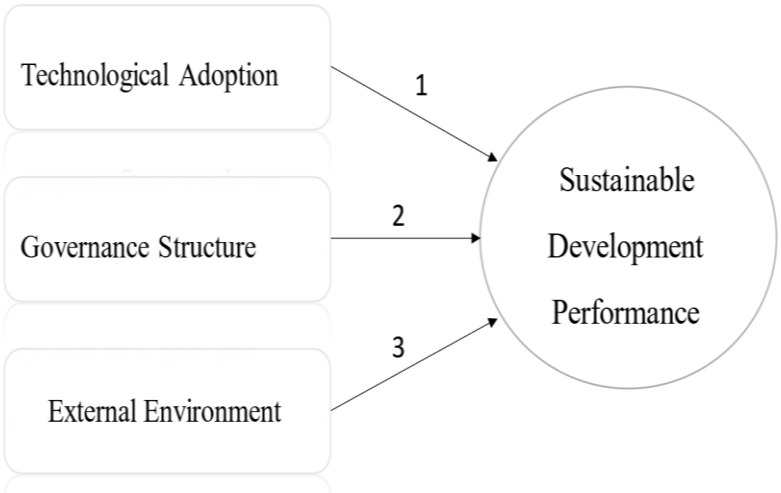
- To measure the influence of technological adoption on the sustainable development performance
- To measure the influence of Governance Structure on the sustainable development performance
- To measure the influence of External Environment on the sustainable development performance
- To measure the difference in gender and educational group of respondents on their perception towards sustainable development performance

Variables for the study

Dependent Variable

1. Sustainable Development Performance: This variable measures the extent to which cooperative models contribute to sustainable development goals, including economic, social, and environmental aspects.

Figure 1
Conceptual Model



Source: Authors own

Independent Variables

1. Technological Adoption: This variable assesses the level of adoption and integration of digital platforms, automation, and other technological innovations within cooperative operations.

2. Governance Structure: This variable examines the democratic governance structure of cooperatives, including decision-making processes, member participation, and transparency.

3. External Environment: This variable captures the influence of external factors such as government policies, market dynamics, and societal trends on cooperative performance and sustainability.

2. Literature Review

Cooperative Models and Sustainable Development

Cooperative models play a significant role in promoting sustainable development by fostering community engagement, resource management, and social equity. The theoretical foundations of cooperatives, which emphasize democratic governance, member participation, and community orientation, align closely with the principles of sustainable development, particularly in economic, social, and environmental contexts. For instance, cooperatives empower rural communities by organizing local resources and promoting sustainable practices. This is evident in the formation of 4,565 new cooperatives in Iran, which focus on sustainable livelihoods and smart agriculture (Mohammadi et al., 2023). Similarly, agricultural cooperatives in Morocco have been instrumental in reducing inequalities and ensuring environmental compliance, thereby contributing to the achievement of sustainable development goals (Jamal, 2023). The cooperative model also integrates well with circular economy principles, facilitating resource reuse and recycling, which minimizes waste and reduces environmental impact. Collaboration among cooperative members enhances knowledge sharing and resource management, both of which are essential for implementing sustainable practices (Savga et al., 2023). Furthermore, cooperatives embody the principles of solidarity and social justice, which are crucial for achieving the Sustainable Development Goals (SDGs) and improving the quality of life in communities. They act as local economic units that address both ecological and social challenges, playing a vital role in rural development (Menezes, 2023; Golovina & Ruchkin, 2023). Despite the promising potential of cooperatives in advancing sustainable development, challenges such as market access and the need for governmental support remain significant obstacles. Addressing these issues is essential for maximizing the positive impact of cooperatives on sustainable development.

Technological Adoption in Cooperatives

Technological adoption in cooperatives is crucial for enhancing their operational efficiency and sustainability. The integration of digital tools and innovative practices can significantly impact cooperative performance, particularly in agriculture. Digitalization, for instance, enhances service speed, comfort, and security within cooperatives, especially in microfinance sectors, enabling them to effectively reach remote areas (Trisnadewi & Purnami, 2024). However, to fully leverage the benefits of technology, it is essential that cooperative members receive adequate training in digital transformation and change management (Trisnadewi & Purnami, 2024). In the context of agricultural cooperatives, those that adopt technology often exhibit higher profitability compared to those that do not, underscoring the importance of digital administration skills and financial literacy (A. et al., 2023). The adoption of intelligent technologies, such as smart spraying, is also influenced by factors like government subsidies and cooperative awareness of agricultural hazards (Zheng & Mei, 2023). Moreover, external factors such as market opportunities and technological capabilities are significant

drivers for eco-innovation in agricultural cooperatives, highlighting the need for supportive policies (Pham et al., 2024). Participation in cooperatives can also enhance farmers' adoption of green technologies, addressing barriers to innovation and promoting sustainable practices (Dong et al., 2023). While technological adoption offers numerous benefits, challenges such as knowledge gaps and resource limitations remain prevalent in many cooperatives. Addressing these issues through targeted training and supportive policies is essential for maximizing the potential of technology in cooperative settings.

Governance Structures in Cooperatives

Governance structures in cooperatives are multifaceted, shaped by member control, organizational context, and the dynamics of internal and external relationships. Understanding these structures is crucial for enhancing cooperative performance and member satisfaction. Cooperatives often experience a continuum of governance structures, transitioning from total member control to delegated authority as they evolve through various life cycle stages (Gimenes et al., 2023). In the early phases, member control is paramount, but as cooperatives grow and operations become more complex, a separation of control often occurs, reflecting this evolution (Gimenes et al., 2023). Recent studies have also highlighted the adoption of nontraditional governance features, such as proportional voting and the inclusion of nonmember directors, which can enhance decision- making processes and align with competitive strategies (Grashuis & Martinez-Georges, 2024). These adaptations are particularly prevalent in larger marketing cooperatives, indicating a shift towards more specialized governance to meet the diverse needs of members (Grashuis & Martinez-Georges, 2024). Effective governance is strongly linked to improved performance in cooperatives. For example, in smallholder dairy schemes in Zimbabwe, competent boards significantly influence resource allocation and operational success (Matangaidze et al., 2023). Conversely, poor governance can hinder performance, underscoring the need for capacity building and strategic partnerships to enhance governance structures (Matangaidze et al., 2023). In summary, while cooperative governance structures are inherently democratic, they must adapt to the evolving needs of members and external pressures to remain effective. This adaptability is essential for sustaining cooperative success and ensuring continued member engagement.

Hypotheses

- Technological innovation is positively related to sustainable development performance.
- Governance structure positively influences sustainable development performance.
- A favorable external environment positively contributes to sustainable development performance.
- Male respondents are likely to have a more favorable perception of technological adoption, governance structure, and external environmental factors related to sustainable development performance compared to female respondents.
- Respondents with more years of experience are more likely to perceive technological adoption, governance structure, and external environmental factors as contributing positively to sustainable development performance.

3. Research Methodology

This quantitative research employs an empirical survey design with 106 experts as respondents, conducted over four months from February 2024 to May 2024. The study utilizes a purposive sampling technique. Data collection involves a structured questionnaire distributed via Google Forms on social media platforms, emphasizing ethical considerations to secure respondents' consent and interest. Reliability of the questionnaire is assessed using Cronbach's alpha, demonstrating

satisfactory internal consistency (George & Mallery, 2003). Normality tests confirm data suitability for parametric tests, supported by acceptable skewness and kurtosis values. Content and face validity are ensured through validation by subject matter experts. Data analysis includes descriptive statistics, independent sample t-tests, One-way ANOVA, multiple correlations, and multiple regressions to explore relationships between technological adoption, governance structure, external environment, and sustainable development performance. This rigorous methodology aims to yield robust insights into the influence of these variables on sustainable practices within cooperative models, particularly amidst the challenges and opportunities of the Fourth Industrial Revolution.

4. Thematic Analysis

Impact of Technological Innovation on Cooperative Sustainability

The impact of technological innovation on cooperative sustainability is profound, with advancements playing a crucial role in improving operational efficiency, resilience, and long-term sustainability. One significant development is the rise of e-cooperatives, which has been particularly important in response to the challenges posed by the COVID-19 pandemic. These virtual platforms enable cooperatives to manage operations with minimal physical contact, ensuring business continuity and maintaining member engagement even during crises. This shift to virtual management is more than just a temporary solution; it represents a sustainable model that could redefine cooperative operations in the long term (Dasuki & Bustaman, 2024). The emergence of e-cooperatives demonstrates how technology can provide resilient solutions that support sustainable operations, even under adverse conditions. In regions like India, technological advancements are viewed as essential for enhancing the competitiveness and sustainability of cooperatives. The adoption of technology empowers rural communities by improving operational efficiency and fostering inclusive growth. This emphasizes the role of technology as a tool for economic empowerment, where cooperatives can leverage digital platforms and innovative practices to strengthen their market positions and sustainability (D. & R., 2023). By embracing technological innovation, cooperatives in these regions are better equipped to reduce inequalities and promote broader economic development, making them more sustainable in the long run.

The strategic integration of innovative corporate strategies, particularly through digital transformation, is also vital for the sustainable development of cooperatives. This approach enables cooperatives to adapt to technological changes, reduce risks, and maximize profits, which is especially important for small and medium-sized enterprises (SMEs) recovering from economic disruptions (Anisimov, 2022). The ability to strategically utilize technology not only supports operational resilience but also enhances the competitiveness of cooperatives in an increasingly digital economy. This illustrates how innovation and strategic planning are essential for achieving sustainable development goals within cooperative frameworks. Investment in research and development (R&D) is another critical factor in fostering technological innovation for sustainable development. Increased R&D investment is necessary to drive advancements that can positively impact cooperative sustainability across various sectors and regions (Shihab & Bouabid, 2023). Continuous innovation through R&D is crucial for addressing emerging challenges and opportunities within cooperatives, ensuring that they remain at the forefront of sustainable practices. This focus on R&D highlights the long-term commitment required to sustain innovation-driven growth within the cooperative sector.

A case study from Brazil exemplifies the positive relationship between sustainable innovations and economic competitiveness, particularly in the context of pest control. This study shows that environmentally friendly practices, such as sustainable pest control, not only improve environmental outcomes but also enhance the competitiveness of cooperatives ("Technological Cooperation for

Sustainable Innovation and Competitiveness in the Biological Control of Pests," 2022). This demonstrates that sustainability and competitiveness can be mutually reinforcing, with innovative practices benefiting both the environment and the economic viability of cooperatives. However, despite the numerous benefits of technological innovation, cooperatives face challenges such as resource allocation and the need for training in new technologies. These challenges must be addressed to ensure the successful implementation of technological advancements. Adequate training and capacity building are essential to enable cooperative members to effectively utilize new technologies, maximizing their potential benefits. Overcoming these barriers is crucial for allowing cooperatives to fully harness the power of technological innovation for sustainable development.

Role of Governance in Promoting Sustainable Development

The governance structures within cooperatives play a crucial role in promoting sustainable development by enhancing member commitment, satisfaction, and overall cooperative effectiveness. Effective governance, which includes both contractual and relational mechanisms, is essential for fostering member engagement and ensuring the long-term viability of cooperatives. Research indicates that relational governance, which emphasizes trust, communication, and shared values, has a stronger positive effect on member commitment compared to contractual governance. This suggests that fostering strong relational ties within cooperatives can significantly contribute to their sustainability (Zeng et al., 2023). Additionally, different types of cooperatives respond differently to various governance mechanisms, underscoring the importance of tailored governance strategies to enhance sustainability outcomes (Zeng et al., 2023). Member participation in governance is another critical factor that correlates strongly with increased satisfaction levels within cooperatives. Studies have shown that active involvement in decision-making processes leads to a 26.2% improvement in satisfaction among engaged members (Liu et al., 2023). This finding highlights the importance of encouraging cooperative members to understand and exercise their rights and responsibilities, as active participation is a key driver of both member satisfaction and sustainable development (Liu et al., 2023). The role of member involvement in governance cannot be overstated, as it directly impacts the effectiveness of the cooperative in achieving its sustainability goals.

Cultural and legislative contexts also significantly shape the governance of cooperatives, leading to disparities in governance effectiveness across different regions. These contexts influence how governance structures are developed and implemented, affecting the cooperative's ability to promote sustainability (Liang et al., 2022). Understanding these cultural and legislative influences is vital for creating governance frameworks that align with local conditions and effectively promote sustainable development (Liang et al., 2022). This theme underscores the importance of context-specific governance strategies that take into account the unique challenges and opportunities present in different regions. Despite the critical role of governance in promoting sustainability, challenges such as member heterogeneity and varying perceptions of governance can hinder cooperative efforts. Differences in member backgrounds, expectations, and engagement levels can create obstacles to effective governance and, consequently, sustainable development. Addressing these challenges requires ongoing research and the implementation of adaptive governance strategies that can accommodate the diverse needs of cooperative members. By continuously evolving their governance practices, cooperatives can better navigate these challenges and enhance their contributions to sustainable development.

External Environmental Factors Influencing Cooperative Performance

External environmental factors play a crucial role in shaping the performance of cooperatives across various sectors, significantly impacting their ability to achieve sustainable development. These factors include market dynamics, regulatory pressures, and technological advancements, which collectively influence strategic decisions and the effectiveness of collaborative efforts among

cooperatives and their partners. The external business environment, characterized by factors such as market uncertainty and regulatory frameworks, has been shown to positively affect cooperative strategies, ultimately enhancing overall performance. For instance, cooperatives that actively engage with external agents, including market and institutional partners, tend to demonstrate improved innovation performance. This improvement is often driven by factors such as public financing and a strong environmental orientation, which underscore the importance of external collaborations in fostering innovation and sustainable development (Nasution et al., 2022; So & Kim, 2017; Peiró-Signes et al., 2024). The positive influence of external factors highlights the necessity for cooperatives to remain attuned to changes in the business environment and to strategically align their operations with these external conditions.

Environmental cooperation is another critical theme that significantly impacts the performance of cooperatives, especially those in manufacturing and export-oriented sectors. Research shows that factors such as trust and commitment play a moderating role in the relationship between environmental cooperation and firm performance. Specifically, cooperatives that adopt eco-friendly strategies in response to external pressures tend to experience better environmental and export performance (Chen et al., 2023). This underscores the importance of collaboration in sustainability efforts, where external environmental cooperation not only enhances competitiveness but also aligns cooperative activities with broader environmental goals. Strategic decision-making under conditions of uncertainty is also vital for cooperatives operating in unpredictable external environments. The theory of cooperative games provides a valuable framework for making strategic decisions amid such uncertainties, allowing cooperatives to optimize their strategies in response to volatile environmental factors (Andrianova et al., 2023). This approach is particularly important for maintaining competitiveness in a rapidly changing global landscape, where external factors such as market volatility and technological disruptions can pose significant challenges. While external environmental factors generally promote cooperative performance, they also present challenges that must be navigated carefully. Market volatility and technological disruptions, for example, can hinder collaboration efforts and create obstacles to sustainable development. Therefore, it is essential for cooperatives to remain agile and responsive to these external influences, continuously adapting their strategies to sustain their cooperative initiatives and ensure long-term success.

Demographic Influences on Sustainability Perceptions

Demographic factors such as age, gender, income, and education level significantly influence how cooperative members perceive their organization's contributions to sustainable development. These factors shape attitudes and behaviors toward environmental practices, leading to varied levels of engagement and support for sustainability initiatives. Age plays a critical role in shaping sustainability perceptions. Older individuals often exhibit higher sustainability consciousness and awareness, particularly in contexts like tourism. This increased awareness is attributed to their greater life experience and education, which may lead them to prioritize environmental issues more than younger individuals (Uçgun & Narci, 2022). Additionally, age influences how people perceive socio-economic issues related to sustainable local development. Younger respondents tend to prioritize different aspects of sustainability compared to older individuals, reflecting generational differences in values and concerns (Stan & Tasente, 2023). These differences suggest that sustainability initiatives may need to be tailored to address the specific concerns of different age groups to be more effective.

Gender is another important demographic factor that influences perceptions of sustainability. Men and women often prioritize different socio-economic issues and engage in sustainable practices at varying levels. For example, women might focus more on community well-being and social equity, while men may emphasize economic aspects of sustainability (Stan & Tasente, 2023). Moreover, the

interaction between gender and age complicates these perceptions further, indicating that a one-size-fits-all approach to sustainability may not be effective. Instead, strategies that consider the unique perspectives of different demographic groups are necessary to foster broader engagement in sustainability efforts (Stanciu et al., 2024). While demographic factors like age and gender play significant roles in shaping sustainability perceptions, it is important to recognize that individual experiences and cultural contexts also influence these views. Personal experiences, cultural background, and societal norms can all affect how individuals perceive and engage with sustainability initiatives. Understanding these nuances is crucial for designing and implementing sustainability strategies that resonate with diverse groups and enhance the overall effectiveness of sustainability efforts within cooperatives.

5. Empirical Analysis

Descriptive Statistics of Sustainable Development Performance, External Environment, External Environment, and Governance Structure

The descriptive statistics presented in Table 1 offer insights into the perceptions of 106 experts regarding financial inclusion, technological innovation, environmental sustainability, and governance in the context of sustainable development. The high mean score for increased access to financial services (M = 4.12, SD = 0.430) indicates strong agreement that expanding access to banking, credit, and insurance has significantly improved economic opportunities for underserved communities, aligning well with broader economic development goals. Similarly, advancements in financial technology (FinTech) were viewed positively (M = 3.79, SD = 1.102), though the higher standard deviation suggests variability in how these advancements are perceived across different contexts.

The impact of financial inclusion on environmental sustainability received a more moderate response (M = 3.01, SD = 1.046), with some variability in views, indicating that while there is recognition of its potential, the connection between financial inclusion and green financing is not uniformly perceived. Respondents also identified significant obstacles to expanding financial inclusion, such as regulatory barriers and technological limitations (M = 3.86, SD = 0.844), suggesting a shared awareness of the challenges that must be addressed to further these efforts. The alignment of current financial inclusion policies with sustainable development goals was rated highly (M = 4.16, SD = 1.070), though the variability in responses may reflect differences in policy implementation across regions or sectors.

Technological innovation was consistently rated as a critical driver of sustainable development, with high mean scores indicating its role in improving business efficiency (M = 4.03, SD = 0.543) and meeting customer needs (M = 3.92, SD = 0.987). Environmental initiatives were also positively received, with respondents agreeing that monitoring and reporting on environmental impact (M = 4.05, SD = 0.681) and investing in sustainable practices (M = 4.23, SD = 0.694) have enhanced the company's reputation and stakeholder relationships. The governance structures within organizations were rated favorably (M = 4.017, SD = 0.50379), highlighting the importance of prioritizing sustainability in strategic planning and decision-making processes.

Table 1
Descriptive Statistics

	N	Mean	Std. Deviation
Increased access to financial services, such as banking, credit, and insurance, has significantly improved the economic opportunities for underserved communities in the region.	106	4.12	.430
Advancements in financial technology (FinTech) have enhanced the accessibility and affordability of financial services for individuals and small businesses in the industry.	106	3.79	1.102
Financial inclusion initiatives that incorporate technological innovation contribute positively to environmental sustainability by promoting green financing and eco-friendly business practices.	106	3.01	1.046
There are significant obstacles that hinder the expansion of financial inclusion in the sector, such as regulatory barriers, technological limitations, and lack of financial literacy.	106	3.86	.844
Current financial inclusion policies are effectively aligned with broader sustainable development goals, particularly those related to economic growth, reducing inequality, and improving environmental quality.	106	4.16	1.070
Sustainable Development Performance	106	3.7887	.59639
Technological innovations have significantly improved the efficiency and productivity of the business operations.	106	4.03	.543
The adoption of new technologies has enhanced the ability to meet customer needs and expectations.	106	3.92	.987
Investment in technological innovation is a critical factor for maintaining a competitive edge in the industry.	106	3.25	.986
The organization has effectively integrated digital technologies into its core business processes.	106	4.13	.757
Technological innovation has played a crucial role in enabling us to develop sustainable and environmentally friendly business practices.	106	3.93	1.054
External Environment	106	3.8333	.48957
The organization has implemented effective environmental quality initiatives to reduce the carbon footprint and overall environmental impact.	106	3.83	.951
Regularly monitor and report on the environmental impact of the business operations to ensure compliance with environmental standards.	106	4.05	.681
Investing in environmentally sustainable practices has positively influenced the company's reputation and stakeholder relationships.	106	4.23	.694

The company actively supports and participates in community-based environmental quality initiatives and projects.	106	4.00	1.069
Governance Structure	106	4.0170	.50379
The organization prioritizes sustainability in its strategic planning and decision-making processes.	106	3.72	1.136
The sustainability initiatives undertaken by the company are effective in promoting long-term environmental and social benefits.	106	3.75	.837
Employees in the organization are encouraged to contribute to sustainability efforts through training and awareness programs.	106	4.10	.755
The sustainability measures and have implemented have significantly improved the brand image and market positioning.	106	3.29	.792
The successfully integrated sustainability goals with the financial performance objectives, resulting in balanced growth.	106	4.08	.280
Technological Adoption	106	3.7776	.55173

Source: Field data, 2024

The overall positive sentiment towards technological adoption (M = 3.7776, SD = 0.55173) further underscores the recognition of its significance in driving sustainable development and maintaining competitiveness in the industry. Further, the findings reflect a strong alignment between these factors and sustainable development goals, though some variability suggests areas where further efforts are needed to overcome obstacles and ensure consistent sustainability practices

Gender and Sustainable Development Performance, External Environment, External Environment, and Governance Structure

The results presented in Table 2 reveal notable differences in perceptions of sustainable development performance, external environment, governance structure, and technological adoption between male and female respondents. The independent sample t-test was used to compare the means of these variables across gender groups. In terms of sustainable development performance, male respondents reported a significantly higher mean score (M = 4.1103, SD = 0.47855) compared to female respondents (M = 3.4000, SD = 0.48466). The t-test indicated a statistically significant difference between the groups ($t = 7.563$, $p < .001$), suggesting that males perceive sustainable development performance more positively than females. This disparity may reflect differences in perspectives or experiences related to sustainability within the cooperative model. Regarding the external environment, male respondents again showed higher mean scores(M = 4.0833, SD = 0.33805) compared to female respondents (M = 3.5313, SD = 0.47597). The t-test revealed a significant difference ($t = 6.965$, $p < .001$), indicating that males view external environmental factors as more favorable to sustainable development than females do. This difference may suggest varying levels of awareness or perceived impact of external factors, such as government policies or market conditions, on sustainable practices across genders.

Table 2

Group statistics and Independent Sample t test

	Gender	N	Mean	S.D.	Levene's Test for Equality of Variances	t-test for Equality of Means	Remarks

					F	Sig.	t	Sig. (2-tailed)	
Sustainable Development Performance	Male	58	4.1103	.47855	.790	.376	7.563	.000	Equal variances assumed
	Female	48	3.4000	.48466					
External Environment	Male	58	4.0833	.33805	3.762	.055	6.965	.000	Equal variances assumed
	Female	48	3.5313	.47597					
Governance Structure	Male	58	4.1828	.43735	.842	.361	3.978	.000	Equal variances assumed
	Female	48	3.8167	.51004					
Technological Adoption	Male	58	4.0665	.44634	1.088	.299	7.228	.000	Equal variances assumed
	Female	48	3.4286	.45938					

Source: Field data, 2024

The perceptions of governance structure also exhibited significant gender differences. Male respondents had a higher mean score (M = 4.1828, SD = 0.43735) compared to females (M = 3.8167, SD = 0.51004). The t-test results indicated a significant difference ($t = 3.978$, $p < .001$), suggesting that males perceive the governance structure as more effective in promoting sustainability within the organization. This could be due to differences in involvement or influence in decision-making processes, with males possibly feeling more engaged or represented. Further, in terms of technological adoption, male respondents again reported higher mean scores (M = 4.0665, SD = 0.44634) compared to females (M = 3.4286, SD = 0.45938). The t-test indicated a statistically significant difference ($t = 7.228$, $p < .001$), highlighting that males view technological adoption within the organization more favorably. This difference could suggest disparities in access to or familiarity with technological innovations, where males might have more exposure or opportunities to engage with these technologies. Further, the findings highlight significant gender differences in perceptions of key factors related to sustainable development within cooperatives. Males consistently rated these factors more positively than females, underscoring the need for a more inclusive approach that considers diverse perspectives in promoting sustainability within cooperative models. These gender disparities suggest that addressing them could enhance the effectiveness of sustainability initiatives as the industry navigates the complexities of the Fourth Industrial Revolution.

Year of Experience and Sustainable Development Performance, External Environment, External Environment, and Governance Structure

The results presented in Table 3 provide a detailed analysis of the perceptions of sustainable development performance, external environment, governance structure, and technological adoption across different levels of employment experience among respondents, using one-way ANOVA. For sustainable development performance, the analysis reveals significant differences based on the respondents' years of experience ($F = 74.558$, $p < .001$). Those with 6 to 10 years of experience reported the highest mean score (M = 4.3100, SD = 0.28983), closely followed by individuals with more than 10 years of experience (M = 4.2545, SD = 0.36977). In contrast, respondents with less than 3 years of experience had the lowest mean score (M = 3.2609, SD = 0.27260). These results suggest that longer-tenured employees have a more positive perception of their organization's sustainable development efforts, possibly due to a greater understanding and involvement in these initiatives over time. Regarding the external environment, significant differences were also observed across different levels of employment experience ($F = 41.602$, $p < .001$). Respondents with 6 to 10 years of experience again reported the highest mean score (M = 4.2333, SD = 0.24979), indicating a

more favorable view of how external factors, such as government policies and market conditions, influence sustainability.

Table 3
Group statistics and One way ANOVA

	Levels of Employment	N	Mean	Std. Deviation	ANOVA	
					F	Sig. (2-tailed)
Sustainable Development Performance	Above 10 years	11	4.2545	.36977	74.558	.000
	6 to 10 Years	40	4.3100	.28983		
	3 to 5 Years	32	3.3563	.41809		
	Below 3 years	23	3.2609	.27260		
	Total	106	3.7887	.59639		
External Environment	Above 10 years	11	4.1061	.33560	41.602	.000
	6 to 10 Years	40	4.2333	.24979		
	3 to 5 Years	32	3.4583	.41908		
	Below 3 years	23	3.5290	.32432		
	Total	106	3.8333	.48957		
Governance Structure	Above 10 years	11	4.1636	.33248	22.600	.000
	6 to 10 Years	40	4.3200	.30315		
	3 to 5 Years	32	3.9750	.37930		
	Below 3 years	23	3.4783	.55837		
	Total	106	4.0170	.50379		
Technological Adoption	Above 10 years	11	4.1429	.29966	86.569	.000
	6 to 10 Years	40	4.2893	.17567		
	3 to 5 Years	32	3.3705	.38377		
	Below 3 years	23	3.2795	.32656		
	Total	106	3.7776	.55173		

Source: Field data, 2024

In comparison, those with 3 to 5 years of experience reported a lower mean score (M = 3.4583, SD = 0.41908). This variation suggests that as employees gain more experience, they might develop a better understanding or more optimistic view of the external factors impacting their organization's sustainability efforts. When it comes to governance structure, the analysis found significant differences across the various levels of experience ($F = 22.600$, $p < .001$). Respondents with 6 to 10 years of experience reported the highest mean score (M = 4.3200, SD = 0.30315), which reflects strong confidence in the governance mechanisms of their organization. On the other hand, those with less than 3 years of experience reported a lower mean score (M = 3.4783, SD = 0.55837). These

findings suggest that more experienced employees might have greater trust in the organization's leadership and decision-making processes, possibly due to their extended exposure to these systems. Finally, the technological adoption variable also showed significant differences among the groups ($F = 86.569$, $p < .001$). The highest mean score was reported by respondents with 6 to 10 years of experience ($M = 4.2893$, $SD = 0.17567$), while the lowest mean score was observed among those with less than 3 years of experience ($M = 3.2795$, $SD = 0.32656$). This indicates that more experienced employees view the organization's technological adoption efforts more favorably, likely because of their deeper involvement in or awareness of technological advancements within the organization over time. In conclusion, the findings from the ANOVA analysis underscore significant differences in how employees at different levels of experience perceive key aspects of sustainable development, external environment, governance structure, and technological adoption within their organizations. Employees with more experience generally have more positive perceptions across these areas, highlighting the importance of considering the role of employee experience in evaluating and implementing sustainability and technological initiatives in the workplace.

The multiple comparison results presented in Table 4 provide insights into the differences in perceptions across various levels of experience concerning sustainable development performance, external environment, governance structure, and technological adoption, as assessed through the Tukey HSD test. For sustainable development performance, the analysis reveals that respondents with more than 10 years of experience do not significantly differ in their perceptions compared to those with 6 to 10 years of experience (Mean Difference = -0.05545, $p = .963$). However, significant differences are observed when comparing those with more than 10 years of experience to those with 3 to 5 years (Mean Difference = 0.89830, $p < .001$) and less than 3 years (Mean Difference = 0.99368, $p < .001$) of experience.

Table 4

Multiple Comparison — Tukey HSD

Dependent Variable	(I) Year of experience in this field	(J) Year of experience in this field	Mean Difference (I-J)	Std. Error	Sig.
Sustainable Development Performance	Above 10 years	6 to 10 Years	-.05545	.11529	.963
		3 to 5 Years	.89830*	.11836	.000
		Below 3 years	.99368*	.12414	.000
	6 to 10 Years	Above 10 years	.05545	.11529	.963
		3 to 5 Years	.95375*	.08031	.000
		Below 3 years	1.04913*	.08862	.000
	3 to 5 Years	Above 10 years	-.89830*	.11836	.000
		6 to 10 Years	-.95375*	.08031	.000
		Below 3 years	.09538	.09257	.732
	Below 3 years	Above 10 years	-.99368*	.12414	.000
		6 to 10 Years	-1.04913*	.08862	.000
		3 to 5 Years	-.09538	.09257	.732
External Environment	Above 10 years	6 to 10 Years	-.12727	.11341	.677
		3 to 5 Years	.64773*	.11643	.000
		Below 3 years	.57708*	.12211	.000
	6 to 10 Years	Above 10 years	.12727	.11341	.677
		3 to 5 Years	.77500*	.07900	.000

		Below 3 years	.70435*	.08717	.000
	3 to 5 Years	Above 10 years	-.64773*	.11643	.000
		6 to 10 Years	-.77500*	.07900	.000
		Below 3 years	-.07065	.09106	.865
	Below 3 years	Above 10 years	-.57708*	.12211	.000
		6 to 10 Years	-.70435*	.08717	.000
		3 to 5 Years	.07065	.09106	.865
Governance Structure	Above 10 years	6 to 10 Years	-.15636	.13488	.654
		3 to 5 Years	.18864	.13846	.526
		Below 3 years	.68538*	.14523	.000
	6 to 10 Years	Above 10 years	.15636	.13488	.654
		3 to 5 Years	.34500*	.09396	.002
		Below 3 years	.84174*	.10367	.000
	3 to 5 Years	Above 10 years	-.18864	.13846	.526
		6 to 10 Years	-.34500*	.09396	.002
		Below 3 years	.49674*	.10830	.000
	Below 3 years	Above 10 years	-.68538*	.14523	.000
		6 to 10 Years	-.84174*	.10367	.000
		3 to 5 Years	-.49674*	.10830	.000
Technological Adoption	Above 10 years	6 to 10 Years	-.14643	.10120	.473
		3 to 5 Years	.77232*	.10390	.000
		Below 3 years	.86335*	.10897	.000
	6 to 10 Years	Above 10 years	.14643	.10120	.473
		3 to 5 Years	.91875*	.07050	.000
		Below 3 years	1.00978*	.07779	.000
	3 to 5 Years	Above 10 years	-.77232*	.10390	.000
		6 to 10 Years	-.91875*	.07050	.000
		Below 3 years	.09103	.08126	.678
	Below 3 years	Above 10 years	-.86335*	.10897	.000
		6 to 10 Years	-1.00978*	.07779	.000
		3 to 5 Years	-.09103	.08126	.678

Source: Field data, 2024

Additionally, respondents with 6 to 10 years of experience report significantly higher perceptions than those with 3 to 5 years (Mean Difference = 0.95375, $p < .001$) and less than 3 years (Mean Difference = 1.04913, $p < .001$). These findings suggest that respondents with more experience, particularly those with 6 to 10 years, have a more favorable view of their organization's sustainable development performance compared to those with less experience. Regarding the external environment, respondents with over 10 years of experience do not show a significant difference in their perceptions compared to those with 6 to 10 years of experience (Mean Difference = -0.12727, $p = .677$). However, significant differences emerge when comparing the perceptions of those with more than 10 years of experience to those with 3 to 5 years (Mean Difference = 0.64773, $p < .001$) and less than 3 years (Mean Difference = 0.57708, $p < .001$). Similarly, respondents with 6 to 10 years of experience report significantly higher perceptions than those with 3 to 5 years (Mean Difference = 0.77500, $p < .001$) and less than 3 years (Mean Difference = 0.70435, $p < .001$). These results indicate that individuals with more experience, especially those with 6 to 10 years, perceive the external environment more positively than their less experienced counterparts.

For governance structure, the results show that there is no significant difference between respondents

with more than 10 years of experience and those with 6 to 10 years (Mean Difference = -0.15636, p = .654) or between those with more than 10 years and 3 to 5 years (Mean Difference = 0.18864, p = .526). However, significant differences are noted between those with more than 10 years of experience and those with less than 3 years (Mean Difference = 0.68538, p < .001). Respondents with 6 to 10 years of experience also report significantly higher perceptions compared to those with 3 to 5 years (Mean Difference = 0.34500, p = .002) and less than 3 years (Mean Difference = 0.84174, p < .001). The findings suggest that experience influences perceptions of governance structures, with more experienced individuals generally viewing governance more favorably. Finally, for technological adoption, the analysis indicates no significant difference between respondents with more than 10 years of experience and those with 6 to 10 years (Mean Difference = -0.14643, p = .473). However, significant differences are observed when comparing those with more than 10 years of experience to those with 3 to 5 years (Mean Difference = 0.77232, p < .001) and less than 3 years (Mean Difference = 0.86335, p < .001). Respondents with 6 to 10 years of experience also show significantly higher perceptions compared to those with 3 to 5 years (Mean Difference = 0.91875, p < .001) and less than 3 years (Mean Difference = 1.00978, p < .001). These findings suggest that technological adoption is viewed more positively by individuals with greater experience, particularly those with 6 to 10 years of experience. Further, the multiple comparison results underscore the significant impact of experience on perceptions of sustainable development performance, the external environment, governance structures, and technological adoption within organizations. More experienced employees tend to have more positive views across these areas, highlighting the importance of considering experience levels when assessing organizational practices and initiatives.

Relationship between Sustainable Development Performance with External Environment, External Environment, and Governance Structure

Table 5
Correlation

		External Environment	Governance Structure	Technological Adoption
Sustainable Development Performance	Mean	3.833	4.017	3.78
	Std. Deviation	.489	.503	.551
	Pearson Correlation	.893**	.574**	.842**
	Sig. (2-tailed)	.000	.000	.000
	N	106	106	106

Source: Field data, 2024

Table 5 presents the correlation analysis of sustainable development performance with external environment, governance structure, and technological adoption. The correlation coefficients reveal significant relationships between these variables. The Pearson correlation coefficient between sustainable development performance and the external environment is 0.893 (p < .001), indicating a very strong positive relationship. This suggests that improvements in the external environment, such as better regulatory conditions, market dynamics, and societal trends, are closely associated with higher sustainable development performance. Organizations that effectively engage with and adapt to external environmental factors are likely to exhibit enhanced sustainable development outcomes. The correlation between sustainable development performance and governance structure is 0.574 (p < .001), reflecting a moderate to strong positive relationship. This implies that well-structured governance, including effective decision-making processes and member participation, is positively associated with sustainable development performance. Organizations with robust governance

frameworks are more likely to achieve higher performance in sustainable development.

In addition, the Pearson correlation between sustainable development performance and technological adoption is 0.842 ($p < .001$), indicating a strong positive relationship. This correlation underscores that the adoption of advanced technologies is significantly associated with better performance in sustainable development. Organizations that integrate technological innovations into their operations are likely to see improvements in their sustainability metrics. Further, the results from Table 5 highlight the crucial roles of the external environment, governance structure, and technological adoption in enhancing sustainable development performance. Each of these factors contributes positively and significantly, underscoring the importance of a holistic approach in managing and improving sustainability practices within organizations.

Regression Analysis of Sustainable Development Performance

Table 6 shows the model summary for the regression analysis examining the relationship between sustainable development performance and the external environment, governance structure, and technological adoption. The model exhibits a strong fit, with an R value of 0.920 and an R-squared value of 0.846. This indicates that approximately 84.6% of the variance in sustainable development performance can be explained by the three predictors: external environment, governance structure, and technological adoption

Table 6
Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.920[a]	.846	.842	.23740	2.162

a. Predictors: (Constant), Technological Adoption, Governance Structure, External Environment
b. Dependent Variable: Sustainable Development Performance

Source: Field data, 2024

The adjusted R-squared value of 0.842, which accounts for the number of predictors in the model, further supports the robustness of the model. The standard error of the estimate is 0.23740, suggesting a relatively low average deviation of the observed values from the predicted values. The Durbin-Watson statistic of 2.162 indicates that there is no significant autocorrelation in the residuals.

Table 7
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.598	3	10.533	186.893	.000[b]
	Residual	5.748	102	.056		
	Total	37.346	105			

a. Dependent Variable: Sustainable Development Performance
b. Predictors: (Constant), Technological Adoption, Governance Structure, External Environment

Source: Field data, 2024

Table 8
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.733	.217		-3.377	.001
	External Environment	.755	.080	.620	9.429	.000
	Governance Structure	.124	.059	.105	2.101	.038
	Technological Adoption	.299	.080	.277	3.736	.000

a. Dependent Variable: Sustainable Development Performance

Source: Field data, 2024

Table 7 presents the ANOVA results, which test the overall significance of the regression model. The F-statistic of 186.893 ($p < .001$) confirms that the regression model is statistically significant, meaning that the predictors (external environment, governance structure, and technological adoption) collectively have a significant impact on sustainable development performance.

Table 8 details the coefficients for the regression model. Regression line equation can be written as follows:

Sustainable Development Performance = -0.733 + 0.755 External Environment+ 0.124 Governance Structure + 0.299 Technological Adoption

This equation predicts the sustainable development performance based on the values of the external environment, governance structure, and technological adoption.

The unstandardized coefficients represent the change in the dependent variable for each one-unit change in the predictor variable, while the standardized coefficients (beta) provide a measure of the relative importance of each predictor.

- External Environment has a coefficient of 0.755 ($p < .001$), indicating a strong and positive effect on sustainable development performance. The standardized beta of 0.620 suggests that this variable has the largest impact among the predictors.
- Governance Structure has a coefficient of 0.124 ($p = .038$), which is positive and statistically significant. The standardized beta of 0.105 indicates a moderate impact on sustainable development performance.
- Technological Adoption shows a coefficient of 0.299 ($p < .001$) with a standardized beta of 0.277, reflecting a significant positive influence on sustainable development performance.

The constant term of -0.733 ($p = .001$) suggests the baseline level of sustainable development performance when all predictors are at zero. Overall, the regression analysis highlights that the external environment, governance structure, and technological adoption are all significant predictors of sustainable development performance. Among these, the external environment has the most substantial effect, followed by technological adoption and governance structure. This comprehensive model underscores the importance of these factors in enhancing sustainable development within organizations.

6. Theoretical and Managerial or Practical implications of the study

This study on the role of cooperative models in promoting sustainable development amid the next industrial revolution provides valuable contributions to both theoretical understanding and practical application. The theoretical implications underscore how cooperatives, through effective technological adoption, governance structures, and consideration of external environmental factors, can align with Sustainable Development Goals (SDGs). The strong positive correlations found between sustainable development performance and these predictors highlight the critical role of a supportive external environment and robust governance in achieving sustainability objectives. The significant impact of technological adoption further emphasizes the necessity for cooperatives to integrate advanced technologies to enhance their sustainable practices and organizational resilience.
From a managerial perspective, the study offers strategic guidance for cooperative managers and policymakers. It suggests that prioritizing sustainable practices, educating members on the importance of sustainability, and leveraging supportive regulatory frameworks are essential for enhancing cooperative performance. Managers are encouraged to adopt technological innovations that not only improve operational efficiency but also contribute to environmentally friendly practices. Policymakers should focus on creating and implementing regulations that support the adoption of green technologies and sustainable practices within cooperatives. Further, tthis integrated approach supports the competitiveness of cooperatives by positioning them as leaders in sustainable innovation. Addressing societal and ecological challenges of the Fourth Industrial Revolution, cooperatives can leverage their unique governance structures and technological advancements to drive meaningful contributions to global sustainability efforts.

7. Limitations and Scope for Further Research

This study, while offering significant insights into the role of cooperative models in sustainable development, has several limitations that provide a clear direction for future research. The relatively small sample size of 106 respondents and the focus on a specific context may limit the generalizability of the findings. To address this, future research should involve a larger and more diverse sample of cooperatives from various regions and sectors, enhancing the representativeness and applicability of the results. Additionally, the cross-sectional design of the study provides only a snapshot of the variables at a single point in time, which limits the ability to observe long-term trends. Longitudinal studies are needed to track changes in technological adoption, governance structures, and sustainable development performance over time, offering deeper insights into their evolving impacts. The reliance on self-reported data introduces the potential for biases, suggesting that future studies should incorporate objective measures or use a mixed-methods approach to validate findings and reduce response bias. Finally, comparative research exploring cooperatives against other organizational models and examining the influence of external factors in different countries could further elucidate the unique contributions and challenges of cooperative models in promoting sustainability. By addressing these limitations through the suggested avenues for further research, scholars can provide a more comprehensive understanding of how cooperatives can effectively navigate and contribute to sustainable development amidst the Fourth Industrial Revolution.

8. Conclusion

In conclusion, this study underscores the pivotal role of cooperative models in advancing sustainable development within the context of the Fourth Industrial Revolution. By meticulously examining the interplay between technological adoption, governance structures, and external environmental factors, this research reveals how cooperatives can effectively contribute to the Sustainable Development Goals (SDGs) while enhancing their organizational resilience. The findings highlight that

technological innovation, robust governance, and a supportive external environment are instrumental in driving sustainable outcomes and positioning cooperatives as leaders in green innovation. The study's insights offer valuable guidance for cooperative managers and policymakers, emphasizing the importance of integrating sustainability into strategic planning, fostering member education on sustainable practices, and leveraging regulatory frameworks to support cooperative initiatives. However, recognizing the limitations of the research, including the sample size and methodological constraints, paves the way for future exploration. Longitudinal studies, larger and more diverse samples, and comparative research will enrich our understanding and refine strategies to harness the full potential of cooperative models in achieving sustainable development. Ultimately, this research affirms that cooperatives, with their unique principles of democratic governance and community focus, are well-positioned to address the complex societal and ecological challenges of the modern industrial landscape. As we advance through the Fourth Industrial Revolution, cooperatives can not only adapt and thrive but also lead the way in fostering a more sustainable and equitable future.

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Adoption of Improved Vegetable Farming Technology through Agriculture Cooperative in Kaski District Nepal

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Abstract

Improved vegetable farming technology from sowing the seed to its management uplifts the living standard of the farmers with a higher return which aids in the agricultural development of the country. Hemja and Bagmara areas of Pokhara Metropolitan City were selected by using a simple random sampling technique. Primary data were collected using a pretested semi-structured interview schedule from 120 farmers, 60 from each areas were randomly selected using a simple random sampling technique. Descriptive and inferential statistics showed that the majority of the respondents were male, the majority belonging to middle age group, literate, medium family size and had received training on commercial vegetable farming technology through cooperatives. The level of education and extension contact had a positive and significant relationship with the adoption of improved vegetable farming technology. Multiple regression analysis showed that the level of education and extension contact contributed 21.3 percentage variation to the adoption. e study suggests that principles such as democratic member control, voluntary and open membership, and member economic participation are critical to the effective and sustainable operation of agricultural cooperatives in Nepal. These principles promote members' sense of responsibility and ownership by ensuring transparency, fairness, and democratic decision-making. The facilitation of the all the services related to inputs and outputs from the agriculture cooperative motivate for the technology adoption. Lack of information on technology and crop management were the major constraints faced by the farmers for improved vegetable production.

Keywords: Adoption, co-operative, vegetable, improved farming, farmer

1. Introduction

Agriculture cooperative sector in Nepal has been growing rapidly and has become a crucial part of the country's economy based on their functioning, which include marketing, farm supply, service provider, production, and processing cooperatives (Kathiwada, 2014). The concept of cooperatives is multifaceted, encompassing various roles and objectives, as articulated in the Statement on the Cooperative Identity by the International Cooperative Alliance (ICA) in 1995 (ICA, 1995b).Consequently, these principles are reflected in the operational practices of cooperative enterprises. The universal principles of cooperatives, established by international cooperative bodies such as the International Cooperative Alliance (ICA), serve as the ethical cornerstone for cooperative enterprise. These principles collectively uphold the values of inclusivity, democracy, equitable participation, autonomy, education, and collaboration, guiding cooperative enterprises toward sustainable growth and community empowerment ("The Seven Cooperative Principles," 2024). Cooperatives offer significant advantages such as minimizing transaction costs and reducing the risk of default, making them valuable financial intermediaries for small-scale farmers. Despite these benefits, cooperatives encounter a fundamental challenge in strengthening their economic viability and institutional sustainability (Singh, 2022).

Vegetable farming with its higher farm-gate values and productivity stand as an important sector in agribusiness (Mariyono, 2017). Vegetable farming has become important part of agriculture (Zeeuw,

Veenhuizen, & Dubbeling, 2011). Vegetable are important agriculture commodity for poverty alleviation and income generation as identified by different periodic plans of Nepal. Vegetables including potato and spices has contributed 5 percentage to the Gross Domestic Product (GDP) and 19.44 percentage to Agriculture Gross Domestic Product (AGDP). in developing countries, vegetable farming plays a crucial role in enhancing income, alleviating poverty, and strengthening food and nutrition security in developing countries (Shrestha et al., 2022).

Agriculture is the occupation for livelihood and cash income, vegetable farming appears as one of the productive enterprises for cash generation (Rai et al., 2019). Commercial farming has increasing trend in Nepal (Shrestha, Ojha, Pradhan, & Joshi, 2018) and it shared a larger fragments of urban agriculture in Kaski as the profitability attracted farmer day by day (Shrestha, Shrestha, & Pandey, 2014). Lack of sufficient studies on commercial vegetable production has, however, narrowed the development of vegetable sector although, different initiative have been conducted in National level (Ghimire, Lamsal, Paudel, Khatri, &Bhusal, 2018). The increase in vegetable production can be attributed to the farmer's shift of cultivation trend from cereal crops like rice to vegetable crops due to high economic returns (Gurung, Thapa, Gautam, Karki, & Regmi, 2016). Commercial vegetable farming can be a good method for poverty reduction in Nepal (Gurung, 2016).

Nepal's new constitution makes strong commitments to cooperatives, many of which are agricultural. If these cooperatives can make money for their members, they can be an important force for development, contributing to the achievement of the Sustainable Development Goals (Kemkhadae, 2017).). The GoN, (2015) recognizes cooperatives as one of the three pillars, along with the public and private sector, for development of the national economy (NEFSCUN, 2020). Agricultural cooperatives in Nepal can take various forms, including primary cooperatives at the grassroots level, district-level cooperatives, and apex organizations that coordinate the activities of lower-tier cooperatives (NEFSCUN, 2019).

2. Materials and Methods

Selection of study area

Kaski district was selected purposively for the study because it consist the pocket area of vegetable production with number of farmers with membership in cooperative. Agriculture is the main occupation of the people in the district. Seventy one percentage populations are engaged in agriculture as a major profession (PMAMP, 2018). This figure is above than national average (65.6percentage). Commercial vegetable farming was the major occupation of farmers involving in agriculture in Pokhara metropolitan city. Hemja, Lekhnath, PumdiBhumdi, Bagmara, Rithepani, Malepatan are the major vegetable growing area of metropolitan city. (PMAMP, 2018) Hemja and Bagmara were selected by using simple random sampling technique from the major pocket area of commercial vegetable farming area in Kaski.

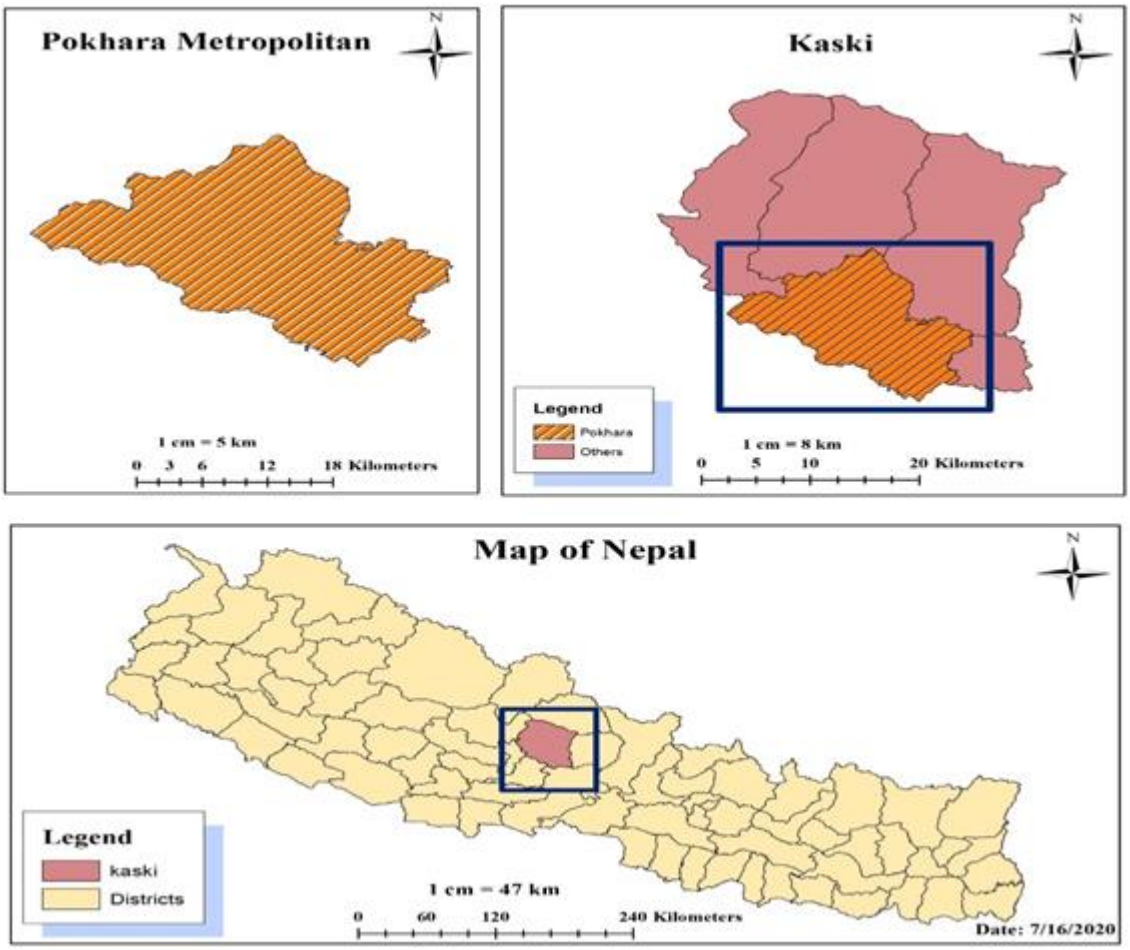

Figure1. Map of study area

Interview schedule was used as research instrument for the study. Semi-structured interview schedule were developed based on the objectives and basic information obtained from preliminary survey. A detailed interview schedule related to technology adoption consisting of both close ended as well as open ended questions were developed for gathering information from the farmers.

Selection of sample and sampling procedure

Hemja and Bagmara are the major commercial vegetable farming areas among the vegetable growing areas in Kaski district. A list of commercial vegetable farmers from the selected areas was prepared separately and was used as sampling frame to select the respondent farmers. From each area 60 respondents were selected by using simple random sampling technique through lottery method. Thus the total number of sample size was 120.

Data collection

The primary data were collected from farmers by administering semi-structured pre-tested interview schedule. Additional information were also collected from three focus group discussion and key informant survey to know more on the status of vegetable technology adopted and constraints faced by vegetable growing farmers.

Secondary data were collected from different published materials by Ministry of Agriculture and Livestock Development (MOALD), Department of Agriculture, Central Bureau of Statistics (CBS), Prime Minister Agriculture Modernization project (PMAMP), other NGOs, INGOs, and CBOs.

Techniques of data analysis and measurement of variables
The collected information was analyzed using both descriptive and inferential statistics. Descriptive statistics (mean, standard deviation, frequency, and percentage) was used to describe the respondents' socio-economic and demographic characters such as age, education, and family size, and family income, membership in organization, training and extension contact. The collected information were coded, tabulated and entered into the computer for the analysis. The final analysis was done with the help of software Statistical Package for Social Science (SPSS) and Microsoft Excel.

3. Results and Discussion

The result included the socio-economic characteristics of the respondents, extension related factors, sources of knowledge used by the farmers, level of technology adoption, socio-economic factors, and constraints related to adoption of vegetable production technology.

Relationship between socio-economic and other factors and adoption
Pearson's correlation coefficient (r) analysis was done to measure the relationship between socio-economic factors, other related factors and adoption of improved vegetable production technology. The socio-economic factors included were age, level of education, family size, farm size, annual income, organizational membership and extension related factor were frequency of extension contact and training.

Table shows that the level of education (0.007), extension contact (0.002), had positively significant relationship with the level of adoption. The relationship was tested at 0.05 and 0.01 probability test. The result of Pearson's correlation (r) analysis has been presented in Table 1.

Table 1. Relationship between socio-economic and other factors and adoption

Factors	r-value	p-value
Age	-0.138	0.170
Level of education	0.269**	0.007
Family size	-0.119	0.239
Land holding size	-0.105	0.298
Annual income	0.011	0.913
Cooperative membership	0.139	0.167
Extension contact	0.300**	0.002
Training	0.097	0.339

*Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.001 level (2- tailed)

Factors affecting adoption of improved vegetable production technology
Multivariate regression analysis was carried out to determine the factors affecting adoption of vegetable farming technologies (dependent variable) in the study area.

Table 2. Factor affecting the adoption of vegetable farming practices in the study area

Independent variable	Beta coeff.	S.E	T	Sig.	R^2
Age	-.019	.120	-.154	.878	
Level of education	3.974	1.610	2.468	.015**	
Family size	-.516	.547	-.943	.348	
Land holding size	-3.896	2.330	-1.672	.098	0.213
Annual income	.000	.000	.696	.488	
Cooperative membership	2.139	3.049	.702	.485	
Training	1.404	3.540	.397	.693	
Extension contact	3.257	.961	3.389	.001**	
Adj. R^2-0.144					

**significant at the 0.01 level (2-tailed)
*significant at the 0.05 level (2-tailed)

The explanatory variables (independent) were age, level of education, family size, farm size, annual income, organizational membership, extension contact, training and the dependent variable was adoption of improved vegetable cultivation technology.

The coefficient of determination of R^2 is 0.213 indicating 21.3 percentage of variation in the adoption of improved vegetable production technology explained by the included explanatory variables. The R^2 value of 0.213 indicates that all the selected 8 variables put together contributed for about 21.3 percentage variation for the adoption of improved vegetable farming technology.

4. Conclusion

On the basis of this study, it can be concluded that the present level of adoption of improved vegetable farming techniques on seed, nursery management, disease and, pest management, irrigation, plastic house structure, harvest, and, market was found medium in the study area. The adoption of modern vegetable farming technology was largely constrained by lack of quality seed, disease, insect-pest problem, manures and fertilizer, storage, marketing and, price, agricultural loan, subsidy, and, irrigation. It affects the adoption of improved vegetable farming technology. Training, organizational membership, and annual income had shown positive relationship with the level of adoption. The level of education and extension contact showed significant and positive relationship with the level of adoption. Hence these factors could be promoted and incorporated into the other extension programs to enhance the dissemination and promotion of vegetable improved vegetable farming technology that will aid in the uplift of the living standard of vegetable growing farmers and nation agriculture development.

5. Acknowledgements

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Governance and Accountability in Cooperative Banks: Lessons from Karuvannur

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Abstract

The case study deals with the failure in governance and accountability issues relating to Karuvannur Service Cooperative Bank- a once-reliable institution in Kerala, India. The bank was established in 1921, with an enduring legacy and community support. However, by 2023, the bank plunged deep into a financial crisis dogged by declining deposits, unsustainable credit-deposit ratio, and surfacing fraud worth ₹100 crores. Through the narrative of key individuals, including a whistleblower and affected borrowers, the study reveals that deep-seated corruption, political involvement, and failure of governance were responsible for the bank's collapse. The investigation, involving multiple agencies, highlighted how intricate the fraudulent dealings were, including that of political figures, which only served to further erode the public's trust. It is thus crucial that this case serves as an instructive lesson to other cooperative banks on the importance of strong governance structures, transparency, and ethical management practices.

Keywords: Cooperative Banks, Governance, Accountability, Regulatory Compliance, Risk Management

1. The Bank's Legacy

In the quiet village of Porathissery, in the Thrissur district of Kerala, rests Karuvannur Service Cooperative Bank. Founded in 1921, amidst the lush landscapes and verdant fields of Kerala, the bank was more than just a financial institution. It was the heartbeat of the local community, bringing to life the vision of providing financial stability and support to the agrarian and business sectors of the region.

In time, Karuvannur Bank comes to be known as the bank of credibility and community confidence. It was a time to prove cooperative banking as one of the pioneering tools of social upliftment at the grassroots level, especially in the rural and semi-urban parts of society. Its founder members, most of them being local farmers and traders, viewed it as a medium through which their community could be socially uplifted by making available to them financial services.

The impact of the bank became visible right from its formative years. Farmers like Raghavan Nair, who had only a small piece of land, used to find support in Karuvannur Bank to take up his agriculture with needs such as seeds, fertilizers, equipment, and so on and on so forth so that he could yield better crops and sustain his livelihood. The bank’s role extended beyond merely providing financial services; it became a trusted advisor and a pillar of support during times of need.

Small businesses benefited from the bank's facilitation. Local entrepreneurs like Anil Kumar, running a small grocery shop, also depended on credit from the bank to finance their stocks to meet the working capital requirements. The bank, by churning out tailor-made financial products, helped those small businesses realize the liquidity they required to expand and diversify.
For the families of Porathissery, it was the secure place of investment in the bank. Parents had secured

money for their children's future, most likely for their education, and others had secured their investments for emergencies. Long-standing trust was consequently built believing that the bank would secure their deposits. The bank was not just a place for financial transactions; it was where one shared their happiness, their grief, built contacts, and made a belonging.

The more it matured over more years the bank became even more consequential. It became the symbol of stability within a region marked by vibrant agricultural activities and a closely-knit community. The growth in its deposits and loans was itself a reflective mode of prosperity and trust that the bank had built for itself over the growth years.

However, as the 21st century progressed, the landscape started to change. The bank, once a beacon of trust and reliability, would soon face challenges that tested its foundational principles. The financial stability it had provided for generations was about to be jeopardized by a series of events that would unravel its legacy and impact its standing in the community.

2. Financial Deterioration

By the close of the 2018-2019 financial year, Karuvannur Service Cooperative Bank had morphed as a bulb of strength in finance with a base deposit of ₹402 crore. This impressive figure was a testament to the bank's enduring stability and its deep-rooted trust within the Porathissery community. The deposits reflected the confidence that local farmers, small businesses, and families had in the institution, viewing it as a haven for their savings and a reliable partner for their financial needs.

However, the next few years would reveal a completely different picture. As the bank moved into 2023, a series of troubling developments began to unfold. The once-thriving deposit base had significantly eroded, dropping to ₹282 crore. This substantial reduction in deposits raised immediate red flags, suggesting underlying issues that were not immediately apparent.

At the same time, the bank's loan portfolio was growing alarmingly high, at ₹514 crore. The spike in loans in comparison to the plummeting deposits reflected an imbalance in the financial structure of the bank. This disparity between deposits and loans was signaling an emerging concern, as it pointed to operations by the bank that precariously relied on borrowed funds, rather than on its reserves.

The outcome is that the very important figure, from which one can equate the health of the bank, the credit-deposit ratio, took a towering 136%. That is to way up high. High by any measure of industry norms, given at best 70-75%, it was indicative of a drastic departure from any conventional level of sound financial management. High credit-deposit ratios would imply that the bank would increasingly be extending more loans relative to its deposits, either appealing to aggressive lending practices or a lack of deposit growth to support the demand for loans.

Karuvannur Bank had a high ratio which resulted in being a major concern criterion. There arises the indication that the bank was taking too much risk in its lending, which further meant lending more than what was there in its reserves. Such a scenario could lead to liquidity issues, where the bank might struggle to meet its short-term obligations or even face difficulties in managing daily operations. The imbalance also suggested a possible strain on the bank's ability to absorb potential losses from bad loans or defaults.

The case did not go unnoticed. Stakeholders, depositors, and local business organizations began to question the strength of the bank. Eroding confidence was noticed, which had been one of the big rocks of its reputation. Whereas people had deposited money in Karuvannur Bank with great

goodwill, without suspicion or doubts, these people came in a queue to withdraw cash, further reducing deposits and worsening the financial agony of the institution.

It became a public issue, and the people within the community, the local media, and even some regulating bodies began to look more and more into the bank's financial practices. The institution that was once considered reliable had now come to a point where its credibility and stability were at stake. It is sad how such a legacy could turn down so fast.

The worsening condition of finance, as it grew graver, reached out to the community in the form of tremors. The worsening conditions of finance at Karuvannur Bank began waving out to the healthy local businesses, farmers, and families who had relied upon Karuvannur Bank for all their financial needs for generations. The fall obliged them not only purely on financial grounds but so deeply touching the lives of people who had reposed faith in it.

3. The Whistle-Blower's Tale

Sreekala E S was an industrious and duty-bound bank secretary at Karuvannur Service Cooperative Bank. Her adherence to principles of functioning with transparency and keeping within the bounds of regulatory conformity was well understood inside the institution. Decades of unbroken dedication would soon pitch her into one of the darkest, most dangerous situations that would test her resolve and courage to the utmost.

July 2021 was like any other month, but it became a turning point in her professional life. Sreekala was performing her regular tasks concerning the financial records and loan documents of the bank. It was during that rigorous scrutiny of these documents that she chanced upon a series of anomalies and discrepancies that raised instant red flags about everything being hugely wrong within the operations at the bank.

She was led to a startling discovery—that about ₹100 crore had been laundered through fraudulent loans. These loans, outwardly legitimate, actually constituted a far-fetched scheme implemented to siphon off funds from the bank. The magnitude of the fraud was enormous, and the realization that such a huge amount had been misappropriated stumped her and caused a lot of disturbance.

The fraudulent loans were camouflaged by a nexus of dummy accounts, forged documents, and shady transactions. More than that, these leading questions made one realize that it was not just clinically organized, but the high-level connivance then involved manipulating the very systems of the bank to serve vested interests. The sheer audacity and sophistication of the scheme underscored the gravity of the situation and the potential consequences for the bank and its stakeholders.

Sreekala was in a dilemma. Her discovery was both personally and professionally a dangerous thing to do, for it will not only expose this scamming case but may further challenge her safety and career equally. In the frenzy of opposition, despite it all, Sreekala has opted for the right thing. She contacted problem authorities, regulatory bodies, and law enforcement agencies.

It was quite a bold act, and this whistle-blowing proved to be the turning point and catalyst needed for change. The allegations against them prompted the authorities to initiate an in-depth investigation, and the whole scam came to light completely within a very short period. And now, this whole scandalous situation that occurred inside the bank's operations began being known to the general public and the media. Its exposure created shock waves amongst the community and stakeholders.

4. The Borrowers' Struggle

For many in the Porathissery community, Karuvannur Service Cooperative Bank was more than just a financial institution; it was a vital lifeline. The bank's sudden financial turmoil and the ensuing scandal created a ripple effect that devastated the lives of countless borrowers who had entrusted their hopes and dreams to it.

Rajan's Dilemma

Rajan was a hardworking farmer in his late 50s who had been with Karuvannur Bank for quite a considerable period. In the year 2019, he took a jumbo loan from the bank to increase farming activities. His dream lay in raising the yield from the acres and putting his family in a good position. The loan would be used to buy new equipment and invest in better seeds and fertilizers.

But as the financial crisis at the bank worsened, Rajan's world was starting to come apart. He had been conscientious about his repayments, but mismanagement at the bank produced this zero-hour fiasco: he had been re-mortgaged without his knowledge or consent in the name of financial adjustments. It was a gut-wrenching blow. He had worked hard building up his property only to find that, with news of the re-mortgaging, it was being threatened with foreclosure.

The emotional strain was overwhelming. All his life, Rajan had striven and struggled to build up his farm to not just sustain his livelihood but also to create a legacy for his family. At this stage, the financial pressures would now be compounded by the emergence of COVID-19, which had already rummaged through agricultural supply chains and markets. Crops were withering away, and markets seemed too unpredictable about prices; Rajan was caught within such a vortex of stress and desperation The threat of foreclosure loomed large, casting a shadow over every aspect of his life.

Anju's Plight

The case of Anju, a small businesswoman in her early forties, was no different. She ran a local boutique that was a favorite among people in the area. With raunchy lockdowns and reduced spending by people during the pandemic, things became pretty bad for Anju. She took additional funding from Karuvannur Bank to help her keep the business running, along with retention of staff.

According to her, the cooperative bank was very cooperative earlier, but with the financial crisis, things changed dramatically for Anju. She found that all her running loans had been mismanaged. The administrative error and malpractices within the midst of financial instability at the bank caused funds meant for her business to be either delayed or misdirected. The red tape at the bank and indifference to her concerns thwarted Anju's efforts to sort out these irregularities.

The consequences were serious. With the absence of vital funds, Anju struggled to meet her operational costs and salary payments for her staff. Her once thriving business now started to go down with the increasing financial pressure, leading to anxiety and depression. The pressure of handling the mismanagement of the bank added up to keeping her business afloat during a pandemic.

5. Investigation

The magnitude of the scandal involving Karuvannur Bank was so huge that it deserved an investigation that was equally extensive and multi-layered. What began as a nondescript inquiry about some alleged financial aberrations in the bank snowballed into a very complicated probe involving scores of stakeholders with huge political overtones.

Initial Response

In July 2021, the charge was handed over to the local police after certain discrepancies were found. But while the local police had started working on the financial irregularities, they realized the magnitude of the scam was much too large for them. The case was entrusted to the State Crime Branch since it involved huge money and complex financial transactions. It was an undisputed sign of the gravity of the issue and the specialized need for expertise in dealing with such a massive publicity case.

Role of ED — Enforcement Directorate

It was in August 2021 that the Enforcement Directorate took over the probe. Considering that the ED is the central agency entrusted with probing into financial crimes and economic laws, its stepping in marked a turning point since it needed its resources and expertise to unravel the wrong web of financial deceit that Karuvannur Bank had fallen into.

This also opened Pandora's box for many financial irregularities for ED's probe, which went much beyond the bank's internal operations. The investigation there unwrapped a most sophisticated scheme, involving an immense network of people and entities. Right in the middle of this web was Satheesh Kumar P, a high-profile private financier with very solid connections within the financial sector. Kumar played a very important role, implicated in masterminding fraudulent loan schemes and in the siphoning of money.

6. Political and Social Communities' Reactions

The Karuvannur Bank scam soon exploded into a big political issue, with CPI(M) at the center among a host of several other political outfits. Party leaders and cadres of CPI(M) came under the scanner as the alleged involvement in this scam became a speaking point. Gradually, other talking points included corruption, mismanagement, and prominent political interference.

The opposition took the cue and repositioned CPI(M) as an unethical party that had mismanaged its mandate. By that time it had already become a hot potato, a poo that was at the center of political rivalries, each party using the matter to advance its agendas through the exposure of rivals' failures. The accusations were not just against the CPI(M) alone but also against other parties and politicians who were seen as complicit or indifferent to the ramifications of the scandal.

The political fallout was just as enormous—a gunpowder-like, sparks-in-the-air series of debates and accusations going to and fro between both parties. Discourse in the public was riddled with allegations of political corruption and exploitation of power for personal gains. From these followed calls for increasing scrutiny over political funding and reforms that would hinder such conflicts of interest from happening in the future.

Thus, the consequences of the scandal for the local community are tremendous. While before it was the convenience of a strong bank, financially sound and reliable, the Karuvannur Bank felt shattered from the oneness which had held this community together all along. The loss of faith in the bank bled into broader cynicism toward local institutions, political representatives, and structures of governance.

The scandal, however, set off a series of rallies and public forums in which the concerned residents were demanding the truth. These gatherings have been a space for venting frustration and polling the management of the bank and political leadership for answers. The people wanted transparent restitution of the lost funds and massive reforms so that this does not happen again.

7. Erosion of Trust and Calls for Reforms

The scandals have shaken the community not only because of the financial losses incurred but also through an evident breakdown of trust in the local institution. Whereas once the bank at Karuvannur was a hallowed institution, it had now turned out to be an emblem of betrayal and a broader assault on community cohesion. To state it as simply as can be, confidence has been lost in financial institutions, their leadership, and mechanisms of governance.

As the scandal expanded, so did the demands for reforms in the system that had let such a scandal develop. The modifications demanded by the community included increased strictness in regulatory oversight, and corporate governance, strengthened enforcement of financial regulations, and transparency in political and financial transactions. Reform dominated public debate because most citizens realized the necessity of changes to prevent further abuses and guarantee accountability to those responsible.

Questions

1. What are the key lessons that can be drawn from the Karuvannur Bank case for other cooperative banks?

2. How can these lessons inform best practices in corporate governance and financial management?

3. What governance structures and practices could have prevented the Karuvannur Bank scandal?

4. What reforms should be implemented in Karuvannur Bank to enhance transparency and accountability? How can these reforms be effectively enforced?

5. How can Karuvannur Bank rebuild its reputation and regain the confidence of its stakeholders?

6. How can cooperative banks develop a culture of ethical behavior and integrity among their employees and management?

Exhibit 1: Timeline of Events

Date	Event
1921	Establishment of Karuvannur Service Cooperative Bank in Porathissery, Thrissur district, Kerala.
2018-2019	The bank reports a robust deposit base of ₹402 crore.
2020	The impact of the COVID-19 pandemic has begun affecting businesses and agriculture, leading to financial strain.
Jul-21	Sreekala E S uncovers evidence of approximately ₹100 crore siphoned off through fraudulent loans.

Jul-21	Sreekala reports the discrepancies to authorities, initiating an official investigation.
Aug-21	Local police transfer the case to the State Crime Branch due to its scale.
Aug-21	The Enforcement Directorate (ED) joins the investigation, revealing a complex network involving Satheesh Kumar P and CPI(M) figures.
2022	ED temporarily attaches assets linked to CPI(M). Public and media scrutiny intensifies.
2023	The deposit base declines to ₹282 crore. Loan portfolio expands to ₹514 crore. Credit-deposit ratio reaches 136%.
2023	Local borrowers, including Rajan (farmer) and Anju (small business owner), face severe financial hardships due to the bank's mismanagement.

8. Teaching Note

Learning Objectives

- Understand the concept of corporate governance and its importance in financial institutions.
- Analyze the case of Karuvannur Cooperative Bank to identify governance and accountability issues.
- Relate corporate governance theories and models to the case study.
- Evaluate the effectiveness of governance mechanisms in cooperative banks.

Introduction (10-15 minutes)

- **Brief Overview of Corporate Governance**
    - Definition and significance.
    - Difference between corporate and cooperative governance.

Aspect	Corporate Governance	Cooperative Governance
Ownership Structure	Owned by shareholders who invest capital; ownership is separate from management.	Owned and controlled by members who use the services; each member typically has one vote.
Purpose and Objectives	Focus on maximizing shareholder value and profitability.	Focus on serving members' needs and interests, often including community support.
Decision-Making Process	Board of directors elected by shareholders (weighted voting); management oversight.	Decisions are made democratically by members (one member, one vote); the board is accountable to members.
Accountability	Directors and executives are accountable to shareholders; performance is judged on financial returns.	The board and management are accountable to members, focusing on service quality and community impact.

Profit Distribution	Profits are distributed to shareholders as dividends based on shares owned.	Surplus earnings are distributed to members based on usage or reinvested into the cooperative.
Regulatory Environment	Subject to strict financial regulations, disclosure requirements, and governance codes.	Governed by specific cooperative laws; more flexible but still regulated.
Stakeholder Engagement	Primarily focused on shareholders, with increasing recognition of other stakeholders.	Inherently multi-stakeholder-focused, aligning interests of members, who are often also stakeholders.
Risk Management	Emphasizes financial risk management to protect shareholder value.	Focus on sustainability, member service, and social/community risks.
Transparency and Disclosure	High level of financial transparency and regular reporting to shareholders.	Operational transparency to members, with less emphasis on detailed financial disclosure.

  - Introduction to key corporate governance theories (Agency Theory, Stakeholder Theory, Stewardship Theory).

- **Introduction to the Case**
  - Background of Karuvannur Cooperative Bank.
  - Outline the issues faced by the bank.

Case Study Presentation (20-25 minutes)

- **Detailed Case Discussion**
  - Present the key events leading to the governance crisis at Karuvannur.
  - Discuss the role of various stakeholders (management, board, employees, members).

- **Identification of Governance Issues**
  - Lack of accountability.
  - Board mismanagement.
  - Financial irregularities.

Linking Corporate Governance Theories and Models (20-25 minutes)

- **Application of Theories**
  - **Agency Theory**
    - How the separation of ownership and control led to issues in Karuvannur.
  - **Stakeholder Theory**
    - Analysis of how different stakeholders were affected by the governance failure.
    - Importance of considering all stakeholders in governance decisions.
  - **Stewardship Theory**
    - Contrast between stewardship and the actual behavior of the bank's management.
    - Why stewardship failed in this context.

- **Discussion on Governance Models**
  - **Anglo-American Model**

        - Compare this model with the governance structure at Karuvannur.
    - **German Model**
        - How a dual board system could have addressed the issues.
    - **Japanese Model**
        - The role of cross-shareholding and group dynamics in governance.

Group Activity/Discussion (15-20 minutes)

- **Case Study Analysis in Groups**
    - Divide students into groups and assign each group a specific governance theory.
    - Have them analyze the case through the lens of their assigned theory.
    - Each group presents their findings and suggests how better governance could have prevented the crisis.

Conclusion (10 minutes)

- **Summarize Key Learnings**
    - Recap the governance issues at Karuvannur and the applicability of different theories.
    - Discuss the implications of weak governance in cooperative banks.
    - Highlight the importance of adopting strong governance practices.

9. Reading Materials

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Do employee perspective matter in delivery of social responsibility of cooperatives?
A study of dairy cooperatives in Kerala

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Abstract

The paper looks into the aspects of job performance in third-sector organizations. Following the duality principle, cooperative businesses focus on service orientation, along with business profits. The study attempts to validate SCOOM hypothesis in a non-worker cooperative context. The study has been carried out among employees in dairy cooperatives in Kerala. While envisaging job performance as task performance and pro-social behaviour, the effect of individual variable job autonomy and group level variable perceived justice climate is probed. Further, the result validates the moderator's effect on the relation between individual/group level variables and performance constructs. High SC was found to have a stronger effect on relationship between job autonomy and task performance and high OO strongly influenced the relation of perceived justice climate to pro-social behaviour.

Key words: task performance, pro-social behaviour, job autonomy, perceived justice climate, self-concern, other orientation

1. Introduction

Third-sector organisations are known for its service orientation and concern for community. Cooperatives are based on value orientation, depicted by its accepted principles governed by the International Cooperative Alliance. They follow principles to orient their enterprise to be democratic organisations, acting for the economic interest of its members, while having a concern for community. Performance of a cooperative have to be gauged on social responsibility lens along with business performance. Job performance also need to be assessed on these dimensions. A study on antecedents to job performance in the cooperative context, could offer insights for determining the factors that contribute to organizational efficiency.

The duality in cooperatives is possibly best reflected by being portrayed both as an association and an enterprise, catering to both the social and economic orientation; this in effect, has largely attracted the interest of researchers. However, literature of a cooperatives have possibly overlooked the aspect of integration of socio-economic orientation, which is needed to deliver values consistent with the very identity of a cooperative. Researchers in the past have primarily focused on the members' interaction and orientation with the cooperatives themselves, as cooperatives are primarily member-focused organizations.

Cooperatives can be categorised as workers' cooperatives (where members themselves are employees) and non-workers' cooperatives (paid employees are utilized for carrying out the business of co-operatives). In worker's cooperatives, workers have ownership, endowed with decision-making power, which makes them feel more dedicated to their jobs and community. However, in non-worker cooperatives, employees need not necessarily be members, warranting low levels of involvement. In

such situations, value orientation of the enterprises has to be delivered through its paid employees. Ideally, employees in cooperatives are expected to adopt the cooperative's values and show commitment to society, aligning to its accepted principles. Depiction of pro-social work behaviour along with task performance in cooperatives thus becomes contingent on its employees, which needs an inquiry. Hence, the study was taken up among the cooperatives in Kerala to understand the determinants of job performance among paid employees of cooperatives. Cooperatives are governed by the dual objectives of achieving business performance along with member/community service orientation aligned to the principles put forward by International Cooperative Alliance (ICA). Third sector organisations are the backbone of socialistic society due to their dual orientation of social perspective with profit orientation. The outcomes of the research will bring out the alternative model for assessing the job performance in cooperatives and also bring out the antecedents for job performance in cooperative context. This would serve in enhancing knowledge which can guide personnel selection, training and development suited to cooperative context in specific.

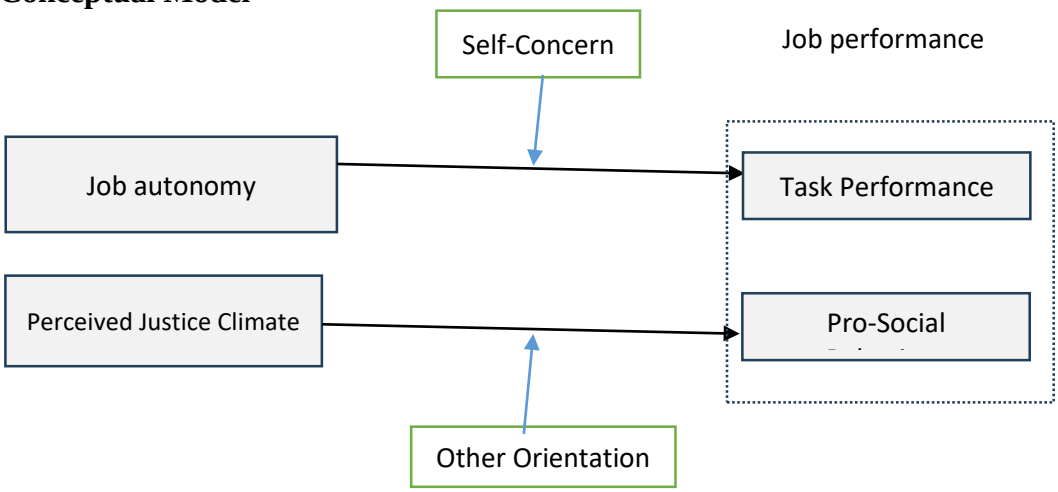
Except in workers' cooperatives, where members themselves are employees, other forms of cooperative organizations deliver services through their paid employees. Being ideologically relevant in the community context is a major formidable challenge faced by cooperatives. While business orientation is required as in the case of any corporate, the task of social orientation required by duality needs attention in case of a cooperative. However, in most cases, the workforce is dependent on employee motivation, which effectively creates fulfillment of job roles. The question is about the delivery of value prepositions as prescribed by the principles of cooperation based on which, a cooperative is supposed to work. In turn, this requires employees to perform extra roles in addition to their job demands. It is also interesting to note that both individual and group factors drive employees to show job performance. Like any organization, a co-operative's success is primarily dependent on how its workers deliver services. Therefore, the study on factors affecting job performance is relevant for cooperative organizations. Importantly, extant research exploring the same has been scarce, especially in developing countries (Sen,2012; Knezovic & Smajic,2022).

2. Theoretical Framework

The study uses SCOOM (Self-Concern and Other-Orientation as moderators) hypothesis(De Dreu, 2006; De Dreu & Nauta, 2009), which states that individual and organizational factors contribute to job performance that is moderated by self-concern (SC) and other orientation (OO). The study explores the delivery of value-based services of the cooperative through the lens of job characteristics theory, equity theory, and prosocial motivation theory. The application of theories is integrated into the frame of the SCOOM hypothesis. The job characteristics theory posits that factors including skill variety, task identity, task significance, autonomy, and feedback are variables leading to motivation, satisfaction, and performance (Hackman, 1980). Equity theory postulates an individual's attitude to fairness in social exchange relationships (Adams, 1963). According to the theory, an employee fairly considered for his job input would be motivated, which could lead to better performance.

Pro-social motivation indicates the other-oriented well-being (Grant & Berg, 2011). Extant research on factors that lead to job performance has been the basis of several studies. Researchers (Muecke & Iseke, 2019) in their meta-analytic study of 319 papers emphasized the effect of job autonomy on job performance through several factors including motivation.

Conceptual Model



The study is based on the conceptual model based on SCOOM hypothesis as depicted in Fig1. In alignment with the duality of orientation of cooperatives, job performance is envisaged as task performance and contextual performance(Oldham & Fried, 2016; Sørlie et al., 2022). While task performance describes the aptitude of the employees to deliver the job description, contextual performance is all about extra-role behaviours beyond the job description, like prosocial behaviours shown by employees. The prosocial behaviour in this context would be in alignment with the cooperative principle of 'concern for community'.

As envisaged by the SCOOM (SC and OO as moderators) hypothesis, individual-level and group-level variables have a bearing on job performance in organizational settings (De Dreu, 2006; De Dreu & Nauta, 2009). Individual-level variables that influence job performance are moderated by SC, whereas group-level variables are moderated by OC. Individual variables (job autonomy) and group-level variables (perceived justice climate) could affect job performance of an employee which is moderated by SC and OO. An employee high in SC in the presence of job autonomy could demonstrate high task performance. Also, those high in OO could reflect high prosocial behaviour, if they perceive a positive justice climate.

3. Methodology

The study was carried out among dairy cooperatives in Kerala. Employees of dairy cooperatives form the population of the study. Primary data is collected from the respondents using a questionnaire. 671 employees are interviewed based on adapted questions/statements measuring on Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Moderation analysis is carried out using statistical software Process Macro for SPSS to arrive at the results (Hayes, 2013). The paper is based on two aspects among the workers in a cooperative; ie individual aspect and group aspect (while working as team in an organisation). The study validates the SCOOM hypothesis, which proposes two hypotheses based on the individual aspect and group aspect moderated by SCand OO.

Job Performance

Job/Work performance in an occupational context measures the outcomes of an individual performing a job (Koopmans et al., 2012). This measures behaviours that an employee would depict (than the outputs) in their jobs. Departing from the traditional outlook of job performance being considered as a single construct, underlying structures that encompass job performance have been identified as task performance (proficiency in delivering the tasks assigned with efficiency,

(Campbell, 1990)); contextual performance (behaviours that support organisational, social, and psychological environment, (Borman and Motowidlo, 1993); adaptive performance measures an individual's ability to adapt to changes, (Griffin et al., 2007); and counterproductive work behaviour implies behaviours that are non-beneficial or harmful organization, (Rotundo and Sackett, 2002). For the study, job performance encompasses task and contextual performance. Since contextual performance is well defined in the cooperative context, it has been replaced by pro-social behaviour.

Job autonomy

It refers to the individual discretion and control an individual experiences while performing jobs/tasks (Klien, 1991). While job autonomy is significant in organisations, there is no consensus on how much discretion can be given to an employee for deciding the pace and process of performing the job. Also, discretion in terms of delegation of responsibilities could be offered in a limited sense and employees need to work under the frame of organisational responsibilities. Task autonomy implying granting an individual discretion and control on how to carry out the tasks is being measured as part of the study. The study conceives job autonomy as the freedom given by the organization to decide the pace and process of achieving a task that is assigned as part of the job role.

The effect of job autonomy on performance is widely researched. Job autonomy was propounded by the job characteristic model defined by Hackman and Oldham (1976), It has been conceived by various scholars including Breaugh (1985), Morgeson and Humphrey (2006), Kubicek et al. (2017), and (Zhou, 2020) concludes that it could be the organizational autonomy providing individual employees with freedom to work.

H1: Job autonomy leads to high task performance.

Perceived Justice Climate

Perceived justice climate refers to group experiences of fairness that could influence the individual perceptions of justice that may originate from past work. Justice climate affects individual perceptions of fairness leading to work outcomes.(Rupp & Thornton, 2014).

Researches show that meeting increasing demands of meeting organizational obligations with limited human resources warrants personal commitment from employees to do extra-role behaviours. This element is measured as pro-social behaviours wherein, the employee depicts interest in serving the society that does not necessarily be defined in their job roles. In the cooperative context, though pro-social behaviour has not been specified a job role, appears in the accepted set of principles. Thus, study posits that pro-social behaviour in cooperatives can be treated as an element of job performance and considered a mandatory extra-role performance. While considering antecedents that promote pro-social behaviours, an employee's perception of the fairness climate in an organization assumes importance (Pecino et al., 2018). Researchers have observed that the social exchange theory is validated in this context wherein employees with higher perception of fairness/justice in organizations tend to give back to the organization showing higher levels of employee engagement leading to better work performance. Hence the study proposes the hypothesis as

H2: Perceived justice climate (procedural justice) leads to pro-social behaviour

4. Moderation Hypothesis

Self-concern is related to self-related consequences while other orientation concentrates on social cues following higher concern for others (De Dreu & Nauta, 2009). SC and OC are variables that could influence job performance. It would significantly lead to (non) performance given the

situations. In a study conducted among nurses where they were subjected to witnessing negative workplace behaviours, it was found that individuals with high other orientation experienced low emotional exhaustion and thereby maintained better work performance than those with higher SC who experienced high emotional exhaustion in a similar situation (Baranik et.al., 2021). Whereas, (Dreu & Nauta, 2009) found that SC and other orientation are independent where individual high in SC could lead to focus on personal outcomes that may cause lesser collaborative work behaviours and job performance. Interestingly (Dreu & Nauta, 2009) viewed SC and other orientation as independent constructs that could influence task performance and prosocial behaviour differently. The present study proposes that concern and other orientation may coexist in an individual as proposed by (Gobel & Miyamoto, 2024); in which they argue that even though trade-off between SC (behaviours promoting interests of oneself) and other orientation (behaviours that promote other's interests) could occur even if they are considered opposite or exclusive (Rucker et al., 2018). The study found that cultural differences can influence the occurrence of such trade-offs, where the study in Western contexts like USA revealed exclusivity of the concepts while co-existence was found in East Asian contexts.

H3: Employees high in SC in the presence of job autonomy could demonstrate high task performance.

H4: Employees high in other orientation could reflect high prosocial behaviour, if they perceive positive justice climate

Measures:
Job performance has been conceived as task performance and pro-social behaviour. Task performance is measured by 4 items, pro-social behaviour by 18 items, job autonomy by 4 items, organisational justice climate by 3 items, and SC and other orientation by 3 items each. The respondents were asked to rate on a Likert seven-point rating scale of 1 "strongly disagree" to 7 "strongly agree" depicting various levels of agreement with the statements.

Results
The research model was subjected to empirical validation through the application of moderation analysis. Before conducting the moderation analysis, the key assumptions were tested, such as the construct validity and reliability by confirmatory factor analysis. This was followed by moderation analysis to examine the empirical relationships proposed in the study. The moderation models were tested using SPSS Process Macro, version 24.

Confirmatory Factor Analysis
Confirmatory Factor Analysis is a method of testing the extent to which the observed variables represent the latent constructs and it provides for a confirmatory test of the measurement model. "A measurement theory specifies how the measured variables logically and systematically represent the constructs involved in a theoretical model. In other words, measurement theory specifies a series of relationships that suggest how measured variables represent a latent construct that is not measured directly" (Hair, 2014, p. 603). The various objectives of confirmatory factor analysis consist of testing the construct validity including convergent and discriminant validity, construct reliability and testing the measurement model using various fit indices.

Construct validity and reliability
To ensure construct validity, both convergent validity and discriminant validity were tested. Table 1 illustrates the calculated values of AVE, CR and standardized loadings of items. All items of the constructs were found to have standardized regression loadings of greater than 0.50; the AVE of all constructs were greater than the threshold limit of 0.5 ranging from 0.683 for job autonomy to 0.829

for perceived justice climate and self-concern; and CR values are higher than the cut-off value of 0.70 and the highest value was obtained for pro-social behaviour and lowest was for the construct job autonomy as recommended by Anderson & Gerbing, (1988) and Hair, (2014) indicating acceptable level of convergent validity.

Table 1. Convergent validity and construct reliability

Factor	Items	Standardized loadings	CR	AVE
Job Autonomy	JA1	0.780	0.896	0.683
	JA2	0.805		
	JA3	0.860		
	JA4	0.857		
Perceived justice climate	PJC3	0.926	0.936	0.829
	PJC2	0.914		
	PJC1	0.891		
Task Performance	TP1	0.889	0.939	0.795
	TP2	0.901		
	TP3	0.898		
	TP4	0.878		
Pro-social behaviour	PSB-1	0.874	0.981	0.742
	PSB-2	0.856		
	PSB-3	0.883		
	PSB-4	0.873		
	PSB-5	0.889		
	PSB-6	0.880		
	PSB-7	0.871		
	PSB-8	0.834		
	PSB-9	0.854		
	PSB-10	0.866		
	PSB-11	0.829		
	PSB-12	0.867		
	PSB-13	0.884		
	PSB-14	0.885		
	PSB-15	0.865		
	PSB-16	0.875		
	PSB-17	0.831		
	PSB18	0.781		
Self-concern	SC1	0.855	0.936	0.829
	SC2	0.944		
	SC3	0.930		
Other orientation	OO1	0.850	0.911	0.774
	OO2	0.912		
	OO3	0.876		

Discriminant validity is the is the degree to which two conceptually similar concepts are distinct (Hair, 2014). The discriminant validity of measurement scales was evaluated by comparing the square root of AVE with the inter-construct correlation coefficients. Table 2 shows that the square root of AVE of all constructs as greater than their inter-construct correlation coefficients and hence

discriminant validity is established (Hair, 2014; Hu & Bentler, 1999).

Table 2. Discriminant Validity

	SC	JA	PJC	TP	PSB	OO
SC	**0.911**					
JA	-0.232	**0.826**				
PJC	-0.394	0.598	**0.910**			
TP	-0.392	0.675	0.779	**0.892**		
PSB	-0.370	0.706	0.741	0.861	**0.861**	
OO	-0.025	0.067	0.276	0.085	0.123	**0.880**

Note: The diagonal values in bold are square root of AVE; off-diagonal values are inter-construct correlations

Evaluation of Measurement Model

The measurement model was tested with six constructs with 35 items. Though numerous fit indices were used to examine the different aspects of the model, researchers should report one absolute fit index (GFI, AGFI, RMSEA, SRMR or Ratio of chi-square to degrees of freedom), one incremental fit index (CFI, IFI, TLI or NFI), one badness of fit index (RMEA, SRMR or χ^2/d.f) (Hair, 2014). The recommended threshold value of fit indices viz., GFI, AGFI, CFI, NFI and TLI should be greater than 0.90 and the cut off level of RMSEA and χ^2 /df are less than 0.08 and 5 respectively (Anderson & Gerbing, 1988; Hair, 2014). As depicted in Table 3, all the fit indices surpass their respective boundaries ((χ^2 = 1357.047, df = 545; χ^2/ df. = 2.490; RMSEA = 0.047; CFI = 0.968; TLI = 0.965; and NFI = 0.948) which demonstrates that the model with 10 latent constructs provide good fit to the data under study.

Table 3. Result of the measurement model

Fit indices	Threshold Limit	Value	Interpretation
Chi-square (χ^2)	Low value	1357.047 (DF=545; p= 0.00)	Excellent
Ratio of χ^2 to DF	≤5	2.490	Excellent
Root Mean Square Error of Approximation (RMSEA)	≤0.08	0.047	Excellent
Comparative Fit Index (CFI)	≥0.90	0.968	Excellent
Tucker-Lewis Index (TLI)	≥0.90	0.965	Excellent
Normed Fit Index (NFI)	≥0.90	0.948	Excellent

Tests of moderating effects

The hypotheses of the study were tested using moderation analysis. The conceptual model of the study consists of two moderators, viz., self-concern. The study framed two simple moderation models to test the hypotheses proposed under the study and the results of moderation analysis is presented in this section.

Moderating role of SC on the relationship between job autonomy and task performance

The hypothesis H1 postulated that job autonomy exerts significant effect on task performance and H2 proposed a moderating effect of SC on the direct relationship between job autonomy and task performance such that the effect is strong (weak) for those with at higher (lower) levels of self-concern. The hypotheses were tested using Model#4 of SPSS Process Macro as recommended by Hayes (2014). The results of moderation analysis supported the hypothesis H1 which stated a direct effect of job autonomy on task performance (β=0.5088, SE=0.0278, p<0.001, CI95[0.4542, 0.5635]). Further, the results validated a positive moderating effect of SC on the direct association between job autonomy and task performance (effect= 0.0922, SE=0.0133, p<0.001, CI95[0.0661, 0.1183], and the overall model was also found significant (r^2 = 0.4649, p<0.001). While analyzing the conditional effects, it was found that the effect of job autonomy on task performance was strongest at higher levels of SC (β=0.6975, SE=0.0363, p<0.001, CI95 [0.6261, 0.7688) and the effect was weakest at lower levels of SC (β=0.3202, SE=0.0413, p< 0.001, CI95 [0.2391, 0.4013).

Table 4. Moderating effect of SC on the direct path between job autonomy and Task performance

Predictor	**B**	**SE**	**T**	**P**	**LICI**	**ULCI**
R^2= 0.5376; p=0.000						
Constant	5.7665	0.0315	183.1403	0.000	5.7047	5.8283
Job autonomy (JA)	0.5088	0.0278	18.2822	0.000	0.4542	0.5635
Self-concern	-0.1363	0.0154	-8.8373	0.000	-0.1666	-0.1060
JA x self-concern	0.0922	0.0133	6.9444	0.000	0.0661	0.1183
R-square increase due to interaction(s):						
Interaction	R^2 change	F	Df1	Df2	P	
JA x self-concern	0.0385	48.2243	1.00	667.00	0.000	
Conditional Effect of job autonomy on task performance at various levels of SC						
Levels of Self-concern	**Effect**	**SE**	**T**	**p**	**LLCI**	**ULCI**
-2.0456	0.3202	0.0413	7.7510	0.000	0.2391	0.4013
0.000	0.5088	0.0278	18.2822	0.000	0.4542	0.5635
2.0456	0.6975	0.0363	19.2046	0.000	0.6261	0.7688

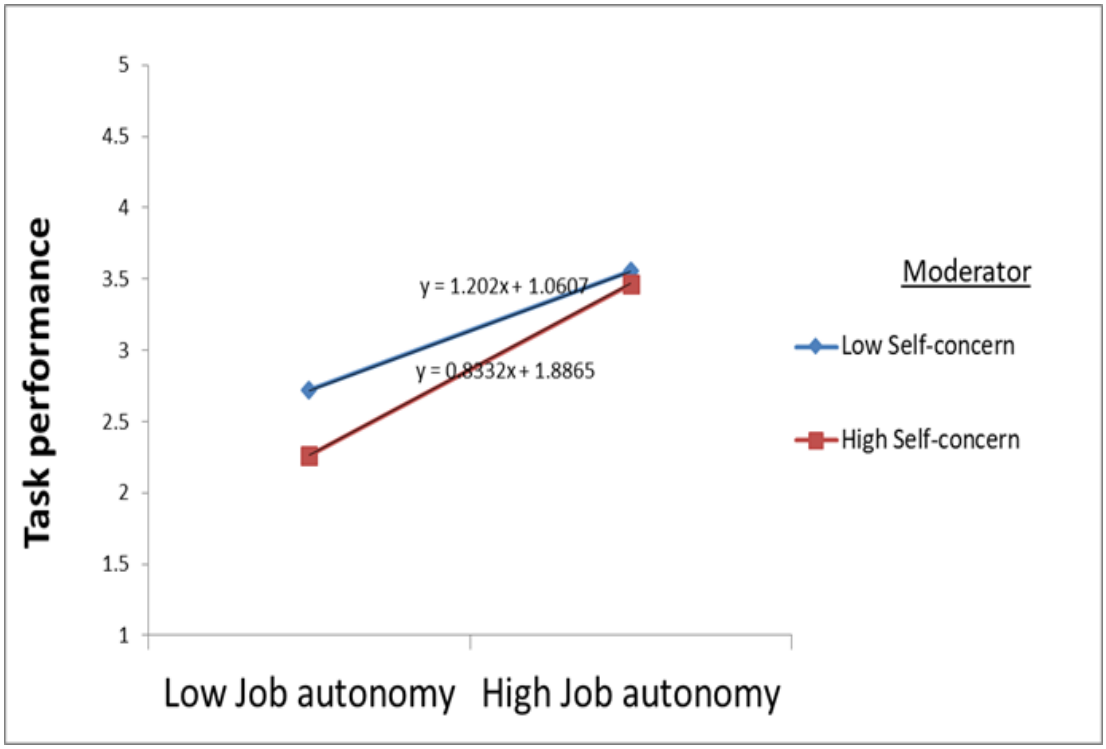


Fig 1. Moderating effect of SC on the direct path between job autonomy and task performance

Moderating effect of other orientation on the relationship between perceived justice climate and pro-social behavior

The Hypothesis H3 proposes that perceived justice climate has a significant effect on pro-social behaviour and H4 posited the moderating effect of other orientation on the direct path between perceived justice climate and pro-social behaviour, such that the positive effect is stronger (weaker) for those who have higher (lower) levels of other orientation. The hypotheses were tested using Model number 1 of SPSS Process Macro. The results empirically validated the Hypothesis H3, validating a direct positive effect of perceived justice climate on pro-social behaviour (β= 0.6756, SE=0.0252, p<0.001, CI95 [0.6260, 0.7251]). The results supported for the overall model (r^2= 0.5245, p<0.001) and the positive moderating effect of other orientation on the relationship between perceived justice climate and pro-social behaviour (β=0.0682, SE=0.0162, p< 0.001, CI95 [0.0365, 0.0999]). Further, the conditional effect at different levels of other orientation indicated the positive effect of perceived justice climate on pro-social behaviour is stronger for those who have reported higher levels of other orientation (β=0.7850, SE=0.0386, p< 0.001, CI95 [0.7093, 0.8607]) when compared with those who have reported lower levels of other orientation (β=0.5661, SE=0.0336, p< 0.001, CI95 [0.5001, 0.6321]) and conditional effect was found to be significant at all levels, thus the hypothesis H4 is supported. The results of moderation analysis and interaction graph is presented in Table 5 and Fig 2.

Table 5. Moderating effect of other orientation on the direct path between perceived justice climate and pro-social behaviour

Predictor	B	SE	T	P	LICI	ULCI
R^2= 0.5376; p=0.000						

Constant	5.5625	0.0269	206.689	0.000	5.5096	5.6153
Perceived justice climate (PJC)	0.6756	0.0252	26.7814	0.000	0.6260	0.7251
Other orientation (OO)	-0.0416	0.0167	-2.4825	0.0133	-0.0744	-0.0087
PJC x OO	0.0682	0.0162	4.2201	0.000	00365	0.0999
R-square increase due to interaction(s):						
Interaction	R^2 change	F	Df1	Df2	P	
PJC x OO	0.0127	17.8093	1.00	667	0.000	
Conditional Effect of perceived justice climate on pro-social behaviour at various levels of other orientation						
Levels of OO	**Effect**	**SE**	**T**	**p**	**LLCI**	**ULCI**
-1.6052	0.5661	0.0336	16.8321	0.0000	0.5001	0.6321
0.000	0.6756	0.0252	26.1814	0.0000	0.6260	0.7251
1.6052	0.7850	0.0386	20.3586	0.0000	0.7093	0.8607

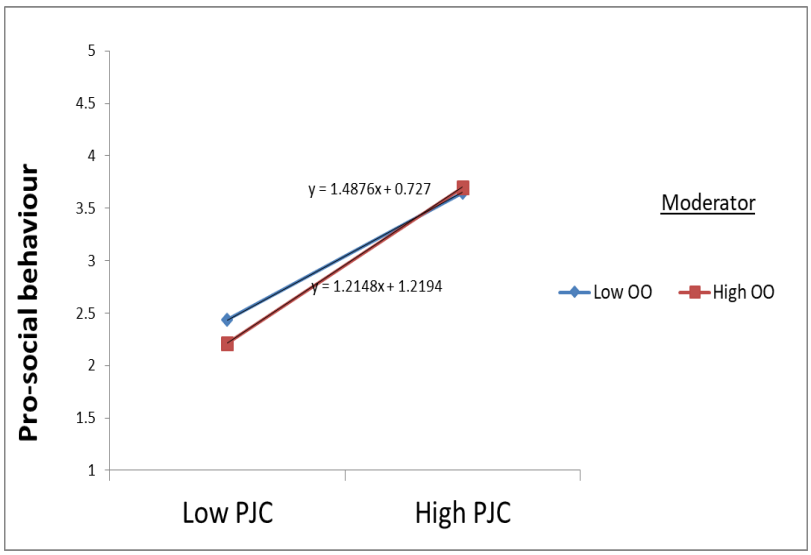


Fig 2: Moderating effect of other orientation on the relationship between perceived justice climate and pro-social behaviour

5. Discussion

From the results of the analysis, the following points were observed. The results supported hypothesis H1 which stated a direct positive effect of job autonomy on task performance. (β=0.5088, $p<0.001$). Autonomy in performing job can boost motivation of the employee and can cause an effect leading to better performance as the employee could be inspired by the incentivization of freedom. The results supports the findings of (Mousa Alriyami et al., 2024), who verified the significant role of job autonomy in resulting task performance of public sector employees.

While analyzing the conditional effects, it was found that the impact of job autonomy on task performance was maximum at elevated levels of SC (β=0.6975, p<0.001) and the impact was minimal at lesser levels of SC (β=0.3202, p< 0.001). SC being high, the positive effect of job autonomy on task performance was found to be high, substantiating the moderation effect. The results provides empirical validation to the SCOOM hypothesis as well as aligns with the results of (De Dreu & Nauta, 2009), who posited that the effect of individual level characteristics like job attributes on job performance is high among the employees with high level of self-concern. SC of an individual motivates to achieve better performance for his benefit. Individuals high in SC would benefit from the autonomy in terms of discretion offered by the organization in performing tasks. However, this happens in the broad framework of the organisational culture where delegation of responsibility in achieving tasks happen. Cooperatives, being democratic organisations have their governance framework encompassing representatives of members. In worker's cooperatives, where members themselves serve as workers, the autonomy in jobs is designed by themselves. The current study is based on dairy cooperatives, where paid employees need not necessarily be members. However, the result is similar for a non-worker cooperative which indicates that job autonomy improves the task performance of the employee who feels a sense of responsibility for being assigned with freedom to do a job. Those employees with an innate orientation to excel in the job (with self-concern) tend to complete the tasks responsibly contributing to job performance.

The results also validated the hypothesis H3, validating a direct positive effect of perceived justice climate on pro-social behaviour (β= 0.6756, p<0.001). Thus, it could be stated that perceived fairness in an organisation boosts the morale of employees and can lead the employees to deliver extra-role performances.

Further, the conditional effect at different levels of other orientation indicated that perceived justice climate positively influences pro-social behaviour and the relation is stronger at elevated levels of other orientation (β=0.7850, p< 0.001) than possessing lesser other orientation (β=0.5661, p< 0.001), supporting hypothesis H4. The findings supports the arguments of (De Dreu & Nauta, 2009), who validated that the effect of justice climate on pro-social behaviour is high at higher levels of other orientation among the employees. This suggests that employees who are high in thinking for the welfare of others apparently exhibit pro-social behaviours in response to perceived fairness and justice in a cooperative. Cooperative contexts are well known for their democratic nature and are oriented towards ensuring justice climate. The results reiterate the above notion and are validated in the dairy cooperative context. Job performance occurs due to individual and collective efforts and perceived fairness promotes cooperative behaviour.

6. Implications

Both hypotheses were tested in the context of cooperatives among the same set of workers. Thus, SCOOM hypothesis is validated in the cooperative setting. This reveals that individuals may possess both SC and OO at varying levels. This finding is supported by Gobel & Miyamoto, (2024) where authors claim that SC and OO can coexist within an individual. Hence, job performance in cooperative context could be treated as positive outcomes of job autonomy and perceived justice climate at higher levels of SC and OO respectively. Hence, it is implied that cooperatives may look for individuals who have balanced SC and OO in their recruitment processes to boost both performance-related outcomes. Also, strategically designing jobs to provide job autonomy to employees can lead to better task performance. Further, pro-social outcomes can be boosted by offering justice climate in the organisation.

7. Conclusion

In the dairy cooperative context in Kerala, it was found that task performance and pro-social behaviour may be positively influenced by job autonomy and perceived justice climate. While SC was found to positively moderate the path of job autonomy to task performance, other orientation positively influenced the perceived justice climate to the pro-social behaviour path. Thus, to boost performance, it is imperative to provide a fair justice climate with sufficient job autonomy that would lead to desired job outcomes like task performance and pro-social behaviour. The study validates SCOOM hypothesis in cooperative context. The paper also suggests that SC and OO can coexist in an individual which may act as boosters to job performance, exposed to the environment of job autonomy and justice climate.

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Application of Corporate Governance Principles for Cooperative Governance

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Abstract

Corporate governance has gained significance in recent years due to the tremendous economic growth and subsequent business scandals that jeopardize investor confidence, social justice, and equality. Alike the corporates, the cooperative sector also witnessed remarkable progress in their reach and diversity of operations. Though cooperatives follow a different set of governing standards than corporations, vital components such as accountability, transparency, responsibility, and fairness are equally applicable to both entities for protecting stakeholders' interests. Cooperatives, like the corporates, have not been immune to the current corporate governance scams. Cooperatives also witnessed malpractices involving huge money belonging to, mainly, the marginalised people. If this catastrophe continues to prevail, undoubtedly, the very essence and noble purpose of cooperatives will be defeated. Improving governance standards for cooperatives is a growing concern and has become a debatable agenda item. Therefore, a study is undertaken to address the governance issues in the cooperative sector and also to examine the scope for applying corporate governance standards to prevent undemocratic practices. The study is based on primary and secondary data. According to the study, political interference, lack of professional management, disregard to cooperative principles, long and consecutive terms of board of directors, inadequate governance measures, and nepotism are the most significant barriers to cooperative growth in Kerala. It is observed that though cooperatives operate on a different philosophy, application of corporate governance practices can curb the malpractices and improve the operational efficiency of cooperatives.

Key Words: Corporate governance, Cooperative governance, Cooperative principles, Stakeholder protection, Regulatory framework, Cooperative sector scams, Transparency, Compliance and Accountability, Political nexus, Restructuring cooperative regulations, Cooperatives and ESG (Environmental, Social and Governance), SWOC and TOWS Matrix for cooperatives.

1. Introduction

Despite inherent constraints, cooperatives have immense potential to emerge as competitive enterprises at the community level. Cooperative governance ascertains roles and responsibilities, states expectations, guarantees accountability, and guides the organization to attain socio-economic and sustainability goals. Good cooperative governance encourages sustainable growth, develops competitive advantage, enhances risk management, and adds to stakeholder value. The responsibility of cooperative governance is entrusted with the board of directors, who have the authority to plan, design, control, and allocate resources. They are responsible to govern the organization through a statutory mechanism of cooperative laws, bylaws, policies, internal controls, systems, processes, and procedures in order to protect the interests of its members. Regaining public trust in the cooperative sector is crucial in these challenging times of cooperative scandals, where resilient governance measures assumes a major role. In this backdrop, an effort is made to analyze the scope of employing corporate governance principles in cooperative systems with an aim to make them socially responsible, self-reliant, and sustainable organizations.

2. Literature Review

A study conducted by Kyazze, Lawrence et.al., (2017), to examine the relationship between cooperative governance and non-financial performance of cooperative societies in Uganda revealed a significant and positive relationship between monitoring rights and social performance. They identified a positive relationship between innovation and social performance and found that cooperative governance was a good predictor of social performance.

The study conducted by Tripathy, et. al., (2021) examined business activities of select PACS of Kerala to provide insight into their governance practices and its relationship with competitiveness. The research concludes that participation, accountability, and transparency are the effective pillars of cooperative governance that leads to improved competitive performance. They opined that good practices of PACS enhance the reputation and stakeholder value of the cooperatives in the long run and also improves their productivity.

Jamaluddin et. al., (2023) found that the four main categories of corporate governance employed in relation to cooperative performance are social or human capital; management, leadership, and tactics; policy or principle compliance; and board characteristics. The relationship between CG and cooperative performance has been found to be conflicting and inconclusive. It is also identified that strong CG results in efficient activity monitoring for cooperatives, which enhances their social and environmental performance in addition to financial success.

Rizki et.al. (2024), conducted a study in Indonesia and found that the principle of responsibility is the most widely implemented principle by the cooperatives, followed by the principle of fairness and equality, and the principle of independence. The findings also demonstrate that majority of the cooperatives operate transparently, allowing all members, administrators, supervisors, and employees to access financial and non-financial information. However, there had been shortfalls in accountability and responsibility; due to lack of clarity in the functioning of the cooperative structure and system.

3. Theoretical Framework

Cooperatives are jointly owned, democratically controlled organizations that are formed volunteering by people to meet the needs of its members. With the motto of "self-help, mutual help, Cooperative's serve the members interests first and foremost, irrespective of the services they provide to wider society.

The major difference between cooperatives and corporates is in the democratic control of the organization. In cooperative institutions, "one member one vote" is the principle; however, voting rights in corporates are based on the number of shares a natural legal person hold in that enterprise. Corporate Governance is the system by which corporate businesses are managed and controlled and where obligations are established between the different parties involved in the organization such as shareholders, board of directors, management, other stakeholders, as well as the rules and procedures for decision-making in these businesses.

In the ever-changing modern business world, the principles of corporate governance are adaptable to cooperatives, as well. However, in cooperative governance, the internal mechanism that direct and control the governance system is administered through the general body meetings, board of directors, supervisory boards and the management.

Co-operative Governance and Corporate Governance

The global trend of economic democracy has propelled the formation of the cooperative movement, that advocates an expansion of decision-making power from a minority of corporate shareholders to a larger majority of public stakeholders. As opposed to public sector companies, the foundation of cooperative system is based on open and voluntary association of individuals, democratic control, economic participation of members, autonomy and cooperation among cooperatives.

Corporate governance has emerged in the 19th century as a response to separation of ownership and control after joint stock companies were established. Since the owners or shareholders of these companies were not involved in the day-to-day operations of the firm, they required assurances that

Cooperative Governance Principles

1. *Voluntary and Open Membership*
2. *Democratic Member Control*
3. *Member Economic Participation*
4. *Autonomy and Independence*
5. *Education, Training and Information*
6. *Cooperation among Cooperatives*
7. *Concern for Community*

Corporate Governance Principles

1. *Transparency*
2. *Accountability*
3. *Fairness in dealings*
4. *Responsibility of the Board*
5. *Equitable Treatment of Shareholders*
6. *Disclosure and Compliance*
7. *Responsiveness to societal needs*

those in control were safeguarding their interests and accurately and transparently disclosing the financial outcome of business operations. Therefore, corporate governance practices were evolved over time with the objective of protecting the interest of shareholders.

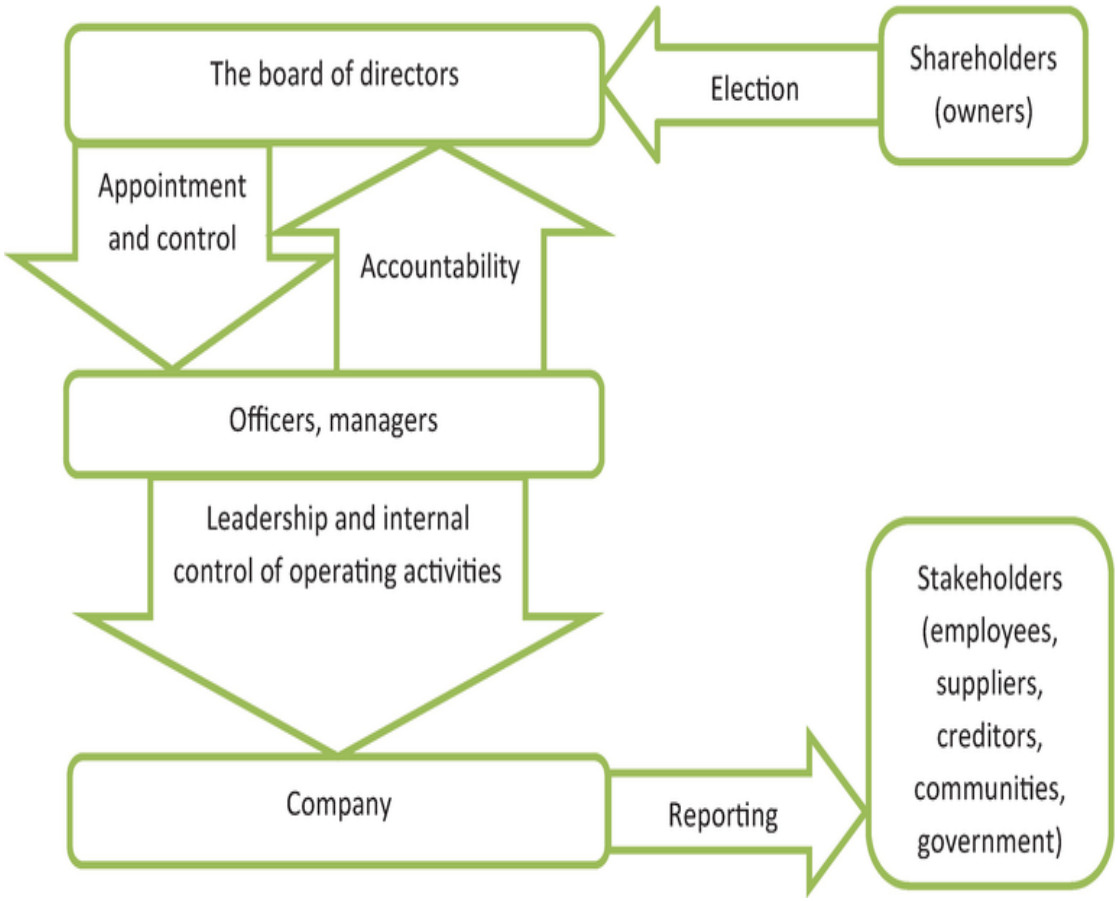
The basis of cooperative ideology is 'each for all and all for each', and on the other hand, the focal point of corporate governance is to protect the shareholder interests. In recent times, there had been a shift in the emphasis and have incorporated the interests of all stakeholders, along with sustainability reporting and corporate social responsibility. The concept of 'social contract' has developed based on the idea that business functions because of public consent; therefore, business has an obligation to responsibly serve the needs of society. In its true spirit, both cooperatives and corporations are responsible for protecting the interests of the stakeholders and environment while making profit for themselves.

The main pillars of good corporate governance are transparency, accountability, predictability, participation, risk management, and control. Accountability is the capacity to call officials to account for their actions; transparency entails low-cost access to relevant information; predictability results primarily from laws and regulations that are clear, known in advance, and uniformly and effectively enforced; and participation is needed to obtain reliable information and to serve as a reality check and watchdog for government action.

Shareholders own the company as they have invested in its shares, and they appoint a Board of

Directors to ensure that the Board can hold management accountable for its fiduciary decisions. Board committees are subsets of the Board that include Board members. Management, selected by the Board, manages the business operations and collaborates with the Board to develop and implement corporate strategies. The shareholders of the firm also appoint statutory auditors, who are responsible for auditing the company's financial statements. Regulators, such as the government and SEBI, monitor firms to ensure that they comply with all applicable laws, rules, and regulations. Stakeholders are those who have an interest in the affairs of the company. An outline of the governance framework is illustrated in Figure 1.

Figure 1. Process of Governance mechanism



A co-operative has a constitution (by-laws) which establishes formally several organs of governance. These are: Annual General Meeting of Members (AGM) which elects a Board of Directors (BOD) or Managing Committee, a Board of Auditors (BOA)or Audit and Supervision Committee. These two organs are independent of each other and directly answerable to the AGM. The BOD appoints a General Manager (GM) or Secretary, who is also supported by functional level employees. The GM is answerable to the BOD. Present organisational design of most of the cooperatives does not follow the basic principles of management and are generally headed by a committee of elected members, who are not necessarily professionals. Such a committee is responsible to take crucial decisions including sanction of loans, investments, interest rate fixation, etc. which require a minimum degree of skill and expertise. Therefore, it is necessary to evolve scientific staffing norms and good governance practices in cooperatives in line with the corporates.

4. Research Methodology

Corporate governance principles are regarded as essential to ensuring that firms prosper and maintain their competitiveness in the global economy. Through the combination of skills and capacities, knowledge production, information transfer, and risk sharing for innovation, cooperatives also have the ability to increase their competitiveness. Such a competitive edge can also help cooperative firms achieve resilient global growth. Present study is undertaken with the following objectives to examine the possibility of applying corporate governance principles in cooperatives to enhance their competitiveness. The study is descriptive and exploratory in nature as it attempts to describe the governance issues in the operations of cooperatives by reviewing its functioning and exploring the possibility of following the corporate governance principles for developing a better governance system.

Objectives of the study:

1. To examine the level of compliance to cooperative governing principles by the cooperatives in Kerala.
2. To identify the strengths and weaknesses of cooperative institutions and to understand the opportunities and challenges encountered by them in Kerala.
3. To compare and examine the possibility of applying corporate governance principles in cooperatives.

Data source and Methodology

The study is largely depending on primary data collected from members of cooperative organizations in Kerala, using a structured questionnaire using 5 point Likert scale. For the purpose of sampling, 10 respondents each were selected from 14 districts of Kerala using convenient sampling method. Criteria for inclusion as a respondent was participation in a cooperative organization, regardless of its kind, size, or geographic coverage. The sample size taken was 140. Secondary data collected from articles, books and websites also form an integral part of the study. Percentage method, SWOC Analysis and TOWS Matrix were used for data analysis. Data for SWOC analysis was collected from various stakeholders and experts in the field of cooperation.

Scope of the study

Effective cooperative governance involves the Board and management pursuing objectives in a transparent, accountable, responsible, and fair manner that benefit both the organization, members, and society at large. This leads to effective monitoring of activities, efficient use of resources, timely conflict resolution, and increased accountability and transparency in operations and communication. As the technical and economic business environment change at a faster pace, organizations must rework their governance practices to tackle challenging issues such as corporate scandals and misappropriation. Failure to prioritize governance measures weakens responsibility and accountability and poses a risk to the organization and society. Applying corporate governance practices would strengthen the cooperative system and boost their credibility and competitiveness. The present study is focused on applying corporate governance practices in cooperatives to strengthen the governance and control mechanisms to detect and prevent scandals and to improve regulatory compliance.

5. Results and Discussions

Demographic Profile of Respondents

The demographic details of the respondents are given in Table 1.1 to 1.3.

Table 1. Age, gender and educational qualification of respondents

Details	Category	Frequency	Percentage
Age	< 25 Years	8	6%
	25- 30 Years	12	9%
	30- 35 Years	34	24%
	35- 40 Years	36	26%
	> 40 Years	60	43%
Gender	Male	82	59%
	Female	58	41%
	Others	0	0%
Educational Qualification	HS	34	24%
	Plus 2	38	27%
	UG	32	23%
	ITI / Diploma	31	22%
	PG	5	4%

Source: Primary data

It is evident from the Table that majority (43%) of the respondents are in the age group pf above 40 years, followed by (26%) the age group 25 to 40 years. This indicates that most of the members have taken their membership long time ago and there are no volumes involved in new membership. In addition, Male category dominates in the membership pattern. Most of the members are either having a senior secondary, higher secondary or undergraduate education. There was no representation of professionals in the samples taken.

Table 2. Occupation, annual income and duration of membership of respondents

Details	**Category**	**Frequency**	**Percentage**
Occupation	Unemployed	22	16%
	Daily Wage	42	30%
	Self Employed	36	26%
	Pvt Employee	28	20%
	Govt Employee	12	9%
Monthly Income	< 10000	36	26%
	10,000 - 15,000	52	37%
	15,000 - 20,000	33	24%
	20,000 - 25,000	18	13%
	> 25,000	1	1%
Years of Membership	Don’t remember	10	7%
	< 5 years	8	6%
	5 - 10 years	18	13%
	10 - 15 years	82	59%
	Above 15 years	22	16%

Source: Primary data

From the Table, it is evident that most of the members are either daily wage employees or self-employed people. We could also note that a considerable number of members belong to unemployed category as they are either home makers, or unemployed due to sickness, old age or under protection of family members, but still hold membership in cooperatives.

Majority of the respondents were under the monthly income group of Rs. 10,000 to 15,000. This is a positive indication of the changing pattern of wage and income distribution and can be considered as a result of the institutional support schemes offered for women empowerment and inclusion.

Most of the members were holding on to membership for at least 10 to 15 years, and there are even cases where members do not remember the year of registration. Interestingly, only a small number of memberships were distributed in recent years, which is a matter of concern for the long-term sustainability of cooperatives. There are even dormant members who do not participate in any of the business activities. Nominal membership is also offered to members who want to avail of services such as gold loans.

Profile and Status of Cooperatives in Kerala

Cooperatives stimulate socioeconomic development through community engagement and extension activities. Primary Agricultural Credit Societies (PACS) make up the majority of cooperative organizations in India and are the driving force behind the cooperative credit movement. Table 2 provides an insight into the categories of cooperatives in Kerala as of 2023.

Table 3. Type and Number of cooperative organizations in Kerala.

Sl. No.	Type of Societies	No.
1	Apex Societies / Banks	11
2	Federal Societies	13
3	Kerala samsthana Pravasi Kshema Vikasana Sahakarana Sangham	1
4	All Kerala IT Dealers Co-operative Society Ltd.	1
5	The North Malabar District Co-op Supply & Marketing Society	1
6	Urban Co-operative Banks	111
7	Primary Consumer Stores	574
8	College Co-operative Stores	190
9	School Co-operative Stores	3,845
10	Marketing & Processing Societies	625
11	Miscellaneous Societies	6,928
	TOTAL	**16,352**
	No. of Societies Working	**12,241**
	No. of Societies Dormant	**3,466**
	No. of Societies Under Liquidation	**645**

Source: *Office of the Registrar of cooperative societies (2023)*

Miscellaneous societies, comprising of 33 categories, include Live Stock Co-operative Societies, Farming Co-operative Societies, Labour Contract Co-operative Societies, Industrial Co-operative Societies, Plantation Co-operative Societies, Canteen Co-operative Societies, Multipurpose Co-operative Societies, Educational Co-operative Societies, to name a few. Out of the total cooperative institutions in Kerala, 28% is dormant and 5% is under liquidation. Subsequently, as of 2023, out of 16,352 cooperative institutions, 33% are non-operational, which poses apprehensions about the future of cooperative sector in Kerala. Kerala Co-operative Deposit Guarantee Scheme (2012) was introduced to provide guarantee for the deposits accepted by the societies, with a view to create confidence among the depositors. The scheme shall apply to all credit societies except, the ones that are dormant or under liquidation.

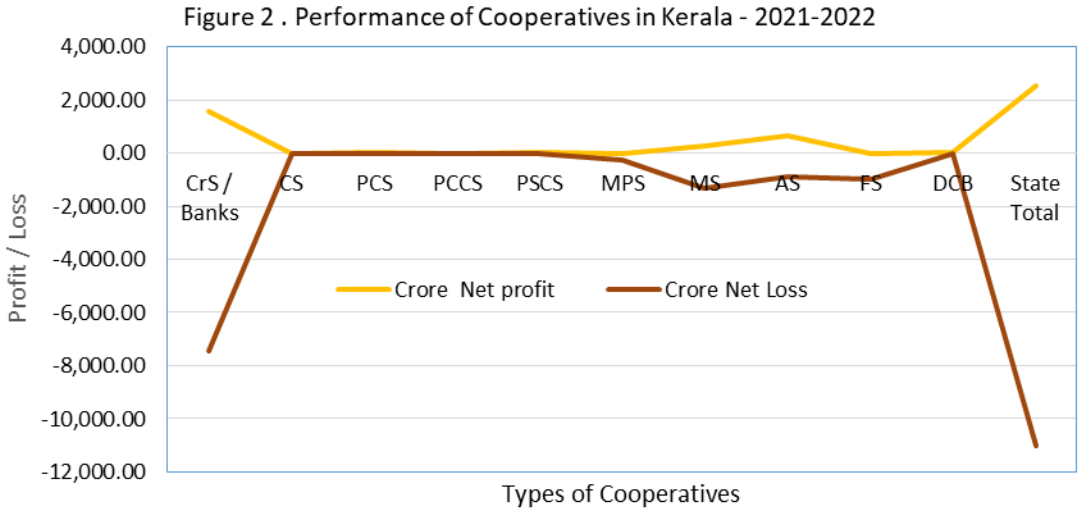
Table 4. Financial Details of Cooperatives in Kerala – 2021- 2022

Amount in Crore				
Types of Banks/Societies	**Net profit**		**Net Loss**	
	No .of Societies	**Amount**	**No. of Societies**	**Amount**
Credit societies / Banks	2,120	1,565.47	1,550	-7,453.60
Consumer societies	2	0.31	12	-40.30
Primary Consumer Stores	41	4.13	103	-43.61
Primary College Consumer Stores	79	0.40	78	-3.38
Primary School Co-op Stores	1,995	2.10	1,491	-7.70
Marketing & processing societies	57	0.65	177	-286.18
Miscellaneous societies	1,846	279.46	2,711	-1,328.81
Apex societies / banks	3	668.97	8	-903.20
Federal societies	1	0.02	9	-967.12
District co-operative banks	1	2.01	-	
STATE TOTAL	**6,145**	**2,523.52**	**6,139**	**-11,033.89**
Net Loss				**8,510.38**

Source: Statistical Report, Office of the Registrar of cooperative societies (2023)

We can observe from Table 3 that out of the 12,241 cooperatives in Kerala, 50% are loss making and 50% are profit making. However, the disparity between the money value of profit and loss is voluminous and 4.4 times higher than the profit figures. The net loss of the cooperative system in the state in 2023 is Rs. 8,510.38 crores.

The major contributors to loss are credit societies / banks to the tune of Rs. 7,453 crores and miscellaneous societies for Rs. 1,329 crores. Apex societies / banks and federal societies also contribute significantly to the loss. Credit societies / banks owns 68% of the loss and miscellaneous societies contribute 12 %, followed by Apex societies / banks and federal societies, 8% and 9% respectively.



Based on the above data we can understand that Kerala's rural economy relies heavily on cooperatives. However, the sector is experiencing a crisis of confidence following the recent Karuvannur Service Cooperative bank scam for the embezzlement of Rs 300 crore, which raised questions about the viability of hundreds of other credit cooperative societies.

Member feedback on the governance of Cooperatives in Kerala

Members of cooperatives were asked to respond to a set of questions based on cooperative principles and governance and the results are presented in the following Tables.

Response on Open and Voluntary membership

The principle asserts that "membership in a cooperative is open to all persons who can reasonably use its services and are willing to accept the responsibilities of membership, regardless of race, religion, gender, or economic circumstances." In principle, membership should be available to anyone who is able and willing to join, assume responsibility as a member, and utilize the organization's resources and protects members from all forms of discrimination. Table 4 presents member responses on how the membership is issued currently in cooperative organizations.

Table 5. Feedback on open and voluntary membership

Statements	**Yes**		**Neutral**		**No**	
Q1) Membership is open to all	18	13%	34	24%	88	**63%**
Q2) Membership form is distributed on demand	20	14%	45	32%	75	**54%**
Q3) I have taken membership with my own felt need and interest	30	21%	52	37%	58	**41%**
Q4) I have taken membership to avail of services	42	30%	35	25%	63	**45%**
Q5) I have taken membership due to compulsion	79	**56%**	28	20%	33	24%
Q6) Membership is my right to participate in decision making	30	21%	53	38%	57	**41%**

Source: Primary data

It is evident from the feedback that the purpose of the first and foremost principle of cooperation is defeated in most of the cooperative organizations. On further investigation, it is revealed that most of the cooperatives are controlled by political parties and the dominating front will always discourage, delay or deny membership to people who have inclination to other parties. The cooperative ideology is basically designed to encourage the free exchange of thoughts and ideas among its members. Therefore, political tolerance must be maintained by cooperatives to operate in an equitable and democratic manner. In today's highly polarized political atmosphere, taking a stance may impede the cooperative's capacity to act in the best interests of all members.

Feedback on Democratic Control and Member participation

Cooperatives are democratic organizations elected by its members, based on a 'one member one vote' policy, who actively engage in strategy development and decision-making. Members hold elected representatives or the Board of Directors, accountable for policy decisions.

Table 6. Member feedback on democratic control and participation

Statements	**Yes**		**Neutral**		**No**	
Q1) I attend General Body Meetings	35	25%	18	13%	87	**62%**
Q2) My vote is based only on political inclination	104	**74%**	24	17%	12	9%
Q3) I can vote for candidates at my will	30	21%	35	25%	75	**54%**
Q4) I analyse the capability of candidate before voting	13	9%	45	32%	82	**59%**
Q5) I can cast vote even without actively participation	89	**64%**	28	20%	23	16%
Q6) I understand the value and purpose of casting my vote	21	15%	56	40%	63	**45%**

Source: Primary data

The above feedback is a clear indication that member participation and democratic control is weakening in cooperative sector of Kerala. While investigating further, it is observed that majority of the members are ignorant about the importance of general body meetings and they attend the annual general body meetings for collecting the promotional gifts offered by the society. When prompted on the election and casting of votes, it was revealed that they have no freedom to cast vote as per their will, instead they have to follow the instructions of the political parties. This further explains that no member is concerned about the capabilities of the candidate and is ignorant about the importance and lasting consequences of taking part in the election process. It was quite interesting to note that even dormant members are allowed to take part in elections.

Feedback on Co-operative education and cooperation among cooperatives

It is essential that everyone involved in cooperation is aware of its specific objectives, principles and procedures. They must collaborate and approach their work with selflessness. Cooperative education is the process of educating members, board of directors, and staff of cooperative organizations about cooperative principles, objectives, processes and bye-laws in order to increase their trust in the cooperative movement and approach. Table 5 highlights the status of cooperative education in Kerala.

Table 7. Member feedback on Cooperative education and cooperation among cooperatives

Statements	Yes		Neutral		No	
Q1) I am aware of the concept of cooperatives	10	7%	25	18%	105	**75%**
Q2) I am aware of my responsibilities as member	12	9%	37	26%	91	**65%**
Q3) My organization educate us on the importance and benefits of cooperatives	30	21%	28	20%	82	**59%**
Q4) My organization conducts training to develop business skills and to control corruption	13	9%	21	15%	106	**76%**
Q5) My organization works in harmony with other cooperatives in the region	12	9%	105	**75%**	23	16%
Q6) My organization communicates the benefits of other types of cooperatives in the region	21	15%	23	16%	96	**69%**

Source: Primary data

It is distressing to note that majority of the members are associating with cooperative organizations without having any knowledge or understanding of the very essence of this movement. It was further distressing to understand that even the decision making board members are not educated about the purpose of its existence. They are considering cooperatives as a vertically integrated system to implement the state and center run welfare schemes and extension activities.

The study also revealed that there is no much cooperation between the cooperatives and most of them are working as independent entities. However, it is worthwhile to note that few members of the cooperative banks have mentioned that before the merger of district cooperative banks with state banks (Kerala Bank), there were better dependency and cooperation. In addition, there is no mutual promotion of the services or benefits of different types of cooperatives in the same region.

Feedback on Concern for Society

While all cooperatives prioritize their internal communities, they also care about the local communities. For example, in order to promote community sustainability, cooperatives procure agricultural produce from local farmers and sell through their outlets. Even though the Co-op is not a nonprofit organization, their emphasis includes policies that demonstrate concern and dedication to the community. Cooperative outreach and education initiatives are influenced by this innate care, and range from direct service to monetary or in-kind contributions. Cooperatives have a social responsibility to cater to the needs of the community to ensure the social, cultural, environmental and economic development to foster social justice and equality. Members were asked a series of questions, the answers of which are shown in Table 6.

Table 8. Member feedback on Cooperative education and cooperation among cooperatives

Statements	Yes		Neutral		No	
Q1) My organization undertakes schemes to help society economically	74	**53%**	21	15%	45	32%
Q2) My organization undertakes schemes to help society socially	76	**54%**	18	13%	46	33%
Q3) My organization undertakes schemes to help society culturally	80	**57%**	12	9%	48	34%
Q4) My organization undertakes schemes to protect environment	55	39%	24	17%	61	**44%**
Q5) My organization believes in sustainable development	12	9%	42	30%	86	**61%**
Q6) My organization offers community development programs	21	15%	96	**69%**	27	19%

Source: Primary data

The above table answers the most crucial question: what is the relevance of cooperatives in the future, and, despite their shortcomings, why should we uphold these organizations? Most members believed that their cooperatives are essential to their lives in the social, cultural, and economic domains. In their limited knowledge and point of view, cooperatives offer a helping hand at times of their need. Cooperatives offers community development schemes such as encouraging the meritorious students, offer educational tools, organize 'special markets' during festive seasons, promote cultural activities and also take part in 'green' initiatives. They provide all of their basic needs through a variety of cooperative organizations, including consumer cooperatives, producer cooperatives, workers' cooperatives, and multi-purpose cooperatives, to name a few. This highlights the importance of cooperatives in Kerala.

6. SWOC Analysis of Cooperatives in Kerala

A S.W.O.C. (Strengths, Weaknesses, Opportunities, and Challenges) analysis is conducted to determine the current state of affairs of the cooperative environment in Kerala. This analysis can help the cooperatives to focus on what makes it strong, position itself to reduce weakness, and potentially capitalize on unseen opportunities. SWOC analysis is commonly used to scan the firm's business environment.

Table 7. Strengths and Weaknesses of Cooperatives in Kerala

Strengths of Cooperatives	**Weaknesses of Cooperatives**
S1 Democracy and independence	W1 Lack of professional management
S2 Local knowledge and accessibility	W2 Unethical political interference
S3 Economic, social and environmental impact	W3 Corruption and nepotism
S4 Financial inclusion and empowerment	W4 Lack of technical up gradation
S5 Government patronage	W5 Lack of cooperative vision
Opportunities of Cooperatives	**Challenges of Cooperatives**
O1 New avenues for expansion such as renewable energy, healthcare and housing.	C1 Competition from private enterprises with strong digital networking platforms
O2 Agricultural reforms and innovations in supply chain management, sustainable farming	C2 Loss of credibility and confidence due to corruption and over politicization.
O3 Govt supported schemes for rural entrepreneurship and skill development	C3 Lack of member participation, networking and collaborations
O4 Promotion of digitalization, financial inclusion and rural women empowerment	C4 Duality of control – RBI for banking and State for administration.
O5 Accessibility of global market and demand for eco-friendly products and services	C5 Lack of strategic planning and expertise in investment decisions

Source: Primary data

In order to build a roadmap for the future, SWOC analysis will help the cooperatives to evaluate its position in the competitive market and ascertain what has to be done for further strategic planning. The two primary components of a SWOC analysis are the external and internal factors. 'Strengths' and 'weaknesses' are regarded internal, whilst 'opportunities' and 'challenges' are external.

While preserving the 'strengths' and capitalizing on the 'opportunities', the focus must be on minimizing the 'weaknesses' and managing the 'challenges'. The crucial challenge lies in cash management, as the majority of frauds reported in societies are the result of funds being misappropriated. Since most of the cooperatives are not computerized and are not run by trained staff, there is a great risk of financial misappropriation and embezzlement. In reply to a query raised in the state assembly (2022), Kerala Cooperation Minister V N Vasavan made the revelation that in the last six years as many as 399 cooperative banks and societies have been involved in scams in Kerala and Thrissur district tops the list with 66 cooperative institutions being allegedly involved.

7. TOWS Matrix

Tows Matrix is used in this study to help cooperatives not only to identify but also to find effective strategies for reducing challenges and taking advantage of opportunities. This also equips them with the insight necessary for exploiting their individual strengths and removing weaknesses. An examination of strengths and weaknesses precedes the creation of the TOWS Matrix, which provides a clear understanding and aids in the adoption of long-term strategies.

Table 8. Strategies based on Strengths, Weaknesses and Opportunities of Cooperatives

	STRENGTHS – SO Strategies	**WEAKNESSES – WO Strategies**
OPPORTUNITIES	S1-O1. Cooperatives can expand into non-traditional areas such as renewable energy, healthcare, and housing, utilizing the govt. sponsored training and upskilling programs.	W1-O1. Utilizing Cooperative Training Institutes and govt. supported upskilling programs to produce professional managers. Recruitment through Public Service Commission.
	S2-O2. Cooperatives can play a vital role in capitalizing on agricultural reforms by improving supply chain management, increasing access to markets, and promoting organic and sustainable farming.	W2-O2. Progress of cooperatives will be hampered by excessive political interventions. Management and Board must act according to cooperative ideology to benefit from agricultural reforms
	S3-O3. Cooperatives can drive rural entrepreneurship by providing a platform for skill development, innovation, and market access and can positively impact sustainability.	W3-O3. Responsible Audit committees, well defined SOP's, Compliance Committee, Internal control and member engagement can control unethical business practices and nepotism
	S4-O4. Implementing digital platforms, data analytics, and online marketplaces can improve efficiency, increase market reach, reduce operational costs and can improve financial and technological inclusion..	W4-O4. To compete in the digital world, cooperatives must take initiative to introduce ICT enabled techniques to improve transparency and efficiency in operations
	S5-O5. Government aid and support would help them sustain and explore new national and global markets especially in sectors like dairy, handicrafts, tourism, and textiles.	W5-O5. Through vertical and horizontal linkages and integration, market networking can be improved with a vision, mission, and strategies.

SO (Strengths-Opportunities): Strategies that leverage the strengths of cooperatives to take advantage of emerging opportunities, like expanding into new markets or sectors.

WO (Weaknesses-Opportunities): Strategies to address weaknesses by capitalizing on opportunities, such as using technology to improve inefficiencies.

Effective use of TOWS matrix demands not only identifying strategies but also implementing them into practice and continuously evaluating them to adjust to changing environments. This strategic plan enables cooperatives to integrate their internal competencies with external market forces, resulting in long-term growth and resilience. Based on the nature and type of business transacted, each cooperative can develop strategies to suit their special circumstances. While developing the above strategies, the general strengths and weaknesses of the system and not specific to a particular type of cooperative. This is a good way to take advantage of the democratic management system to create alternative strategies that might not otherwise be considered. It forces Board of Directors and Management to formulate growth plans and retrenchment strategies in a cooperative way than diverting to nepotism and unethical practices.

Table 9. Strategies based on Strengths, Weaknesses and Challenges of Cooperatives in Kerala

	STRENGTHS – SC Strategies	WEAKNESSES – WC Strategies
CHALLENGES	S1-C1. Reduce input costs and increase market power to remain competitive against private firms. Democratic leadership and independent decision making capability can reduce response time.	W1-C1. Skill development programs to improve management skills and reduce dependence on government. Embrace technology and digitalization to improve competency
	S2 - C2. Utilize cooperative structure and local expertise to manage difficult regulatory complexities. Engage with local authorities to comply with rules and regulations. Increase reach and accessibility to improve stakeholder engagement.	W2-C2. Focus on governance reforms to reduce political interference and enhance efficiency. Internal governance reforms can minimise political interference and can improve market competency.
	S3 - C3. Cooperate with other cooperatives to improve forward and backward linkages. Vertical and horizontal integration of state run schemes will help improve economic, social and environmental sustainability.	W3-C4. Duality of control restricts autonomy. Improved governance, transparency, disclosure, fairness and compliance would enhance trust and member confidence
	S4 - C4. Digital and financial inclusion, combined with social empowerment, will help to increase member engagement. This, in turn, can prevent irregularities and serves as an internal control.	W4-C3. Develop policies to integrate various state run welfare schemes. Member education and cooperation among cooperatives will improve networking and reduce inequalities.
	S5 - C5. Leverage government support to build resilience against climate change. Government funding can be used to adopt sustainable practices and climate-resilient technologies.	W5-C5. Cooperatives can serve as grassroots level ambassadors to promote environmental, social, and governance (ESG) goals. A strong cooperative vision can lead to positive transformation.

SC (Strengths-Challenges): Strategies that use existing strengths to mitigate the challenges faced by cooperatives, such as climate change or competition from the private sector.

WC (Weaknesses-Challenges): Defensive strategies aimed at minimizing weaknesses to avoid external threats, like political interference or financial challenges.

SO strategies use strengths to maximize opportunities and SC strategies use strengths to minimize challenges and threats. WO strategies minimize weaknesses by taking advantage of opportunities, while WC strategies minimize weaknesses and avoid challenges.

8. Linkage of corporate governance principles for cooperative governance

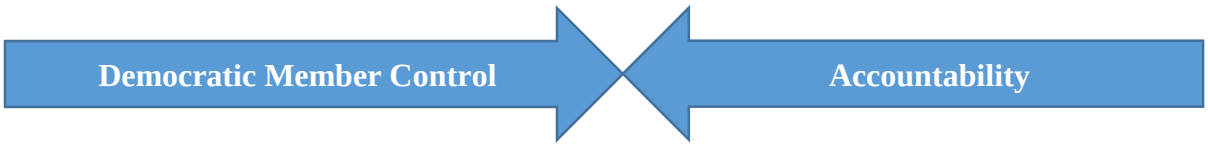
Application and linkage between the principles of cooperation and concepts of corporate governance is discussed in the light of observations made from primary and secondary sources of data.

A. The open and voluntary membership principle of cooperatives and the concept of transparency in corporate governance are mutually reinforcing. While 'open membership' allows for a diverse and

engaged membership base that benefits from and supports transparent business practices, 'transparency' ensures that all members have access to critical information and can participate meaningfully in the decision making process.

It has been observed that membership is not open in most of the cooperatives and is offered mainly to the ruling parties prospective supporters. As a result, most of the policy decisions are taken unanimously without any discussions or strategic plan. Lack of opposition, as well as successive and monopolistic rule by political parties, geared up the path for noncompliance and misappropriation in cooperatives. A few recent examples of this phenomenon include the Chittur Cooperative Bank scam (2017), the Kalpetta Cooperative Bank scam (2021), and the Karuvannur Cooperative Bank scam (2023).
Therefore, it is imperative that transparency in membership and communication of information is essential for protecting the interests of cooperative stakeholders and the movement itself. Based on the survey, the common suggestion evolved was to offer membership on line (digitally) through organization website, incorporating the basic eligibility criteria. In the event an application is rejected, that has to be communicated within a stipulated time period, citing reasons for rejection. This method can enhance transparency, improve member engagement and create an internal control mechanism.

B. The second principle, 'democratic control' means every member has a say in how decisions are made in the organization. In a cooperative, this often means that each member has one vote and decisions are taken through democratic procedures. In corporate governance, accountability means that managers and executives have to answer to the stakeholders for their decisions and actions.



The survey revealed that due to over politicization, democratic control is lost in most of the cooperatives. The controversy pertaining to the state government's move in 2017 to dissolve the elected managing body of the Indian Coffee House (ICH), citing claims of financial embezzlement and nepotism, sparked severe concerns among cooperatives. The approach has been interpreted as a direct infringement on the democratic nature of a cooperative with the aim of governing the society.

It has been noted that cooperative elections are held on a general basis, with no geographical distinction. In such a case, members are forced to elect candidates even without any clue about their capabilities. The norm for voting is merely the names provided by their political party. Therefore, it has been recommended that in order to improve accountability and responsibility among members and the elected body, it would be better to have separate divisions, like in the panchayats, based on the geographic location of members. Such an attempt would help for better connection and communication and will encourage member participation. The present law regarding term duration is that no person may serve as a director of a society for more than two consecutive terms or a total of six years. To increase accountability, it is recommended that candidates serve only one term and be eligible for reelection following a one-term break.

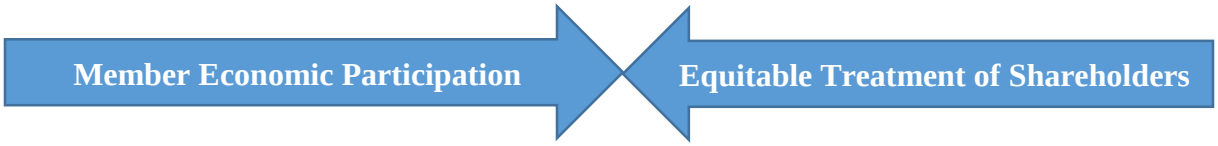
In corporates, the accountability and responsibility are clearly defined and Board committees are formed in areas where special focus and expertise are required, such as, internal audit, risk management, etc. They derive authority from the powers vested in them by law or regulation or delegated to them by the board. There are 5 mandatory board level committees – audit committee, nomination and remuneration committee, stakeholders' relationship committee, risk management

committee and corporate social responsibility committee. Each committee has well defined responsibilities and they act as check points to prevent corporate scams and manipulations.

However, in case of cooperatives, clarity in accountability and responsibility is not well defined. Though the decisions are technically taken by the Board, in the event of an allegation, administrative staff will be made responsible. There are also incidents of misappropriation by staff that go unnoticed by the board. The reason being most of the societies do not carry out reconciliation of their books regularly and do not generate any MIS reports. In certain cases, the board relies on the incomplete and manipulated reports submitted and are totally unaware of the reality until it gets reported at the time of the audit. Ever since the Department of Cooperative Audit started to carry out audits, there has been a slow and steady transformation, and the cooperatives are realising the importance of maintaining proper books of accounts and reports.

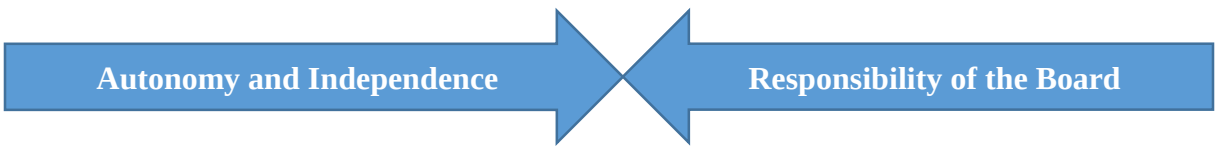
Therefore, similar to corporate governance, responsible committees are to be formed in Kerala to conduct business in the most efficient, democratic and cooperative way. To quote a similar case, Karnataka State Cooperative Act has laid out provisions to report misappropriation of funds and also to allocate responsibility and accountability on the Auditors to disclose in the financial statements in their Audit report. It is the responsibility of the Auditor to request a detailed enquiry into the event to fix the responsibility. Auditor is also responsible to oversee the functioning of the administrative Board and various sub committees of the society to identify and prevent violations of the cooperative laws and institutional bye-law.

C. The concept of third cooperative principle "member economic participation" refers to the active involvement of members in the economic activities of the organization. Equitable treatment of shareholders is a corporate governance principle that guarantees that all shareholders receive equitable treatment in the company.



Member engagement is essential for any organization and it refers to the level of contact, participation, and dedication that members have to the organization they belong to. High involvement usually leads to stronger connections, improved relationships, and better overall results for both individuals and the enterprise. As per corporate governance principle, member engagement is possible when there is equitable treatment of its shareholders. Likewise, in cooperatives member recognition, member education on cooperative ideology, member inclusion and empowerment would positively influence member participation.

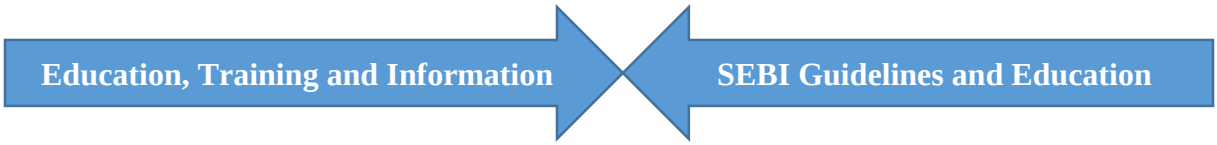
D. The cooperative's capacity to take decisions without undue intervention from external parties is the next principle. Independence refers to the state of being an independent entity, where decisions are made collectively by the members, and the cooperative is accountable to them rather than to external parties.



The board of directors plays a crucial role in corporate governance, responsible for overseeing the

organization's management, ensuring accountability, and setting strategic direction. For it to be possible for board to successfully manage a firm and carry out its fiduciary duties, autonomy and independence are fundamental requisites. Board must have the capacity to act independently, which guarantees that decisions are made with the stakeholders' best interests in mind.
Striking the right balance between autonomy and independence can be challenging, especially when cooperatives interact with stakeholders like government or other funding agencies. However, staying true to these principles ensures that cooperatives continue to serve their members effectively and operate in a way that aligns with their foundational values.

E. Cooperatives offer education and training to members, board of directors, selected representatives, management and staff, enabling them to actively contribute to cooperative development. Information on the essence, nature and benefits of co-operatives is offered to community in order to promote the success and growth of this vital movement. Cooperatives have a well settled institutional framework in India. The National Cooperative Union of India (NCUI), the apex organisation of the cooperatives has a representation of 242 cooperative organisational members and has been working in 43 cooperative education field projects.



Educating shareholders about corporate governance is more than just increasing their knowledge; it is also about cultivating a more inclusive, accountable, and engaged shareholder base. Securities Exchange Board of India (SEBI) and stock exchanges in India are educating members about their rights and responsibilities to improve transparency and disclosure of information on company affairs. This would help protect the interests of the shareholders as well as make the Board and management accountable.

Cooperative education has the potential to considerably reduce scandals by offering members and organizations with the knowledge and skills required to recognize, prevent, and respond to fraudulent practices. By investing in education focused on cooperative principles, it can help prevent corruption, and thereby, cooperatives can better protect their members' interest, reduce the incidence of fraud, and build a more resilient and informed community. Increased member awareness on the democratic power they wield should at least partially address the issue. A united and resolute action by the members can help oust the corrupt management and bring in transparency and accountability.

F. The seventh principle highlights that cooperatives should perform in a way that helps the society at large in addition to their members. It further affirms that cooperatives must stay committed to their fundamental values in the process of creating a more just, sustainable, and equitable society.

On the other hand, corporate governance emphasizes ESG (Environmental, Social, and Governance), which is a framework used to appraise a company's sustainability and ethical impact. While 'Environmental' focuses on the efforts taken by a corporate to manage its carbon footprint, including climate change, resource utilization, and pollution, 'Social' reviews the public relations of a company and their interactions with employees, customers, and communities in areas such as HR practices, human rights, and community engagement. 'Governance' assures that a company is ethically responsibly managed to maximize shareholder value while safeguarding stakeholder interests. Governance scrutinize the quality of Board and management, including shareholder rights, executive compensation, diversity on the board, and corporate social responsibility.

Like in companies, ESG practices enable cooperatives to successfully manage risks and challenges, thereby contributing to long-term viability, economic equality, and social empowerment. Credibility of cooperatives can be enhanced as responsible and ethical companies, appealing members who value sustainability and social responsibility. Cooperative principles naturally correspond with ESG criteria, making it easy for them to incorporate these practices into operations and culture. ESG principles enhance cooperative ideology by emphasizing commitment to sustainable, fair, and ethical operations. Cooperatives that embrace ESG can increase their impact, strengthen governance, and better serve their members and communities.

G. Timely disclosure of financial and operational information of cooperatives develops trust among members. Transparency ensures that members are informed about the cooperative's performance, decisions and progress. In order to enhance credibility and member confidence, cooperatives should implement best practices for both disclosure and compliance, comprising regular financial reporting, adherence to governance standards, and compliance with cooperative ideology, laws, and individual bylaws. A culture of transparency and ethical behavior can be inculcated by educating members and staff about the importance of disclosure and compliance.

9. Limitations and Further Scope for Research

The availability of literature connecting corporate governance and cooperative governance is very limited. In addition, cooperatives are characterized by certain features that are not directly comparable with the corporate philosophy. Therefore, the major emphasis is given to examine how the governance practices can be applied in line with the corporates, while sticking onto the basic principles that make cooperatives unique. The adherence to cooperative principles by cooperatives in Kerala is based on responses from selected members and hence, cannot be generalized. The study has taken cooperatives as whole and not based on the specific nature of each cooperative. A detailed study can be undertaken with data from additional sources and with exclusive coverage. Many promising areas for future research has been identified during this study. The research has furnished many new insights into the working of different types of cooperative organizations and their unique challenges and opportunities. Therefore, there is scope for conducting research based on each type of cooperative and their specific operations. In addition, further research is essential to bring about governance changes in cooperative structure and regulations to meet the needs of a much advanced tech-based society.

10. Conclusion

Empowering society and fostering trust in cooperative communities through governance structures ensures sustainable economic development and global competitiveness in an ethical, equitable, and democratic way. Cooperatives in Kerala are going through a challenging phase as an aftermath of various cooperative scams that shook the confidence of their members and the cooperative system itself. The failure of the authorities or auditors to detect the irregularities in a timely manner is even more concerning. The study revealed that cooperatives play a vital role and are an integral part of the Kerala economy. There is a growing concern among members that most of the cooperatives are not working in compliance with cooperative principles, and this would put the future of these unique organizations in danger. Major obstacles for growth, as identified, are excessive political interference

and control, lack of professional expertise of board and staff, poor member participation, lack of cooperative education, lack of linkages and integration, lack of a tech-based operational system or lack of expertise to explore the possibilities of digitalization, and absence of transparency, accountability, and disclosure. While comparing the corporate governance practices, it is observed that most of these practices are essential and applicable in cooperatives to pave the way for a prospective future. Though a cooperative governance system is in existence, authorities must take decisive steps to bring stability to cooperatives through the execution of good governance practices, complying with cooperative philosophy. The conflict of dual regulatory control between RBI and the States in the case of credit cooperatives can be resolved by assigning RBI additional administrative powers through appropriate legislative amendments. Meanwhile, state governments can concentrate on the management and regulatory compliance of other types of cooperative organizations. It is recommended that the government and the regulatory agencies involved exercise their powers to protect the interests of the stakeholders and, at the same time, offer cooperative organizations a level playing platform to enable them to compete in the dynamic business environment.

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New Generation Cooperatives for Sustainable Social Care

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Abstract

Cooperatives safeguard socio-economic growth by encouraging the community towards agricultural, industrial and service sector related opportunities. In spite of certain hindrances, cooperatives have enormous prospects to expand people oriented ambitious business transactions. The survival of cooperative units rely on various factors like accountability, transparency, mutual trust, predictability and governance.

In this context this study has focused on objectives namely, examining the role of cooperatives toward attaining Sustainable Development Goals (SDGs), determining the factors responsible for achievements of cooperatives and identifying new avenues of operation with respect to dynamic requirements of the community

This study has deduced results showing the three phase approach of cooperatives in terms /of economic progress through employment generation, social justice via inclusive growth and collective progress through application of democratic principles in day to day working. The outcome of this study contributes by providing suggestions for achieving sustainable development goals. Some new areas have been explored like health care, elderly care etc. that could be incorporated by cooperatives to ensure survival in the present era of cut throat competition.

Key Words: New generation cooperatives, Sustainable Development Goals (SDGs), Governance, Socio-economic development, Capacity building

1. Introduction

Organisations working on the principles of cooperation are acknowledged institutes which successfully focus on structuring the informal economy as well as actively work for achieving stainable development, social peace and equality of life. Cooperatives are the most suitable solution to boost re economy and inclusive growth‖. The rational option for financial and economic framework could be based only on principles of cooperatives. Today in the era of globalisation it is difficult for any country to be developed in isolation.

In the present competitive era of commercial and survival oriented activities, the cooperatives need to revive themselves by adopting innovative and professional practices. They can do so as e co-operative enterprises are one of the oldest and most enduring forms of business having enough flexibility. The format of cooperative organisations was initiated with prime objective of collective growth. This noble target was instrumented by helping the community member on real time assistance. Initial assistance was limited to fulfill financial requirement. These organisations were established by group of visionary people from the society for development of other members through active participation of the society.

Rural cooperatives ensure socio-economic development by community mobilization and through agricultural growth. Economic planning in India has become successful as agriculture and rural

policies are realised through the strong network of cooperative institutes. In urban and semi-urban areas functioning of cooperatives is multi-dimensional from housing to business and from health care to employment generation. Cooperatives now need to play an active role in attaining Sustainable Development Goals (SDGs). They have to identify new avenues of operation to fulfill dynamic requirements of the society.

2. Literature Review

Observations of Zeuli & Cropp, (2004) determined that the concept of co-operative is not new. It roots in stone-age period where people began to live in groups to fulfill requirement of life. In the entire world different socio economic tasks are carried out in organised form by more than 800 million people. (Reyes & Harnecker, 2013). According to Nembhard, (2014), cooperatives are organizations monitored by members of the society which provides common platform to buyers and sellers. They work on the principles of democracy to ensure collective growth both economically and socially. Cheney et al,(2014) viewed cooperatives as a specific structure of commercial enterprises that concentrates on ownership as well as governance both by the members.

As far as role of cooperatives in achieving sustainable development goals is concerned Temitope, (2019), viewed that, attaining sustainable development is a three dimensional process. These dimensions include rational industrial development ensuring satisfaction of socio-economic requirements, overall development of human resources, and batter control over income distribution assuring social equity. Cooperatives can create an impulse for economic growth, employment generation, income enhancement, poverty eradication and cleaner environment. Well established cooperative organizations can nurture to be entrepreneurs by imparting financial access resulting into more employment and promoting efforts to reduce poverty. This ultimately leads to reach the goals for sustainable development.

SDGs inspire an action plan for people, planet and prosperity. It aims to build universal peace without disturbing liberty. It is recognised that eradicating poverty is the challenging task before the society. But it is an essential need for sustainable development. The plan suggested by UN Department of Economic and Social Affairs, in 2014 is activated by all nations and stakeholders with adequate collaboration. The study by Roy & Das, (2013) revealed that successfully managed primary marketing cooperative enterprises have great potential for rural development in general and rising consumer involvement in particular.

3. New Opportunities

Agro Producers Cooperatives

Agro producers face the challenges like, value chain consolidation, and icing competition with limited marketing opportunities. To overcome these challenges, many producers of farm commodities rely on the intermediate link of the agro-food value chain by holding the ownership jointly. But, conventional cooperatives face the problem of shortage of fund which restricts large-scale investments. This has initiated the concept of the new generation cooperative (NGC). This organizational format facilitates for sufficient investments and equity assurances for adding value to milk, corn, and other agro commodities when prices has downturn.

Worker Cooperatives

Worker cooperative is another type of entrepreneurship becoming popular. The concept of a worker co-operatives could be understood in various ways. In an unorganized circumstances it becomes essential to coordinate workers for ensuring the work based on their skill and expertise. Thus these

cooperatives have created prominent place in the market.

Unorganised Professionals Cooperatives
Cooperatives have always displayed self-reliance and income security without exploitation. This principle has made the cooperative model attractive to new-age businesses. People with a shared trade like drivers, chefs, farmers, tree growers, designers, weavers, and others are forming their own cooperatives and prioritizing their needs while relying on collective support to grow together. This trend has also given rise to new platforms for cooperatives, enabling members to market their products and services and compete with other businesses.

Women Empowering Cooperatives
Women empowering cooperative is a platform for women which offers a range of products and services. Its primary aim is to make both online and offline markets accessible to women's enterprises

Health Care Cooperatives
The health care cooperatives work totally for the objective of attaining health related issues among the society. These are not for profit organisations run on the patronage of well to do members in the society and governments. They face many challenges like, the inability to pay for services taken from physicians and reimbursement through insurance schemes. Due to network of public health care systems, health care cooperatives seems to be neglected. But now these cooperatives are innovated successfully.

Social Care Cooperatives
Social cooperatives are initiated to supply social service towards the solution of problems of children, senior citizens and people with disability. They also work for the engagement of jobless people into employment. The phenomenon is first developed in Italy, now exists indifferent s formats in many nations. Members of the social care organisations include service providers, service receivers, career seekers, social workers and the community. They are concerned with making decisions and generating benefits from activities carried out by these organisations. The scope of social care co-operatives include safety of senior citizens, support services to people with disability, public health care programs and building community shelters. They improve diversity, provide health options and initiate community services for ensuring productivity, quality and innovation along with accountability.

4. Study Objectives and Significance

In the cooperative domain frequent studies have been made highlighting comparative efficiency analysis of various cooperative units working at regional, national and international level but the study on efficiency analysis from sustainable development goals perspectives and new approaches for sustainable survival of cooperatives has been almost negligible.

The basic objective of this study is to examine the role of cooperatives toward attaining Sustainable Development Goals (SDGs). The study further aims to determine the factors responsible for success of cooperatives and identify new avenues of operation with respect to dynamic requirements of the community.

5. Research Question and Hypotheses

The questions were framed to navigate respondents about their opinions regarding role of cooperatives in employment generation, capacity building, poverty eradication and community

development. They were expected to throw light on success factors like accountability, transparency and loyalty. In addition suggestion for some new and innovative areas expected which could be considered by cooperatives to ensure sustainability. The hypothesis was examined using statistical analysis for understanding the role of cooperatives in poverty alleviation among members and achieving SDG. The hypotheses were,

H1: The new generation cooperatives are operating effectively for achieving the SDGs

H2: Identifying novel opportunities ensure survival of new generation cooperatives.

6. Research Methodology

The study was comprised of survey conducted among randomly selected 105 stakeholders. They represented 35 registered cooperative organisations working within the jurisdiction of Sangli-Miraj-Kupwad Corporation (SMKC) in Maharashtra State. The questionnaire were circulated among respondents and requested to give responses using five point Likert scale indicating from five for strongly agree to one for strongly disagree.

The new generation cooperatives need to be flexible enough to accommodate community expectations. The new look of cooperatives involve the best practices that could strengthen the goodwill and stakeholder value. The sustainable social care could be ensured by new generation cooperatives only when they overturn the challenges like, lack of knowledge about the capacity of cooperative enterprise, passive nature of stakeholder, lack of appropriate reach to the society and less awareness about benefits from cooperatives

7. Data Analysis

Respondent Cooperatives Type-wise Analysis
The respondent cooperative enterprises are analysed according to their type as shown in Table 1 below.

Maximum responses were from housing cooperatives followed by consumer cooperatives and urban banks. Multi-purpose cooperatives and credit cooperative societies had participation of 11.43% each. 8.58% responses were from processing cooperatives while marketing and transport cooperatives participated at 5.71% each.

Table 1
Cooperative Type-wise Analysis

Sr. No.	Type	Frequency	Percentage
01	Processing	3	08.58
02	Consumer	5	14.28
03	Credit	4	11.43
04	Education	1	02.86
05	Fishery	1	02.86
06	Handicraft	1	02.86
07	Housing	6	17.14
08	Marketing	2	05.71
09	Multi-purpose	4	11.43

10	Sugar Mill	1	02.86
11	Transport	2	05.71
12	Urban Bank	5	14.28
Total		35	100.00

Source: Compiled from Primary Data

Respondent Stakeholders Analysis

Table 2 below shows analysis of stakeholders. Three participants (35X3) =105) from every cooperative enterprise were randomly selected for this study.

Table 2
Stakeholders' Analysis

Sr. No.	Particulars	Frequency	Percentage
I	**Gender**		
	Male	80	76
	Female	25	24
II	**Age (Years)**		
	Below 25	16	15
	26 To 40	42	40
	41 To 55	26	25
	Above 55	21	20
III	**Experience (Years)**		
	Below 05	15	14
	05 To 15	32	31
	16 To 25	36	34
	Above 25	22	21
IV	**Education**		
	Below SSC	15	14
	Graduation	54	52
	Post Grad	25	24
	Professional	11	10

Source: Compiled from Primary Data

Majority of respondents were male (76%), within the age group 26 to 40 years (40%), with experience between 16 and 25 years and education up to graduation (52%).The 10% respondents have professional education like MBA in marketing, HRM or finance. Still 14% respondents were working with education of passing SSC.

Involvement of Cooperatives for Attaining SDGs

The involvement of cooperatives for attaining some of the SDGs with particular activities are shown in Table 3.

Table 3
Involvement of Cooperatives for Attaining SDGs

Sr. No.	Particulars	Frequency	Percentage
1	Improving Living Standard	105	100
2	Generating Employment	96	91
3	Providing Financial Help	87	83
4	Scope for Capacity Building	78	74
5	Development of Community	71	68
6	Enhancing Skills	67	64

Source: Compiled from Primary Data

As observed through Table 3, all stakeholders has given priority to improve living standard of people which is an indicator of eliminating poverty. Consequently employment generation and support for self-employment through financial assistance have been opted by 91% and 83% respondents respectively. Attempts for capacity building was preferred by 74% respondents. The collective development of community and skill enhancement programs were recommended by 68% and 64% respondents respectively.

Opportunities for New Generation Cooperatives

In the current business and social environment new generation cooperatives need to identify some innovative opportunities as indicated by Table 4.

Table 4
Opportunities for New Generation Cooperatives

Sr. No.	Particulars	Frequency	Percentage	Rank
1	Agri Producers	60	57	IV
2	Workers	52	49	VI
3	Unorganised Professionals	71	68	III
4	Women	57	54	V
5	Health Care	82	78	II
6	Social Care	105	100	I

Source: Compiled from Primary Data

All stakeholder respondents have identified social care related issues need to be addressed as vision of new generation cooperatives. It was followed by health care issues (78%), problems of unorganised professionals like drivers, small traders, vegetable vendors etc. (68%) and difficulties of agri producers (57%). Similarly scope for tackling issues related to women empowerment and workers were pointed out by 54% and 49% respondents respectively.

Social Care Issues for New Generation Cooperatives

Table 5 indicates different issues related to social care which were highlighted by the respondents. According to them they may be considered by new generation cooperatives seriously.

Table 5
Social Care Issues for New Generation Cooperatives

Sr. No.	Particulars	Frequency	Percentage
1	Old Age Homes	100	95
2	Community Nursing	70	67
3	Community Kitchen	40	38
4	Parental Service	80	76
5	Children Health Care	50	48
6	Recreation	30	29

Source: Compiled from Primary Data

The need of establishing old age homes in cooperative sector was pointed out by maximum (95%) respondents. It was followed by the needs of developing enterprises providing parental service (76%), community nursing (67%) and health care of children (48%). Social issues like community kitchen and recreation of elderly people were suggested by 38% and 29% respondents respectively.

Component Analysis

Table 6
Component Analysis

Sr. No.	Component	Component Loading	Cronbach α	Variance %	K-M-O Value	p Value
1	SDG	0,826	0.789	63.78	0.811	0.01
2	New Avenues	0.703	0.752	67.31	0.846	0.01

Source: Compiled from Primary Data

As seen in Table 6, the KMO values for SDG and New Avenues are 0.811 and 0,846 respectively These values are greater than 0.60. That means the data are suitable for component analysis. The variance value for SDG is 63.78% while this value for new avenues is 67.31%. Both the component have Cronbach α value above 0.70. The component loadings were 0.826 for SDG and 0.703 for new avenues. Hence it can be deduced that the data used for the study is reliable and valid.

Hypotheses Testing

Table 7
Hypotheses Testing

Dependent Variable	Independent Variable	p Value	T Value	B Value	Result
New Generation Cooperatives	SDG	0.001	2.867	0.243	Accept H1
	New Avenues	0.001	2.479	0.252	Accept H2

Source: Compiled from Primary Data

Above table shows o the multiple regression analysis. It could be observed d that the first independent variable; SDG (β: 0.243, p=0.001) has affected the dependent variable; New Generation Cooperative (NGC) significantly. The second independent variable: new avenues (β: 0.52 p=0.001) has significant

effect on the dependent variable NGC, The p values for both independent variables are below 0.05. Hence, both hypotheses (H1 and H2) are accepted. They state that,

H1: The new generation cooperatives are operating effectively for achieving the SDGs
H2: Identifying novel opportunities ensure survival of new generation cooperatives.

8. Limitations of the Study

Few limitations of this study may be considered for future research. The study has considered smaller sample size, narrow geographical area and limited number of variables. Hence results of this study could not be generalised.

Future research could be extended to wider geographical areas with larger sample size, more number of variables and additional services so that results could be more rational.

9. Conclusion

The new look of cooperatives involve the best practices that could strengthen the goodwill and stakeholder value. The sustainable social care could be ensured by new generation cooperatives only when they overturn the challenges like, lack of knowledge about the capacity of cooperative enterprise, passive nature of stakeholder, lack of appropriate reach to the society and less awareness about benefits from cooperatives.

Cooperatives performs a triple role; in the economy. These roles are associated with generation of employment, sustainability for better livelihoods and improvement in income. Co-operative enterprises are people focused so they attempt to ensure equity and social justice. These organisations work on principles of democracy which secures inclusive growth of the society.

Accordingly, this study concludes that the cooperative enterprises are operating effectively in achieving the Sustainable Development Goals (SDGs). In the turbulent environment new generation cooperatives should respond positively to dynamic social needs. Some new areas have been explored through this study like, health care, elderly care, community services, etc. which need to be incorporated by cooperatives to ensure survival in the present era of cut throat competition.

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Contributing to Sustainable Community Development through Urban Consumer Co-operatives: Case Study of Osaka Izumi Co-op

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Abstract

The objective of this paper is to investigate the potential of urban consumer co-operatives to facilitate sustainable development in local communities. To exemplify this, the paper will present a case study of the Osaka Izumi Co-op.

In contrast to the activities of farmers' and fishermen's co-operatives, the specific contributions of consumer co-operatives to the local community are not immediately apparent. Consumer co-operatives are frequently regarded as primarily serving to enhance the consumer benefit of individual members. The Izumi Co-op is addressing social issues pertinent to urban communities, including food security, waste reduction, and employment opportunities for disadvantaged individuals. The Izumi Co-op operates an organic recycling system whereby food waste from its operations is composted by disabled employees and subsequently used on their own farm. This has resulted in a notable reduction in food waste at the Izumi Co-op, while also leading to a markedly higher employment rate of disabled individuals than other corporations. The Izumi Co-op has been the recipient of numerous accolades in the field of corporate social responsibility in Japan. This outcome is indicative of the organisation's full operational capacity as a membership entity.

Keywords: Consumer co-op, Concern for community, Employment of disabled persons, Food loss, Urban agriculture, Ethical business, Osaka Izumi Co-op

1. Introduction

Objects

Farmers' and fishermen's co-operatives can not only increase the personal income of their members, but also boost the local farming and fishing industry as a whole. In doing so, they ensure the sustainable growth of the local economy. In this sense, it is clear to all that these producer co-operatives are pursuing the 7th principle of the ICA 1995 Principles, 'concern for the sustainable development of the community'.

What about consumer co-operatives?

They certainly improve their members' households by providing better quality products at lower prices. But this does not always translate into support for their own community economy.

Consumer co-operatives in the UK and Europe support Third World producer communities through Fairtrade projects. Similarly, Japanese co-operatives have developed a domestic Fairtrade model called TEIKEI or SANCHOKU to support rural communities in Japan. It is possible for consumer co-operatives to assist such remote rural and fishing communities through ethical consumption.

But what can urban co-operatives do for the sustainable development of their own local base communities that do not have large food production areas?
This paper seeks to explore how urban co-operatives can be involved in the sustainable development

of their communities by observing the activities of a co-op located in Osaka, Japan's second largest city.

Previous Research

A substantial of literature on consumer co-operatives in Japan has been written by researchers and practitioners in Japan. There are 217 monographs on consumer co-operatives published between 1980 and 2012 (Sugimoto, 2014). In addition to monographs, a number of journals on consumer co-operatives have been published in Japan. Notable journals on consumer co-ops include the monthly *Seikatsu Kyodo Kumiai Kenkyu* (Journal of Consumer Co-operative Studies) and the quarterly *Kurashi to Kyodo* (Living and Co-operation), as well as the biannual *Kyodo Kumiai Kenkyu* (Journal of Co-operative Studies) and the quarterly *Niji* (Rainbow), which are publishing a substantial number of articles on the consumer co-operative movement. The Japanese Society for C-operative Studies has a membership of over 400 individuals and nearly 50 supporting organisation members.

It can be argued that Japan is the country where research on the co-operative movement is most prevalent. However, the majority of these studies were written in Japanese, which has resulted in them being inaccessible to researchers outside Japan. The only specialist books written in English that analyse Japanese consumer co-operatives from an academic perspective are Nomura (1993) and the Consumer Co-operative Institute of Japan (2009). Additionally, there is a paucity of specialised English-language papers authored by Japanese researchers, including works by Aoki et al. (2020), Kurimoto (2020) (2024a) (2024b), and others.

Therefore, a limited number of co-operative research books outside Japan address the subject of Japanese consumer co-operatives (Vacek (1989), Birchall (1997)). For many non-Japanese researchers, Japan-style consumer co-operatives are either beyond the scope of their interest, or, if they are interested, they are uninformed about them.

This paper takes up the case of Osaka Izumi Co-op as an illustrative example of a Japan-style consumer co-operative as identified by previous studies, and examines the potential of urban consumer co-operatives to contribute to the development of sustainable communities.

2. Material, Method and Questions

There are 10 regional consumer co-operatives in Osaka, four of which are very large, with more than 100,000 members. This paper focuses on one of them, Osaka Izumi Co-op, which was established in 1974. It now has more than 560,000 members. More than 30% of households in the southern part of Osaka belong to Izumi Co-op.

This paper presents a discussion of the contribution of the co-operative in question to the sustainable development of the urban community in southern Osaka. The discussion is based on the findings of an interview with managers, employees and members of the co-operative, as well as an examination of Izumi's official publications and reports. In order to examine the potential of urban consumer co-operatives, three key questions will be addressed.

Q1: Urban food self-sufficiency issues

A mere 40% of the calories consumed by Japanese people are derived from food produced domestically, while 60% is dependent on imports. In particular, the production of foodstuffs at the local level represents a significant challenge in urban contexts. The food self-sufficiency rate in Osaka Prefecture is less than 2%.

It would be unwise for a community to rely on food produced outside its own boundaries, given the importance of sustainable development. It is necessary to achieve a balanced development of industry, commerce, agriculture and fisheries, even in urban areas, in the second half of the 21st century. While 20th-century societies pursued the wealth of the country as a whole through the international division of labour and free trade regimes, 21st-century societies should seek to enhance the wealth of their community members through the construction of self-reliant, decentralised, small communities.

In what ways might co-operatives contribute to the realisation of this vision?

Q2: Urban waste problems and food loss

A considerable proportion of the global population in developing countries continues to experience poverty and food insecurity. Even in more economically developed regions, there are individuals and communities facing financial constraints that restrict their access to adequate nutrition. Concurrently, substantial quantities of food waste are generated in the urban centres of developed countries. One of the most significant environmental challenges facing urban areas in developed economies is the issue of waste management.

In 2022, global food aid to those suffering from hunger reached 4.8 million tonnes. This figure is approximately equivalent to the quantity of food waste generated by the Japanese population. In Japan, the quantity of food discarded reached 4.72 million tonnes in 2022. This waste is contributing to environmental degradation.

Of the total food loss in Japan, 50% (2.36 million tonnes) is comprised of leftover food from households, while the remaining 50% is derived from corporate activities. These include the waste generated during the production and processing of food in the food manufacturing industry, unsold food in restaurants and food retailing industries, and other sources. The food retail industry, inclusive of consumer co-operatives, is responsible for the generation of 4.90 million tonnes of food loss on an annual basis.

What strategies do co-operatives employ in order to address this issue?

Q3: Urban employment issues – employment of persons with disabilities

One of the most crucial elements of sustainable community development is to guarantee a place of work that offers suitable employment opportunities for every member of the community.

Securing employment is a significant challenge in rural and underdeveloped regions of the Third World. Despite the perception that cities in developed countries are economically prosperous and offer a plentiful supply of employment opportunities, the reality is that urban areas in these countries are also characterised by significant challenges in this regard. Japanese-style capitalism is characterised by a greater emphasis on job security than is the case in Western capitalist economies. Nevertheless, there are numerous individuals in Japanese urban areas who are actively seeking employment but are unable to secure it. The issue of disability is particularly problematic. The competitive nature of the economy and the prevalence of prejudice have resulted in a situation where individuals with physical and intellectual disabilities are unable to secure employment that allows them to fully demonstrate their abilities. Even in developed economies, it can be challenging for individuals with disabilities to secure decent work. In Japan, there are 9.65 million individuals with disabilities, of whom fewer than 0.58 million are employed, representing a mere 6%.

In consequence, the Japanese government has enacted legislation requiring companies to employ

persons with disabilities. In accordance with the Law for Employment Promotion of Persons with Disabilities, employers with a minimum number of employees are obliged to ensure that the percentage of employees with physical, intellectual and mental disabilities exceeds the statutory employment rate. In the private sector, the legally mandated employment rate is 2.5%. This signifies that an employer with 40 employees is obliged to employ at least one individual with a disability, whereas a company with 4,000 employees is required to employ 100 individuals with disabilities. Those companies that achieve this rate are duly rewarded.

However, the 2022 Employment Status of Persons with Disabilities report by the Ministry of Health, Labour and Welfare indicates that 55,684 companies have not achieved the statutory employment rate. Such companies are subject to financial penalties and the obligation to develop employment plans, in addition to receiving specialised guidance. The names of companies that have persistently failed to comply are made public.

The retail and wholesale sectors account for the largest number of companies that are made public. The intense price competition that characterises the distribution sector is perceived as an obstacle to the employment of persons with disabilities.

What measures might consumer co-operatives adopt in response to this situation?

3. Results

Overview

Izumi Co-op has developed an integrated system that encompasses employment, resource and environmental protection, and self-sufficiency. The organisation has become a pioneering entity in the field of disability employment and the reduction of food loss, while also making a significant contribution to the enhancement of self-sufficiency in Osaka and the preservation of local food culture through the operation of its own organic urban farming business.

Food Recycling Loop System

A defining feature of Japanese-style co-ops is their engagement with a diverse range of activities beyond retail. These activities include initiatives addressing environmental, peace and food safety concerns, with a strong membership organisation leading the way in developing community-based projects and staff providing vital support. This outcome can be attributed to Japan's Co-op Law, which prohibits trade with non-members and significantly restricts their areas of operation. However, such unreasonable constraints on co-operatives have led to the expansion of Japanese co-operatives as community-based social movements, rather than merely as conscientious retail entities.

In terms of waste reduction, co-ops have been successful in significantly reducing the amount of waste by taking advantage of their membership organisation and engaging in recycling activities on a much larger scale than other supermarkets. This is due to the fact that co-ops are membership organisations, which allows them to engage their members in recycling activities on a larger scale than other supermarkets. The quantity of waste collected by Izumi Co-op in 2023 and repurposed as materials for recycled products is considerable: 123.7 tonnes of milk cartons, 57.4 tonnes of egg cartons, 19.5 tonnes of food trays, 76.0 tonnes of plastic bags, 4667 tonnes of catalogues and 47.2 tonnes of plastic bottles. The aforementioned materials are subsequently transformed into a variety of products, including toilet paper, clothing, containers, and so forth, in recycling plants.

The rate of collection for PET bottles in Japan is notably high, exceeding 85%. This stands in stark contrast to the United States, where the collection rate is less than 20%, and Europe, where it is

slightly above 40% (Figure 1). One of the reasons for this is that, in addition to collection by local authorities, environmentally conscious consumers, such as members of consumer co-operatives, are engaged in recycling PET bottles through their own collection routes in collaboration with entities such as co-operatives.

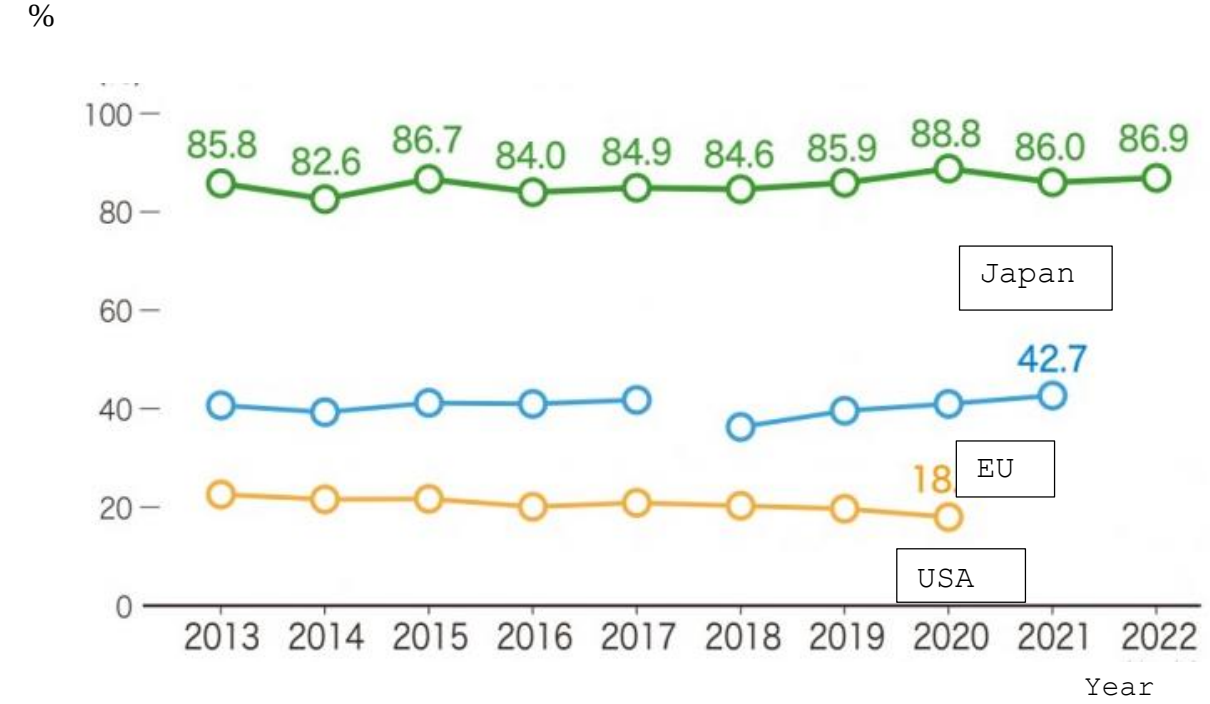

Figure 1 PET bottle recycling rates in Japan, the USA and Europe (%)
Source: Plastic Waste Management Institute (https://www.pwmi.or.jp/column/column-2365/)

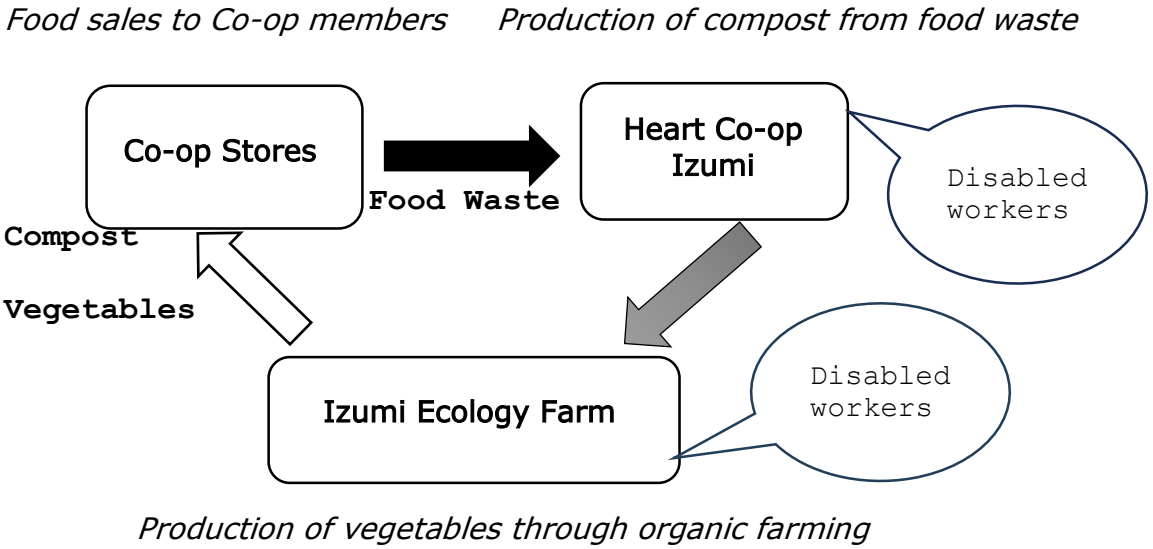

Figure 2 Food Recycling Loop of Osaka Izumi Co-op

Similar to other co-operatives, Izumi Co-op is engaged in local recycling initiatives targeting packaging and containers of its commercial products. However, it has also devised a distinctive recycling system that has gained it considerable renown. This is the 'food recycling loop'. With this system, Izumi Co-op aims to reduce food waste from its operations to zero, while at the same time

providing jobs for people with disabilities far exceeding the legally mandated employment rate.

Izumi Co-op has established a subsidiary company, named Heart Co-op Izumi, which employs a number of disabled individuals. The subsidiary's activities include the processing of unsold food and other items from Izumi Co-op stores into compost. The compost is subsequently employed in the cultivation of vegetables on farmland under the management of a subsidiary entity called Izumi Ecology Farm. At Izumi Ecology Farm, a significant number of disabled individuals are engaged in agricultural activities, with the produce subsequently transported to Izumi Co-op stores for sale. This process has resulted in the establishment of a food recycling loop between Izumi Co-op, Heart Co-op Izumi and the Izumi Ecology Farm. The system is operated and maintained by workers with disabilities and provides consumers with safe, locally grown produce in Osaka, a region where agricultural production is not thriving (Figure 2).

Achievements and Challenges

In the 2023 financial year, the Izumi Co-op Group generated 583.4 tonnes of food waste, representing a 96.9% increase compared to the previous year. The group has achieved a reduction in waste of over 3% in a single year through the implementation of a food recycling loop and donations to food banks for those in need (Table 1).

Table 1 Food Recycle Rate of Osaka Izumi Co-operative Group, 2023

	Home Delivery	Store	Total
Unsold & Scraps	552.5 t	665.9 t	1218.4 t
Recycle	114.7 t	240.7 t	355.4 t
Donations	279.5 t	-	279.5 t
Subtotal	394.2 t	240.7 t	634.9 t
Waste	158.2 t	425.2 t	583.4 t
Recycle rate	79.3%	36.1%	59.2%

Source: Sustainability Report 2024, Osaka Izumi Co-operative, 2024

Notwithstanding these accomplishments, additional measures are necessary to attain the objective of zero food waste. A significant challenge lies in enhancing the figures for the store sector, given that the recycling rate in the home delivery sector is nearly 80%, whereas in the store sector it is only 36%. As a considerable proportion of food waste in the store sector is unsuitable for donation, it will be necessary to explore further avenues for utilising the recycling loop.

In regard to the employment of individuals with disabilities, the Izumi Co-op Group has achieved remarkable outcomes and has been lauded by Osaka Prefecture and other regulatory bodies. A total of 42 disabled individuals are employed by Heart Co-op Izumi, while 14 are employed by Izumi Ecology Farm. These individuals are engaged in the food recycling loop. The Izumi Co-op Group's overall employment rate for disabled individuals stands at 6.61%, a figure that far exceeds Japan's legal employment rate of 2.5%.

As in other countries, the global pandemic has resulted in a significant increase in the number of unemployed individuals in Japan. Those in vulnerable positions in the labour market, such as the disabled, were the first to be dismissed. Nevertheless, the Izumi Co-operative Group did not terminate the employment of any disabled individuals during the period of pandemic, and instead ensured the continuity of their employment.

In order for the Izumi Co-op Group to make a further contribution to the social participation of

persons with disabilities in the future, it will be necessary to consider the nature of employment. Presently, the employment of persons with disabilities within the Izumi Co-op Group is largely concentrated within Heart Co-op Izumi and Izumi Ecology Farm. The proportion of disabled individuals in other co-operative establishments and administrative departments is in the 2% range, which is in line with the representation of disabled individuals in other companies. With regard to the coexistence of individuals from diverse backgrounds in the workplace, the employment of people with disabilities at Izumi Co-op still necessitates the overcoming of considerable challenges.

4. Discussion

Those who lack an understanding of the principles of co-operation often view such organisations with a negative or sceptical attitude, on the grounds that they are member-owned entities. The argument is made that co-operatives can contribute to their members, but that they are not relevant to non-members or the wider community. In particular, it is challenging to accept that consumer co-operatives are beneficial to the local economy, even if they are beneficial to individual consumers. However, an analysis of the Osaka Izumi Co-operative reveals that this consumer co-operative plays a notable role in the sustainable development of the community. Its contributions extend beyond the consumer activities of individual members to encompass environmental issues and the employment of people with disabilities. The fact that the consumer co-operative is a member-owned organisation has a positive impact on the promotion of the common interests of its members, as well as the interests of society and the community as a whole. In contrast to non-member-owned businesses, consumer co-operatives are structured in a way that allows consumers to play a direct role in decision-making. This gives members a unique position to drive business activities that address environmental and employment issues, as they are the ones who understand the importance of these matters.

The status of a member-owned organisation is not a disadvantage; it can, in fact, be a significant advantage in the development of sustainable communities.

Although this paper has addressed the achievements and obstacles encountered by consumer co-operatives in the context of environmental and employment issues, a comprehensive investigation of the potential of consumer co-operatives in maintaining and strengthening local food production and safeguarding food culture remains a future research opportunity. It is thus necessary to examine the possibilities and constraints of single-stakeholder co-operatives, that is to say, consumer co-operatives.

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Role of Federation-Public-Private Partnerships in Enabling Ecosystems for Stronger Women's Cooperatives

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Abstract

Informal women workers make up 94% of India's female workforce, facing multiple challenges in ensuring work and income security, social security, food security and accessing credit. Their contribution to the local and national economy is often unrecognized and they remain under-represented in policy spaces despite their contributions.

The cooperative structure amongst other collective structures is crucial for the socioeconomic development of informal women workers in India. The SEWA Cooperative Federation sees this model has proven resilient and sustainable over the years, even pulling through crises like the COVID-19 pandemic. Women's cooperatives, when housed in an integrated ecosystem such as a federation, can provide essential services that give members income, food and social security and build self-reliance, confidence and leadership skills through decentralized and self-governed decision-making processes.

This study explores the necessity and potential of public-private partnerships (PPP) between community-centric, Women's Enterprise Support Systems (WESS), which help in incubating and strengthening women's cooperatives, such as the SEWA Cooperative Federation (SCF), private partners, and governments. The study explores the possible challenges in the formation of such partnerships and provides preliminary best practices and recommendations for creating enabling ecosystems for such partnerships.

Keywords: Federation-Public-Private Partnerships (F-PPP), Women's Enterprise Support Systems, Women's Cooperatives, Informal Women Workers, Policy Frameworks.

1. Background

Informal Women's Cooperatives and Socioeconomic Development

When looking at socioeconomic development of informal women workers, collectives have proven to be a resilient model which can be adapted to community needs, fostering decision making, increasing awareness of rights and strengthening bargaining power. Community-based interventions through different forms of collectivization including cooperatives, Self Help Groups (SHGs), Farmer Producer Organizations (FPOs) and the like have been increasingly used for poverty alleviation and livelihood generation.

The cooperative structure helps in increasing business acumen and marketing skills, understanding of democratic principles of governance by promoting equal say and ownership ('one member, one vote'), ensuring community-centric, sustainable livelihoods, providing work security, income security and decent wages (Cooperative Identity, Values & Principles, ICA, 2024) improved working conditions and even resilience during economic downturns and crises (Hiriyur and Chettri, 2020).
This structure is vital for women in the informal sector as they are amongst the most vulnerable informal workers, without access to capital, assets, housing, social protections like maternity leave,

insurance and childcare, facing the double burden of care work and work outside the home, patriarchal exploitation and lacking visibility or representation either in labor force surveys or even labor unions (Asian Development Bank et al., 2016, OECD, 2019). Such women workers may face hazardous living conditions and be unable to access mainstream markets.

Studies have shown that women-owned and women-run cooperatives contribute to SDG 5 and empower women through gender specific frameworks (Russell-DuVarney, 2016) through regular income and access to essential services, and improved confidence and self-worth through decentralized and self-governed decision-making processes (SEWA Cooperative Federation, 1993). Moreover, such cooperatives also provide an effective way to organize women in the informal sector towards formalization. For example, women members after having regular incomes can start savings accounts and take loans and join the formal financial system (SEWA Cooperative Federation, 2018). Women's cooperatives ensure that women have a support system to fall back on in times of crisis. According to a study done by the SEWA Cooperative Federation (2020), "71% of informal women workers who were in cooperatives and had sought support for livelihood loss due to the first wave of COVID-19, received employment and business-related opportunities from the cooperative".

However, it has to be noticed that women's cooperatives in the informal sector face a common set of challenges in growth and sustainability- a lack of suitable financial products, lack of access to markets, technology and technical skills (Ghani et al., 2013), lack of business skills and mentorship, lack of customized services for enterprise development, lack of sector and gender-disaggregated data, socio-cultural norms, lack of access to education, social capital and assets and finally a lack of collaboration among stakeholders such as the private sector, academia, CSOs and the government (Bhattacharya et al., 2022). Apart from challenges at the individual and community level, macro-level challenges in the political economy are also prevalent, including but not limited to inflation and poor sectoral growth in sectors such as agriculture and handicrafts, saturation in domestic markets and lack of a gender-just care economy (Joseph and Bhattacharya, 2023).

In this case, Federations for cooperatives play a vital supportive role. The SEWA Cooperative Federation, acting as a decentralized Women's Enterprise Support System (WESS), works more effectively than traditional incubators and accelerators in addressing systemic challenges faced by women's enterprises in male-dominated markets (SEWA Cooperative Federation, 2024).

The SEWA Cooperative Federation and the Role of Federations as Grassroots Women's Enterprise Support Systems

The SEWA Cooperative Federation's roots lie in the Self-Employed Women's Association's (SEWA) struggle for informal women workers' rights, since its inception in 1972. As of now, with 2.9 million members and a spread of 18 states, SEWA is one of the largest central trade unions in India.

While working towards securing more rights, SEWA recognized the need for sustainable livelihoods for informal women workers and initiated cooperatives in sectors like care work, health, handicrafts, agriculture, and construction. This eventually led to the formation of the SEWA Cooperative Federation, an umbrella organisation for supporting informal women's cooperatives, most of which had started in Gujarat, the home base of the SEWA union.

Established in 1992, the SEWA Cooperative Federation supports over 100 women-owned cooperatives and collectives across the country, aiming for "full employment and self-reliance for

informal women workers". It supports these cooperatives to become financially viable, innovate, and scale by providing organizational and capacity-building support.

The Federation facilitates incubation, registration and governance of cooperatives across six sectors -dairy, handicrafts, land based work (agriculture and allied work), service (such as care work and health services), savings and credit and labour work (such as construction).

The Federation then links member cooperatives to services across the SEWA network, such as healthcare, insurance, and childcare. Some cooperatives remain closely tied to the Federation and are given intensive support, while others operate independently and take support as needed. The Federation also does policy advocacy, representing cooperatives in policy forums and connecting them to broader movements.

Since 2018-2019 the Federation has structured itself as a "Women's Enterprise Support System" or WESS for delivery of its core services across women's collective enterprises (WCEs) in the informal sector. These core services comprise capacity building, enterprise development, financial management, communications, compliance and governance support (such as through accounting, audit support, training of cooperative members in bylaws) and research and policy advocacy. The Federation also provides working capital to women's enterprises at a minimal interest rate of 3-5%.

Throughout its history the Federation has partnered with different organizations to support its work in the informal sector, particularly as development and growth of cooperatives within this population segment requires intensive mentorship and capital investment, often over longer periods of time than the typical startup. The Federation promotes development partnerships where a member based, community centric WESS can bridge public and private players and grassroots cooperatives. This builds trust among cooperative members towards private and public partners, as they are safeguarded within the Federated structure, ensures cooperatives are not exploited and can have their needs met, and tailors the partnership to be culturally rooted.

Taking an action research perspective, the present study examines the enabling mechanisms and best practices for successful multi-stakeholder development partnerships (MSPs) between governments, private institutions and informal women's cooperatives, with Federations like the SEWA Cooperative Federation acting as a WESS, bringing stakeholders together and supporting smaller, vulnerable cooperatives through the various stages of the partnership.

2. Research Questions

1. What role do member-based, community-centric WESS such as the Federation play in connecting informal women's cooperatives to public and private partners?
2. What challenges hinder the formation and successful operation of multi-stakeholder PPPs with informal women's cooperatives housed in a federated WESS?
3. What enabling environments are necessary for the success of such PPPs?

4. What best practices should be considered for successful multi-stakeholder partnerships (MSPs) in the informal sector?

3. Methodology

This qualitative action research applies analytical lenses of labor, informality, partnerships and gender-responsive collectivizing. The Abodana Handicrafts Cooperative, or Abodana in short, a

member of the SEWA Cooperative Federation, Gujarat, has been used as a case study to demonstrate the role of multi-stakeholder public-private partnerships (MSPs), anchored by a Federation, in the socioeconomic empowerment of informal women workers.

The research employs a methodology of process documentation. Here, the MSP is not seen as a fixed event but rather a set of moving and evolving processes and negotiations among different actors, where challenges and deviations can arise and subsequent resolutions are attempted (Mosse, 1996). We look at the planned versus actual interventions and outcomes of the partnership, which was aimed at reviving Abodana.

As part of the study, interviews were conducted with Abodana's Manager, cooperative members and the Federation's team who had been involved in the project. Organisational documentation and a review of secondary literature were further used to analyze the importance of such WESS mediated MSPs, delineate the challenges faced in the project's execution stages and provide actionable recommendations for successful MSPs with informal sector participants.

Understanding and Operationalizing the Definition of Federation-Public Private Partnerships

The ILO's "A Guide to Multi-stakeholder Partnerships" states that a multi-stakeholder partnership or MSP can be defined as a "formal or partially formal alliance of partners from at least two of a list of possible actors - government and government driven institutions, civil society actors, private sector and multilateral organizations". However, any combination of partners can be present including workers organizations, regional groups, local authorities and others. In our present context we emphasize MSPs for socioeconomic development of informal women's cooperatives. Here, the public or private partner (other than the grassroots enterprise itself) is primarily responsible for providing working capital, knowledge and technical resources or any other kind of capacities for development at the grassroots level. For the purposes of this study, we use the concept of Federation-PPP as a type of MSP.

Multi-stakeholder PPPs for informal women workers in the handicrafts sector: the Case Study of Abodana's Revival

Abodana Mahila Chaapkaam SEWA Sahkari Mandali (or Abodana), a women's handicrafts cooperative in Gujarat, was founded in the early 1980s to transform the lives of women artisans in Ahmedabad's Chhipawad area.

The cooperative emerged after a socio-economic survey conducted by SEWA revealed the exploitation of block-printing women artisans. Due to the dominance of textile mills, and declining market rates, these artisans had been forced into machine-based stitching and low-paid job work. The women lacked access to markets and were dependent on middlemen, often earning meager wages.

To counter their dismal working conditions and ensure decent work, social security and ownership of trade, SEWA mobilized the women, offering them training to enhance their block-printing skills, and helped them in registering their own cooperative in 1982 with 51 members - the Abodana Handicrafts Cooperative. Soon the SEWA Cooperative Federation supported Abodana for participating in exhibitions and generating sustainable livelihoods for its members. Some of its women also became master artisans, training others, and eventually, the cooperative grew into a profitable venture.

Through the SEWA Cooperative Federation 's support, Abodana's artisans also gained access to microcredit from SEWA Bank and the State Bank of India, allowing them to collectively take out loans for business development. Abodana's women, with capacity building from the Federation,

learned to manage finances, read balance sheets and write accounts, and develop collective business strength.

Being a member of the SEWA Cooperative Federation allowed Abodana to connect its members to government programs and social security initiatives, as well as to be integrated with other sister cooperatives within the Federation. The cooperative also acted as a support system for its members, helping address both livelihood and personal concerns such as family issues, lack of access to credit, social security, mobility and financial stability.

However, despite its success, Abodana faced a period of decline between 2010 and 2015, due to the deaths of key leaders, challenges in marketing, and the reluctance of younger generations to continue with block printing. The cooperative's membership began to dwindle, and it struggled to maintain its operations.

Factors behind Cooperative Decline in the Informal Sector - The SEWA Cooperative Federation Experience

1. **Leadership Challenges:** Declining leadership and the inability to cultivate a second cadre of leaders are major problems. Often, existing leaders, overwhelmed by responsibilities, do not have time to train new members. Without strong leadership succession, the cooperative suffers.

2. **Limited Mentorship:** WESS organizations such as the SEWA Cooperative Federation often provide advice, but cooperatives may ignore this, viewing the organization as an outsider. Over time there may be deterioration in cooperative functioning due to limited mentorship, particularly if second generation leaders have not been trained in market dynamics and cooperative governance.

3. **Market Linkage Issues:** With changing market dynamics and competition in sectors such as handicrafts, there is a need for a high degree of specialization, quality control and product diversification. There are challenges in ensuring that all members of the cooperative can benefit equally. While some members actively seek out opportunities, others struggle to secure work or generate income, leading to inequalities within the cooperative due to difficulties in securing market linkages.

4. **Member Apathy:** Inactive members contribute to the decline by not participating in elections, which may also lead to a monopoly of power by a few active members. There is a lack of ownership, as some members view the cooperative as a source of passive income.

5. **Financial Challenges**: Staff in informal women worker cooperatives, especially those paid through project grants or capital arranged by organizations acting as WESS, often receive low wages, and only cooperatives with large turnovers can afford to pay staff competitive salaries. A manager of good caliber is crucial, but most informal women's cooperatives rely on project funds to keep the manager on the payroll.

   Financial challenges also extend to barriers in accessing credit for infrastructure development, training and business expansion, because women in the informal sector are often seen as non-bankable due to the prevalent high deficit in work and income security, and lack of awareness in financial management related to business operations. Further, informal women's

businesses find it cumbersome to keep up with the compliance requirements of formal financial institutions leading to loans and debt from middlemen or other unregulated credit sources.

6. **Inability to keep up with technical business requirements:** Often informal women workers' cooperatives struggle to keep up with changing business needs, particularly technical needs such as digitalization, tapping into the digital economy, media outreach, and maintaining visibility. There is a stark rural-urban, as well as gender divide in mobile ownership, smartphone ownership, access to the internet, and the capacity or knowledge to use these tools. For example, only 31% of rural India uses the internet and men are 30% more likely to own phones (IAMAI, 2022).

7. **Policy Environment and Regulatory Hurdles:** Often, the policy environment may not be conducive to the growth of informal women workers' cooperatives. For example, to access government public procurement platforms smaller enterprises may have to go through complex registration processes. Women's cooperatives in India form a small part of the overall cooperative sector, and informal women's cooperatives are even less in number. Being invisible to policy makers, with a lack of gender disaggregated data, there are significant hurdles in ensuring the needs of these cooperatives are reflected in the policy landscape.

In 2016, some of the Abodana cooperative's older leaders, alongside younger artisans, sought help from the SEWA Cooperative Federation to implement a revival strategy to rebuild and strengthen the cooperative and eventually make it sustainable.

4. Revival and Sustainability

The revival of informal women's cooperatives, such as Abodana, depends on two distinct processes, influenced by the cooperative's stage of decline:

1. *Complete Stagnation:* In cases where the cooperative has no active members or functioning activities, a full revival process is required.

2. *Limited Activity:* When the cooperative is still operational but has very few active members or minimal work, the aim is to strengthen its operations. This involves focusing on market linkages, strengthening the Board of Directors (BOD), and improving business skills through capacity building. Abodana was in this stage of operations when a revival was decided after discussions with its members.

A WESS, such as the Federation, which is community-centric, labor- and gender-informed, is essential for the revival process because of the following reasons:

Conducting Situational Analysis: Before the revival process begins, the Federation undertakes scoping studies to gauge the reasons for decline, whether current markets would be friendly to the cooperative's products or services, the existing member base and member capacities and a tentative business plan with revenue projections needed for revival.

Securing Funds for Revival: For reviving a cooperative, it is essential for the Federation to secure project funds to cover operational costs, infrastructure development, human resources and technical partnerships, capacity building requirements like training of members in domain specific skills and governance, creation of market linkages, sourcing of raw materials and other necessary investments.

In the experience of the Federation, the revival process usually takes 3 to 5 years. Additionally, mobilization of members and member engagement is a crucial driving force for cooperative revival, failing which the Federation may be unable to inject momentum into the process.

Figuring out Sustainability options: The trade in question also dictates how long the revival will take and whether the cooperative will become sustainable. In the experience of the Federation, trades such as handicrafts and services must survive in more competitive markets than sectors which revolve around production activities such as dairy which can more easily cater to local economies. While project-based funding keeps the cooperative going, sustainability depends on active member strength, strong business plans and mentoring in the initial phase, constantly changing strategies in a competitive market and enabling policy environments for access to finance, capacity building and business.

Long-term sustainability requires that cooperatives become independent and can cover fixed costs. Parameters for successful and sustainable cooperatives, as per the Federation's senior team, include: leadership quality, a balanced member base (as more members mean more capital and resources but also difficulties in governance and ownership), strong business acumen of members, leading to consistent business, number of members getting regular work, and regular and transparent governance processes.

5. Objectives of the Federation-Public-Private-Partnership for the Revival of Abodana Handicrafts Cooperative

Main Objective: The revival and sustainability of Abodana Handicrafts Cooperative by developing infrastructure, skills and market linkages and providing livelihoods to the artisans.

Sub Objectives:

a. Building a Common Facilitation Center (CFC) for artisans for raw material storage, accessing machinery, digital technologies and space for work and coordination of production and sales to customers.
b. Providing artisans with soft-skill and domain specific training in crafts for enhancing the quality of production and diversifying expertise in different categories of products.
c. Connect artisans to new offline as well as online markets and improve the visibility and sales of products.
d. Connect artisans to government welfare schemes under SFURTI and the following social security measures – opening of bank accounts and linking to insurance and pension through government schemes.
e. Regularly document and report project activities, challenges, progress and next steps to all the stakeholders and beneficiaries, ensuring transparent monitoring and evaluation.

6. Key Initiatives for Abodana's Revival

Between 2016 to 2020, the Abodana cooperative's production processes were first streamlined and new professionals were hired for supporting the cooperative's operations - this included a new Manager, coordinators and designers. Cooperative members were given initial training in crafts skills and governance.

The cooperative's products were being sold through a shop called Kalakruti which was attached to

the Federation building. However, this shop was not able to manage its inventory and was suffering losses. Thus in 2020, Kalakruti was temporarily shut down and the production was shifted to job work to sustain the cooperative.

During the COVID-19 pandemic, Abodana, with the help of the Federation, pivoted to home-based work- to mask making and stitching and members were given online training via video conferencing. The cooperative generated INR 35 lakhs in turnover in 2021-2022 due to the increased sales, even as other businesses struggled with the economic downturn. But, it was only with a multi-stakeholder partnership that the Federation started intensively working towards the revival and independent functioning of the cooperative, with full-time and sustained employment of its artisans. As of now, the cooperative revival process has been completed, and the next steps involve ensuring long term sustainability and independence of the cooperative.

The Federation undertook several **key initiatives** as part of a business and empowerment plan to help revitalize Abodana:

1. ***Partnerships for growth:*** Of particular interest to this paper is the role of MSPs, (mediated through the WESS), in strengthening informal women workers through cooperatives such as Abodana. In 2021 the SEWA Cooperative Federation linked Abodana with the Scheme of Fund for Regeneration of Traditional Industries (SFURTI). This scheme operates under the Khadi and Village Industries Commission (KVIC) of the Indian Ministry of Micro, Small, and Medium Enterprises (MSME). Around the same time the Federation also partnered with a private bank to utilize its CSR towards the revival process, particularly for skill enhancement and training of artisans and improving the collection of finished products.

   Through these partnerships the Federation started reviving Abodana, mobilizing new women artisans from rural areas - Kadi, Kalol and bringing them under the cooperative's fold, providing capacity building and infrastructure development.

   A brief overview of the different partners of the multi-stakeholder partnership is given as follows:

   Firstly, as per the terminologies issued by the government under the KVIC project, the Federation acted as the Implementing Agency (IA) and anchored the partnership together. The role of the IA was to manage the everyday operations of the project and ensure timely coordination and execution of all the various hard and soft interventions.

   Here hard interventions included provisions for infrastructure development through the building of a Common Facilitation Centre (CFC) where all the artisans would be able to work together. The CFC was set up in Kadi, Mehsana in 2023 and women artisans could then access laser cutting machines, sewing machines, a design cell and a block printing unit, apart from raw material for bulk production.

   Soft interventions on the other hand included activities such as undertaking awareness camps and domain skill training, exposure visits to industry exhibitions in Kutch and marketing activities such as building the cooperative's website and carrying out photoshoots of finished products for exhibitions.

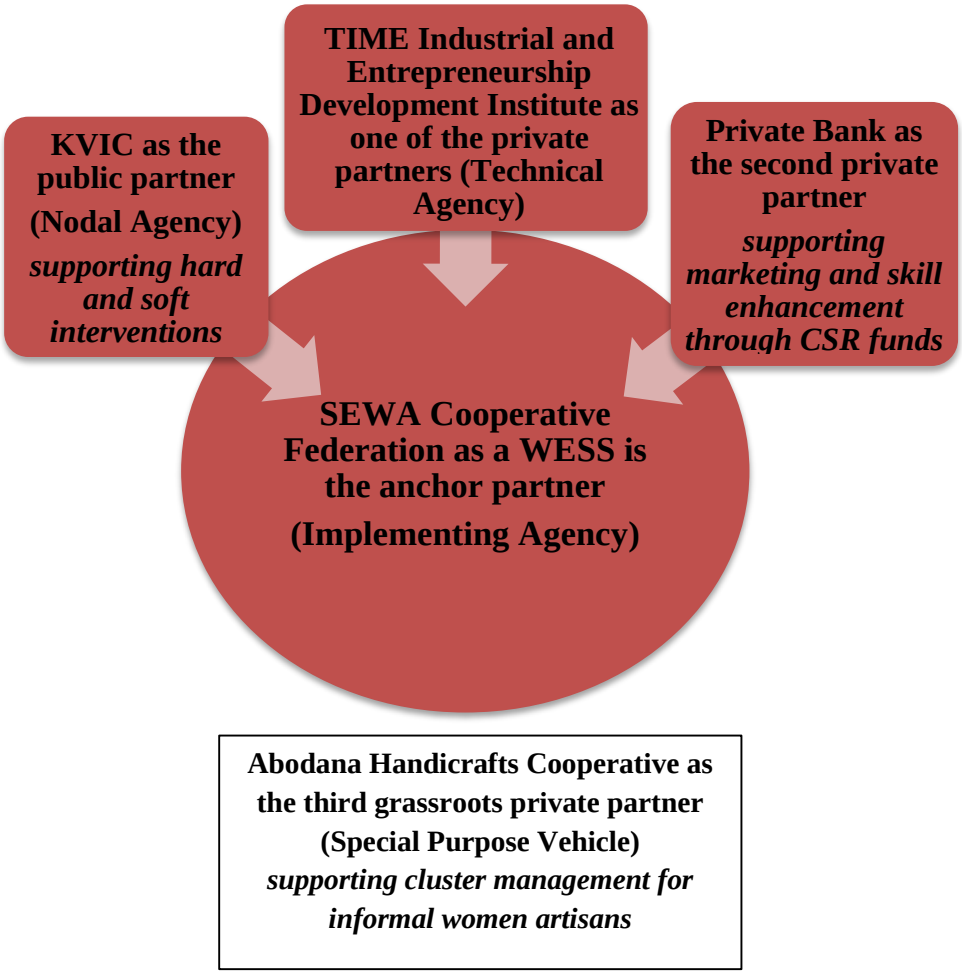
   The KVIC was the Nodal Agency (NA) and as per the definition used in this study, can be termed as the public partner. As per the SFURTI guidelines, the Nodal Agency is in overall

charge of the project. The Implementing Agency, Technical Agency and Special Purpose Vehicles would all report to the Nodal Agency.

The Technical Agency (TA) in the project, which as per this study's definitions may be termed as one of the private partners, was the TIME Industrial and Entrepreneurship Development Institute. The other private partner was a private bank which provided the project with further CSR funds. The Technical Agency was responsible for providing guidance on the overall project design and execution plan, with input on marketing, business, and infrastructure development.

Finally, the beneficiary in the project, the third private partner, was the Abodana Handicrafts Cooperative itself, acting as the Special Purpose Vehicle (as per the terminologies of the SFURTI scheme). The Special Purpose Vehicle, comprising the artisans themselves, would be required to manage a new cluster effectively as a fully functional livelihood-generating entity, with the help of the IA, NA and TA.

The funds from the public partner, KVIC, majorly helped in carrying out the hard and soft interventions, building up infrastructure and purchasing machinery, while the CSR funds from the private bank helped in the marketing, skill enhancement and further development of the cluster. The cluster formed under this project was named the Kalakruti Garment Apparel Cluster.



The structure of the Multi-Stakeholder Partnership for Abodana's Revival

2. ***Expansion of Product Lines and Newer Geographies:*** As part of the KVIC project, the Federation expanded the reach of the Abodana Handicrafts Cooperative, to cover Kalol city in Gandhinagar district, and Kadi city in Mehsana district. Artisans from these areas became members of the Abodana cooperative and were included within the Kalakruti cluster. The Federation also facilitated training and supported diversification of the product line of the cooperative to include other crafts such as embroidery, applique, badla work and stitching to keep up with the competitive handicrafts market and appeal to a broader category of customers. New types of products were designed such as bags, cushion covers, bed spreads, embroidered blouses and kurtas, table covers and so on.

3. ***Developing Business Plan:*** For developing a business plan, the Federation's team undertook thorough resource mapping on raw materials available, existing market links, existing machinery as well as financial and human resources available with the cooperative. This business plan was focused to support the artisans through inputs related to design and production, branding, preparing a website, brochures and product catalogs, new designs for packaging of products, increasing social media presence, and connecting to livelihood opportunities.
4. ***Capacity Building:*** Apart from training new leaders, regular members also need to feel a sense of ownership towards their cooperative and take up necessary responsibilities for work and everyday operations. Hence it is necessary for them to understand the principles of cooperativism, the collective vision of the cooperative and have their concerns heard in a democratic manner. To this end extensive training was given to board members and artisans covering important topics such as governance, leadership, marketing and digital literacy.

   The Federation also linked cooperative members to government bodies such as the National Cooperative Union of India, and private organisations such as MicroSave Consulting and Entrepreneurship Development Institute of India, for domain-specific capacity building in different crafts including embroidery, applique and jewelry-making, keeping in mind the vision to diversify the cooperative's product lines. By the end of 2023, over 250 artisans had participated in these training sessions. 10 training sessions were given in Badla, 47 in embroidery and 175 sessions in patchwork.

   Apart from facilitation of training, the Federation also arranged exposure visits to Kutch, one of Gujarat's famous centers for traditional crafts, Craftroots- an initiative to connect artisans at the global level and Dharohar Foundation in Vadodara which works with micro-enterprises. These visits promoted peer learning and boosted the confidence of the women artisans.

5. ***Marketing Support:*** As part of its enterprise development services, the Federation helped Abodana to establish new market linkages via B2B and B2C sales through exhibitions, the Federation's online marketplace – SEWA Saamarth, and regular job work. New market links helped broaden the customer base and increased the cooperative's annual turnover. Some of the new B2B customers included Vaani Khadi and By Nirjari, which are local businesses in Gujarat.

7. The Impact of the Revival Process

The multi-stakeholder partnership proved successful for the revival of Abodana. In 2023 the cooperative linked 428 artisans across five crafts to livelihoods and made notable strides in securing social benefits, including access to banking and insurance through the Pradhan Mantri Jan Dhan Yojana, and pensions through the Atal Pension Yojana, for 300 artisans. The master trainers of

Abodana also saw an increase in income from INR 300-500 per day to INR 1000-1500 per day, after being given training through the KVIC partnership.

Training provided by SEWA Saamarth also had a substantial impact on the members' future goals. Training improved work quality through enhanced skills in new designs and techniques, leading to more work and higher income. Mastery of all craft aspects and familiarity with technology also helped in advertising of work.

Networking from training also enabled women to stay informed about market trends, connect with clients, and secure more work opportunities, even during COVID-19. While 55% were not directly affected by the pandemic, 74% received relief kits and 25% found livelihood opportunities like mask production. During the COVID-19 pandemic, Abodana was able to provide sustained livelihoods for 150 artisans who collectively produced 310,500 masks.

Abodana members also received 310 craft tool kits, and 93 sewing machines based on their skill levels. Abodana continues to promote member training, innovation, and leadership, ensuring the preservation of traditional skills while adapting to modern demands. The cooperative's turnover surpassed INR 14 lakhs for the 2022-2023 financial year.

8. Benefits of multi-stakeholder PPPs for different stakeholders

The experience of the Federation shows how such partnerships can be beneficial in local contexts both for local informal women's cooperatives as well as the government and private sector.

Benefits for the government

1. ***Building Infrastructure and Livelihoods:*** The government, through schemes like SFURTI (KVIC), provides critical seed funding for informal women's cooperatives like Abodana. These funds are essential for setting up infrastructure such as the Common Facility Centre (CFC) to help fulfill targets for livelihood generation and upskilling of marginalized populations and the promotion and development of Micro, Small and Medium Enterprises or MSMEs. By supporting cooperatives, the government helps in creating rural employment opportunities. The revival project for Abodana directly supported the livelihoods of 428 artisans, as of FY 2023-2024 and empowered them economically.

2. ***Women Empowerment:*** The government's collaboration with cooperatives like Abodana ensures that women in the informal economy are supported with schemes that uplift them socially and economically.

3. ***Leadership and Self-Reliance of Informal Women Workers:*** Training provided under such partnerships enhances leadership within informal women worker cooperatives, fostering holistic development. The presence of organizations such as the Federation ensures that such partnerships for cluster development do not just meet a numerical target but improve the quality of women members' lives by building confidence, business acumen, improving mobility and access to personal assets like mobile phones and bank accounts, along with generating the necessary skills to make use of the assets, thus ensuring self-reliance and full employment among women in the informal sector.

4. ***Social Security:*** By linking artisans to government schemes such as pensions and insurance, the government ensures a safety net for informal sector workers. In Abodana's case, 300

artisans were linked to social security measures such as insurance and bank accounts. 180 artisans were supported to access artisans cards; the artisan card is an official proof that enables artisans to participate in government handicrafts schemes and access training, insurance and credit.

5. ***Improving Resilience:*** By fostering sustainable rural enterprises, the government aligns with national goals of rural development. The SFURTI project provides financial resources and a policy framework that bolsters the resilience of cooperatives like Abodana in adverse market conditions including economic downturns such as the one experienced during the COVID-19 pandemic.

Benefits for the private sector

1. ***Reputation and Legitimacy:*** Effective CSR projects strengthen the relationship between corporations, host communities, and through the Federation or other community-based anchor partners, with national or state governments.

2. ***Access to new markets:*** Grassroots cooperatives also serve as valuable intermediaries to local markets and their member base can be tapped as potential customer segments, leading to diversification and expansion of the private player's market base. For example, rural India forms 35% of FMCG market share (Ibef, 2023). Both private partners and collective enterprises at the grassroots level can benefit from innovation and access to finances, leading to improved products and marketing processes.

3. ***Lobbying and advocacy for better business conditions:*** The private partner can lobby for favorable operational and business environments, pushing for better policies to the government. As the government also has interests in bettering market conditions and boosting growth of MSMEs, such partnerships are beneficial to all stakeholders. The Federation for instance has also advocated for women-centric and informal worker-centric policies for digital inclusion and public procurement through government platforms like the Government-e-Marketplace.

Benefits for the Federation and other such WESS

The Federation is able to use resources and earn legitimacy by partnering with public and private sectors.

1. ***Financial resources:*** Federations of cooperatives receive direct payments, subsidies, or seed funding for their services.

2. ***Brand recognition****:* Partnering with a successful corporation enhances the public image of a WESS.

3. ***Access to new networks:*** Successfully managing a multi-stakeholder partnership opens doors to new opportunities and networks.

4. ***Management expertise:*** The project built the capacity of the Federation to adopt best management practices that align with corporate, government and community expectations.

5. ***Policy monitoring and influence:*** Through such MSPs, the WESS as an umbrella organisation for cooperatives gains social relevance and can use the same as leverage to

develop and communicate recommendations for improving government schemes for informal women workers. Experience of such MSPs, with input from various partners strengthens the capacity of WESS organizations to monitor policy.

Benefits for Informal Women's Cooperatives

1. ***Infrastructure and Working Capital**:* The public and private sector played a crucial role by providing additional funds for infrastructure and working capital, essential for building facilities such as the Common Facility Center (CFC) for Abodana.

   These funds supported the purchase of machinery and scaling up production capabilities, enhancing the cooperative's operational efficiency. Relying on funds from one source can be risky even for umbrella organizations like the Federation. Not only is funding often project specific and difficult to obtain in development cooperation, because of high interest rates and collateral, complex processes and perception of the MSME sector as risky by lenders, but MSMEs have different types of requirements at different stages of growth (Singh and Wasdani, 2016).

   As handling such large funds, project requirements and monitoring processes of different partners may be difficult for grassroots enterprises alone, due to limited business skills and digital literacy of members, Federation-PPPs provide much required support and balance in the initial stages of collectivization, revival and growth of grassroots enterprises.

2. ***Market Expansion and Livelihoods:*** Difficulties in market linkages pose significant obstacles to informal women cooperatives' development - lack of understanding of market trends, low product marketability, low product quality, lack of standardization and poor visibility of the enterprise being some of the major barriers (Bhattacharya et al., 2022). Through the MSP, Abodana was able to access new markets, resulting in linking 428 women with livelihoods as of FY 2023-2024. This support included diversifying product lines and expanding market reach, which stabilized and increased income for cooperative members.

   Here, private sector engagement improved Abodana's branding and market visibility. The project helped the cooperative utilize digital platforms and exhibitions to increase sales and establish themselves as a unique market presence of informal women artisans.

3. ***Preventing Exploitation:*** Federations are important in safeguarding member cooperatives from possible exploitation and ensuring member concerns and goals are reflected when collaborating with funders and outside stakeholders. For example, in the case of the revival of Abodana, the Federation protected the cooperative from unfair prices imposed by middlemen and vendors. The Federation also helped the cooperative motivate, train and organize women members to tackle the gendered challenges of the informal sector, acting as a buffer against any challenges faced while meeting the objectives of the revival project and in interacting with any of the partners.

4. ***Leadership and Training:*** The Federation facilitated continuous training in technical skills, governance, and entrepreneurship, ensuring that members would be well-equipped to sustain the cooperative by themselves after the revival process.

5. ***Advocacy for Better Frameworks:*** Federations and other community-based and membership-based organizations can leverage collective bargaining strength to advocate for improved

policy frameworks. For example, the Federation's advocacy included pushing for more transparent and participatory mechanisms for cluster development schemes, which take local contexts and practical limitations of CBOs and other private actors into account.

6. ***Ensuring Social Security and Livelihoods:*** Federations can help facilitate access to social security schemes and plug gaps in government service delivery at the last mile. During the COVID-19 pandemic, the Federation ensured that artisans received necessary relief, including medical and food kits, and maintained their livelihoods during challenging times. Through the Federation's support the members also received artisan cards which will help them access monthly pensions, loans and skill training by the government.

Challenges faced by the SEWA Cooperative Federation towards Formation of Multi-Stakeholder PPPs

1. ***Lengthy Approval Process:*** It took the SEWA Cooperative Federation five years to secure approval for the SFURTI project. The IA experienced delays in receiving the sanction letter from KVIC, which, in turn, delayed the first installment of funds. This extended timeline delayed the cooperative's revival efforts, creating a bottleneck for artisans' livelihoods. The project thus faced significant delays in forming the Special Purpose Vehicle- Abodana and training its board members. The first year, allocated for SPV formation, skill development, and other preparatory steps, did not generate any sales due to these delays. Additionally, payment processes with vendors were lengthy and difficult, particularly regarding advance payments and the release of final installments.

2. ***Inconsistent Guidelines and Formats*****:** The project guidelines lacked clarity in crucial budget categories like petty cash, administrative expenses, travel, and consultant fees. This made financial management difficult for the Implementing Agency i.e. the Federation. The provided formats and guidelines were more technical, posing a challenge for the SPV (Abodana) to comprehend effectively. Additionally, the financial flow lacked a provision for funds specifically dedicated to strengthening SPV governance. There was also a need for greater flexibility to reallocate funds across various interventions as needed.

3. ***SPV finds it difficult to function as per extensive guidelines:*** Abodana found it difficult to understand and fulfill compliance requirements as per project guidelines and had to extensively rely on the Federation for support through the revival process. Government schemes should thus simplify guidelines for informal sector partners to successfully engage with development partnerships.

4. ***Obtaining permissions:*** for infrastructure needs, such as electric and water connections, drainage systems, and town planning approvals, was time-consuming. Correspondence through proper government channels to local authorities often led to delays in acquiring necessary permits.

5. ***Vendor Challenges:*** Eligibility criteria for vendors (e.g., minimum turnover and experience) excluded many local service providers, making it difficult to source affordable options for rural projects. Large vendors with turnovers above ₹1 crore were uninterested in smaller rural projects, which impacted the completion of infrastructure like the Common Facility Centre (CFC).

6. ***Banking Involvement Issues:*** Bank officers were often unavailable to participate in the working committee, leading to delays in financial decision-making. This contributed to the overall slow process of fund disbursement and project execution.

7. ***Higher Financial Contribution of IA to Project:*** Often partners, especially those anchoring a project, such as the Federation in the case of Abodana's revival, must take up additional costs that are beyond the estimates provided in the project guidelines or budget heads.

   These costs, while seeming small, are necessary for smooth implementation of interventions and include miscellaneous expenses such as vehicle upkeep and fuel costs, staff overtime or compensating artisans for coming to training sessions. These administrative costs added up and put a strain on the Federation. Thus, the guideline for the IA's contribution to the project being 10% of the total expenditure proved challenging to arrange.

8. ***Project Guidelines Missing Required Personnel:*** The SFURTI guidelines did not cover the need for key personnel such as designers, accountants and marketers, major roles which are crucial for grassroots clusters to develop and scale in the market. The salary for the Cluster Development Executive (CDE) was also below industry standards, which made recruitment difficult. Other guidelines also proved restrictive, such as mandatory bond signing for the CDE and living near the comparatively remote location of the CFC, which made it unappealing for interested candidates.

9. ***Difficulties in Mobilizing Artisans:*** The process of mobilizing artisans also faced challenges, with many artisans hesitant to furnish certain required identity proofs and bank details, which were needed to include them as part of the cluster development process. There was a gap in trust between new and old members towards the Federation, which had to be bridged. Artisans were wary of theft of personal information, but this resulted in delays in commencing welfare activities and linking them to insurance, or depositing livelihood in bank accounts. Other challenges towards cluster level mobilization also mirrored sectoral commonalities – migration, alternate livelihoods and care work, which disrupted training and awareness meetings and led to fluctuations in artisan data.

10. ***Challenges in the Tendering Process:*** To procure certain construction materials, machinery for both digital and handicrafts purposes- including laptops and sewing machines, tenders were issued. However, the process proved long and complex and the tender specifications were not always accurate. The working committee for the project, which also included bank officials, often could not meet all together at a time and issue the tender.

Recommendations for MSPs with Informal Women Workers' Cooperatives

1. ***Realistic Financial Projections:*** Projected Internal Rate of Return (IRR) calculations should be more realistic, especially in the first year when no sales are expected. Financial projections should account for the time required for SPV formation, training, and infrastructure development.

2. ***Streamlining Bureaucratic Processes:*** Formal correspondence between government bodies should be expedited to facilitate faster acquisition of permits for necessary utilities like electricity, water, and drainage.

3. ***Clarity in Budget Guidelines:*** Clear and detailed guidelines are needed for budget heads such as administrative expenses, petty cash, and travel to help IAs manage finances effectively.

4. ***Financial Support for the IA:*** Recommendations were made to link clusters with corporate CSR from the outset. Additionally, bank loans or guarantees should be provided to help IAs meet their 10% financial contribution requirement.

5. ***Improved Recruitment for Cluster Development Executives:*** The honorarium and mobility allowance for CDEs should be made industry standard to attract more qualified candidates. The bond-signing requirement should be revisited to make the position more appealing.

6. ***Artisan Mobilization Revisions:*** There should be more flexibility in the artisan data collection process, with a proposed 30% variation allowance in the artisan list as local, sectoral and cultural contexts and lack of documents make it difficult for data to be 100% streamlined and accurate. Identity cards for mobilizers and systematic documentation of artisan activities should be introduced to streamline mobilization efforts.

7. ***Tendering Process Improvements****:* Tender specifications should be revised to meet project needs more appropriately. The requirement for working committee members to be present during tender openings should be made more flexible to avoid delays.

8. ***Timely Sanction and Payment Processes:*** Sanctions and the release of project funds need to be timelier. A simplified payment process should be introduced, particularly for advance payments to vendors and the release of final installments.

9. ***Flexible Training Programs:*** Mobilization for training and awareness programs should be initiated early. Training schedules should be made more flexible to accommodate artisans' household responsibilities and other occupations.

Enabling Environments for Formation of Multi-Stakeholder Partnerships for socioeconomic development at the grassroots

1. ***Linking to Corporate CSR for Financial Support:*** To alleviate the financial burden on Implementing Agencies (IAs) like SEWA Cooperative Federation in the Abodana project, Corporate Social Responsibility (CSR) initiatives present a viable solution for securing initial funding.

2. ***Policy Support for Partnerships to Strengthen Traditional Sectors:*** The traditional sectors such as handicrafts require supportive policies when it comes to attracting partnerships for their revival and growth in a competitive market. This is essential apart from providing financial support.

   Some of the policies to encourage public-private-partnerships to boost sector growth, may include tax breaks, integrated markets and public procurement platforms and subsidies for companies to invest in cooperative-led or MSME-led ventures and business activities. This will help foster good relations between the cooperative and private sectors, following the principles of inter-cooperation.

3. ***Risk mitigation for Private Partners:*** Private partners may be hesitant to venture into partnerships with small grassroots cooperatives or collectives, especially in cases where the

project is for revival of business operations, because the cooperative may lack financial or market leverage. Here, partnerships backed by larger member-based bodies such as the Federation and one or more government partners can help mitigate and share risks with the private sector and support the smaller cooperatives in handling credibility and partnership requirements. This kind of risk sharing can then facilitate the further entry of the private sector into vulnerable sectors, markets and value chains.

4. ***Easier and Accessible Finance Mechanisms for Grassroots Collectives:*** Microsave Consulting along with the SEWA Cooperative Federation conducted a joint study in 2024: "Study to assess the working capital needs of women collective enterprises (WCEs)". This study which looked at 20 stakeholders across the supply and demand side ecosystem, found inequities in accessing capital for women owned MSMEs (wMSMEs). Nearly 70 percent of wMSME's financial needs remain unserved or underserved, with the unmet finance gap for wMSME's coming to USD 16.67 billion (Microsave Consulting, 2024).

   Women's collective enterprises in the study reported that the main challenge to improve business is the lack of capital. These enterprises often require long-term but at the same time, high-risk capital, and formal financial mechanisms fail to supply almost 60% of the credit needs of micro-enterprises (Microsave Consulting, 2024).

   Some of the challenges in this sector are limited awareness among wMSMEs on how to approach mainstream banks, with WCEs depending on non-bank credit sources such as grants from the nonprofit sector and B2B collectives, including artisan collectives such as Abodana, struggling to finance long credit periods, and documentation requirements for loans due to complex registration processes. The need for collateral is one of the major reasons as to why WCEs cannot access credit (Microsave Consulting, 2024).

   As per the Microsave report, bridge institutions in this case play a big role in connecting small WCEs to patient working capital, helping with documentation and registration, and acting as guarantors and increasing credibility and bankability, with some bridge institutions like the SEWA Cooperative Federation providing tailored services in the first phases of the growth journey of the WCEs, ensuring that they are able to utilize capital for infrastructure development, building capacities and accessing markets, thereby building a path to long-term sustainability and a timeline for paying back any loans.

   Public-private-partnerships should have such bridge institutions as partners to ensure that grassroots women are able to not only access flexible funding mechanisms but also map their needs and prepare appropriate business plans to utilize the capital, with a thorough strategy on how to function after the exit of funders. Bridge institutions can then offer necessary support from time to time, in a tailored manner as per the WCE's phase of growth.

   Grassroots women's cooperatives need flexible and low-interest loans. Access to finance through partnerships should combine private investment, grants, and patient capital. A combination of such funding measures, through what is known as blended financing, can also reduce risk for the private sector to be involved in development projects at the grassroots level.

5. ***Conducive Gender-Mainstreamed Policy Frameworks:*** Any scheme such as SFURTI should involve consultations and workshops for feedback from all levels of beneficiaries and partners. One of the most important considerations in multi-stakeholder development

partnerships is a gender-mainstreamed framework for all guidelines, project phases and deliverables.

Any project for strengthening informal or grassroots women's collectives should, at the very least, include capacity building for developing leadership and participation in decision-making processes. Any meetings and training should consider gendered challenges faced by such cooperatives which may include mobility restrictions, care burdens, and high volume of work across different trades like handicrafts and agriculture. Any partnership processes and milestones should integrate a gender lens to be considered useful for grassroots WCEs.

6. ***Government Support for Infrastructure and Land Requirement:*** The Federation had to arrange for the building and land required for the Abodana project, which proved difficult. In such partnerships the government can provide unused land or infrastructure for a minimal rent amount to the Implementing Agency and the Special Purpose Vehicle (SPV). This can be a good way to reduce the operational costs for the IA and SPV. The Common Facilitation Centre can be built on this land and help improve the affordability of infrastructure and building costs for the SPVs, which are often smaller entities such as cooperatives, MSMEs or SHGs.

   This model can encourage a sense of security as access to land and building is guaranteed until the cluster is fully functional and generating enough profits to invest in its own building and land. The land and infrastructure costs can also be split through government grants and CSR, sharing the cost and responsibilities between the public and private sectors.

7. ***Introducing bank guarantees to reduce financial pressure on the IA:*** The KVIC project guidelines require the IA to provide 10 percent of the project costs, but for smaller local organizations who may take on the role of the IA, providing capital upfront can be a significant challenge.

   In such a case, introducing a bank guarantee can help reduce the pressure on smaller organizations. This would ensure that project costs are met without compromising on the financial security of the IA. For the KVIC project, a bank guarantee would have enabled the Federation to manage all the project costs sustainably without putting undue strain on funds.

   Such a mechanism can support smaller IAs to better manage their finances while taking up development partnerships at the grassroots level. Banks can be private partners and issue guarantees, ensuring grassroots collectives have a level-playing field to engage in larger projects without an immediate drain on finances.

8. ***Strengthening Communication with Local Bodies through Support from Government Partners:*** For the smooth functioning of partnerships involving multiple stakeholders, especially grassroots or rural stakeholders who may be sidelined by local governing bodies, it is essential for effective communication channels to be established between these bodies such as the Gram Panchayat and the cooperative and its supporting partner, such as the Federation in this case.

   To help strengthen communication, a formal letter may be sent from the local office of the government partner (here the KVIC) to the Gram Panchayat or the Nagar Panchayat to expedite operational processes such as securing permits for electricity and water supply. Higher government authorities can thus play a vital supportive role in these partnerships to streamline and accelerate bureaucratic processes and ensure that cooperatives face less

administrative hurdles.

9. ***Disseminating Successful Case Studies and Increasing Visibility for Effective Partnership Frameworks:*** Successful partnerships like Abodana's revival should be documented and disseminated further to build trust and showcase how multi-stakeholder partnerships with grassroots beneficiaries can be made more feasible. The revival of the Abodana Handicrafts Cooperative is an effective case of using funds and support from partners at various levels to drive an impactful change in the informal sector.

Best Practices for Multi-stakeholder partnerships involving informal women workers

The Abodana revival serves as a good case study to adapt public-private partnerships to cooperative principles and ensure accountability and inclusivity in partnerships. These principles can be adapted to other such development projects across rural or urban areas. Some best practices are listed below based on the Federation's experience and review of literature (the Kampala Principles, Brinkerhoff, 2015, Fiszbein & Lowden, 1999, Singh, C., & Wasdani, K. P., 2016)

1. ***Inclusivity within partnerships towards vulnerable groups*** **–** The Abodana revival project targeted vulnerable women artisans who did not have access to capacities such as marketing, understanding of business plans or leadership skills. It focused on bringing in new members and capital into an ailing cooperative to revive its operations.

   But throughout the entire project the core focus was on involving all partners to understand the needs of the main beneficiary group and tailor interventions towards their development. The Federation, as the anchor partner in the project, played a key role in facilitating dialogue among the different partners, with the local community's voices shaping the direction of the project.

2. ***Risk sharing among partners for MSPs targeting vulnerable groups*** **–** The Federation acted as a guarantor in the partnership, providing support to the artisans of Abodana cooperative to make full use of the working capital provided through KVIC as well as the private bank, ensuring that the artisans understood the objectives and scope of the project, and undertaking various capacity building and mentoring interventions to help the women move towards long-term sustainability even after the project ended.

   The presence of the Federation as an anchor partner gave a safety net for the artisans to manage all the project goals and deliverables. Such community-based and member supported anchor partners are useful in helping share risks proportionally, given that partners or beneficiaries in the informal sector may feel overwhelmed or not have the skills and resources for managing project goals on their own.

3. ***Choosing private sector partners whose business interests align with the project goals*** **-** The partnership to revive Abodana was effective, primarily due to the SEWA Cooperative Federation's experience and insight towards choosing a private partner whose business and CSR interests would align with the development goals of the informal sector women artisans who wanted to revive their cooperative.

4. ***Need for flexible and comprehensive financial support*** **–** The success of the Abodana revival project depended on providing for finances as per the needs of the project, which were sometimes not covered within the project budget head guidelines. Any such multi-stakeholder partnerships at the grassroots level need to have comprehensive yet flexible financial support covering various costs such as capital requirements, human resource costs and administrative

overheads.

The partners should have workshops with representatives of grassroots beneficiaries such as the Federation and revise budget heads keeping in mind cost margins for development projects at the grassroots level, with their various fluctuating complexities and barriers on the ground. For example, for Abodana, there were various added personnel costs which needed to be borne to ensure the project went ahead smoothly. Funding for such projects can be met by a mix of public and private contributions-grants, CSR, or microfinance can be blended for supporting such projects, and the Federation or other anchor partners can play a key role in pooling together such resources.

5. ***Targeted Interventions for Long-term Impact and Extended Project Handover –*** When it comes to the interventions needed for long term sustainability of a cluster or collective for informal sector women, they should emphasize targeted impact on women's leadership – in business and collective governance, training up a second cadre of younger leaders to create a self-sustained cooperative, trade specific skills, value chain mapping and strengthening, with production and marketing being in the hands of the women, necessary diversification of products and tapping of new customer bases (with necessary expert inputs such as design inputs in the case of Abodana), and essential development of infrastructure and fixed assets. The project plan should also consider exit strategies to ensure independent operations of the collective after project completion. Apart from interventions with these specific types of targets in mind, projects for socioeconomic development and strengthening of informal women's collective enterprises should have extended project handover periods- typically between five to seven years. This is because the first three to five years are needed for capacity building and infrastructure development, then focusing on stabilizing the new market linkages and livelihoods of the beneficiaries, before shifting responsibility of the entire business operations and decision making to the collective.

6. ***Transparent, Context-Specific and Inclusive M&E –*** Any project deliverables and timelines should have some scope for revision taking into account the needs of informal sector women's collective enterprises, such as mobility and space restraints, care work burdens hindering number of trainings conducted, more time needed for building business mindsets and collective ownership, and buffer periods for setting up market linkages and infrastructure in remote or rural areas.

   There should be scope for all stakeholders involved to mutually decide SMART deliverables and co-create monitoring and evaluation frameworks which are transparent, adapted to community contexts and easily understood by women at the grassroots level. Only by sharing as well as ensuring that women at the grassroots level understand key project objectives, deliverables and outcomes, can progress and learnings be tracked accurately, improving inclusivity and accountability across the project timeline.

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Cooperative governance for resilient urban development: Lessons from Accra, Ghana

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Abstract

The United Nations' global sustainable development agenda highlights the critical role of governance and partnerships involving cooperatives, public, and private entities in achieving sustainable development goals (SDGs), particularly in developing sustainable, resilient, and inclusive cities. As urbanization accelerates, cities play an increasingly vital role in the global sustainability agenda. Addressing complex sustainability issues requires collaboration among various stakeholders, including cooperatives, alongside technical solutions. This study examines the essential involvement of cooperatives in governance, balancing ecological protection with socioeconomic well-being. Achieving Accra's goal to become Africa's cleanest city and part of the 100 Resilient Cities initiative depends on the inclusive participation of non-state actors. This research contributes to the literature on collaborative governance by emphasizing the role of cooperatives in promoting UN SDG 11 on sustainable cities and communities post-2015.rewrite. The study utilizes qualitative data gathered through interviews with officials of the Accra Resilient City Department, cooperative members, non-state actors, and representatives of local associations. It also analyzes local and international governance documents to present the cooperative economy's perspective on sustainable urban development. This research underscores the pivotal role of cooperatives in collaborative governance for building resilience in Accra, aligning with global sustainability goals.

Keywords: Cooperatives, Governance, Resilient Cities, Sustainable Development Goals

1. Introduction

Globally environmental sustainability has been recognized as meeting the needs of future generations without compromise. Environmental sustainability is built on the foundation of economic, social, and environmental protection, (Singh et al., 2016). In India, Agricultural practices are beginning to adjust to environmental sustainability. This study highlighted the importance of the environmental perspective. Moreover, an environmental analysis has been conducted to draw a connection between systems of agricultural production and environmental sustainability indicating positive environmental responses (Adomako and Ampadu, 2015).

Globally environmental sustainability has been associated with urban growth and city cleanliness. Recent research on the relationship of urban population growth, flood events, and urban sustainability relates to issues of population growth and environmental responses (Cobbinah et al., 2017). Urban growth brings attention to sustaining its development and environment with a policy that bring on board a lot of stakeholders (Cobbinah et al., 2017). Collaboration among neighbors can be achieved through collaborative governance through participation. (Wang & Xu, 2024). Collaboration among public and non-governmental sectors can also help address crises. For example, urban environmental crises (Bortkevičiūtė, 2024) Using multiple agent collaborative governance, stakeholders can achieve poverty alleviation. (Zhang et al., 2020). The SDG framework further calls for a multi-stakeholder approach for targets to be met not just by some groups in some countries, but by all people everywhere. Therefore, collaboration can be fostered by a partnership structure (Nelischer, 2024).

On the other hand, stakeholders can contribute to environmental sustainability through landscape protection decision-making (Li et al., 2024). Stakeholders committed to a common purpose can achieve societal goals such as poverty reduction. However, sustainability can be addressed through collaborative efforts, (Conrad et al., 2018). In January 2016, sustainable development goals were unveiled to address economic, social, and environmental issues. The Environmental Sustainability Goal is to create a partnership between the government and other organizations. Government engagement in a partnership improves its right choices sustainably.

Sustainable development goals can be achieved through global partnerships. Global partnership is critical for the achievement of SDGs in the sense that countries are economically, socially, and politically interlinked. Such a global governance system may help control the epidemic (COVID-19), and protect human rights and people from environmental threats. Ghana was fortunate to be part of about 50 countries the UN selected to undertake in-country consultations to generate inputs for the new global development framework (post-2015 agenda).

Global partnerships can help achieve a sustainable environment through safe cities and human settlements in the industrial era. The SDGs are a developmental transition from a brown economy characterized by the 18th Century Industrial era which was unsustainable and defective into a greener economy characterized by the implementation of 17 interconnected developmental goals which are more sustainable and effective for the creation of a world in which prosperity is collective, societies are inclusive, industrialization is sustainable and the environment is kept safer and healthier (Tharwani et al.2024). The 17 SDGs are categorized under three thematic pillars namely; economic, social and environmental. In Ghana, making a clean and sustainable is the focus of Accra Resilient Policy. Accra faces multiple vulnerabilities such as earthquakes, flooding, sanitation issues, building collapses, informal settlements and exacerbating climate change concerns (Accra Resilient Strategy, 2019). This paper examines from a cooperative governance perspective on how environmental sustainability can be achieved using lessons from Accra, Ghana's capital city. It proceeds with a review relevant theoretical and empirical literature, provided sources of data, discuss the findings and makes a concluding remark.

2. Theoretical and Empirical review

Theoretical Review

Theories on cooperative efforts towards achieving environmental, social development has not given much attention to explaining inclusive roles of non-state actors such as cooperatives in various industries of the private sector. The concept of industrial cooperatives included in resilient urban development efforts aligns with stakeholder theory propounded by R. Edward Freeman (Awa et al., 2024). Freeman (1984) considers the interest of all stakeholders to address a common problem.

The stakeholder theory considers the interests of all stakeholders, not just members. The goal is to balance stakeholder needs and interests. The mechanism of the stakeholder theory involves stakeholder engagement and inclusive decision-making. Freeman's work emphasizes that the need to embrace the interests of shareholders and stakeholders in this process of decision making. This approach is particularly relevant in cooperative governance, where balancing the needs of various members in the community is crucial.

However, he failed to consider the possibility of categorizing stakeholders into non-state actors and state actors and the need to figure out how their varying interests can be tapped towards achieving a common goal. Addressing this gap is very relevant for cooperative governance. It appears that institutional focused on cooperatives is titled towards influence of institutional environmental. That is government defining agent actions by way of laws regulation and in some cases cultural norms.

Although this theory provides a framework to understand government challenges and opportunity faced by cooperatives, it does not give room to understand the involvement non-state actors in the cooperative efforts towards achieving an institution goal.

Government institutions responsible for providing and managing public goods and services adapt policies and implement them in the direction of service delivery (Wijesundara et al., 2024). Institutional theory explains how cooperatives are influenced by the broader institutional environment, including laws, regulations, and cultural norms. Governance practices must adapt to external pressures while preserving the cooperative's core values and principles. These theories provide a framework for understanding governance problems faced by cooperatives. They emphasize the importance of democratic participation, stakeholder engagement, and alignment of interests to ensure effective and sustainable governance. This is relevant for the study because it helps to explain the challenges of local government bodies in adopting cooperatives bodies in achieving clean cities in developing countries. The pressing need to achieve environmental sustainability as espouse in the SDG goals, require collaborative governance to tap industrial cooperatives to play responsible roles in implementing resilient urban development policies provided by public sector institutions. For example, urban cleanliness which is an aspect of environmental sustainability.

To foster partnership between industrial cooperatives and public sector institution to achieve environmental sustainability, there is the need for a revolutionized thinking on cooperative governance.

Empirical review

Environmental Sustainability and SDGs

The findings from the 2019 SDG report show that globally from 2000 and 2017, mortality rates dropped by 49%. Reduction in mortality rates was a result of immunization that saved millions of lives. Mortality rates have improved with electricity access, (Kenny, 2024). In the context of SDG, India can embrace governance and partnership as part of its agenda for city development and the elimination of poverty (Patni, 2024). Every country is contributing its quota to protect the planet. Climate change is one of the major threats to coastal fish biodiversity. (Lin et al., 2024).

About 150 countries have developed national policies to respond to rapid urbanization. Associated with this response are challenges of the development of policies by about 100 countries. Ethiopia contributed more than 300 policies and instruments to regulate production and consumption.

Collaborative governance in Urban development

City development is confronted with the understanding of urban growth and sanitation dynamics (Korah, Koch, & Wimberly, 2024). Collaborative governance theory shows how to produce effective collaborative efforts (Ansell, & Gash, 2008). This theory is associated with governance and social movement theory (Newman, Barnes, Sullivan & Knops, 2004). The theory of collaborative governance was propounded in 2015 by Emerson and Nabatchi (Haris, Suryono, Said & Rozikin, 2024). The theory helps the development and implementation of public policies (Mulyanto and Rabbiul, 2024). The theory provides empowerment (Larkin, Cierpial, Stack, Morrison, & Griffith, 2008). Some scholars have argued for a critical theory of collaborative governance (McIvor, 2020).

Realizing resilient policy on sustainable programs is by ways of collaborating. Sustainable programs are achieved over time through various forms of collaboration (Tremblay, & Scaillerez, 2024). Therefore, Collaborative governance encourages public and private actors to work hand in hand (Ansell, & Gash, 2008).

Cooperative Governance in Clean Cities

Policy discourse in Ghana has dwelled on debates on urban resilience (Amegavi, Nursey-Bray, & Suh, 2024). Previous studies show that there is a lack of coherent urban planning in Accra (Oteng-Ababio, Agergaard, Møller-Jensen, & Andreasen, 2024). In Accra, the waste management department's effort is being made to sustain the city's environment (Kwawuvi & Yangouliba, 2023). Accra holds about 5.4 million Ghanaians (Kwawuvi, and Yangouliba, 2023). Some areas in Accra such as Dar es Salaam have been planned by the Department of Town planning (Croese, Robinson, Amedzro, Harrison, Kombe, Mwathunga & Owusu, 2023). For instance, effective community engagement contributed to urban design and agenda (Tavares, Sellars, Dupré, & Mews, 2024). Effective public engagement led to the development of Seoul Yongsan Park (Shin, Woo, & Choi, 2024).

The study of Zhang et al., (2020), argues that cooperative governance practices at the local level which consider the poor citizens and socialization can be improved by recognizing the relationship between cooperatives and behavior outcomes in evolutional expectations of the environment. However, the study of Lund and Novkovic (2023) based on social capital and agency problems identifies stewardship as an ideal model for cooperative governance. The study of Zhang et al. (2020) argues that cooperative governance practices at the local level, which consider poor citizens and socialization, can be improved by recognizing the relationship between cooperatives and behavior outcomes in evolutional expectations of the environment. According to Lund and Novkovic (2023), a relationship between member participation and cooperative performance can be explored based on their findings that participatory behavior is relevant to cooperativeness. This includes cooperative governance participation. The study further indicates that cooperatives are vital in local governance partnerships.

In the same vein, Tortia and Sacchetti (2023) explain that members and stakeholders engage through broad decision-making with a particular characteristic of cooperative governance, described as the best cooperative governance dependent on expectations of members in a democratic context and system. It is noted that about one million plants and animals were bound to face extinction (Kindo et al., 2024). Efficient waste management entails the management of dispersion in areas. The lacking structures such as access points contribute to the urban problems of litter collection, sometimes programs are designed on litter management to tackle urban cleaning. Urban cleaning improves the environment (Heravi et al., 2024). The urban poor live in environments characterized by sanitation practices. Some communities in Ghana such as Old Faduma have sewage disposal and housing systems, (Adofo, Opoku, & Sampson, 2024).

Regarding wicked waste problems; waste is disposed without processing, (Kotei, 2024). In addition, waste is disposed with little or no regard for safety and health requirements, (Bayu, 2023). Solid waste is considered an 'urban' problem (Ashshidiqi, Najib & Ningsih, 2020). High level of consumption and unacceptable waste disposal practices pose grave risks (Agbim, 2020). This is creating a threat of solid waste disposition in Benin City (Agbebaku & Kama, 2022).

Ghana's lookout for solid waste governance systems which is sustainable to address wicked waste problems is far from complete, (Volsuuri, Owusu-Sekyere & Imoro, 2022). There is a lack of attention to service provision toward the critical need of the service users in solid waste management (Aning-Agyei et al., 2024). However, this shifts to plastic waste in daily life, (Debrah, Vidal & Dinis, 2021).

Urban areas are associated with the low rate of solid waste collection, (Kotei, 2024). For example, Nairobi faces poor solid waste management practices due to weak policy implementation efforts of

different stakeholders, (Ogutu, Kimata & Kweyu, 2021). Consequently, there is a wicked trend of waste collection, transportation, and open dumping, where the entire amount of waste including plastic is openly dumped (Bowan, Kayaga & Fisher, 2020). Plastic pose as a threat to environmental sustainability, (Bowan, Kayaga & Fisher, 2020). Wicked waste problems are contributing to poor environmental conditions and stand in the way of sustainable development, (Fernando & Zutshi, 2023). Across the developing economies waste problems cause environmentally, socially, and economically negative impacts (Fernando & Zutshi, 2023). The proper management of these challenges is needed most now that the untold adverse consequences are globally affecting both the rich and the poor (Agbim, 2020) as well as public health, environment, and climate change (Prajapati et al., 2021).

To address wicked waste problems is partly a result of a lack of awareness and education of the public on waste activities and management, (Debrah, Teye & Dinis, 2022). When waste collection is irregular disposal place breeds organisms that carry diseases, (Adama, 2022). Solid waste is illegally deposited in rivers and along roadsides affects people, (Henry, Yongsheng & Jun 2006). Incineration produces fumes that pose a health hazard to those living around landfills, (Dzah et al., 2022). Several developing countries lack acceptable ways of managing wastes, (Debrah, Vidal & Dinis, 2021).

3. Methodology

Qualitative data was obtained from 22 interviews. They include officials from the Accra Resilient City Department, Metropolitan Assembly, non-state actors, cooperatives, and public administration students at a seminar held at Ghana Institute of Management and Public Administration (GIMPA) from 20th to 23rd March 2024. Qualitative research design in social science and academic research provides opportunities for researchers to delve into phenomena of interest to the researcher, researchers can present factual textual insights and views on the subject matter of interest (Creswell & Creswell, 2017). In qualitative research design, researchers rely on subjective assessment of views, insights, and understanding of people on subject matter of interest and a phenomenon. In short, qualitative analysis was done using the data gathered through the interviews and content analysis to highlight relevant information for comprehensive understanding of cooperate governance and resilient urban development of Accra.

4. Results and Discussion

The findings of the study have been presented in this section. The findings show responses of the interviewees on the cleanliness situation of Accra and how a non-state actor and industrial cooperative are in partnership towards cleaning the city. The section begins with findings on the cleanliness of Accra.

Accra City Cleanliness Situation Analysis

Focusing on household waste management, the Accra City Cleanliness situation has been analyzed. Managing waste is done in several ways including recycling. In Ghana, stakeholders of waste management and environmental cleanliness include waste management companies or institutions. However, waste management and waste disposal involve the transportation of waste from one place to another; a final deposit point.

The study found that in most cases, they put dustbins across various communities to enable the public to dump waste. This is in consonance with the Local Government Act 462, which prescribed the 'polluter pay' system or the pay-as-you-dump. Under this system, the unit charges households a fee for collecting their waste. However, the study found that effectiveness of these systems is limited by a plethora of challenges. Some of these interviewees mentioned that the urban centers of Ghana need

to be given attention to the cleanliness of the city. They explained that settlements located in the city generate waste, especially if you go to the markets, the traders, they are also part of the engagement because you must also show them where to deposit their refuse and where not to keep refuse. The dirty environment of the city contributes to floods that characterize the city during rainfall. Another interviewee noted that Accra is full of dirt and unclean. The waste disposal situation in Accra city is very bad. Plastic bags are disposed everywhere. "You definitely find them on street or in the sea" (Field Data, 2024).

The finding that Accra city need attention to become an ideal city implies that the city is facing "wicked" sustainability problems. Some interviewees expressed their opinions on urban growth and unclean city environment as characterizing Accra and other cities in the country. An interviewee described: if you pick refuse from a household within a locality, they have to travel a long distance to nearby towns from the city. These towns included Kpong and Kotoku. This indicates that waste collectors have to go through long distance before they dispose the waste. This challenge was addressed by dumping of refuse by the Aboboyaa trucks because they need to assist with depositing refuse over short distances. An interviewee explained: "depending on where the district is, you could travel as far as 80 kilometers to dump the refuse" (Field Data, 2024).

An interviewee stated "So, they are all involved". Sustainable planning initiative of Accra resilient policy engages ESPA to play a major role in bringing informal collectors into the picture, so that whatever is agreed there, they also go back to disseminate to the members of their association. Interviewees of the study hinted that cleanliness is desired by citizens of Accra city.

Waste Management Regulation and Policy

In Ghana, there are several policies for waste management. The Local Government Act, of 1990 (Act 462) is one of the waste disposal regulations. In addition, the Criminal Code, of 1960 (Act 29) also regulates conduct for cleanliness. Other regulations include the Pesticides Control and Management Act, of 1996 (Act 528). Water Resources Commission Act, 1996 (Act 522) together with Environmental Assessment Regulations, 1999 (LI 1652) promotes effective waste management, and the National Buildings Regulations 1996 (LI 1630).

Collaboration among ministries centered on solid waste management has produced some guidelines such as the Ghana Landfill Guidelines (2002). Although Ghana has various regulations and policies in place to manage solid waste, there are still significant challenges in waste management. Waste management involves the collection and disposal of solid waste. Arising with the need for waste disposal has come many methods for disposing of waste such as composting and incineration, (Boadi & Kuitunen (2004). Landfills are often the final place for disposing solid waste driven by door-to-door or house-to-house with the community approval.

Accra Resilient City Policy

The growing sustainability problems in Accra led to the formulation of the Accra Resilient policy in 2019. Effective implementation of the initiative of the Accra resilient city policy is key to achieving environmental sustainability in Ghana. The policy has some success stories of environmental sustainability development. The success can be attributed to the application of cooperative and partnership doctrines.

Accra's resilient policy has largely improved the city of Accra indicating improved services. "We don't receive complaints from the media", an employee of the Accra City Department stated. Another interviewee stated that "Accra Resilient Policy has helped to a large extent towards the sustainability of the city's cleanliness." They are responsible for plans, strategies, and implementation of collecting

waste. Engaging stakeholders in a good practice towards sustainable city development is of a high level of interest from stakeholders who would hold it in high esteem because they were a part of the realization of a solution.

Industrial cooperative

The "Aboboyaa" is a popular term for tricycles in Ghana are widely used for various business purposes in Ghana. These three-wheeled vehicles are owned by individual investors. Owners of these tricycles have formed cooperatives in various forms. Some of the cooperatives of tricycles are into shuttles moving people from markets to communities; cutting of goods such as food stuffs and sachet water in the communities; and waste management and cleaning of Accra city.

The Accra Resilient City Department engaged cooperative of Aboboyaa operators to transport waste clean the city. Cooperation with "Aboboyaa" operators that transport waste always posed some challenges. An employee from Accra Resilient City Department commented, "I would not mention the companies, or the partners, but then when we inspected their services, we abrogated the contracts of some of them and then for some we expanded their work areas" (Field Data, 2024).Another interviewee explained: "You know; we have investors who procure these tricycles to work for them so we have registered them as our partners and also regulated their activities to help clean the city of Accra" (Field Data, 2024).

The study identified one major partner in waste management organization management called Zoomlion Ghana Limited. The services of this private company cover collection, transfer, recycling and disposal of waste in Ghana and some African countries. The engagement of this company has contributed tremendously in cleaning the Accra city.

The finding on the Industrial cooperative of "Aboboyaa" and Zoomlion Ghana Limited in helping to clean the city of Accra indicate the role of cooperative governance for resilient urban development. Therefore, sustainable city development can be based on cooperative efforts. The finding of the study also indicates that toward sustainable city development, there was a need for collaborative efforts and involved non-state actors. In developing countries, informal waste collectors rely on recoverable materials as a means of earning a livelihood (Bowan, Kayaga & Fisher, 2020).

Industrial Cooperatives and cooperative governance

Inclusive platforms for non-state actors in the quest to achieve sustainable city development has come to gear with environmental sustainability. Some interviewees were of the view that one way of getting Accra City clean is through the cooperative governance; adopting an inclusive approach to tackle the issues of cleanliness, "I am making reference to a program that we started in Greater Accra. It was dubbed 'Operation clean your Frontage'. We realized that participated to making sure that the city is clean". An interviewee noted "the media is no longer putting any issue on us, so it showed that the services have improved" (Field Data, 2024). This finding point to effectiveness of partnership with non-state actors.

These findings indicate that Accra City cleanliness policy implementation requires the commitment of citizens to pay for services provided, this contributes to the creation of accounts to cater for operational cost related to city cleanliness. However, Accra Resilient City Department assured; "so once you pay it, you are assured that your money will be used for that particular purpose." Successful implementation of Accra resilient policy is dependent on citizens payment of services "So, we had to engage them to let them know that they will have to be paying for the services from these waste management contractors". An interviewee mentioned that: These actors, mainly found in Accra contributed to the implementation of the policy.

The absence of a polluter-pays principle can restrict the capacity of an Assembly to increase the allocation of skip containers for efficient waste management, (Aning-Agyei et al., 2024). However, across the country, individual behavior towards the environment is reflected in their countries, (Kountouris, 2022). Citizens will pay money for value. Thus, cooperatives in clean city business must observe entails following a line of discipline to achieve value for money and accountability, (Volsuuri, Owusu-Sekyere & Imoro, 2022).

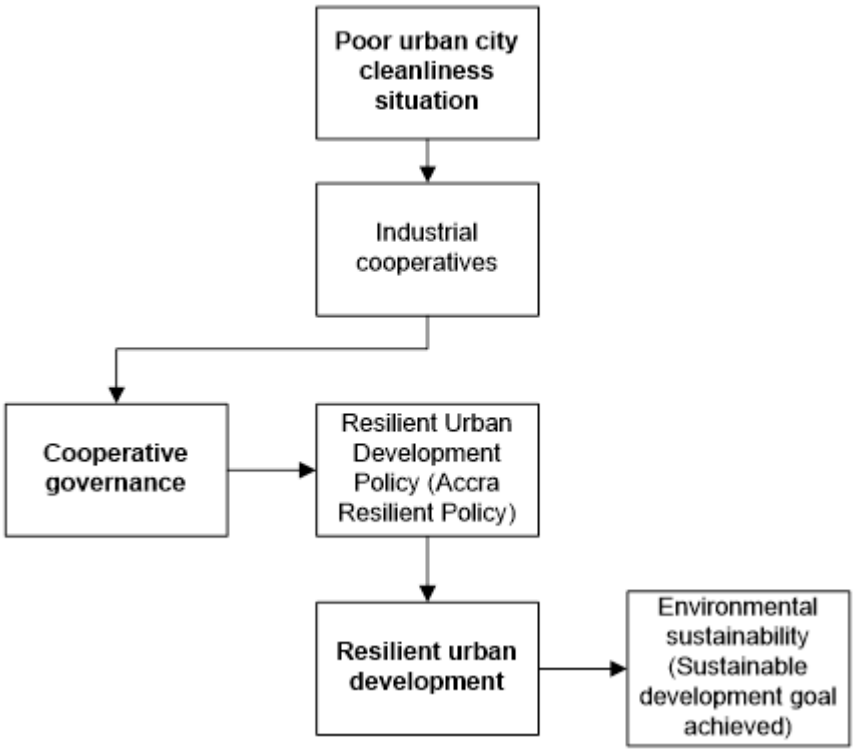

Figure 1: Illustrating lessons on the role of Cooperatives in promoting Resilient Urban Development

Waste management challenges

Managing waste management in Accra faces many challenges including technology, finances, lack of personnel, poor enforcement of laws, and lack of logistics amongst others. These are discussed below

- **Technology**

Almost all interviewees recognize the importance of technology in the management of waste in this modern era. Although the interviewees conceded that technology is limitedly applied in the management of waste, they nonetheless acknowledged its central role in waste management. It was clear that waste management through the use of technology can contribute to cost savings, operational efficiency, and waste reduction. One student for example spoke of route optimization software that can enhance waste collection services. This student mentioned that trucks are tracked and IDs provide various data including speed. This makes it easy to optimize route information regarding waste-collecting trucks and their speed. The tracking system also has an appreciation of the driving force monitoring remotely. Some interviewees also spoke of improved recycling and waste diversion. According to the majority of interviewees, the amount of trash at a landfill reduces recycling.

Promising, tech-innovative like reversible adhesives, super-polymers, depolymerization (chemical

recycling), and technologies to remove additives are almost all in the R&D stage (Soto Bermudez, 2020). The key is better recycling approaches and management systems, (Ashshidiqi, Najib & Ningsih, 2020). For example, in Ghana, Tamale faces waste crises which can be tackled with Waste-to-Energy technologies (WtE) as an innovative solution (Tahiru, Cobbina & Asare, 2024).

- **Finance**

In the case of the financial challenge, most interviewees from the Metropolitan Assembly pointed out that the Metropolitan Assembly was unable to deliver on their responsibility because the Assemble owe money to a number of private waste contractors which limit their ability to manage waste effectively. Small private waste contractors and cooperatives mostly stopped to discharge their duties whenever the payment of their contracts delay. It is only one big private contractor, namely, Zoomlion that tried to cope with the financial challenges. Even though Zoomlion used to cope, the cost of delay in payment has serious implications for the Assembly and the waste management company. With respect to private waste cooperatives and companies, the delay in payment directly affects the maintenance of their equipment and the payment of salaries of staff (Field Data, 2024).

According to officials of government interviewed managing solid waste leaves much to be desired. This situation is triggered by limited funds allocated to the management of solid waste. Although the government is responsible for the health and environment of its citizens, it provides less towards solid waste management. This is because the government experiences greater financial challenges. Adding to the financial challenge situation of the government is the irregular pattern of citizens towards paying for sanitation services in Accra. As a result, the health of the public needs protection services, and the cleanliness of the city of Accra are constrained. Therefore, the services provided are irregular making sustainability elusive.

- **Lack of Personnel**

One major challenge identified is the lack of personnel. Human and financial resources are very much needed for a successful implementation; in situations where there is a lack of any of these resources, the probability of quality implementation becomes very slim (Agomor 2002). Apart from financial issues, there is the issue of personnel. Most of the interviewees asserted, that poor remuneration, and delays in payment of staff, accounted for the retention and recruitment of qualified and committed staff for waste management operations. Indeed, the lack of qualified and committed personnel to effectively plan, execute, supervise, and enforce waste management laws turned out to be a major obstacle that stifled the government's efforts to meet the prescriptions made for cleaning Accra (Field Data, 2024).

The Metropolis lacks enough financial and material resources to manage waste. The lack of financial resources has many implications for waste management. For example, due to limited finances, we are not able to procure enough logistics to manage waste effectively. There are inadequate personnel to tackle metropolis waste. This has seriously affected waste laws and policies adopted in the metropolis. To a large extent, all these explain the poor state of waste management. There are serious logistical constraints facing waste management. In most of our serving areas, there are not many waste containers and bins which may explain the indiscriminate dumping of waste in the city (Field Data, 2024).

- **Waste collection and disposal equipment**

Mensah and Larbi (2005) observed that the population growth in Ghana is 3.5 percent with 0.45kg of waste generated in a day. Solid waste generated annually is less than 3.0 million. According to Boateng and Nkrumah (2006) between 1500 and 1800 tons of waste is generated in Accra. Waste generated is sent to the landfill or reused. A typical solid waste management system requires waste

collection and disposal equipment such as waste bins, containers, skips, skip loaders, tricycles, graders, road sweepers, trucks, and bulldozers. (Ogawa, 2005).

Interviews with official indicated that several government departments, ministries, and agencies have all these disposal logistics that they use to do their work No single department, ministry, or agency has all the logistics. What is missing is a partnership for effective coordination to use the available logistics of the private and public sectors. Legislation can help define roles and functions to avoid the duplication of efforts and maximize the use of national resources.

- **Lack of Public Education and Awareness**

The objective to make Accra a clean city can be examined in terms of the level of stakeholder awareness of processes and procedures. Policy implementation is likely to run into trouble where information is unavailable and, even more serious when the actors in the policy network are not adequately informed, or educated about the policy (Agomor 2002).

Community and public awareness on waste generated from households was examined in the study, paying attention to citizen's engagement. The interviews held with Metropolitan staff, Zoomlion staff, and students all acknowledged that education is much needed to alter the waste management behavior of the public. Most interviewees said education can go a long way to create public awareness on the management of waste and also let the public know about other waste management practices. These vignettes from the informants lend credence to the following responses:

I have personally observed that through education, the public becomes aware of very important waste management practices like recycling and waste segregation. Education also helps individuals to influence others on the need to avoid improper waste disposal practices. Education is needed to alter public perceptions and also enhance their knowledge about waste management practices. Indeed, households do not even know of the importance of recycling; some do not know the economic value of recycling; with my engagements with the public, I have observed some of these things (Field Data, 2024).

Thus, the absence of good governance practices such as partnership, collaboration, transparency, openness, and access to information endangered the successful implementation of waste management policy.

- **Social and Cultural Challenges**

The quest to make Accra a clean city is frustrated by social challenges. The lack of cooperation from the citizenry to make a city clean is sometimes the result of the social challenge of conflict. Efforts to make a city clean can be prevented through ownership understanding between private companies and workers informally, (Govind & Mahongnao, 2021). Conflicts push people to urban areas. Rapid urbanization is another social challenge in getting a city clean. This is because rapid urbanization is increasing the number and volume of solid waste in a municipality, (Amugsi, Muindi & Mberu, 2022).

Citizens can refuse to cooperate to make a city clean due to a lack of environmental and socio-environmental responsibility. To address such social challenges, stakeholders affected ought to come together, (Agbim, 2020). Poor cooperation of citizens affect the potency of solid waste policies and regulations, (Amugsi, Muindi & Mberu, 2022).

The aim to make a country clean can be challenged by waste management culture. It has been noted that public perception based on cultural norms focus on water and organic reuse (Ddiba et al., 2020).

In Ghana, a continual attitude to waste is posing as a cultural challenge (Debrah, Teye & Dinis, 2022). For example, individual recycling behavior is influenced by norms and behavior of waste management (Kountouris, 2022). Moreover, individual recycling norms are influenced by waste management norms and practices (Kountouris, 2022). Thus, cultural consumption and participation affect recycling activities occurring in households (Ashshidiqi, Najib & Ningsih, 2020).

Changes in the attitude of citizens towards was may be due to regional variation in norms and preferences (Kountouris, 2022). This embrace within-country differences in norms. E-waste management behavior contributes to the cultural challenge to city cleanliness in Ho, the capital city of the Volta Region of Ghana. For example, river dumping (Dzah et al., 2022; Usoh et al., 2023).

Moreover, the culture of waste management defines recycling behavior is recycling behavior (Kountouris, 2022). For instance, the waste management culture. A waste management culture related to untreated waste untreated waste, (Adeleke et al., 2021). To achieve sustainable outcomes such as a clean city there is the need to encourage behavior among individuals and organization behavior amongst individuals and organizations (Fernando & Zutshi, 2023). Sustainable energy derived from aste resurced can prevent the dumping of untreated waste at landfills (Govind & Mahongnao, 2021). Hence, minimizing waste in Delhi has been facilitated by the activities of hand pickers, (Govind & Mahongnao, 2021).

- **Legal and Institutional challenges**

Legislation challenges relate to the functions and activities of harnessing resources to the maximum level of use. In Kenya, the government's maximum resources can be gained with policies and legislation to implement green procurement attention, (Malatji, 2021In Ghana, there is a pressing need to focus on legislation governing e-waste management practices (Dzah et al., 2022). Addressing e-waste management requires a comprehensive policy approach to reform the socio-technical systems associated with it (Dzah et al., 2022). Policy reforms should give attention to the bottleneck of managing e-waste (Dzah et al., 2022).

Waste management best practices in cities is realized due to poor capacity serving as an institutional challenge. There is the need to address the concerns of inadequate financial, logistics, and know-how in technical areas, (Seah & Addo-Fordwuor, 2021). For example, the volumes of waste collected are influenced by demographic and economic factors, but this cannot occur due to a lack of administrative units that do not privatize waste management units (Adib & Mahapatro, 2022).

Poor capacity to serve citizens is dependent on resource availability. Contributing to the waste problem in a municipality broken down trucks, maintenance (Addo et al., 2020). Non-regulation of waste management Companies by the Assembly, and their low involvement in the affairs of the companies is due to inadequate logistics and material resources. This is a huge local government task a herculean task, (Afful et al., 2024; Boakye et al.,2024

Legislation challenges prevent the definition of roles and functions to prevent effort duplication and maximize the use of national resources. In Kenya, government efforts has been to regulate with policies and legislation business activities of those involved in waste management, (Malatji, 2021).
In Ghana, legislation on e-waste management practices require attention (Dzah et al., 2022). Reforming the socio-technical system in line with managing e-waste need a policy related strategy (Dzah et al., 2022).

Political will for law enforcement is another legislation challenge. In Ghana there is dynamics of informal operators of waste management at Accra (Boampong, Britwum & Akorsu, 2020). Towards

Sustainable waste management is the critical element of political wil to promote waste management policy and legislation, (Kotei, 2024; Sarfo-Mensah et al., 2019). For instance, to fight plastic pollution and resource dependency, the European Commission has introduced Vision 2030 to address plastic waste management issues by way of a cost-effective strategy to reuse or recycle waste (Soto Bermudez, 2020).

Addressing waste disposal requires giving attention to specific laws and coordination of e-waste disposal, (Bowan et al., 2020). For example, Kenya experiences a not-too-strong attitude toward policy implementation as well as enforcement in its urban areas, (Amugsi, Muindi & Mberu, 2022). In developing countries, weak legislation and policy enforcement are controlling to the magnitude of government problems, (Amugsi, Muindi & Mberu, 2022). Non-compliance is also with policies governing waste management. It is important to encourage the promulgating, of legislation that focuses on waste management harmonization and protect the environment to ensure sanitation and health, (Debrah, Teye & Dinis, 2022).

Tackling non-compliance with waste management policies is critical. There is a need to prioritize the formulation, improvement, and alignment of waste management policies. Furthermore, strict enforcement of environmental sanitation laws is essential to protect both human health and the environment (Debrah, Teye & Dinis, 2022).

This will help with the intervention of engaging the private sector through planning to address waste management issues in India, (Prajapati et al., 2021). Thus, policymakers can employ behavioral interventions, (Kountouris, 2022). For instance, government institutions can relook policy in the direction of embracing waste pickers emerging as an incentivized approach pf waste segregation, (Govind & Mahongnao, 2021). Thus, policy makers can employ behavioral interventions (Kountouris, 2022).

Although government institutions are responsible for providing and managing public goods and services such as catering to clean cities, their ability to provide those services is limited by institutional challenges. Some Institutional challenges arise with private-public partnerships and this bureaucracy discourages the private sector from joining heads with public institutions, (Afful et al., 2024; Kavishe et al., 2023). For example, collaboration between public and private organizations in Nairobi has led to strategies that address obstacles to sustainable waste management, notably enhancing policy formulation and financial capacity (Ogutu, Kimata & Kweyu, 2021). Therefore, it is essential to explore methods to improve coordination and cooperation among state agencies and stakeholders (Volsuuri, Owusu-Sekyere & Imoro, 2022). In developing nations, promoting solid waste management practices in municipalities should be prioritized, along with fostering partnerships (Fernando & Zutshi, 2023).

5. Conclusion

The study examine how cooperative governance for resilient urban development can be achieved in the context of Accra, the capital city of Ghana. The study shows that inclusion of non-state actors and industrial cooperatives is potent for the next industrial revolution on environmental sanitation. Sustainable clean cities in African countries are possible to achieve by 2030, through resilient urban development policies. The gap to fill is inclusive non state actors in policy formulation and policy implementation related to clean urban cities. Filling the gap require, recognition by scholars across the globe, embarking an industrial revolution of inclusiveness of the private sector and other non-state actors on cooperative agenda setting for government policy formulation and implementation related to environmental sustainability.

In building sustainable and resilient Accra city as well as clean a policy for sustainable city development. The study concludes that African cities characterize by wicked environmental problems must adapt cooperative governance and include non-state actors as agents in the implementation of clean city policy.

The next industrial revolution related to cooperatives in urban city development is about the inclusion of industrial cooperatives such as the Aboboyaa association in Ghana through collaborative governance seeking to carry out a policy decision for an ideal clean city. The study shows that the Accra city was facing wicked sustainability problems due to non-inclusion of industrial cooperatives in the private sector as stakeholders to help with the implementation of Accra resilient policy. The Accra city department like any other local government unit interested in cleaning cities and attainment of sustainable development goals for environmental sustainability ought to include industrial cooperatives to join their efforts. Clearly the next industrial revolution in the area of environmental sustainability specifically maintaining clean cities has to do with the paradigm shift in the business models of cooperatives in the private sector offering city cleanliness services related to those provided by the local government and non-state actors.

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Navigating the Next Industrial Revolution: The Political Economy of Cooperatives in Kerala, India

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Abstract

This article examines the evolving role of cooperatives in Kerala, India, within the broader context of the Fourth Industrial Revolution (Industry 4.0). Historically, cooperatives have played a pivotal role in Kerala's socio-economic development, contributing significantly to inclusive growth and poverty alleviation. However, as technological disruptions reshape the global economy, the sustainability and relevance of these cooperatives are being increasingly challenged. This paper analyzes both the challenges and opportunities faced by Kerala's cooperatives, offering insights into how they can adapt to the transformations brought about by Industry 4.0. Drawing on a blend of theoretical analysis and empirical data, the article argues that innovation and policy intervention are critical to ensuring that cooperatives continue to serve as vital agents of economic growth and social welfare in Kerala's evolving political economy.

Keywords: Cooperatives, Political Economy, Next Industrial Revolution, Technological Advancements, Politico-Bureaucratic Nexus.

1. Introduction

The global economy stands at the brink of the Fourth Industrial Revolution, marked by the integration of advanced technologies such as artificial intelligence (AI), robotics, the Internet of Things (IoT), and blockchain across various sectors. This revolution promises to transform industries, disrupt labour markets, and reshape economic relationships. However, the uneven distribution of these technological advancements presents significant challenges, particularly in regions with deeply entrenched socio-economic systems. Kerala, with its long-standing cooperative movement, represents a unique case study of how these changes can impact traditional sectors. While the Fourth Industrial Revolution brings opportunities for growth and innovation, Kerala's cooperative sector faces mounting pressures to adapt. The sector's ability to embrace digital transformation will be critical to maintaining its relevance and addressing the socio- economic challenges of the future. Cooperatives and mutual organizations have long played a key role in organizing transactions across various economies. *The Handbook of Research on Cooperatives and Mutuals* (Matthew & Michael 2023) highlights the need for continued research and collaboration on these organizations, encouraging both public and private investment. They suggest that global cooperation, including the possibility of international conferences, could help advance research and address the complex regional dynamics that influence the performance of cooperatives and mutuals, positioning them as effective solutions to economic and societal challenges.

Cooperatives play a crucial role in societies worldwide, deeply influencing various aspects of life. A

study by Dave Grace & Associates (2014) found a strong correlation between countries with robust cooperative economies and high social progress, with two-thirds of the top ten cooperative economies also ranking highly on the Social Progress Index (SPI). Cooperatives have also been proven to enhance economic and financial stability during crises, such as the 2008 financial crisis (Čihák, 2007) and the COVID-19 pandemic. In the book 'The Political Economy of Cooperatives and Socialism', Bruno Jossa (2020) argues that cooperatives, with their democratic structure and worker ownership, can serve as a viable alternative to capitalism and a pathway toward socialism. He suggests that cooperatives offer a model that reconciles economic efficiency with social equity, promoting both individual autonomy and collective decision-making, which could address the shortcomings of traditional capitalist systems. According to the International Cooperative Alliance (ICA), at least 12% of the global population are members of one of the 3 million cooperatives worldwide. Cooperatives provide jobs or work opportunities to 10% of the employed population, and the three hundred largest cooperatives or mutuals generate a turnover of 2,409.41 billion USD while offering essential services and infrastructure for societal progress (ICA, 2023).

Despite these global successes, a closer look at the World Cooperative Monitor (2023) shows that cooperatives in developing countries, including India, have yet to emerge as a significant force compared to their role in developed capitalist economies, where they counterbalance corporate power. This underscores the importance of innovation and adaptation for Kerala's cooperative sector, especially as it faces the demands of the Fourth Industrial Revolution and digital transformation.

2. Importance of Cooperatives in Kerala

Cooperatives in Kerala have long played a pivotal role in promoting economic equity, particularly in rural areas. Deeply integrated into the state's socio-political fabric, the cooperative movement has served as a mechanism for collective bargaining, resource pooling, and building social capital. Agricultural cooperatives support small-scale farmers, while credit cooperatives provide essential financial services to marginalized communities, driving Kerala's unique model of development. The Kerala State Planning Board estimates the cooperative sector's contribution to the state's GDP at around 10-12%. As of the latest reports, cooperative societies in Kerala have mobilized deposits exceeding ₹1.25 lakh crore (₹1,250 billion; approximately USD 15 billion), demonstrating their crucial role in the state's economy (GoK, Economic Review 2023).

Unlike global trends of centralized, technology-driven industrial growth, Kerala's cooperatives present a more community-centric economic model. As industries worldwide face automation and the potential displacement of traditional labour, Kerala's cooperative sector prioritizes collective ownership and social equity, offering an alternative approach to navigating the changes brought by the Fourth Industrial Revolution. While the revolution introduces growth opportunities, it also poses risks of inequality and job displacement—challenges Kerala's cooperatives must address while staying true to their core values of democratic management and local control.

With over 17,000 working cooperative societies (see Table 1), Kerala's cooperative sector spans multiple industries, including agriculture, dairy, fisheries, banking, and retail, providing vital support to small-scale farmers and artisans[i]. Political backing, particularly from leftist movements, has been integral to the sector's success, as cooperatives are seen as tools to counterbalance capitalist models. The supportive role of the state government has also been crucial, with favourable policies, financial aid, and a commitment to ensuring democratic governance within cooperatives. As noted in the Economic Survey of Kerala, the growth of cooperatives has contributed to the achievement of key Sustainable Development Goals (SDGs), such as poverty alleviation, food security, gender equality, and climate action (Government of Kerala, 2024).

However, while the Kerala State Cooperative Policy envisions a sustainable and equitable cooperative movement, there are notable deviations from core cooperative principles, particularly those outlined by the ICA. The policy's vision and mission statements emphasize collaboration with the government, but there is a need to more explicitly reinforce democratic governance, autonomy, and member education. Ensuring that cooperatives maintain their independence and prioritize member participation is vital for safeguarding their foundational values. Moreover, fostering cooperation among cooperatives would strengthen the movement and ensure it continues to benefit society while promoting local economic development.

Table -1 Number Statement of Type-wise Co-operative Societies in Kerala (as of 31-03-2023)

Sl No	Type of Societies	Total	Of which					
			Working	Working Percen	Dormant	Dormant Percen	Under Liquidation	Under Liquidation
1	Apex Societies / Banks	11	11	*100*	0	*0*	0	*0*
2	Federal Societies	13	11	*84.62*	2	*15.38*	0	*0*
3	Central Banks	1	1	*100.00*	0	*0.00*	0	*0*
4	Credit Societies/ Banks	4145	3655	*88.18*	377	*9.10*	113	*2.73*
5	Consumer Societies	20	15	*75.00*	3	*15.00*	2	*10.00*
6	Primary Societies	4609	3749	*81.34*	752	*16.32*	108	*2.34*
7	Marketing and & Processing Socs.	625	235	*37.60*	324	***51.84***	66	***10.56***
8	Miscellaneous societies	6928	4564	*65.88*	2008	***28.98***	356	***5.14***
9	**TOTAL (Under RCS)**	**16352**	**12241**	***74.86***	**3466**	*21.20*	**645**	*3.94*
10	No. of Dairy Coops (APCOS + Non Apcos(Under Dairy Dept)	**3610**	3370	***93.35***	240	*6.65*	0	*0.00*
11	Number of Hanloom Coops	**532**	335	62.97	115	21.62	82	15.41
12	No. Coir Coops	**1103**	546	***49.50***	286	*25.93*	271	*24.57*
13	No. Fisheries Coops (Matysfed)	**651**	651	***100.00***	-	*0.00*	-	*0.00*
14	Number of Industrial Coops	367	367	***100.00***	-	*0.00*	-	*0.00*
	TOTAL of all cooperatives	**22615**	**17510**	***77.43***	**4107**	*18.16*	**998**	*4.41*

Note: Data on dormant and under-liquidation cooperatives in the Fisheries and Industrial sectors is unavailable.

Source: (i) Government of Kerala, (2023). NUMBER STATEMENT OF TYPE WISE CO-OPERATIVE SOCIETIES, Department of Co-operation. (ii) Government of Kerala. (2024) Economic Review 2023, Vol.2, State Planning Board

Field studies reveal that many cooperatives in Kerala are straying from their foundational principles, becoming increasingly intertwined with bureaucratic systems (Jose 2012; Veerakumaran & Vinaikumar 2014; Nair & Misha 2024, Jose 2001). This entanglement has limited their autonomy, posing a challenge to the cooperative movement's effectiveness in addressing the socio-economic needs of its members. As the Fourth Industrial Revolution— characterized by the integration of digital technologies, automation, and artificial intelligence— reshapes industries, Kerala's cooperatives must adapt to remain competitive. This includes adopting digital platforms for financial transactions, market access, and supply chain management. At the same time, the cooperative model's focus on local control and community benefit offers a counter-narrative to the disruptive

potential of this revolution, such as job displacement and rising inequality. The cooperative movement in Kerala must therefore find ways to integrate new technologies while preserving its core values. This background of Kerala's cooperative movement sets the stage for addressing the research problem outlined below.

3. Research Problem Statement

The onset of the Fourth Industrial Revolution, characterized by rapid technological advancements such as automation, artificial intelligence, and digital platforms, presents both significant challenges and transformative opportunities for Kerala's cooperative sector. With over 17,000 registered cooperatives across agriculture, banking, fisheries, and consumer goods, these institutions have historically been central to fostering social equity, financial inclusion, and rural development in the state. However, as Kerala's economy becomes more integrated with global markets and the pressures of modernization intensify, the ability of cooperatives to adapt to these technological changes and continue contributing to sustainable economic growth is increasingly in question.

This study critically examines the potential of Kerala's cooperatives to navigate the complexities of this industrial transformation, particularly in leveraging their community-centric and democratic structures to drive inclusive growth. At the same time, the research explores the risks posed by these technological shifts, including the potential erosion of cooperative values such as democratic governance and local control. By situating these cooperatives within the broader political economy of Kerala, this research aims to assess how they can continue to play a strategic role in shaping the state's economic future, ensuring that the benefits of technological advancement are equitably distributed across society, without compromising their foundational principles.

4. Research Objective

To critically analyze the historical role of Kerala's cooperatives in driving economic development, assess the challenges and opportunities they face in adapting to the Fourth Industrial Revolution, and explore how these cooperatives can leverage their community-centric model, governance structures, and policy support to foster sustainable and inclusive growth. The study will also examine how Kerala's cooperatives can balance the demands of modernization with their core values of social equity and democratic governance in an increasingly globalized economy.

5. Research Questions

As we move further into the era of the Fourth Industrial Revolution, critical questions arise regarding the role of cooperatives in this new economic paradigm:

(i) How have Kerala's cooperatives historically contributed to economic development, and what lessons from their past can guide their adaptation to the Fourth Industrial Revolution?
(ii) What are the main challenges and opportunities for Kerala's cooperatives in embracing technological advancements and navigating globalization within the evolving political economy?
(iii) How can Kerala's cooperatives leverage their community-centric model to foster sustainable and inclusive economic growth while maintaining a balance between modernization and social equity?
(iv) How do governance structures, financial mechanisms, and state policies impact the ability of Kerala's cooperatives to adapt to the economic and industrial transformations of the Fourth Industrial Revolution?

6. Thesis Statement

This study argues that while Kerala's cooperatives have historically contributed to economic resilience and social equity, their current governance structures have deteriorated, deviating from core ICA principles and suffering from declining member participation. Increasingly entangled in the state's bureaucracy, the cooperative movement has been weakened by corruption, inefficiency, and the erosion of democratic processes, largely due to the politico-bureaucratic nexus. As youth disengagement grows and governance issues persist, the capacity of cooperatives to adapt to the demands of the Fourth Industrial Revolution and drive sustainable, inclusive growth is significantly compromised. The future success of Kerala's cooperatives depends on urgent governance reforms, renewed member engagement, and a reinvigorated commitment to cooperative principles.

7. Methodology

This study employs a mixed-methods approach, integrating qualitative and quantitative research techniques to comprehensively analyze the role of cooperatives in Kerala within the context of the Fourth Industrial Revolution. This methodology captures the multifaceted nature of cooperatives, including their philosophical foundations, governance structures, and socio-economic impacts.

The research begins with a comprehensive literature review on the political economy of cooperatives, with a specific focus on Kerala and the implications of the Fourth Industrial Revolution. This review identifies key gaps and establishes the theoretical foundation for the study. A conceptual framework is developed, incorporating critical concepts from political economy, cooperative governance, and community-centric development, with an emphasis on sustainable development and industrial transformation.

To gather primary data, a purposive sampling method is employed to select case studies from diverse cooperative sectors in Kerala, including agriculture, fisheries, and banking. Semi- structured interviews with cooperative leaders, members, and policymakers are conducted, alongside surveys to capture member engagement and participation[ii]. Document analysis (e.g., policy documents, cooperative records) and field observations are used to further triangulate data.

Quantitative data collection includes analyzing financial performance metrics, membership statistics, and cooperative participation rates. These are integrated with the qualitative findings to provide a comprehensive view of the cooperatives' performance and challenges. Findings from the case studies are compared and synthesized to identify patterns, challenges, and best practices. The final analysis draws broader conclusions about the role of cooperatives in Kerala's political economy and their potential to drive sustainable growth in the face of technological transformation. The study concludes with policy recommendations aimed at enhancing the resilience and effectiveness of Kerala's cooperatives in the context of the Fourth Industrial Revolution.

8. Literature Review:

The Historical Trajectory of the Cooperative Philosophy

The first phase involved a comprehensive literature review to establish the theoretical foundation of the study. Key sources included academic articles, government reports, and publications related to political economy, cooperative development, and technological adaptation. This review helped identify gaps in existing research and informed the conceptual framework used to analyze the data. The literature reviewed provides a comprehensive understanding of the cooperative movement's principles, challenges, and contributions in various contexts.

Cooperatives emerged as an organizational innovation in Europe during the mid-19th century, specifically to counteract the exploitative nature of capitalism that was gaining ground as an economic system during the Industrial Revolution. The first cooperative society was established in 1844 in Rochdale, England, by mill workers who sought to procure consumer goods through a store that adhered to cooperative principles (ICA, 1937), as outlined in Table 1. This Rochdale Society laid the foundation for modern cooperatives, and its principles were later reformulated by the ICA to align with the evolving global environment. Cooperatives play a crucial role in addressing economic challenges, particularly in the context of market and government failures. The Rochdale Pioneers, who initiated the first Cooperative store, recognized this potential. They saw Cooperatives as a solution to the failures of both the public and private sectors, which left workers unable to obtain their daily necessities. The unique strength of Cooperatives lies in their ability to integrate economic, social, and environmental values, leading to positive outcomes not only in terms of income but also in community development and member well-being. This integration is achieved through a democratic structure that emphasizes participation, inclusion, and collective management (assimilated from various publications on cooperatives especially writings by ICA, MacPherson, Birchall etc.)

Cooperatives have since become a vital organizational form for economically vulnerable groups, allowing them to pool their resources for the collective benefit of their communities. In 1995, the ICA adopted a revised Statement on the Cooperative Identity, which includes the definition of a cooperative, its core values, and the seven cooperative principles (see Table 2). These principles form a cohesive whole, with each one reinforcing the others. As MacPherson, who developed the latest set of principles, explains they are intricately connected, and neglecting even one weakens the impact of all. Co-operatives should not be assessed solely on a single principle; instead, their success should be measured by how effectively they embody the principles as a unified set (MacPherson, 1995b, p. 13).

Table No. 2: Cooperative Principles: A Comparison of Principles of Rochdale Pioneers Vs. ICA

Sl No	**Cooperative principles by Rochdale Pioneers (1844)**	**Cooperative principles by ICA (1995)**
i	Open Membership	Voluntary and Open Membership
ii	Democratic Control	Democratic Member Control
iii	Dividend on Purchase	Member Economic Participation
iv	Limited Interest on Capital	Autonomy and Independence
v	Political and Religious Neutrality	Education, Training and Information
vi	Cash Trading	Co-operation among Cooperatives
vii	Promotion of Education.	Concern for Community

Source: Computed and compiled from different sources

The principle of 'Political and Religious Neutrality' of Rochdale Pioneers is no longer a principle of Cooperative formation as per the ICA statement. According to ICA, a Cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise". It is to be noted that the "Cooperatives are based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity'' and "Cooperative members believe in the ethical values of honesty, openness, social responsibility and caring for others" (ICA, 2015).

The first four ICA principles are the most important principles that make a Cooperative organization distinct from other forms of business organization. The last three principles underline the

Cooperative's role as a development organisation by 'democratising development' through strengthening its commitment to serve the community where it exists. As observed by Bouchard the dual nature of the cooperative is reflected in the shared identity of members as both owners and users of the cooperative. Through the ownership linkage (economic participation and voting rights), the members jointly (through their association) own the cooperative. The usage linkage means that the cooperatives' activities serve members' needs and aspirations and that members can make use of these activities (Bouchard 2020). Cooperatives are fundamentally value-driven organizations that prioritize the overall well-being of people, in contrast to the income-centric growth pursued in a competitive, capitalistic environment. In principle, cooperatives stand in direct opposition to the operations of firms within a capitalist economy. However, the practical application of cooperative principles often involves navigating a complex landscape of priorities and compromises.

As illustrated in Table 3, a cooperative economic framework involves multiple stakeholders who collaborate towards a shared purpose or benefit. Among these stakeholders, governments play a crucial role, particularly in fiscal and legal matters, and in overseeing the operation of cooperatives within the broader economy. The success and development of the cooperative movement in any country are shaped by a complex interplay of factors. These include the economic and political systems, state and government legislation, and social and economic policies, as well as external influences such as the international economy and technological advancements. Birchall's (2011) work emphasizes the importance of membership and democratic governance in cooperatives, aligning with the foundational principles outlined by the ICA (2024). Ostrom's (2015) work brings out the evolution of institutions for collective action. Attwood and Baviskar's research (1987) investigates the factors influencing the success and failure of sugar cooperatives in India, highlighting the critical role of institutional support.

Table No. 3: Various Cooperative Stakeholders and Their Rational Concerns

Publics	**Area of Concern**
Farmer/Members	(i) Good price, (ii) Equity price, (iii) Reduction of risks, (iv) Access to the market, (v) Continuity of farming
Customers	(i) Food safety, (ii) Wholesomeness, (iii) Product price, (iv) Marketing efficiency
Employees	(i) Financial benefits, (ii) Recognition/Pride, (iii) Working environment
Suppliers	(i) Price, (ii) Stability, (iii) Continuity
Government (state/local)	(i) Taxes, (ii) Prevention of oversupply, (iii) Law enforcement, (iv) Competition (i.e., no subsidies)
Society	(i) Sustainable growth, (ii) Preventing the outflow of resources, (iii) Education and services, (iv) Civil rights, (v) Pollution abatement, (vi) Employment provision
Landowners	(i) Good rent on land, (ii) Appreciation of land value

Source: Van Bekkum O.F and Van Dijk G. (Eds.) (1997) – Agricultural Cooperatives in the European Union, Trends and Issues on the Eve of the 21st Century, Van Gorcum: The Netherlands.

Reports from the Government of India (2024) and the Government of Kerala highlight the status, policies, and vision for cooperatives in India and Kerala, respectively, underscoring the role of cooperatives in socio-economic development. Govil et al. (2020) explore the evolution and impact of farmer-producer companies, illustrating the cooperative model's potential in agricultural sectors. Jose and Chathukulam (2022) analyze the implications of India's new cooperative ministry, providing

insights into policy directions. Singh and Pundir (2000) focus on cooperatives' role in rural development, while Thomas and Williams (2017) narrate the success story of a construction workers' cooperative in India. Additionally, cultural values, demographic structures, living conditions, and the activities of other organizations, people's movements, and trade unions also play significant roles. Together, these factors determine the ability of cooperatives to thrive and fulfil their mission (Laidlaw, 1987; Birchall, 2004; Kumar, Wankhede, & Gena, 2015; Mooney, 2004; Hyman, 2001). Collectively, these sources offer a rich contextual background and critical analysis relevant to understanding the political economy of cooperatives in Kerala amidst the evolving industrial landscape.

The history of the world's poorest countries reveals a journey from colonialism to Cold War realignments, where development aid became a tool for superpowers to influence these nations. In this context, cooperatives were often misused and viewed as a means to transition toward either capitalist or socialist economies, depending on which superpower was being appeased (Birchall, 2004). However, cooperatives are not merely transitional forms but are unique, people-centred businesses that enable individuals to collectively meet their needs by pooling resources. Despite their potential, it's crucial not to idealize cooperatives or any organizational type as universally effective. Different organizational structures serve different purposes based on who controls them, how assets are managed, and how profits are distributed. Cooperatives, with their focus on collective strength, are particularly advantageous in helping poor communities through economic activities tailored to their specific needs.

Conflicting interests can arise within a cooperative system. For instance, suppliers in a farmer- owned cooperative seek to maximize prices, while consumers in a consumer cooperative aim for the lowest possible prices. Similarly, workers in a worker cooperative strive to maximize their wages or salaries. These differing priorities can create tension within the cooperative structure. Ranis (2016) argues that worker cooperatives offer a democratic alternative to neoliberal capitalism, empowering workers through ownership and decision-making. In his book *Cooperatives Confront Capitalism: Challenging the Neoliberal Economy*, Ranis emphasizes that cooperatives challenge the exploitative nature of capitalist enterprises by promoting social justice, equality, and economic democracy. He suggests that cooperatives are key to addressing the inequalities perpetuated by neoliberal economic policies.

As observed by Marie & Yair (2005) a key challenge for cooperatives is balancing their social and economic goals while operating in a competitive environment that values individualism and profit. This tension creates a paradox, where cooperatives strive for solidarity and reciprocity, yet must navigate a culture that often views cooperation as a hindrance to individual freedom. To survive and maintain their distinct values, cooperatives need to adopt a new approach that integrates their social mission with modern economic realities. To perform effectively, a cooperative must be organized around a homogeneous interest that aligns with the goals of its members (See Table 3).

The essence of a Cooperative can be encapsulated by the three "Cs": cooperation, community spirit, and collective action (Dash, 2013). These organizations represent a blend of capitalism, with its focus on income growth, entrepreneurship, and enterprise development, and democracy, with its emphasis on participation, ownership, and control. This "arranged marriage" between capitalism and democracy enables Cooperatives to transform the economic lives of their members by prioritizing values beyond mere profit and competition.

The Cooperative Approach: A Distinct Model of Economic and Social Integration

The Cooperative model differs fundamentally from that of a typical capitalistic firm, particularly in

its treatment of labour. In traditional capitalist firms, labour is often viewed as toil, where employees work primarily for wages. In contrast, Cooperatives treat labour as action, where member-workers actively engage in the organization, contributing to both its economic and social objectives. Cooperatives uniquely combine two key dimensions, as highlighted by Stefano Zamagni (2010):

(i) *Associationism:* This dimension emphasizes the voluntary coming together of individuals to achieve goals that are unattainable individually.
(ii) *Entrepreneurship:* This aspect focuses on the creation of an enterprise, a stable organization that directs productive activities towards the market.

By integrating these two dimensions, Cooperatives balance the social aspect of producing positive externalities for the community with the economic necessity of operating successfully within the market. Unlike the standard capitalist model, which prioritizes the accumulation and concentration of wealth among owners and investors, *Cooperative economics* is centred on the fair distribution of wealth among all producers and consumers. This paradigm shift underscores the potential of Cooperatives as a means for people, especially the poor, to help themselves. Cooperatives embody the principle of development for the people and by the people, making them a powerful tool for equitable and sustainable economic growth. Both theory and practice demonstrate that Cooperatives are uniquely positioned as the only economic institutions capable of organizing the unorganized. They not only enable these individuals to participate in the production process but also ensure that they benefit from it. Through this inclusive approach, Cooperatives play a vital role in fostering equitable growth and empowering those who are typically marginalized in traditional economic systems.

Johnston Birchall (2017) made a significant contribution to the theory of cooperative governance by emphasizing the importance of a well-designed governance structure centred around three key elements: member involvement, representation, and expertise. He argued that member engagement is crucial for reinforcing psychological ownership, particularly in large consumer cooperatives where governance participation may be limited to voting. Birchall also recognized the challenges of ensuring effective representation in cooperatives with diverse member interests and types, and he highlighted the importance of appointing independent directors to fill expertise gaps, especially in consumer cooperatives where members may lack familiarity with market dynamics and strategic decision-making. In "Neither Public Nor Private: The Co-operative Third Way," Johnston Birchall (1996) explores how we should conceptualize the co-operative sector and its position relative to other social and economic sectors. He raises important questions about whether the significance of cooperatives varies across countries and over time, or if there is a consistent essence grounded in cooperative principles. Birchall examines two primary approaches to these questions: one rooted in political economy and the other in social philosophy. He further discusses the relevance of different models, including the social economy model, the third sector model, and the people- centred business model, offering a comprehensive analysis of where cooperatives fit within the broader societal framework.

'New Cooperativism' refers to a resurgence and reimagining of cooperative principles and practices that have emerged in response to the failures of neoliberal capitalism, particularly in the late 20th and early 21st centuries. This movement redefines traditional cooperatives by emphasizing values like sustainability, social justice, and community empowerment, often in contrast to the profit- driven motives of traditional capitalist enterprises. The concept of 'New Cooperativism' is rooted in the recognition that traditional cooperatives, while valuable, often operated within the confines of capitalist structures, focusing more on economic survival than on broader social change (Vieta, 2010). The new wave of cooperatives, however, seeks to address systemic inequalities, environmental

degradation, and the erosion of community through innovative, democratic, and inclusive practices. This includes worker cooperatives, community-owned enterprises, and digital cooperatives that leverage technology to create more equitable and participatory economic models (Parker et al., 2014).

Baviskar and Attwood (1996), among the pioneers in this area of research, emphasized that the performance of Cooperatives can only be fully understood within the specific regional political and social context. They observed that regions characterized by a broad middle stratum of peasant proprietors, numerically large middle-status castes, commercialization, and relatively greater autonomy from the state are more likely to see successful Cooperative movements. Rath (2016) advocated for institutional changes to promote Cooperatives, suggesting that membership should be limited to those who actively use the Cooperative for its intended purpose. He also proposed that voting rights within Cooperatives should be proportional to each member's share in the total patronage, aligning with the principle of "member economic participation."

The Shivajirao G. Patil Committee (Government of India, 2009) identified governance as a significant factor contributing to the poor performance of Cooperatives in India. The committee argued that the root cause of governance issues lies in the legal framework governing Cooperatives. It recommended constitutional amendments to ensure that state Cooperative laws support the autonomous functioning of these institutions. Such autonomy is crucial not only for helping people survive economically but also for indirectly influencing market behaviour. The Vaidyanathan Committee (NABARD, 2005), which examined Cooperative credit, similarly concluded that poor management and governance were the primary reasons for the financial losses faced by Cooperative societies and banks. The committee warned that without improvements in these areas, any efforts at capitalization would be ineffective as the fundamental functioning of Cooperatives would remain unchanged. A study by the National Council of Applied Economic Research (NCAER) on Cooperative agro-processing and the identification of institutional financial gaps highlighted numerous policy hurdles facing the Cooperative model in India. One major issue identified was the administration of Cooperatives, traditionally managed by state governments, which introduces political complexities. The establishment of a Union Ministry for Cooperatives has rekindled the national debate on collaborative federalism, as noted by Bandyopadhyay (2021).

Many researchers have consistently underscored the governance challenges faced by Cooperatives in India, highlighting the need for reforms to enhance their effectiveness and sustainability. A study by Virendra Kumar, (2015) concluded that Cooperatives are crucial in supporting small and marginal farmers, particularly in developing countries where agriculture is key to economic growth. By uniting farmers to address common needs, cooperatives like IFFCO, KRIBHCO, and AMUL have significantly improved crop productivity, income, and sustainability. These organizations not only enhance agricultural efficiency but also promote ecological resilience through initiatives like agroforestry, benefiting both farmers and the broader community.

Technological and Economic Changes Associated with the next Industrial Revolution.

The transformative impacts of each industrial revolution, from Industry 1.0 to Industry 4.0, on economic structures and labour markets have been significant. Each industrial revolution has brought about profound changes in economic structures and labour markets. The first industrial revolution introduced mechanization, the second brought mass production, and the third digitalized information. The fourth, or Industry 4.0, is characterized by the fusion of technologies that blur the lines between physical, digital, and biological systems. This revolution is expected to transform industries, leading to automation and data exchange in manufacturing technologies, impacting everything from production to services.

Cooperatives, traditionally seen as a model of collective action and social capital, face unique challenges in the context of Industry 4.0. While these organizations have historically thrived on community participation and democratic decision-making, the rapid pace of technological change necessitates a reevaluation of their operational models. The principles of cooperation—such as voluntary membership, economic participation, and concern for the community—must be integrated with the demands of technological innovation to remain relevant. If Owen were alive today, he would likely extend his influential ideas on the relationship between wants, needs, and social progress to address the current climate crisis. Owen's works (Owen, 1813-16) and the communal experiments of the Owenite movement, dating back to the 1820s, clearly reflect an early recognition of the value of reducing unnecessary consumption in favour of increasing free time and fostering creative pursuits.

The literature on current trends and challenges in the cooperative sector, especially in the face of technological and economic changes associated with the next industrial revolution gives a broad picture of the challenges that the cooperative sector faces. As per the ICA World Cooperative Monitor 2022, large cooperatives that invested in digitalization face prominent challenges due to rapid technological shifts. These organizations need to address the growing demands for digital participation while maintaining democratic control. The balance between embracing technology and preserving traditional cooperative values is a significant concern. In the rapid transformation of the economy, digitalization is assuming a key strategic function in enterprises. It is pervasive in all areas of activity in large, small, and micro enterprises and affects the entire value chain cycle of products and services ICA (2022).

The study by Linfeng et.al (2024) in China examined the digital transformation of farmer cooperatives. They opined that it is crucial for advancing rural digital strategies, but it faces challenges due to funding and scale constraints, necessitating both government and market involvement. This study uses a tripartite game model to analyze the roles of farmer cooperatives, consumers, and the government, identifying key parameters like digital subsidy coefficients and consumer preferences that influence successful digital transformation. In the short term, policy-driven initiatives are critical, while long-term success depends on market-driven approaches.

A study conducted in Indonesia examined the competitiveness of cooperatives in the fourth industrial revolution (Industry 4.0) which is defined by automation, data exchange, and advanced digital technologies. Cooperatives, particularly in community economic organizations, face challenges in keeping pace with rapid technological change. Cooperatives' low competitiveness, especially in regions like West Java, Indonesia, highlights the need for adapting to technological advancements and improving sustainability. The sector needs to adopt more digital and automation-based approaches to remain competitive (Wahyuningtyas, et.al. 2023). Research on coffee farmer cooperatives in Indonesia reveals how digital transformation, driven by the fourth industrial revolution, improves the sustainability of these cooperatives. However, limited technological resources and the need for upskilling members pose major obstacles.
(Wardhiani, et.al 2023).

The study conducted by de Peuter et.al (2022) in Canada the UK and the USA examined the new forms of 'cooperativism' that have emerged in the creative and tech sectors. The study highlights four key implications for 'cooperativism' in the cultural and tech sectors. First, research must be grounded in robust evidence of co-operatives' material conditions, such as pay, benefits, and worker's voice, to effectively advocate for co-operatives as a strategy for economic and social justice. Second, the informality in many co-operatives, particularly in creative industries, poses risks to their economic sustainability, highlighting the need for better business practices and reflection on cooperative principles. Third, the rapid growth of co-operatives in creative industries presents opportunities to

promote the cooperative model as an alternative to sole proprietorship, especially given the high satisfaction rates among co-operative workers. Finally, the mixed findings on pay and benefits reflect the broader precarity of work in these sectors, suggesting that co-operatives must be linked with broader movements for social protection and workers' rights, with union co-operatives playing a key role in this effort. However, challenges such as maintaining organizational structures that support democratic participation, while competing in fast-changing industries, remain a barrier. There are opportunities in these sectors, but more work is needed to ensure cooperative principles can thrive alongside technological innovation.

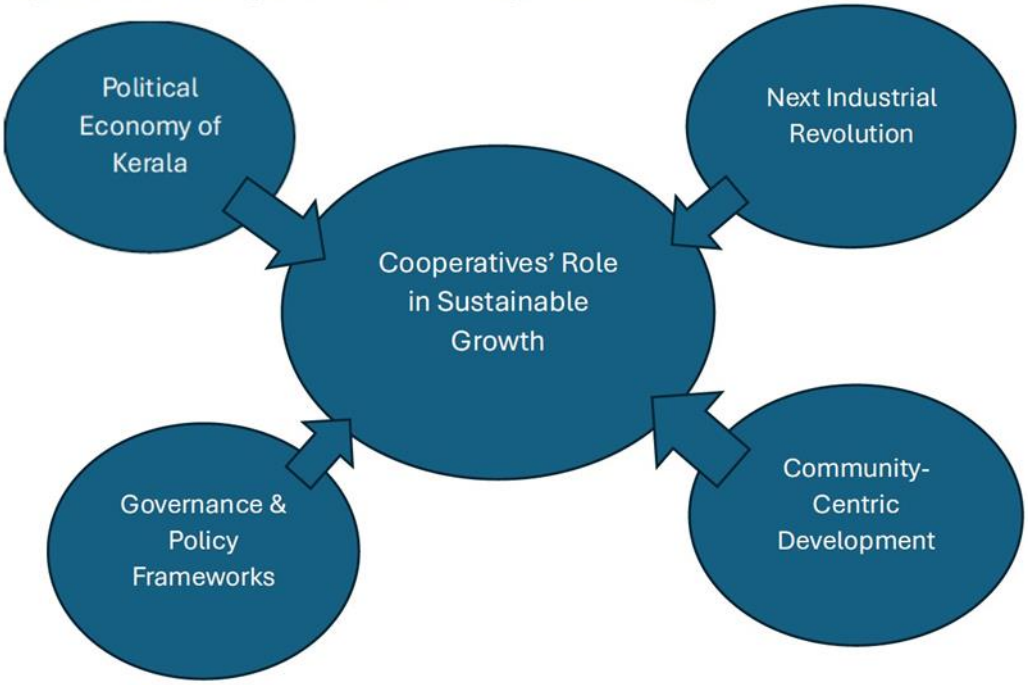
The paper by Tripathy et.al (2021) opines that the next industrial revolution, Industry 4.0, offers both significant challenges and opportunities for cooperatives, traditionally grounded in collective action and democratic values. While technological advancements like Big Data, IoT, and automation can enhance operational efficiency and sustainability, cooperatives often struggle with resource constraints, limited technological infrastructure, and the need to balance innovation with member participation. Successful digital transformation in cooperatives depends heavily on cultivating technical skills, fostering member engagement, and developing robust IT infrastructures. Ultimately, cooperatives that can integrate Industry 4.0 technologies while preserving their cooperative principles stand to benefit from increased competitiveness and long- term sustainability. The study by Saba (2023) highlights how Industry 4.0 can help cooperatives improve operational efficiency and sustainability. Despite cooperatives' historical challenges with adopting technology due to limited funding and infrastructure, these advancements offer solutions for sustainable business practices. However, the successful implementation of Industry 4.0 in cooperatives requires active member participation, technical knowledge, and collaboration.

In sum, while Industry 4.0 introduces significant technological and economic shifts, the cooperative sector’s ability to integrate technological innovation with cooperative values of community and equity will be critical in navigating these changes, especially in regions like Kerala with strong traditions of cooperative governance. Studies from regions like China, Indonesia, and North America reveal that cooperatives must adapt to rapid technological shifts while maintaining their core values.

9. Conceptual Framework of the Study

Based on insights gained from the literature review, a conceptual framework has been developed to guide the analysis. This framework integrates key concepts from political economy, cooperative governance, sustainable development, and industrial transformation. It will serve as a lens through which the role of cooperatives in Kerala can be critically examined, focusing on the interaction between cooperatives and broader economic forces such as globalization and technological change. The framework will address the dual objectives of cooperatives: promoting social equity and achieving economic efficiency, while also considering the significant impact of state policies and regulatory environments on the functioning of cooperatives.

Figure-1: The Conceptual Framework Diagram of the Study



However, the framework also acknowledges the challenges that Kerala's cooperatives face, particularly the erosion of governance structures, the weakening of member participation, and the pervasive influence of the politico-bureaucratic nexus. These factors have led to a disconnection between cooperatives and their foundational principles, resulting in a sector that struggles to remain relevant to the youth and is increasingly seen as an appendage to the state's bureaucracy. The conceptual framework will therefore not only assess the potential of cooperatives to act as agents of sustainable development in a rapidly changing industrial landscape but also critically evaluate the structural and governance reforms necessary to revitalize the cooperative movement in Kerala. This structured approach ensures that all relevant dimensions of the research questions are addressed, providing a comprehensive analysis of the cooperative conundrum in Kerala.

10. Empirical Analysis: Cooperatives in Kerala Today

Since 1990-91, India has embraced a liberalized, capitalistic market economy. However, the current central government's decision to prioritize cooperatives by establishing a dedicated ministry must be viewed considering the potential of cooperatives to serve as a countervailing force, protecting the interests of the disadvantaged sections of society (Jose & Chathukulam 2022). Data on inequality in India, such as the Gini index, reveals that income disparity has worsened since the country embarked on a private enterprise-driven growth path. While the rich have become richer, the conditions for the poor have not improved and, in some cases, have deteriorated— particularly during the current pandemic crisis (World Inequality Lab, 2022).

The political economy of cooperatives in Kerala can be understood through the lens of power relations, resource distribution, and economic policies that have shaped their development. Cooperatives in Kerala emerged as a response to the failures of both the market and the state to address the needs of marginalized communities. By organizing themselves into cooperatives, these communities were able to exert collective control over resources and gain a degree of economic autonomy. The political economy of cooperatives in Kerala can be better understood by examining

how these institutions are managed and governed, considering both political and economic factors. The literature review provided insights from key studies highlighting critical issues that influence policymaking for the development of cooperatives in Kerala and India.

The authors conducted comprehensive field research across various cooperative sectors in Kerala, involving surveys and interviews with key stakeholders, including cooperative members, leaders, policymakers, and experts. Kerala's economy, characterized by high human development indicators and significant remittance inflows, continues to rely on cooperatives in agriculture, dairy, fisheries, and finance. The field-level investigation intended to answer our research questions was also motivated by the following three primary factors: (i) We observed a significant decline in the percentage of functioning cooperative societies in Kerala over the past 18 years, as illustrated in Table 4. The percentage dropped from 85.51% in 2005 to 75.57% in 2023. (ii) There is widespread occurrence of irregularities and fraudulent activities across various sectors of cooperative operations. (iii) Despite the prominence of cooperative societies in the agricultural sector, this sector in Kerala continues to underperform. In Kerala, as indicated in Table 1, nearly 62% of marketing and processing cooperatives are either dormant or under liquidation, alongside approximately 34% of miscellaneous societies (their number is huge-6928, see Table 1) falling into the same category. This poses a significant challenge; particularly given the severe crisis in agricultural marketing that Kerala is currently facing. The inability of cooperatives to effectively address the needs of farmers underscores a critical failure in the cooperative system's role in supporting agricultural stakeholders. We observed that deep-rooted structural, managerial, and demographic challenges threaten the long-term sustainability of the cooperative movement. These challenges must be addressed to revitalize cooperatives in an increasingly dynamic socio- economic environment as we explain in the following sections.

Table 4 No. of Societies Working CO-OPERATIVE SOCIETIES (**Under RCS**) as of 1st April 2005, and 31st March 2023

Sl No	Type of Societies	1st April, 2005			31st March 2023		
		Total	Of which Working	Working Percentage	Total	Of which Working	Working Percentage
1	Number of Societies	12612	10280	***81.51***	16255	12284	***75.57***

Source: (i) Government of Kerala, (2023).NUMBER STATEMENT OF TYPE WISE CO-OPERATIVE SOCIETIES, Department of Co-operation. (ii) Government of Kerala. (2010) STATISTICAL ABSTRACT 2005-06 HANDBOOK, STATISTICS WING, Office of the Registrar of Co-operative Societies, Kerala

Politicization of Cooperatives

A major issue facing Kerala's cooperatives is the politicization of their governance structures. Elections to cooperative boards are frequently contested along political lines, with members affiliated with political parties holding key positions. This politicization undermines the cooperative principles of democratic member control and economic participation[iii]. Political interests often overshadow the cooperative ethos, turning these institutions into stepping stones for political ambitions rather than serving the economic interests of their members.

According to field data, political leaders often use cooperatives as platforms to advance their careers, with positions in cooperatives leading to more prestigious roles in the state legislative assembly or Parliament. Additionally, political interference has led to selective membership practices, where individuals opposed to the ruling political faction are excluded[iv]. This practice violates the inclusive

nature of cooperatives and dilutes their economic and social impact.

Kerala's cooperative development faces a significant issue due to the loss of *local control* in decision-making, caused by the interference of centralized political parties. Despite a framework for democratic, decentralized planning, local leaders, especially in Cooperatives & Gram Panchayats, lack the authority to address community-specific issues. Centralized political parties impose a top-down approach, undermining grassroots participation and cooperative democracy. This paradox restricts the effectiveness of local governance (local control) in cooperatives as decisions are dictated from above rather than emerging from the needs of the local community.

Strengthening regulatory frameworks to limit political involvement in cooperative elections could restore the democratic essence of cooperatives. This might include setting clear guidelines for the selection of board members based on professional qualifications rather than political affiliations. Encouraging active participation & local control and oversight by members can create accountability, reducing the influence of external political forces.

Church Politics and Cooperative Leadership

In regions such as Travancore and Idukki, the involvement of the Roman Catholic Church in cooperative leadership has emerged as a substitute for weakened political leadership. The Church has played a pivotal role in organizing Farmer Producer Companies (FPCs) and Farmer Producer Organizations (FPOs), filling the leadership vacuum left by internal divisions within political parties such as the Kerala Congress.

While the Church's leadership (relatively free from political interference) has brought some stability, especially in addressing agricultural issues such as declining cash crop prices, the leadership often lacks the professional management expertise required for long-term growth[v]. Young priests and bishops have increasingly taken leadership roles, but they are not equipped with the skills to manage complex agricultural cooperatives efficiently.

Cooperative boards, even those led by religious or community organizations, need to recruit professional managers with expertise in finance, marketing, and agricultural production. Offering targeted training and capacity-building programs for cooperative leaders could bridge the gap between social leadership and professional management.

Lack of Professional Management

One of the most critical issues observed in Kerala's cooperatives is the absence of professional management. Many cooperatives, despite handling significant financial transactions, do not adhere to basic financial standards. For example, cooperatives managing large sums of credit frequently overlook non-performing assets (NPAs) and cost-of-fund calculations, leading to financial instability. Data from field research indicates that cooperatives with politically appointed leaders or individuals lacking financial expertise often suffer from mismanagement[vi]. In some cases, mismanagement has led to high rates of NPAs and unsustainable operational costs. For instance, cooperatives involved in the chitti (traditional savings and credit) schemes struggle to maintain profitability without adopting more modern financial practices[vii]. The recent Karuvannur Service Co-operative Bank scam, along with several similar incidents in the state, highlights the professional inefficiency and serves as a clear example of the politico-bureaucratic nexus undermining the cooperative movement in Kerala (The Hindu 2024).

Implementing strict financial audit procedures to ensure that cooperatives adhere to modern financial management practices can reduce the risks of financial mismanagement. Encouraging cooperatives

to hire professionally trained managers with expertise in finance, economics, and agricultural markets would improve operational efficiency and financial sustainability.

Declining Member Participation and Loss of Public Trust in Cooperatives

A significant decline in member participation in cooperative management has been observed. Despite having large memberships, only a small fraction of members attend annual general meetings or engage in decision-making processes. This is particularly evident in agricultural cooperatives, where many members are inactive or joined merely for social status.

Field data show that the lack of member engagement leads to decision-making being concentrated in the hands of a few individuals, undermining the democratic foundation of cooperatives. For example, in some cooperatives with over 10,000 members, fewer than 100 members attended the last annual meeting, signalling disengagement and a potential loss of relevance for the cooperative movement.

Another significant observation from the field pertains to the growing distrust in Kerala's cooperative sector, particularly in the aftermath of the Karuvanur scam. This scandal has led to a widespread loss of confidence in the cooperative movement, with many individuals withdrawing their deposits or awaiting maturity to do so. Our visits to various cooperatives revealed a consistent pattern of deposit withdrawals, signalling a broader decline in public trust. This erosion of trust threatens to tarnish the image of cooperatives in Kerala for an extended period. Moreover, it is likely to deter youth participation, as the sector is increasingly viewed as politically compromised and poorly managed. The loss of trust in cooperatives represents a critical challenge for the future of Kerala's cooperative movement.

Introducing incentives for members to participate in cooperative activities, such as financial rewards for attending meetings or contributing ideas, could revive engagement. Cooperatives could adopt digital platforms to allow members to vote, access cooperative information, and participate in discussions remotely, thus increasing accessibility and engagement. It is recommended that urgent steps be taken to rebuild trust in Kerala's cooperative sector by ensuring greater transparency, reducing political interference, and improving management practices to restore public confidence and attract future generations.

Demographic Challenges: Youth Absence and Aging Population

The ageing demographic of Kerala's agricultural workforce is a critical issue for cooperatives. Field observations show that youth participation is minimal, especially in Farmer Producer Organizations (FPOs), which are promoted by Cooperatives) and weekly markets, which are largely dominated by individuals over the age of 50. This reflects broader socio-economic trends, where younger generations migrate abroad for education and employment, leaving agriculture to older individuals. The absence of youth from agriculture has reduced the capacity for innovation and modernization in cooperatives. In many cases, FPOs are promoted with little grassroots demand from the farming community. As a result, while FPOs meet the formal requirement of having at least 300 members, they often fail to engage in actual production activities, reducing their economic and social impact[viii]. Additionally, with an ageing population, cooperatives risk becoming obsolete if they cannot attract younger members[ix].

Introducing cooperative entrepreneurship programs targeted at younger generations and offering them leadership opportunities and financial incentives could help attract younger participants to agriculture and cooperatives. By embracing digital platforms and innovative technologies in agricultural production and marketing, cooperatives could appeal to the tech-savvy younger generation.

Regulatory Issues

While Kerala's regulatory environment has traditionally supported cooperatives, existing laws are not equipped to address modern challenges such as Industry 4.0. Current regulations limit cooperatives' ability to innovate, partner with private sector companies, or adopt new business models that could enhance their competitiveness in the digital era. The inability of cooperatives to form partnerships with private companies or access innovative technologies has limited their capacity to diversify operations and stay competitive. Outdated laws restrict their ability to expand into new markets or adopt efficient financial models.

Introducing policy reforms that allow cooperatives to form partnerships with private companies, adopt digital payment systems, and diversify their services is essential. Laws should encourage innovation while upholding the core principles of cooperatives. Providing government incentives for cooperatives to invest in modern technologies and diversify their operations could help them compete with commercial banks and private firms.

Technological Skill Gap

The technological skill gap in Kerala's cooperative workforce poses a major challenge. Many cooperatives, especially in rural areas, lack the skilled workforce needed to implement modern technologies and adapt to Industry 4.0 advancements, such as digital financial platforms, automated processes, and data-driven decision-making. As a result, cooperatives are falling behind in terms of operational efficiency and competitiveness. For instance, many cooperatives have yet to adopt UPI-based payment systems, which are increasingly popular among younger consumers[x].

Offering specialized training programs to cooperative workers and leaders on using modern financial tools and technologies would help cooperatives bridge the skill gap. Cooperatives could collaborate with technology companies to develop tailored solutions that meet their specific operational needs, improving efficiency and member services.

Cooperative Entrepreneurship and Lack of Innovation

There is a noticeable lack of cooperative entrepreneurship and innovation in Kerala's cooperative movement. Cooperatives continue to operate in a routine, bureaucratic manner, with little room for innovative ideas or modern business models. Leadership remains largely stagnant, dominated by older generations resistant to change. Cooperatives have failed to adapt to the changing socio-economic landscape, resulting in declining relevance. For example, ventures like *cooperative marts* continue to operate with outdated customer service models and fail to attract younger customers or turn a profit. Cooperatives need to foster a culture of entrepreneurship and innovation, where new leaders with dynamic ideas can take charge. Encouraging younger leaders and members to participate in decision-making could revitalize cooperatives. Expanding cooperative services beyond traditional areas like credit and savings to include modern financial products, agri-business services, and digital banking could help cooperatives compete in a fast- changing market. A pertinent observation by the authors on '*Cooperatives and Social Innovation'* reminds us that social innovations emerge when the state and market in developing countries find it difficult to solve problems such as poverty, hunger, ill health, poor education systems, inadequate drinking water and poor sanitation (Rajasekhar, Manjula & Paranjothi 2020). A significant aspect of cooperative success lies in their ability to innovate across various dimensions. For instance, the performance of farmer collectives can be better understood through an analysis of their innovations, which span membership profiles and roles, governance structures, and member interface and relations. These innovations are crucial in enhancing cooperative efficiency, fostering member engagement, and ensuring sustainable growth in an increasingly competitive and technology-driven landscape (Singh 2023).

The cooperative movement in Kerala is at a critical juncture. Deep-rooted issues such as politicization, lack of professional management, declining member participation, and an ageing demographic threaten its long-term sustainability. To address these challenges, significant reforms are needed—particularly in leadership, professionalization, and modernization. By adopting a more entrepreneurial and technologically driven approach, cooperatives can regain their relevance and continue to serve as vital institutions for Kerala's socio-economic development.

11. Strategies for Navigating the Next Industrial Revolution

To remain competitive and sustainable in the era of Industry 4.0, cooperatives in Kerala must prioritize the adoption of innovative technologies while maintaining their commitment to cooperative principles such as equity, democratic participation, and community benefit. The introduction of digital platforms, artificial intelligence (AI), and blockchain technologies can not only enhance operational efficiency but also empower cooperative members by creating more transparent, inclusive, and profitable systems (Lorella et.al. 2023). Our analysis of the Kerala scenario leads to the following:

(i) Embracing Industry 4.0 Technologies: By leveraging e-commerce platforms, cooperatives can expand their market reach, enabling members—particularly in agriculture and dairy—to sell products directly to consumers without intermediaries. For example, cooperatives can use online platforms to offer subscription-based delivery services for local produce, promoting sustainability and reducing logistical costs (Nyagadza et.al. 2022). Artificial intelligence can revolutionize cooperatives by optimizing resource allocation, predicting market trends, and analyzing financial health. For instance, AI-driven tools could help credit cooperatives better assess loan applicants, improving financial inclusion while minimizing risks related to non-performing assets (NPAs). Similarly, AI can help agricultural cooperatives analyze weather patterns and recommend optimal planting schedules[xi].

Blockchain technology can improve the transparency and accountability of financial transactions in cooperatives. For instance, blockchain can be used in credit cooperatives to create tamper-proof records of member contributions and loan disbursements, reducing the risk of fraud and ensuring that all members have equitable access to resources. It can also enhance supply chain transparency in farmer cooperatives, allowing consumers to trace the origin of their products.

However, the adoption of these technologies must remain aligned with cooperative values. Digital tools should be used to empower members rather than centralize control, and transparency should enhance democratic participation rather than erode it.

(ii) Government Support for the Transition to Industry 4.0: The state government has a critical role to play in facilitating cooperatives' transition to Industry 4.0. The following policy recommendations are designed to enable cooperatives to modernize while maintaining their core principles: The government should introduce targeted subsidies or tax benefits for cooperatives that invest in digital infrastructure and technological upgrades. For example, cooperatives investing in AI-driven financial tools or blockchain-based record-keeping systems could receive financial assistance to offset initial costs. These incentives can be structured in a way that promotes long-term financial independence. Creating specialized skill development programs tailored to the needs of cooperative members is essential. These programs could include training in digital literacy, data analysis, and new agricultural technologies. Collaboration with educational institutions and tech firms can help ensure that

cooperative workers are equipped with the necessary skills to operate advanced technologies.

Kerala's cooperative laws should be revised to promote flexibility and innovation, allowing cooperatives to form partnerships with private enterprises or adopt new business models. For example, updating cooperative laws to allow partnerships with fintech companies could help credit cooperatives offer modern banking services such as digital payments, attracting younger depositors.

(iii) Building Organizational Resilience: In addition to technological adoption, cooperatives must focus on building resilience to navigate socio-economic changes and reduce dependency on a single sector. Organizational resilience can be enhanced through the following strategies: Cooperatives should explore diversifying their operations beyond traditional sectors like agriculture and dairy. For example, cooperatives could enter emerging sectors such as renewable energy, organic farming, or digital financial services. This diversification will help mitigate risks related to market fluctuations in any one sector and create additional revenue streams. In Gujarat, several dairy cooperatives have diversified into solar energy projects, using cooperative-owned land to install solar panels. This initiative not only reduced energy costs but also generated additional revenue through the sale of surplus power to the state grid.

Forming strategic partnerships with private companies, NGOs, and other cooperatives can strengthen the organizational capacity of cooperatives. For instance, partnerships with tech companies can help cooperatives integrate AI-driven tools or blockchain technology into their operations. Collaborating with academic institutions can also help cooperatives access research and development expertise, driving innovation in production processes and marketing strategies. Cooperatives must remain connected to the communities they serve. Regular engagement through participatory decision-making processes ensures that cooperative activities reflect local needs and priorities. For example, setting up community advisory boards composed of diverse stakeholders (e.g., youth, women, and local business leaders) can help cooperatives stay aligned with socio- economic trends and respond more effectively to emerging challenges.

As Kerala's cooperatives face the challenges and opportunities presented by Industry 4.0, a multi- faceted strategy is essential. Technological innovation, supported by government policies and skill development programs, must be combined with efforts to build organizational resilience and strengthen community ties. It is recommended to address the decline in 'functioning' cooperatives, restore public trust, and re-establish local control in cooperative management through targeted reforms; otherwise, the Kerala cooperative movement risks heading towards a collapse. By embracing both modernization and cooperative values, Kerala's cooperatives can secure a sustainable future in an increasingly competitive and digitized world.

12. Conclusion

The cooperative movement in Kerala is facing a significant crisis, rooted in politicization, poor professional management, and diminishing youth participation. These issues have weakened the sector's role in Kerala's economy, turning what was once a dynamic movement into a bureaucratic extension with limited community engagement. To overcome this stagnation, cooperatives must address these challenges by depoliticizing their structures, enhancing managerial professionalism, and re-engaging the younger generation in cooperative activities. It is recommended that measures be taken to restore local control in cooperative decision-making by reducing the influence of

centralized political parties and empowering local leaders to address community-specific issues.

It is recommended to restore public trust in Kerala's cooperatives through enhanced transparency and reduced political interference.

As Kerala and the rest of the world face the onset of Industry 4.0, the cooperative movement must also evolve. Digital transformation offers a pathway to reinvigorating cooperatives, particularly in the agricultural sector, by reducing costs, optimizing resources, and improving production efficiency. Despite the state's historical reliance on cooperatives for socio-economic development, the integration of digital technologies remains slow due to limited funding, inadequate technical expertise, and poor access to digital tools.

To address these barriers, a collaborative approach is essential, involving government support for infrastructure and training, as well as market-driven innovations to empower cooperatives. By embracing digital tools, cooperatives can increase operational efficiency, improve service delivery, and contribute more effectively to Kerala's economic growth. However, this transformation must be pursued without compromising the core values of inclusivity and community participation that are central to the cooperative model. Ultimately, while cooperatives may not be the sole solution to the challenges of economic development, they are an essential part of a more equitable and sustainable future. In an age of increasing uncertainty, their role in empowering individuals and fostering collective action will only grow in importance. If cooperatives did not exist, the demand for such collective institutions would compel us to create them, highlighting their enduring relevance in today's world.

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[i] Please note that there is a lack of cohesive and comprehensive data in the cooperative sector due to fragmented oversight by various government departments. Cooperative societies fall under different regulatory authorities—some are governed by the Registrar of Cooperative Societies (RCS), while others are under the purview of the Department of Industries, the Department of Dairy Development, or the Department of Fisheries.

[ii] It is essential to maintain the confidentiality of the names of the cooperatives used in our case studies, as the information was provided to us under the assurance of discretion. The authors, based on their extensive experience and long-standing engagement with the cooperative sector in Kerala in their professional capacities as academicians, concur with the findings presented in this study.

[iii] The authors of this paper did extensive field work for three months starting from May 3, 2024 to July 30, 2024. The authors visited the selected cooperative institutions of different categories including cooperative banks across Kerala and conducted interviews and focus group discussions (FGDs) with the officials, board members. ordinary members and employees in the selected cooperatives. The names of the selected cooperative institutions and interviewees have been kept anonymous as this is a politically volatile issue. The common factors authors found in all these selected cooperatives include that the hegemony and influence of political parties and their respective local leaders is prevalent in all these selected cooperative entities. The institutions of 'party system' and 'parliamentary party system' which are designed to navigate the working of local governments in Kerala on party line are also seen existing in the working of cooperatives. Those with political backings are only generally placed in key posts in these cooperatives including the president and vice president and members of the governing body. Even if someone want to make independent decisions, they are forced to act according to the dikats given by their local political masters outside the cooperative structure. It was crystal clear that political influence permeates all aspects of cooperatives

sector. Cooperative sector has been also treated as a vote bank and resources, particularly in rural areas. The excessive politicization has led to rampant corruption and fraudulent practices in cooperatives across the state. However, due to political clout, only a selected few are exposed. The authors also come across complaints regarding violent incidents during the time of elections to cooperatives and the elections have been held with police protection in some of the cooperatives visited by the authors. All these indicates that there is a deep democratic deficit within the cooperative sector in the state. There have also been instances where the judicial intervention was needed to conduct election in some of the selected cooperatives in the state.

[iv] The authors during the field visit came across several complaints and incidents which reinforced the fact that that political scrutiny limits membership, especially when individuals from opposition parties seek to join the board of members. Generally, without a 'political scrutiny' no one can obtain a membership to any of the cooperative institutions in Kerala. This was stated by a political leader during our interview.

[v] Church always maintains a conflicting position when it comes to politics. To secure their interest and to stay relevant, the ecclesiastical leadership extend their support to political parties and in matters that are not always necessarily in favor of the Church, they will resent political parties and politicians who stand against them and the Church leaders will even go the extent of manipulating the laity (particularly farmers) in this regard.

[vi] During the interaction with the board members of selected cooperatives, it was noticed that even educated board members are not aware of the financial position of cooperatives. We could see a few board members with graduation and postgraduation from economics and commerce background. It was surprise to comment that their education background has nothing to contribute the performance of the respective cooperatives.

[vii] The lack of professional management makes accounting and systematic governance impossible in many cooperative societies in Kerala. Another disturbing trend noticed during the visit to the cooperatives was that the staff pattern is placed within a hierarchy that is like one we can find in government offices (a bureaucratic framework) or a panchayat office. It gives the impression that the staff pattern in cooperative institutions, particularly in cooperative banks, similar to that of any government office. A person who joins the cooperative as an 'attender' eventually goes on to become the top post, the secretary of the cooperative. We could come across similar situations in many cooperatives and this phenomenon is quite common in cooperative banks.

[viii] One member in a selected FPO, promoted by a Cooperative, opined that two components, namely the farmer and organization, are clearly observable while the third component, production, is noticeably absent.

[ix] Field observations showed that participation of youth in both local agricultural markets and FPO activities is almost nonexistent. The youth prefer white collar jobs and high salaried jobs. In addition, the hardship faced by farmers and agriculturalist in Kerala as a whole also deter younger generation from seeking a career in agriculture and farming.

[ix] All the selected cooperatives are equipped with computers and accessories, yet these resources are often used only for minimal tasks. Many staff members lack the necessary training and skills for effective data management, and even those who are proficient are rarely expected to engage in meaningful computer-based analysis within their institutions. A noticeable pathway of reluctance or resistance to adopting technology exists among both staff and board members, which may stem from

a deep-rooted legacy of 'technophobia' in Kerala's cooperative sector. This hesitancy to embrace technology could reflect a broader cultural pathway, shaped by past experiences and apprehensions about change.

In addition, some staff members fear that technological advancements might threaten their job security, reinforcing their reluctance to adapt. On the other hand, board members often cite a lack of resources as the primary barrier to adopting technology.

However, exceptions exist. For instance, the Sahitya Pravarthaka Cooperative Society (SPCS), a unique cooperative for creative writers in Kerala, primarily focused on publishing and distributing literary works, has taken steps to bridge the technical skill gap. They have admitted that these efforts were driven largely by external market pressures, which have compelled them to modernize to ensure their survival.

This pathway of resistance and adaptation reflects the broader struggle between preserving traditional practices and embracing technological innovation within Kerala's cooperative institutions.

[ix] The Uralungal Labour Contract Cooperative Society (ULCCS) stands out as an exception, warranting a detailed analysis to understand how innovations were introduced to address various challenges. However, since this study has a different focus, we have not explored this aspect in depth

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Waste Warriors: The Contribution of Haritha Karma Sena to Waste Management and Tourist Perceptions of Cleanliness in Ecotourism Destinations in Kerala, India

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Abstract

Eco-tourism refers to a form of travel that facilitates a deeper comprehension of distinctive natural and cultural settings across many global locations. The concept first emerged during the 1980s and subsequently evolved as a strategic approach to foster conservation efforts. Currently, tourism authorities and developers view ecotourism as a tactical tool that provides an economic justification for the implementation of laws intended to conserve natural resources and protect animals. The emergence of ecotourism has presented local communities residing in and next to protected areas with alternate means of generating income. Consequently, this has reduced their reliance on forest resources and fostered a greater dedication to preserving the natural beauty of the forests (Thampi, 2005). Also, the quality of life indicators of the community in the ecotourism centers show a promising position (D Rajasenan. et. al, 2012) and contributes to the protection of the natural ecosystems (Mirjansari, 2012). Thus, ecotourism development not only helps in the conservation of tourism (natural and cultural) resources but also provides economic benefits as well as an opportunity for tourists to enjoy and learn the importance of ecotourism resources (A. Ormsby & K. Mannle 2006, Goeldner & Ritchie 2012). Waste-free environments enhance the visual appeal of ecotourism destinations, ensuring that visitors experience the natural beauty and serenity that drew them to the destination. Hence, waste management is of paramount importance in ecotourism destinations as it directly contributes to the preservation of natural environments, biodiversity conservation, and the overall sustainability of the destination. The study, using a multistakeholder approach, tries to find out the role of Haritha Karma Sena (otherwise known as the green army, a group of community members) in waste management at ecotourism destinations, the efforts taken by them to build a circular economy, and also the perceptions of tourists on following guidelines regarding waste management and maintaining the cleanliness of the destination. Qualitative research was used that included an in-depth interview with 20 Haritha karma sena members who were selected using the purposive sampling method and had a minimum of two years of experience in the management of waste at the destination. The location of the study is Idukki district of Kerala, India which is one of the main ecotourism hot spots in the state. The data was collected using the judgment sampling technique, and a questionnaire was used to collect the data from 345 tourists. The study results explain the steps taken by the Haritha Karma Sena to ensure cleanliness and also the perception of tourists on the same. The study results explain the circular economy models adopted by Kerala ecotourism destinations, the waste reduction strategies promoted, and the recycling initiatives taken. Even though different studies have explored the tourism perception on ecotourism, tourist perceptions and experiences may differ depending on the different tourist characteristics visiting different countries and the availability of a variety of local ecotourism activities. These variations in tourist perception and experiences are to be explored to understand whether the ecotourism initiatives ensure tourist

satisfaction or not.

Keywords: ecotourism, tourist perception, Kerala tourism, Haritha Karma Sena, destination cleanliness, waste management practices.

1. Introduction

Eco-tourism refers to a form of travel that facilitates a deeper comprehension of distinctive natural and cultural settings across many global locations. The concept first emerged during the 1980s and subsequently evolved as a strategic approach to foster conservation efforts. Ceballos-Lascura developed the first formal and widely accepted definition of ecotourism in the 1980s (Blamey, 2001; Boo, 1990). It defines "Traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas." (Ceballos-Lascura´in, 1987: 14). Currently, tourism authorities and developers view ecotourism as a tactical tool that provides an economic justification for the implementation of laws intended to conserve natural resources and protect animals. The emergence of ecotourism has presented local communities residing in and next to protected areas with alternate means of generating income. Consequently, this has reduced their reliance on forest resources and fostered a greater dedication to preserving the natural beauty of the forests (Thampi, 2005). Also, the quality of life indicators of the community in the ecotourism centers show a promising position (D Rajasenan. et. al, 2012) and contributes to the protection of the natural ecosystems (Mirjansari, 2012). Thus, ecotourism development not only helps in the conservation of tourism (natural and cultural) resources but also provides economic benefits as well as an opportunity for tourists to enjoy and learn the importance of ecotourism resources (A. Ormsby & K. Mannle 2006, Goeldner & Ritchie 2012). Waste-free environments enhance the visual appeal of ecotourism destinations, ensuring that visitors experience the natural beauty and serenity that drew them to the destination. As a result, waste management is critical in ecotourism destinations since it directly contributes to environmental preservation, biodiversity conservation, and overall destination sustainability. The study, using a multistakeholder approach, tries to find out the role of Haritha Karma Sena (otherwise known as the green army, a group of community members) in waste management at ecotourism destinations, the efforts taken by them to build a circular economy, and also the perceptions of tourists on following guidelines regarding waste management and maintaining the cleanliness of the destination. Even though different studies have explored the tourism perception on ecotourism (Li et al., 2020; Paul & Roy, 2023), tourist perceptions and experiences may differ depending on the different tourist characteristics visiting different countries and the availability of a variety of local ecotourism activities. These variations in tourist perception and experiences are to be explored to understand whether the ecotourism initiatives ensure tourist satisfaction or not. Qualitative research was used that included an in-depth interview with 20 Haritha karma sena members who were selected using the purposive sampling method and had a minimum of two years of experience in the management of waste at the destination. The location of the study is Idukki district of Kerala, India which is one of the main ecotourism hot spots in the state. The data was collected using the judgment sampling technique, and a questionnaire was used to collect the data from 345 tourists. The study results explain the steps taken by the Haritha Karma Sena to ensure cleanliness and also the perception of tourists on the same. The study results explain the circular economy models adopted by Kerala ecotourism destinations, the waste reduction strategies promoted, and the recycling initiatives taken. Even though different studies have explored the tourism perception on ecotourism, tourist perceptions and experiences may differ depending on the different tourist characteristics visiting different countries and the availability of a variety of local ecotourism activities. These variations in tourist perception and experiences are to be explored to understand whether the ecotourism initiatives ensure tourist satisfaction or not. The study thus tries to find out

the role of Haritha Karma Sena (otherwise known as the green army, a group of community members) in waste management at ecotourism destinations, the efforts taken by them to build a circular economy, and also the perceptions of tourists on ecotourism facilities at the destination.

2. Literature review

What is ecotourism?

Sustainable development has been proposed as a model for structural change within society; one that ventures away from a strictly socio-economic focus to one where development, 'meets the goals of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development 1987: 43). The principles of ecology play a crucial role in driving economic development, aiming to improve the material standards of people living in poverty around the world (Redclift 1987, Barbier 1987). The emphasis on achieving a balance between economic, social, and ecological systems in sustainable development is highly pertinent to the field of tourism, which has seen a significant increase in literature since the 1980s. The term eco originates from the Greek word 'oikos', which translates to 'house'. The word ecotourism's immediate origin can be traced back to 'ecology' if one aims to reclaim and reinforce the term with robustness and accuracy. Eco-tourism refers to a form of tourism that is focused on environmental sustainability and sensitivity. The level of dedication and upkeep a homeowner invests in their house should be equivalent to the level of care one should give to tourism. It is important for eco-tourists to show the same level of care and appreciation for the places they visit as they do for their own homes.

Ecotourism is a rapidly expanding sector within the travel industry, offering great potential as a sustainable development tool. It is essential for all individuals involved in ecotourism activities to adhere to the following principles:

- Maximise effectiveness and minimize the negative problems associated with tourism
- Promote a greater understanding and appreciation for the environment and diverse cultures
- Ensure a delightful experience for both guests and hosts
- Offer tangible financial incentives for conservation efforts
- Support the economic well-being and empowerment of individuals in the community
- Increase awareness of the political, environmental, and social climate in host countries
- Advocate for the promotion of global human rights and labour agreements

Thus, utilising ecotourism as a tool by local communities instead of large outside interests can yield numerous benefits and can ensure sustainable development.

Importance of waste management at the destination

Maintaining a clean and well-kept environment is crucial for leaving a positive impression on tourists and enhancing their overall satisfaction (Ben-Dalia et al., 2013). With its pristine beaches, litter-free historical sites, and well-manicured parks, the clean surroundings of tourism destinations greatly enhance their aesthetic appeal. This entices tourists to explore, linger, and even consider returning for future visits. In addition, maintaining cleanliness creates a feeling of safety and reassurance for tourists, which in turn motivates them to participate in recreational activities and connect with the local community without any worries about cleanliness or hygiene. It is also crucial to protect public health and curb the transmission of diseases. Implementing effective waste management practices is essential for maintaining a clean and healthy environment. Scholars have spent their time to studying many areas of waste management challenges, such as solid waste management techniques in chosen cities (Abdulredha, M et al. 2020). Understanding the importance of waste management, the present study using a qualitative approach, tries to find out the role of Haritha Karma Sena in waste management at selected ecotourism destinations in Kerala.

3. Methodology of the study

Qualitative research was used that included an in-depth interview with 20 Haritha karma sena members who were selected using the purposive sampling method and had a minimum of two years of experience in the management of waste at the destination. The study also collected data from tourists using questionnaires. The study used a multistakeholder approach to understand the role of Haritha Karma Sena in maintaining destination cleanliness and the tourists perception on ecotourism services.

Study Location

The study location was Idukki district of Kerala, India. Idukki District, located in Kerala's Western Ghats, is a popular ecotourism destination recognised for its diverse wildlife, picturesque landscapes, and conservation activities. The district is home to various protected areas, including Eravikulam National Park, Chinnar Wildlife Sanctuary, and Periyar Tiger Reserve, which support a diverse diversity of indigenous flora and animals. Its hill stations, waterfalls, and trekking paths, such as Munnar, Thommankuthu, and Anamudi Shola, provide possibilities for nature lovers to explore and unwind. Ecotourism in Idukki supports sustainable tourism by focussing on conservation, low environmental effect, and cultural exchange with indigenous communities. The districts major ecotourism destinations include Anamudi Shola National Park, Chellarkovil, Chinnar Wildlife Sanctuary, Eravikulam National Park, Idukki Wildlife Sanctuary, Mathikettan Shola National park, Munnar, Marayoor, Pambadum Shola National Park, Periyar Tiger Reserve, and Thommankuthu Waterfalls. Furthermore, Idukki's dams and water bodies, such as the Idukki Dam, are popular tourist attractions that help to maintain the region's natural balance and generate hydroelectric power. Overall, ecotourism in Idukki benefits local people, promotes responsible tourism, and stimulates economic growth by using environmentally friendly practices. Being the ecotourism hotspot Idukki was selected for the study. Primary data was collected from two major ecotourism destinations of Idukki namely Thekkadi and Munnar. An in-depth interview was conducted with 20 Haritha Karma sena members who were selected using the purposive sampling method and had a minimum of two years of experience in the management of waste at the destination. Data was also collected using questionnaire from tourists. A total of 500 questionnaires were distributed to tourists, out of which 345 completed questionnaires were used for analysis with a response rate of 69%. Data collection was done during February, March and April 2024. While collecting data from Haritha Karma Sena members, a semi-structured interview was done in Malayalam because majority of them felt comfortable in their own language, and the responses were subsequently translated to English.

4. Results of the study

Waste management in Kerala: Role of Haritha Karma Sena

To understand the role of Haritha Karma Sena in the waste management of Kerala, the study used secondary data using published government reports, news articles, and all the e-resources available on the government websites. The following section explain the strategies adopted by the Kerala government on waste management and the role of Haritha Karma sena on this. The Kerala government has seriously trying to address the issue of waste, and it is well stated in the Kerala Economic review report 2021, “The Government recognises the importance of waste management and has taken several efforts in this sphere. It is estimated that Kerala generates 10,504 tonnes per day (TPD) of solid waste; out of which 3,472 tonnes are generated by Urban Local Governments and 7,032 tonnes by Grama Panchayats. 49 per cent of the waste is generated in households, 36 per cent in institutions and 15 per cent in public places. In 2019-20 and 2020-21, Clean Kerala Company collected e-waste of 173 tonnes and 77 tonnes respectively. During 2021-22, the slogan ‘My waste

is my responsibility' was propagated massively and state-wide arrangements were made to treat it at source." The Kerala tourism policy 2017, also takes waste management at the destination as one of the priority areas of concern. The Kerala Economic Planning Review Report 2021 also states that "Problems with inadequate infrastructure facilities, waste management and safety have to be given topmost priority in planning and managing tourism destinations and circuits." The Kerala Government has adopted a policy for solid waste management with two strategies: 1. Decentralized waste management and 2. Centralized waste management where necessary. Centralized waste management is arranged in some places as it needs heavy infrastructure, and therefore it requires more space and finance for the transfer and management of waste. The Decentralized Solid Waste Management (DSWM) is a system involving the segregation and processing of waste at the source to the maximum extent possible and then at the community level. Through decentralized solid waste management (DWSM), the government aims to modify individuals' waste management practices through Information - Education -Communication (IEC) Campaigns, with the goal of promoting garbage treatment at its origin. Using this DWSM the government tries to build a "circular-economy", an economy which follows the 3R approach - Reduce, Reuse and Recycle. The government tries to implement DWSM by using two critical aspects:-1. Building of sustainable systems and 2. Behavioural changes. In order to build a sustainable system the Haritha Karma Sena (HKS) was formed in 2016 and Haritha Sahaya Sthapanams (Technical Support Agency), an accredited agency of Suchitwa Mission, was deployed to develop skills and provide support to HKS members. In order to have an effective system for decentralized solid waste management, the government of Kerala has constituted an institutional framework by including different stakeholders with well defined roles:

1. The Local Self Government – It is the primary agency and will be responsible for service delivery and enforcement

2. Suchitwa Mission- This is the agency mandated to give technical assistance and financial support to the LSGIs for the effective working of waste management.

3. Clean Kerala Company - This is the company which undertakes Commercial handling of non-biodegradable waste.

4. Kudumbashree for Harita Karma Sena (HKS) - Consists of a team of trained women entrepreneurs recruited from the Kudumbashree. They provide technical services and solutions on waste management projects. They are responsible for collection, transportation, storage, segregation, processing, disposal, and management of waste in collaboration with the respective LSGIs.

5. MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme):- for infrastructure development (establishment of Mini-MCFs and MCFs) through convergence; Ayyankali Urban Employment Guarantee Scheme (AUEGS) in urban areas for the same purpose.

6. Haritha Keralam Mission for techno-managerial support, campaigns, monitoring, and coordination.

Kerala thus implemented a decentralised waste management system that involves multiple stakeholders. The local governments play a key role in this system and work in collaboration with the Kudumbashree mission. The mission empowers the Haritha Karma Sena(HKS) to develop a sustainable waste management system. Additionally, the Clean Kerala Company is responsible for removing non-biodegradable waste. This system is receiving technical help from entities such as Haritha Keralam Mission and Suchitwa Mission. The HKS members works as at the operational level

of the waste management involved in the activities like waste collection, proper segregation, transportation, recycling and composting of organic wastes. The major roles played by the Haritha Karma Sena include:-

- Door-to-door waste collection:- Members of the Haritha Karma Sena collect rubbish from homes and businesses, ensuring that biodegradable and non-biodegradable items are correctly segregated at the source. This separation promotes efficient recycling and composting.
- Segregation and Recycling: After collection, garbage is separated into recyclable and nonrecyclable categories. Recyclable materials such as plastic, paper, and glass are delivered to authorised recycling facilities, decreasing landfill waste and fostering the circular economy.
- Organic garbage Management: Biodegradable garbage is frequently converted into compost or biogas at local waste treatment facilities. The Sena supports composting technologies, urging homes to embrace environmentally responsible waste disposal procedures.
- Awareness and Education: The Haritha Karma Sena is actively involved in educating the public on the importance of waste segregation, recycling, and the negative consequences of incorrect trash disposal. They run awareness initiatives to encourage community involvement in sustainable garbage management.
- Reducing Environmental Impact: By assuring appropriate waste separation and recycling, the Haritha Karma Sena greatly minimises the quantity of waste that ends up in landfills or pollutes natural ecosystems. This serves to reduce environmental harm, promote cleanliness, and contribute to the state's overall environmental goals.
- Employment and Empowerment: The Haritha Karma Sena also offers job possibilities, particularly for women, thereby empowering local communities economically while also tackling the critical issue of trash management.

Thus the Haritha Karma Sena is integral to Kerala's decentralized waste management system, playing a proactive role in reducing waste, promoting recycling, and creating awareness about sustainable environmental practices. More than 35,000 Haritha Karma Sena members were working in the state covers , with 1550 members in Idukki district. (Table 1).

Table 1: Haritha Karma Sena Status

District	No. Of Wards	Total number of Haritha Karma Sena Members	Total newly appointed Haritha Karma Sena upto January	Collection Coverage
Thiruvananthapuram	1,546	3,947	477	88.14%
Kollam	1,420	3,007	293	88.08%
Pathanamthitta	920	1,747	270	79.74%
Alappuzha	1,384	2,577	390	98.33%
Kottayam	1,344	2,176	383	82.07%
Idukki	861	1,550	252	86.23%
Ernakulam	1,833	3,864	1351	77.80%
Thrissur	1,794	3,050	561	88.06%
Palakkad	1,730	3,116	581	87.47%
Malappuram	2,257	2,713	1018	89.31%
Kozhikode	1,566	2,994	530	86.39%
Wayanad	512	933	197	92.50%
Kannur	1,545	2,174	343	88.76%
Kasaragod	777	1,504	250	87.13%
Total	19,489	35,352	6896	86.97%

Source: https://suchitwamission.org/web/haritha-karma-sena---status

An in-depth interview was conducted with 20 Haritha Karma Sena members of the selected destinations. The demographic details are presented in Table 2.

Fig 1 Haritha Karma Sena members, source : https://haritham.kerala.gov.in/stories_view.php?nid=WFJjMnl2eVdSdXl0L3N3VGM1aXRJQT09&url=Haritha-Karmasena

Table 2: Demographic details of the Haritha Karma Sena members

Respondent No	Age	Gender	Education level	Marital Status	Years of working with HKS
R1	27	F	11th	M	3
R2	32	F	10th	M	5
R3	35	F	Below 10th	M	6
R4	28	F	10th	UM	4
R5	45	F	10th	M	7
R6	38	F	Below 10th	M	8
R7	35	F	Diploma	M	7
R8	29	F	10th	M	6
R9	37	F	Below 10th	M	8
R10	42	F	Below 10th	M	9
R11	46	F	Below 10th	M	8

R12	40	F	Below 10th	M	7
R13	36	F	10th	M	8
R14	34	F	Diploma	M	6
R15	33	F	12th	M	7
R16	28	F	10th	M	6
R17	38	F	10th	M	8
R18	47	F	Below 10th	M	6
R19	31	F	12th	M	7
R20	26	F	12th	UM	4

Source : primary data

The women work as Haritha Karma Sena(HKS) members. The data collected includes diverse age groupings, with 5 individuals belonging to the 20-30 group, the majority (10 members) to the 30-40 group, and 5 to the 40-50 category. The working experience varies from 3 to 8 years, and the maximum education qualification is 12th. The majority of the respondents were married (18 members). A semi-structured interview was conducted to understand the works or activities done by the members for waste management, challenges faced by them regarding managing waste at the ecotourism destinations, suggestions for improving the present waste management system and personal benefits of being part of HKS. By summarising the points explained by HKS members, the major activities done by them include the following:-

- Door to door collection of both biodegradable and non-biodegradable wastes
- Segregation of wastes
- Recycling of wastes
- Biodegradable garbage management or converting biodegradable wastes into fertilizers.
- Conducting awareness programs for tourists and residents
- Transfer of non-biodegradable wastes to MCF's (Material Collection Facility)
- maintenance of ecotourism destinations by proper management of wastes

The study has also utilised the Gioia Methodology to analyse the qualitative data collected from Haritha Karma Sena. It is widely accepted as a very effective strategy because it combines the generation of unique ideas through inductive approaches with the use of rigorous criteria (Gioia et al., 2013). The Gioia technique suggests that both researchers and interviewees are competent individuals who have the ability to comprehend socially constructed realities in an appropriate manner (Corley & Gioia, 2004). The fundamental elements for building a data structure are the first-order ideas, second-order themes, and aggregate dimensions. This stage is essential in the methodology (Gioia et al., 2013). The first-order notions are related to the viewpoints conveyed by the participants. The second-order themes' theoretical foundations establish a strong basis for comprehending the reality based on theory. Expanding on these ideas, the third-order aggregate themes provide a more inclusive and encompassing notion, raising the analysis to a higher degree of abstraction (Hassan & Pandey, 2020). The data structure is designed to organise the data in a way that creates a meaningful and visually understandable representation. Moreover, it illustrates the transition from raw data to concepts and patterns in the analysis phase, which is essential for highlighting the meticulousness of qualitative research (Tracy, 2010).

For the question "What are the challenges faced by Haritha Karma sena on the waste management at the eco-tourism destinations?, the responses were analysed using Gioia methodology. The following fig 2 shows the first-order concepts, second-order themes, and aggregate dimensions.
The first-order notions are related to the viewpoints conveyed by the Haritha Karma Sena members. The second-order themes' theoretical foundations establish a strong basis for comprehending reality based on theory. Expanding on these ideas, the third-order aggregate themes provide a more inclusive and encompassing notion, raising the analysis to a higher degree of abstraction. The analysis shows that 3 dimensions viz. a) Government and institutional support, b) public cooperation, awareness, and social perception, c) infrastructure, health and operational support, and 6 themes viz. a) lack of training and support from government, b) challenges with public cooperation and awareness, c) social perception and stigma, d) infrastructure and resource constraints, e) health and safety concerns and f) operational and seasonal challenges.

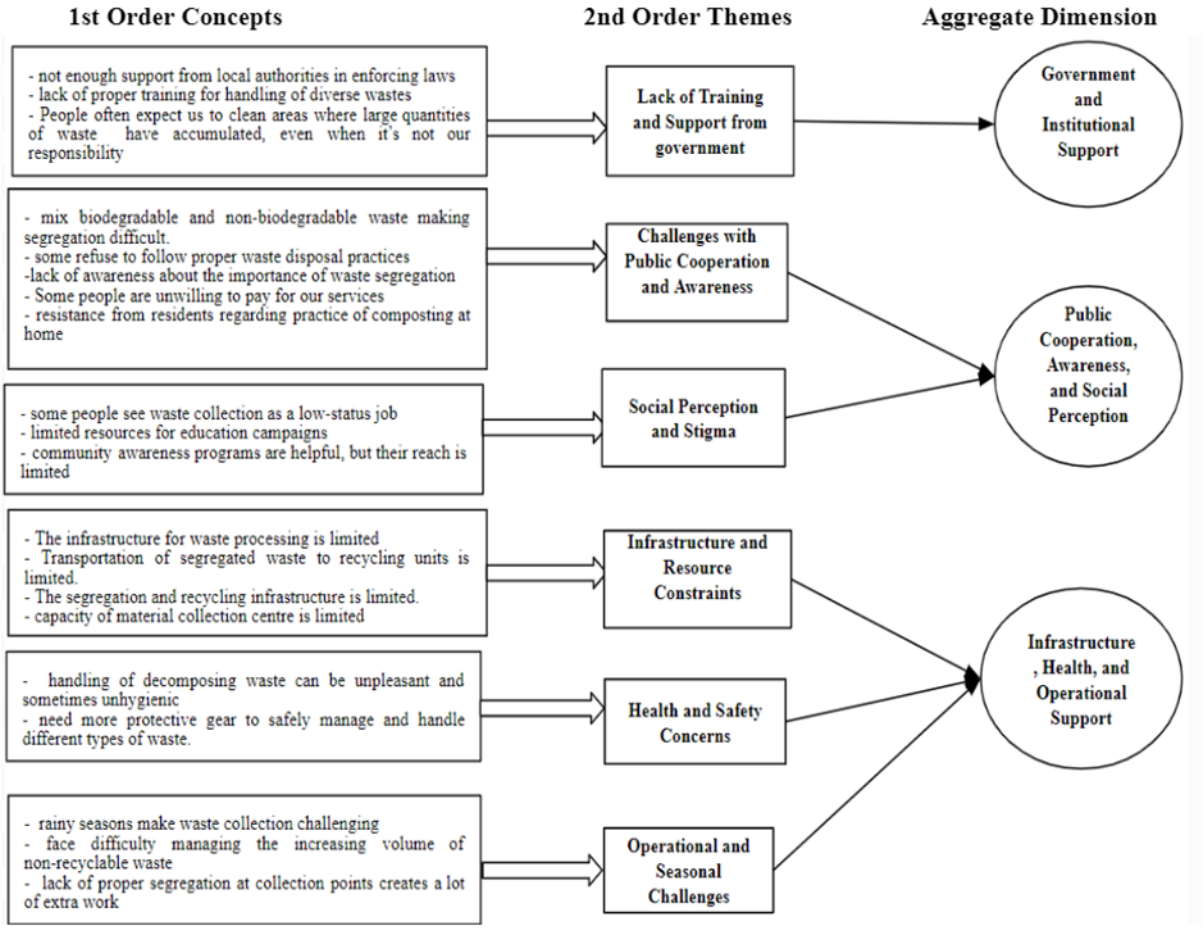

Fig 2 Challenges faced by HKS, Source: primary data

For the question "What are suggestions for improving the present waste management system at the eco-tourism destinations?, the responses were analysed using Gioia methodology. The following fig 3 shows the first-order concepts, second-order themes, and aggregate dimensions. The first-order notions are related to the suggestions conveyed by the Haritha Karma Sena members. The second-order themes' theoretical foundations establish a strong basis for comprehending reality based on theory. Expanding on these ideas, the third-order aggregate themes provide a more inclusive and encompassing notion, raising the analysis to a higher degree of abstraction. The analysis shows that 3 dimensions viz. a) infrastructure, training, and resources, b) community awareness and government

policy, c) technology and recognition, and 5 themes viz. a) improved infrastructure and equipment, b) enhanced training and safety measures, c) stronger community engagement and education, d) policy and government support, and , e) technology and recognition

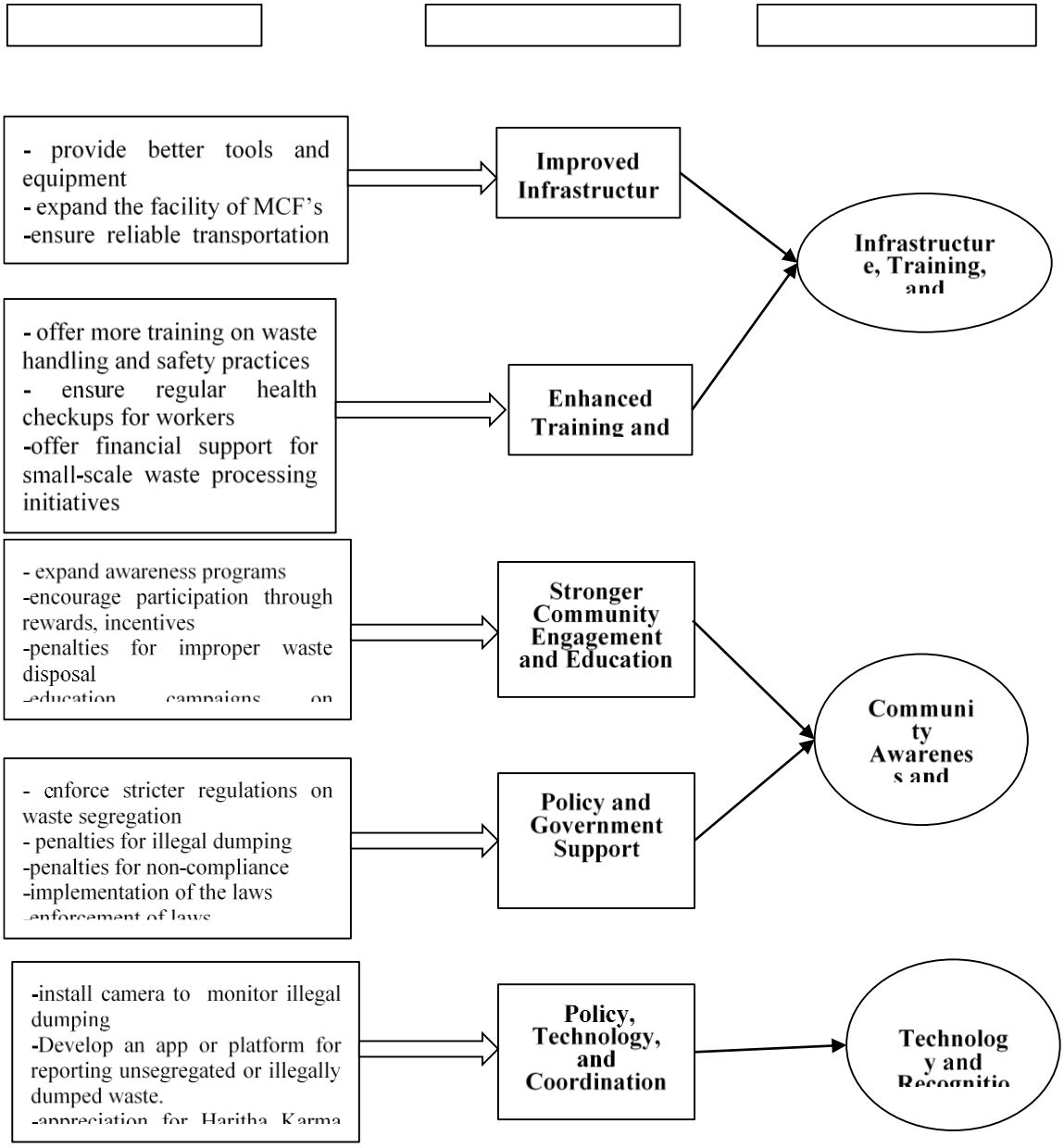

Fig 3 Suggestions given by HKS

The majority of the responses to the question "What are the personal benefits that each Haritha Karma Sena member gets?" were similar, therefore instead of applying the Gioia approach, the researcher summarised the responses, which included:

- helps to get a regular income—financial security
- skill development
- act as a platform for women empowerment
- personal growth, and community recognition,
- able to make a positive impact on the environment and public health.

Thus we can conclude that the Haritha Karma Sena empowers local women by giving them jobs, income, and a sense of belonging, which directly contributes to social sustainability. It provides a platform for women (who are not educationally qualified enough to get high-income jobs) to contribute towards sustainability of the society and acts a major role in waste management.

For the question "Do the Haritha Karma Sena employ any technological applications in their work, such as using IoT for waste tracking or AI to optimise waste collection routes?", the answer was 'No'. They were of the opinion that being working at the ecotourism destination, makes their work easier, as clear instructions were imparted to tourists while visiting an ecotourism destination. They also pointed out that all the tourists visiting and participating in ecotourism activities have been responsibly managing their wastes, but the real challenges were at the other common places near bus stands, town areas etc, where there were limited number of waste bins available. Hence they find it difficult to manage the common and enroute areas to the main eco-tourism destinations (eg Eravikulam National Park, Chinnar Wildlife Sanctuary, Periyar Tiger Reserve, etc).

5. Tourist perceptions and experiences on Eco-Tourism at Idukki

The demographic details of the tourists shows that 42% (n=145) were foreign tourists and 58%(n=200) were domestic. 53.3%(n=184) were male and majority(31.6%) belongs to the age group of 30-40(n=109) which is followed by 20-30(25.8%, n=89). For measuring the perception of tourists six general questions(Sethy & Senapati, 2023) were asked which is presented in Table 3 and to specifically measure the perception six statements were asked using five point Likert scale.

Table 3 Tourists Perception on Ecotourism at Idukki

Questions	Options	Number of Responses	%
Do you understand what ecotourism entails?	Yes	276	80.00
	No	69	20.00
What are your views towards ecotourism development?	Welcome more	298	86.38
	Not welcome	34	9.86
	Don't know	13	3.77
Are you satisfied with the recreational qualities and services ?	Extremely satisfied	212	61.45
	Satisfied	88	25.51
	Not satisfied	12	3.48
	Need improvement	33	9.57
Are you satisfied with the environmental awareness and informative services of the destination?	Extremely satisfied	236	68.41
	Satisfied	84	24.35
	Not satisfied	11	3.19

	Need improvement	14	4.06
Do you think the destination's atmosphere is polluted every day?	Yes	62	17.97
	No	283	82.03
Are you satisfied with the cleanliness at the destination?	Extremely satisfied	263	76.23
	Satisfied	62	17.97
	Not satisfied	05	1.45
	Need improvement	15	4.35
Is there adequate waste bins available at the destination?	Yes	310	89.86
	No	35	10.15
What kind of ecotourism activities have preferred?	Being alone with the nature	145	42.03
	Moving away from the city's noise and fresh air	56	16.23
	Curiosity	11	3.19
	Experiencing a different holiday and getting rest	12	3.48
	Passion of adventure	15	4.35
	Learning about natural beauties of the region	64	18.55
	Get to know the local people in the region and make new friends	42	12.17

Source: primary data

The table clearly shows that 80% of the tourists were aware about ecotourism, 86.38% were ready to welcome more ecotourism activities, and 61.45% of the tourists were extremely happy with the recreational qualities and services at Idukki, followed by 25.51% were satisfied. 68.41% were extremely satisfied with the the environmental awareness and informative services of the destination, and the majority of the tourists (42.03%) preferred to being alone with the nature while visiting ecotourism destination. 76.23% were extremely satisfied with the cleanliness at the destination and 89.86% were agreed that there were adequate number of waste bins at the destination.

Six statements were used to measure the perception of tourists on ecotourism (Junus et al., 2020) and the result is presented in Table 4. The mean score is calculated and a value greater that 3.25 is as 'High', a value less that 1.67 as 'Low' and a value between 1.67 to 3.25 is taken as 'Medium'.

Table 4 Experience on Ecotourism at Idukki

Item	Mean	S.D
Vacation in Idukki gives enjoyment to the visitors.	3.92	1.192
Idukki offers a lot of activities for the visitors to enjoy	3.84	1.039
Ecotourism in Idukki can help in the conservation and protection of natural resources.	4.27	0.866
Idukki is suitable for scientific research and education.	3.88	0.939
The ecotourism activities at Idukki have the potential to be improved.	3.67	1.023
Ecotourism at Idukki provides job opportunities to the locals	4	1.081

The table shows that for all the statements measuring perception of tourists shows 'High' mean score value greater that 3.25, with highest mean value for the item 'Ecotourism at Idukki provides job opportunities to the locals', followed by the value 3.92 for the statement 'Vaccation in Idukki gives enjoyment to the visitors'. The result clearly shows that the tourists have got positive perception on the ecotourism facilities at Idukki.

6. Discussion and Implications of the study

By implementing a decentralised strategy for waste management and utilising the initiatives of Haritha Karma Sena, Kerala is making progress towards establishing a circular economy (D Siva Prasad, 2024). The proposed strategy emphasises the implementation of localised trash collection, segregation, composting, and recycling, hence diminishing reliance on centralised waste processing infrastructure. The Haritha Karma Sena has a vital function in providing education to communities regarding sustainable waste management, guaranteeing appropriate separation at the origin, and converting biodegradable trash into very valuable compost. In order to reduce landfill usage, recycle non-biodegradable items, and encourage resource recovery, Kerala implements effective waste management practices. This cyclical paradigm not only mitigates environmental harm but also fosters economic prospects, empowering communities and establishing a sustainable, environmentally conscious economy. The study clearly shows that the HKS members works as at the operational level of the waste management involved in the activities like waste collection, proper segregation, transportation, recycling and composting of organic wastes.

The challenges faced by the HKS were analysed using Gioia methodology shows that 3 dimensions viz. a) Government and institutional support, b) public cooperation, awareness, and social perception, and c) infrastructure, health and operational support. This shows that the first major challenge is that eventhough the HKS is working with the support of the local government, the local authority needs improvement in the areas of strict law enforcement, and provision of training support to HKS members. The other major challenge is for effective waste management HKS news the cooperation of the public regarding waste segregation and disposal. The HKS states that some people are unaware of the importance of waste segregation, hesitate to give user fee to HKS's, and some even practice open dumping or burning. They are also facing health risks while handling waste materials without proper safety measures. Another challenge is handling waste during rainy season with limited infrastructure facility.

The suggestions put forward by the HKS members revolve around three dimensions, namely a) infrastructure, training, and resources, b) community awareness and government policy, c)

technology and recognition. For efficient working of HKS members, proper training have to be imparted, the enforcement of the law has to be made strict, and incentives have to be given to people who follow waste management rules and regulations. Another major suggestion is the usage of technological applications for waste tracking and management.

The major personal benefits of being a member of HKS is that it helps to get a regular income, helps in skill development, act as a platform for women empowerment resulting in personal growth, community recognition , and can able to make a positive impact on the environment and public health. Thus we can conclude that the Haritha Karma Sena empowers local women by giving them jobs, income, and a sense of belonging, which directly contributes to social sustainability. It provides a platform for women (who are not educationally qualified enough to get high-income jobs) to contribute towards sustainability of the society and acts a major role in waste management. The Haritha Karma Sena, a group of women, primarily Kudumbhasree members interested in garbage management in Kerala, functions as a cooperative in which local women members collaborate to manage waste and promote cleanliness in their community. The model adopted in Kerala by involving local women in the management of waste in their respective area can be taken as model to ensure sustainability of the destination, economic stability for the women and thus ultimately helps in the creation of circular economy.

Kerala's abundant biodiversity and untouched natural landscapes make it a perfect destination for ecotourism activities. There are a variety of wildlife sanctuaries, national parks, and protected areas, and visitors to these sanctuaries can delve into the rich ecosystems of the region, observe unique flora and fauna in their natural habitats, and actively participate in wildlife conservation initiatives (Ranjith M 2020). The Western Ghats of Kerala, with its tropical forest ecosystem, offer a unique opportunity for the development of ecotourism. The Western Ghats regions of Kerala have the potential to be presented as a genuine Ecotourism Zone. Among the different ecotourism destinations in Kerala, the Idukki is a land blessed with natural resources. The study results clearly show that, majority of the tourists were aware of ecotourism and satisfied with the facilities as well as the cleanliness at the ecotourism destinations.

7. Conclusion and limitations of the study

The cooperative character of Haritha Karma Sena exemplifies how local people may take responsibility for sustainable practices, particularly in the tourism industry. The Haritha Karma Sena empowers local women by giving them jobs, income, and a sense of belonging, which directly contributes to social sustainability. Haritha Karma Sena's effectiveness in maintaining cleanliness in ecotourism sites is based on the cooperative principles of collaborative action and mutual benefit. This serves as an example of how cooperatives can innovate and remain relevant in the face of technological and industrial change. The study emphasises the collective responsibilities of tourists and communities for sustainable waste management at the destination. The limitation of the study is its limited sample size of Haritha Karma Sena. This study significantly contributes to understanding the role of HKS in waste management at eco-tourism destination. However, the findings may be biased by the choice of specific travel HKS's, destinations, or demographic groups. The study examined a sample size of 20 HKS's, and the results were specific to their viewpoints. Recognizing these inherent limitations provides a comprehensive perspective and lays the foundation for future research to address these challenges and improve our understanding of the multifaceted relationship between the role of HKS in waste management at eco- tourism destinations.

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A Role of Dairy Cooperatives in Promoting Economic Democracy and Social Justice in Tamil Nadu

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Abstract

Empowering women economically and socially is vital for building equitable and inclusive societies. This research paper focuses on Women's Dairy Cooperatives (WDCs) in Tamil Nadu's Dindigul District, examining their effects on economic gains, social strength, decision-making, and community life. Through interviews with 120 members across three selected WDCs, the research aimed to understand how these dairy cooperatives help women find empowerment and gain economic and social advantages. The findings indicate how these cooperatives help women find empowerment and gain economic and social advantages. The results show that being part of these cooperatives greatly improves women's financial situation. It increases their income, grants them financial independence, and offers better access to credit. Additionally, the cooperatives stand for self-assurance, decision-making independence, and public status among women. Overall, the research paper highlights the vital role of cooperatives in promoting sustainable development and gender equality in rural areas by explaining gender discrimination and social marginalisation through training and skill development.

1. Introduction

In India, most of the people reside in rural community, where agriculture is the prime financial activity. Agriculture alone is insufficient in meeting farmers' and landless labourers' employment and income needs. To address this challenge, additional sources of income are essential to bolster the purchasing power of rural communities. In this regard, animal husbandry and dairy development play crucial roles in supplementing the income of rural households. Recognizing these needs, dairy cooperatives have been established in India with the goal of enriching the financial status of milk producers, particularly those from vulnerable people in rural areas. These cooperatives offer enriched breeding facilities and enhanced cattle feeding, introducing high-quality milch animals, adequate healthcare, and efficient organizational structures for procuring, processing, and selling dairy produces. The progression of the dairy industry through cooperatives not only boosts milk production but also enhances the economic circumstances of dairy farmers.

Recognising the dairy farming's contribution to the agricultural economy and the sustenance of the resource poor farmers and rural communities, much effort has been directed towards improving various facets of the sector. This includes improving the milk marketing infrastructure, enhancing veterinary services related to breed and health care, promoting support for farmers' training, business development, and training on scientific dairy farming. Over the years, both state and central governments have rolled out a number of programs designed to strengthen the dairy sector in these regions. However, varying degrees of success have been reported with these programs. The history of the dairy sector in Tamil Nadu is intertwined with that of the agriculture economy, with the production of milk being the main foundation of income for many households in rural areas. Nevertheless, the traditional methods did use to leave many small dairy farmers exposed to the threats of market fluctuations or economic mercury exploitation with few resources.

2. Literature Review

Economic Democracy:
The economic power among members within dairy cooperatives is said to be equally share and this helps in supporting equity and addressing poverty issues (Farnworth C. R., 2023)[1]. Moreover, there is a decentralization of authority in these cooperatives, which gives the stakeholders, most of who are smallholder dairy farmers, participation in decision-making processes (Geetha R.S. 2021)[3]. Such interventions promote control by members over their economic activities and further allow for fair prices to be set, and therefore profits are distributed fairly (Raghav V. 2021)[4]. The empowerment that dairy cooperatives bring to their members by offering them access to financial services, marketing, and technical assistance leads to a more equitable economy (Prajapati, M. C. 2022)[5]. It is the increasing provision of such basics by the democratization of economic processes that works towards reducing poverty and inequality thereby leading to stronger and self-sufficient rural areas (Durga, V & Pitchai, C. 2023)[5].

Social Justice:
Dairy cooperatives foster an inclusive environment that ensures equal access to resources and opportunities to all, for instance, persons with different gender, socio-economic background or caste (Prajapati, M. C. 2022)[5]. Lower caste women and other disadvantaged groups are reporters towards the development of the cooperative in terms of management and decision making capacity. This inclusion helps to build social cohesion and support each other by reducing divisions and inequalities (Moorthi, D. S. 2023)[6]. Furthermore, cooperatives also have education, training and capacity building components that members can utilize to enhance their social and economic standing (Durga, V., & Pitchai, C. 2024)[7]. It is also evident out of this study that dairy cooperatives in Tamil Nadu strive towards greater participation, better profit sharing mechanisms and concentrate on the welfare of the members thus contributing towards a more equitable society (Geetha, R.S. 2021)[2].

Women Development:
According to Farnworth C.R. (2023) dairy cooperatives are an important form of self-help strategy that focuses on the enhancement of the economic and social development of rural women in areas where most of the people depend on farming. Women, who many times are quite formidable leaders, are able to take risks and make sound decisions (Farnworth C. R., 2023)[1]. They often participate in small livestock activities including craft work alongside performing the responsibilities of a cook, mother and wife (Durga, V., & Pitchai, C. 2024)[7]. Women are involved in production's micro level such as small scale marketing, farming, animal rearing, household activities, and activities within the community but sadly little is said of their participation in top level management as they remain the unheard and unseen labor force (Raghav V. 2021)[3]. Women, on their part, have been said to do most tasks on the dairy farm but are said to be quite passive. Nevertheless, there has been an improvement as many women have come to earn respect and assert their rights and influence the society through leadership and opportunities brought by working in dairy cooperatives (Moorthi D S 2023)[6].

3. Research Objectives

The following specific objectives accompanied the present study:

1. To assess the socio-economic effect of dairy cooperatives on rural livelihoods, revenue levels, and work force expansion in Tamil Nadu.
2. To assess the contributions of women's dairy cooperatives towards enhancing women's financial position, promoting economic liberation, and improving financial diversification.
3. To identify key challenges dairy cooperatives face and assess their implications for rural development in Tamil Nadu.

4. Research Methodology

Data Source:
This study employed a two way approach. This study encompasses interviews with 120 members from three carefully chosen women leading dairy cooperatives through a comprehensive questionnaire designed specifically for this study. Secondary data were collected from various sources, comprising government reports, academic publications, industry reports, and online databases.

Sampling:
The selected three societies were Poosaricoundan Valasu Women's Primary Cooperative Milk Producers Society, Shanmuga Valasu Women's Primary Cooperative Milk Producers Society, and Kuthulippai Women's Primary Cooperative Milk Producers Society in Dindigul District, Tamil Nadu. From each society, 40 members as totally 120 respondents were selected from three WDCs using the proportional probability sampling method.

Tools and Analysis:
This study employs a range of statistical tools and techniques. Traditional methods such as bivariate and multivariate analysis, percentage calculations, tabular representations, and graphical analysis are used to analyse the collected data.

Promoting Economic Democracy and Social Justice through Dairy Cooperatives in Tamil Nadu
Dairy cooperatives in Tamil Nadu, including those organised under the Tamil Nadu Cooperative Milk Producers Federation (Aavin), stand out for their distinctive approach to embedding the principles of economic democracy and social justice. According to the Basic Animal Husbandry Statistics 2023, Tamil Nadu produced 7.17 MT (Million Tonnes) of milk in the 2022-23 period, accounting for 2.07 percent of the total milk production in India. This represents 4.47 percent of Tamil Nadu's share of 15 major milk production states in India.

Through democratic management, they empower marginalised groups, which is essential for sustainable development. They also foster the economic empowerment of rural women through organising self-help groups (SHGs) that offer training in financial management, leadership, and other essential skills.

Table 1: Milk procurement details of the selected Dairy Cooperatives Vs Dindigul District Milk Producers Cooperative Union (DDMPCU)

The above table reveals DDMPCU and selected three WDC's procurement details for 2019-2024, here a steady increase in production from 8,39,012 litters in 2019-2020 and total of 20 WDCs contributes 16.6% of average milk of total procurement in 2019-2020. . However, there has been a decline in recent years, with production dropping to 775,415 litters in 2023-2024, possibly due to challenges such as market conditions or operational constraints. Poosaricoundan Valasu WPCMPS experienced a significant 42.9 percent decline from its peak in 2021-2022, while Shanmuga Valasu WPCMPS showed a more moderate 20.5 percent decrease. The Kuthulippai WPCMPS faced the steepest decline, with a staggering 78.2 percent drop in production. Overall, these trends highlight a concerning decline in milk production, particularly from 2021-2022 onwards, due to operational challenges and number of increasing private dairies.

Table 2: Details of the DCS & WDCs during the year 2023-2024:

Name	**2019-2020** average per month (in litters) with %	**2020-2021** average per month (in litters) with %	**2021-2022** average per month (in litters) with %	**2022-2023** average per month (in litters) with %	**2023-2024** average per month (in litters) with %
DDMPCU	8,39,012	9,54,660	9,54,146	9,12,884	7,75,415
20 WDCs	1, 39,513 (16.6%)	1,32,187 (13.8%)	1,52,315 (15.9%)	1,18,951 (13%)	1,01,727 (13.1%)
Poosaricoundan Valasu WDC	60,605 (7.2%)	55,304 (5.7%)	72,463 (7.5%)	59,082 (6.4%)	41,371 (5.3%)
Shanmuga Valasu WDC	12,871 (1.5%)	15,836 (1.6%)	17,083 (1.7%)	16,697 (1.8%)	13,584 (1.7%)
Kuthulippai WDC	10,466 (1.2%)	7,518 (0.7%)	3,574 (0.3%)	2,598 (0.2%)	2,277 (0.2%)

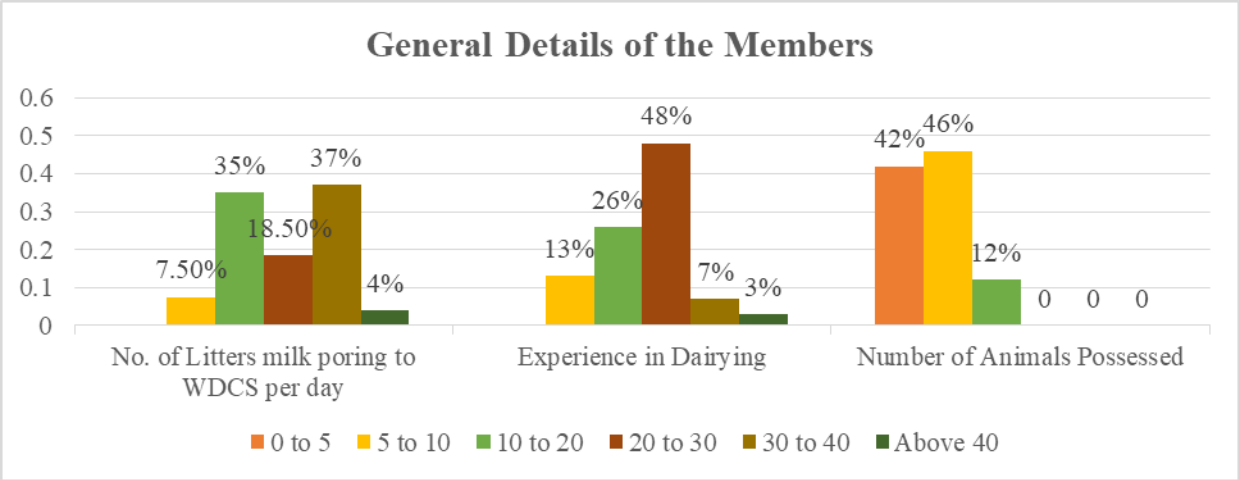
Societies	**Members**		**Procurement (In litters)**	**Sales (In litters)**	
	Total	**Pouring**		**Local**	**Union**
DDMPCU (185 DCs)	35,744	5,413	2,76,24,295	19,93,630	2,56,30,665
20 WDCs	1,642	265	12,20,724	1,67,326	10,53,398
Poosaricoundan Valasu WPCMPS	124	86	4,96,452	98,545	3,97,907
Shanmuga Valasu WPCMPS	113	67	43,008	6,023	36,985
Kuthulippai WPCMPS	106	55	27,324	3204	24120

The data presents the Details of the DCS & WDCs during the year 2023-2024. The Dindigul District Milk Producers Cooperative Union (DDMPCU), comprising 185 Dairy Cooperatives with 20 WDCs 35,744 members, procured a total of 2,76,24,295 litters of milk. Of this, 19,93,630 litters were sold locally, while 2,56,30,665 litters were sold through the union. Among WWDCs, Poosaricoundan Valasu WDC had the highest procurement of 4,96,452 litters, followed by Shanmuga Valasu WDC with 43,008 litter and Kuthulippai WDC with 27,324 litter. The data illustrates Poosaricoundan Valasu WDC handling the majority of procurement and sales.

5. Results and Discussions

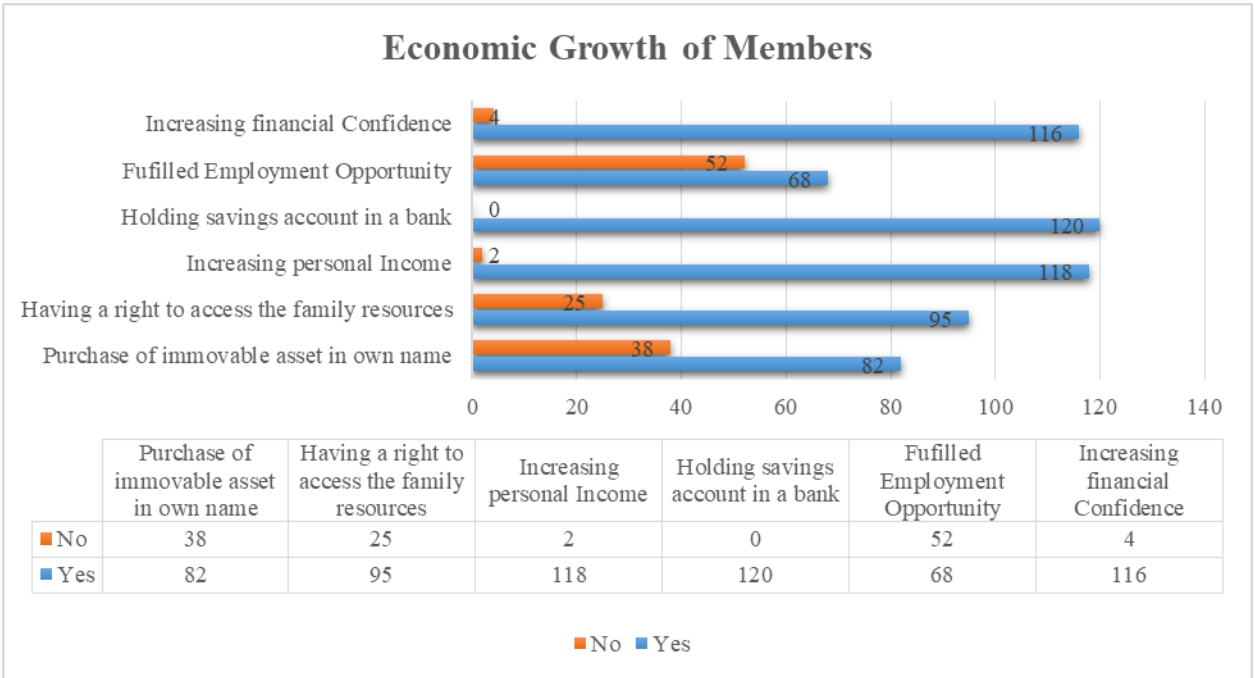
The collected data from the selected three WDCs has been calibrated through the below charts. General details of the members, Economic growth of members, and Social Development of the members are discussed.

Chart1:



The chart titled "General Details of the Members" compares three categories. The majority (37%) pour 10 to 20 litters of milk per day, followed by 35% pour 5 to 10 litters per day, while 7.5% pour only 0 to 5 litters, and 4% pour 20 to 30 litters to WDCs per day. Nearly half (48%) of the members have 20 to 30 years of experience, with 26% having 10 to 20 years of experience, and smaller percentages in the other categories. Moreover, the largest group (46%) owns 10 to 20 animals, followed by 42% owning 5 to 10 animals, with 12% owning 20 to 30 animals. No members reported owning more than 40 animals.

Chart2:

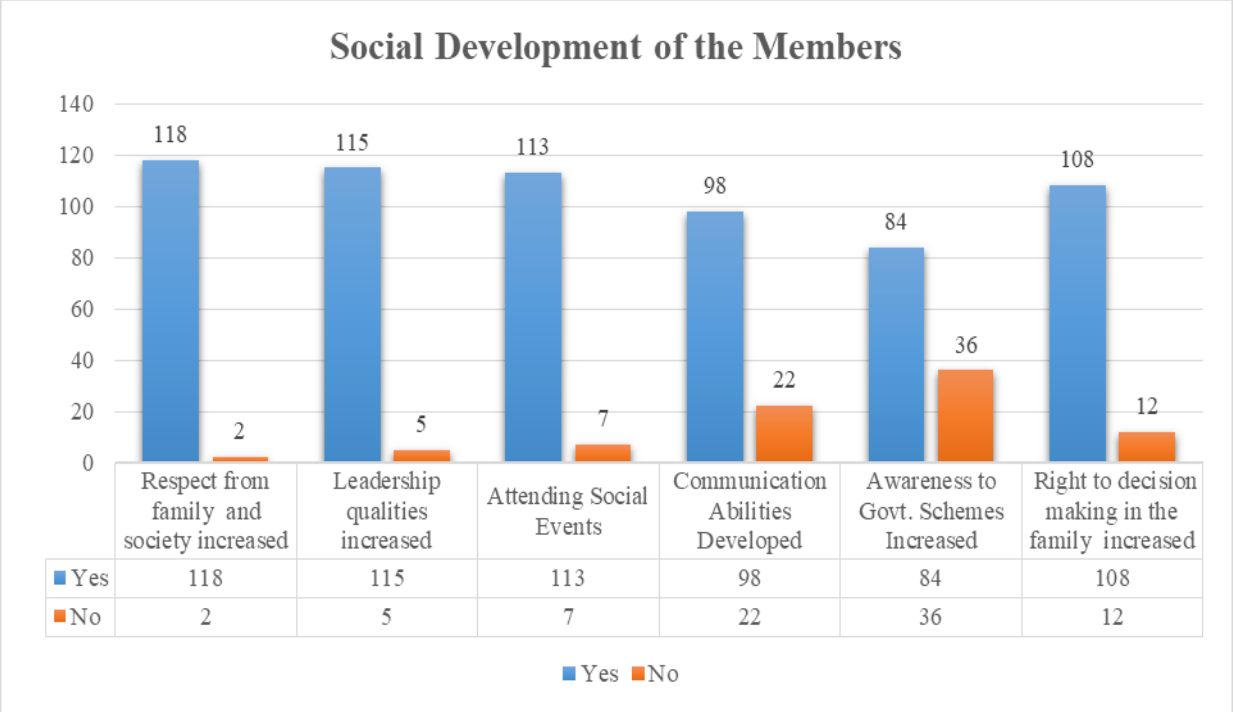


	Purchase of immovable asset in own name	Having a right to access the family resources	Increasing personal Income	Holding savings account in a bank	Fufilled Employment Opportunity	Increasing financial Confidence
No	38	25	2	0	52	4
Yes	82	95	118	120	68	116

It shows a substantial increase in personal income for 118 out of 120 respondents, underscoring significant economic improvement. All respondents have adopted basic financial tools, as evidenced by each having a savings account in a bank. Additionally, a majority have moved towards securing

their futures with 68 individuals agreed as fully employed through dairying. The data also reveals a noteworthy enhancement in financial confidence, with 116 respondents feeling more confident in their economic stability. Furthermore, 82 respondents have taken significant steps towards financial independence by purchasing immovable assets in their names, while 95 have affirmed their right to access family resources, indicating both increased empowerment and integration into the family's economic decisions. This holistic economic progress among the respondents highlights the positive impact of Dairy cooperatives.

Chart 3:



The chart shows significant advancements of members of the dairy cooperatives, 118 members report increased respect from family and society, 115 have enhanced leadership skills, and 113 actively participate in social events, indicating robust community involvement.While 98 improved their communication skills and 84 became more aware of government schemes, these areas show potential for further development. Importantly, 108 members report increased decision-making power within their families, highlighting substantial empowerment and influence in domestic affairs. Overall, the data reflects notable social empowerment and integration among the members.

6. Conclusion

Dairy cooperatives have helped to make village economies stable, offered fair income sharing, and given small dairy farmer's resources and knowledge for lasting farming, which improves their lives. This study looked at how dairy cooperatives affect rural lives in Tamil Nadu, concentrating on three WDCs: Poosaricoundan Valasu, Shanmuga Valasu, and Kuthulippai. The results show that these cooperatives have greatly improved the social and economic status of their members.

Findings:

- **Economic Empowerment:** The overwhelming figure of 98% of the 120 respondents claimed

that there has been an increase in personal income after joining the organization. Particularly, 68% of them stated that they have engaged in dairy farming as a full-time activity, which has improved their earnings.

- **Social Development:** Improved social status was one of the achievements that members reported with 98 percent mentioning increased esteem from family and community. 90% of respondents also reported better experience in leading others while 84% reported enhanced knowledge of government schemes, which are all signs of greater social empowerment.

- **Operational Challenges:** As much as these are positive developments, there are challenges that the cooperatives have to deal with. An example is the case of the Kuthulippai cooperative, which suffered a drop in milk output because of competition from the market and slack in internal operations.

Recommendations:
To address these challenges and build upon the successes, the following recommendations are proposed:

1. **Improve Operations:** Start more training programs like skill development, breeding, leadership, and value-added product making that will teach better dairy farming and cooperative management to boost production and sustainability.

2. **Build Market Presence:** Create plans to compete well with private dairies, using branding and introducing new value added products like paneer

3. **Support Financial Stability:** Make it easier for members to get loans and financial help, so they can invest in their dairy farms and enhance their lives.

4. **Raise Milk Prices:** Increase milk prices to help members as per the member's demand that will cover and manage their dairy costs.

By implementing these strategies, dairy cooperatives in Tamil Nadu can endure to perform a crucial role in promoting economic democracy and social justice among rural communities.

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Inclusive Digitalization and Equitable Access to Technology among Members of Urban Co-operative Banks in India

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Abstract

The current study is an attempt to assess the extent of inclusive digitalization and equitable access to technology facilitated by the Urban Co-operative banks (UCBs). It also intends to investigate whether there is any association between inclusive digitalization and equitable access to technology in Urban Co-operative Banks as perceived by its customers. Survey method was used to collect data from the respondents. For data collection, we have used a self-developed questionnaire, based on the inputs obtained from Shekhar, Mohanty, & Sarkar (2023) and OECD (2022) questionnaire. 44 UCBs were selected to represent the population of Urban Co-operative Banks in India. Multi-stage random sampling was adopted to select the banks. In the first stage, India was divided into four geographical zones, Northern, Southern, Eastern and Western zones. In the next stage, UCBs located in these four zones were classified into seven categories based on the asset size they possess. UCBs were selected from all these asset-size categories, to be included in the final sample. Lastly, customers were selected from these banks to represent the customers of UCBs in India. Accordingly, 142 sample customers were selected as the sample for this study. While screening the filled survey questionnaires, it was found that 17 were not usable since they contained either inconsistent or incomplete data indicating an approximate rejection rate of 12 percent. Thus, the final sample for this study consisted of 125 customers of Urban Co-operative Banks in India. The data obtained were analysed with the help of Jamovi 2.3.28 Software. Statistical tools used to analyse the data include, mean score, analysis of variance, t-test and regression analysis. The findings revealed that the mean score of overall inclusive digitalization and equitable access to technology were either moderate or a little above moderate. So, it is inferred that Urban cooperative banks have to strengthen their efforts to ensure inclusive digitalization and equitable access to technology. The study also revealed that there exists a positive relationship between equitable access to technology and inclusive digitalization. This finding has some practical as well as policy-level implications. First, our findings shed light on the need for co-operative bankers to focus more on their digitalization initiatives. More efforts should be required to digitalize the operations of the Urban Co-operative Banks to make them at par with the operation of other commercial banks. Second, policy-level interventions need to be initiated to ensure equitable access to technology for all the customers of the bank, so that the inclusive digitalization initiatives of the bank can be strengthened.

Keywords: Inclusive Digitalization; Equitable Access to Technology; Urban Co-operative Banks

1. Introduction

Technological and digital advancements have completely changed the financial landscape in India during the last three decades. Customers who are aware of digital trends, especially millennials, are looking for digital channels to provide them with better customer service and more convenience. Given what has happened, the COVID-19 epidemic has only quickened the pace of digitization. Urban Co-operative Banks are an integral part of the banking ecosystem in India. As of March 31,

2021, there were 1,534 UCBs with an aggregate asset value of `6,57,851 crore, comprising 53 scheduled and 1,481 non-scheduled accounts. 3.4% of scheduled commercial banks' total assets were made up of UCBs. Even if their asset sizes may be modest, UCBs have become important players in the financial inclusion process because they provide last-mile credit to borrowers who are often smaller in size. There are considerable qualitative variations in how commercial and cooperative banks have embraced technology advancements, even though digitization has affected every aspect of the banking industry. In contrast to scheduled commercial banks, the regulator, the Reserve Bank of India (RBI), has taken complete charge of UCB digitization. The primary drivers of the regulatory push for UCBs to embrace digital banking have been ensuring effective client services and advancing financial inclusion (Chavan, 2022).

Given the numerous recent digitization initiatives taken by the urban co-operative banks, it is interesting to understand customer perceptions of inclusive digitization as well as equitable access to technology as facilitated by the urban co-operative banks in India. Thus, the following research questions are addressed in this study:

- How inclusive is the digitalization process in Urban Co-operative Banks as perceived by the customers?
- What is the extent of equitable access to technology facilitated by the Urban Co-operative Banks?
- Is there any relationship between equitable access to technology and inclusive digitization among customers of Urban Co-operative Banks?

2. Theoretical Framework

In today's interconnected world, the importance of inclusive digitalization continues to grow. The notable transformation brought by digitalization has reshaped our working lives (Melchior & Haasler, 2023). As per Sabri et al. (2023) through the socio-technological process of digital inclusion or digital equity (Willems et al., 2019), people and communities can access and acquire the digital skills necessary to use information and communication technologies. Thus, inclusive digitalization is the initiatives and tactics used to guarantee that all people and communities, irrespective of their socioeconomic background, place of residence, age, gender, or other potential obstacles, can benefit from digital technologies. Even though every industry has gone digital, the digitalization of banks has been a revolutionary movement in India, radically altering the delivery of financial services (More & Mancharkar, 2023). As per Von Horn (2019), the introduction of new technologies led banks to engage in online correspondence. According to Diener and Spacek (2021) since banks are confronting with disruptive innovation frequently, digitalization is regarded as an ongoing challenge. Chipalkatti et al. (2007) opined that among all banks, Urban Cooperative Banks (UCBs) in India carries out a significant role in financing small business owners and traders, as well as for pooling resources from lower and middle-class populations. Unlike commercial banks, the digitalization efforts within Urban Cooperative Banks have primarily been driven by regulatory initiatives, specifically those mandated by the Reserve Bank of India (Asher, 2007).

Among the prominent theories, Digital Divide theory is a well-known theory concerning equitable access to technology. The term digital divide is used to define the disparities between those who have access to multiple forms of information and communication technology and those who do not have access to these technologies (Méndez-Dominguez et al., 2023; Serrano-Cinca et al., 2015). The multifaceted nature of this theory entails more than access to information and technological resources (Vassilakopoulou & Hustad, 2021). Moreover, the theme Digital Divide is frequently studied under the teaching/ education field (Centeio, 2017; Soomro et al., 2020; Afzal et al., 2023; Devisakti et al.,

2023) and even expands to health (Jongebloed et al., 2024; Smith & Magnani, 2019) and socio-economic development (Çilan et al., 2009). Lythreatis et al. (2022) in their study tries to identify major nine factors affecting digital divide which includes *type of technology, digital training, socio-demographic, socio-economic, personal elements, social support, rights, infrastructure and large-scale events.* They also add that there are only few researches at the firm level. Several other studies also encompass *type of technology* (Wahl & Kiuppis, 2023), *digital training* (Chetty et al., 2018; Nedungadi et al., 2018; Bansal & Choudhary, 2024), *socio-demographic* (Hellemans et al., 2022; Petrovcic et al., 2022; Masadeh et al., 2023) *socio-economic* (Denfanapapol et al., 2024; Devisakti et al., 2023) *and social support* (Kemppainen et al., 2023) as elements impacting digital divide. Economic status is another factor affecting digital divide (Hernandez, 2023).

Another significant theory is Technology Acceptance model. The technology acceptance model suggests that the likelihood of adopting information technology is influenced by perceived ease of use and perceived usefulness (Davis, 1989; Ma & Liu, 2011). Nagy et al. (2023) carried out a study examining the intention to utilize banks' innovative product portfolios through the lens of technology acceptance and observed that the intention to use is directly affected by the attitude towards using the products, which is positively influenced by trust, perceived usefulness, and perceived ease of use. Another study conducted by Trivedi et al. (2022) identified that the relationship between intention to use technology and security is partially mediated by social influence. Bastari et al. (2020) used Technology Acceptance Model (TAM) to investigate the impact of intrinsic motivation on how bank employees use websites and applications for task completion and performance evaluation. The results indicate that the intention to use web and application tools in the bank's digitalization process is directly impacted by intrinsic motivation, perceived ease of use, and perceived usefulness while Nisha (2020) seeks to discover the factors influencing bank employees' adoption of green banking indicating that perceived usefulness influences perceived ease of use, which in turn influences actual usage. Kitsios et al. (2021) conducted a multivariate regression analysis among bank employees in Greece, which resulted in a positive attitude toward the digitalization of banking operations. Urban Co-operative Banks aim to enhance the financial health of urban communities, particularly targeting professionals like artisans, small business owners, technicians, and industrialists (Pai et al., 2023). Therefore, recognizing customer views on digitalization and equitable access to technology is crucial in policy making.

3. Materials and Methods

This study addresses the above-mentioned research questions by analyzing the data collected from customers of 44 Urban Co-operative Banks including 24 scheduled and 20 non-scheduled Urban Co-operative Banks. The sample banks were selected from various asset-size categories. The asset-wise distribution of the sample banks and the number of customers sampled is given in Table 1.

Table 1: Asset-wise Distribution of the Sample Banks and the number of customers sampled

Sl. No.	Asset-size Categories (in Rs. Crores)	No. of UCBs	No. of Customers
1.	Asset < 50	5	15
2.	50 < Asset <100	8	24
3.	100 < Asset < 250	12	35
4.	250 < Asset < 500	10	21
5.	500 < Asset < 1000	4	12
6.	1000 < Asset < 3000	3	10
7.	Asset > 3000	2	8

Total	**44**	**125**

Source: Primary data

A survey was conducted among 142 sample customers of various Urban Co-operative banks to understand the level of inclusive digitalization adopted and the extent of equitable access to technology facilitated by the UCBs. 44 Urban Co-operative Banks were selected to represent the population of Urban Co-operative Banks in India. Multi-stage random sampling was adopted to select the banks. In the first stage, entire India was divided into four geographical zones, Northern, Southern, Eastern and Western zones. In the next stage, Urban co-operative banks located in these four zones were classified into seven categories based on the asset size they possess. Urban Co-operative Banks were selected from all these asset-size categories, to be included in the final sample. Lastly, customers were selected from these banks to represent the entire customers of Urban Co-operative Banks in India. Accordingly, 142 sample customers were selected as the sample for this study. While screening the filled survey questionnaires, it was found that 17 were not usable since they contained either inconsistent or incomplete data indicating an approximate rejection rate of 12 percent. Thus, the final sample for this study consisted of 125 customers of Urban Co-operative Banks in India.

Data were analyzed using Jamovi 2.3.28 Software. Statistical tools used to analyse the data include, mean score, analysis of variance, t-test and regression analysis.

4. Results and Discussion

The descriptive statistics is presented below:

Table 2. Descriptive Statistics

	Age	**Asset**	**ID**	**EA**
N	125	125	125	125
Mean	41-50	100-250	29.03	30.07
Median	3.00	2.00	29.00	34.00
Standard Deviation	1.09	1.68	6.15	6.05
Minimum	1	1	14	16
Maximum	4	7	41	45

Source: Jamovi Output

The average age of sample customers is between 41 and 50 years. While the average asset base of the sample UCBs was between Rs. 100 and 250 Crore. The customers perceive that the level of inclusive digitalization in Urban Co-operative banks is only a little above the moderate level. They also perceive that the extent of equitable access to technology as facilitated by the Urban Co-operative banks is low to moderate.

Table 3. Reliability Statistics

Scale	Items	Cronbach's α
Inclusive Digitalization	10	0.754
Equitable Access to Technology	10	0.832

Source: Primary Data

Since the data were collected using a self-developed questionnaire, based on the inputs obtained from Shekhar, Mohanty, & Sarkar (2023) and OECD (2022) questionnaire, we have tested the reliability of the indicators using Cronbach's α. The Cronbach's α values for inclusive digitalization and equitable access to technology are above 0.70 and hence, it is assumed that the indicators used to measure these constructs are reliable and can be used for further analysis.

Level of Inclusive Digitalization

The perception of customers about the level of inclusive digitalization facilitated by UCBs, is depicted in Table 4.

Table 4. Inclusive Digitalization in Urban Co-operative Banks

Sl.No.	Indicators	Mean Score
1.	Services are accessible everywhere	2.84
2.	Availing the services is quite simple and powerful as they facilitate the use of digital technology	2.75
3.	No more waiting in queues for the transfer of funds saves a lot of time and money	2.86
4.	All transactions are updated in real-time	3.02
5.	Facilitate reliability and flexibility in the decision-making process through digitalization	2.80
6.	All digital channels are fully integrated	2.82
7.	Promote digital financial inclusion	3.19
8.	Promote inclusive digitalization	2.93
9.	Try to Increase customer base with technology support	3.12
10.	Make use of digital marketing channels to reach the members	2.70
	Overall Inclusive Digitalization	**29.03**

Source: Primary Data

Ten indicators were used to measure the construct inclusive digitalization. We have used the mean score to assess the level of inclusive digitalization. Mean scores were computed for all the ten indicators and the overall inclusive digitalization. The analysis revealed that the mean score of all the indicators and the overall inclusive digitalization were either moderate or a little above moderate. So it is inferred that Urban cooperative banks have to strengthen their efforts to ensure inclusive digitalization.

Extent of Equitable Access to Technology

To assess the extent of equitable access to technology, we have used ten indicators

Table 5. Equitable Access to Technology

Sl.No.	Indicators	Mean Score
1.	Rules in banking operations are available and communicated to all customers	3.16
2.	Guidelines are available and communicated to all customers	2.85
3.	Rules related to digital technology use are available and communicated to all customers	3.13
4.	Guidelines related to digital technology use are available and communicated to all customers	2.92
5.	Timely information about banking operations automation is communicated to all customers	2.71
6.	Guidelines about banking operations automation is communicated to all customers on time	2.93
7.	Rules related to data protection and privacy are available and communicated to all customers	3.26
8.	Rules about the personal data protection and their privacy are available and communicated to all customers	2.84
9.	Rules related to access and use of banking data are available and communicated to all customers	3.02
10.	Guidelines related to access and use of banking data are available and communicated to all customers	3.28
	Overall Equitable Access to Technology	**30.07**

Source: Primary Data

Perception of Customers about Inclusive Digitalization and Equitable Access to Technology

To test whether there is any age-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative banks, Analysis of Variance was performed. The results are presented in Table 6.

Table 6. Age-wise Perception on Inclusive Digitalization and Equitable Access to Technology – Analysis of Variance

	Sum of Squares	Df	Mean Square	F	p
Inclusive Digitalization					
Age	1851	3	617.1	26.3	<0.001
Residuals	2842	121	23.5		
Equitable access to technology					
Age	1729	3	576.3	24.9	<0.001
Residuals	2804	121	23.2		

The results revealed that age-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative banks is statistically significant at 5 percent level of significance ($F=26.3; p<0.001$ and $F=24.9$; $p<0.001$ respectively). Thus, it is inferred that there is a statistically significant difference in the perception of customers regarding inclusive digitalization and equitable access to technology facilitated based on their age.

To test whether there is any asset category-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative banks, Analysis of Variance was performed. The results are presented in Table 7.

Table 7. Asset-wise Perception on Inclusive Digitalization and Equitable Access to Technology – Analysis of Variance

	Sum of Squares	Df	Mean Square	F	p
Inclusive Digitalization					
Asset	3793	6	632.15	82.8	<0.001
Residuals	901	118	7.63		
Equitable access to technology					
Age	3646	6	607.67	80.9	<0.001
Residuals	887	118	7.51		

The results revealed that asset-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative banks is is statistically significant at 5 percent level of significance ($F=26.3; p<0.001$ and $F=24.9$; $p<0.001$ respectively). Thus, it is inferred that customers significantly differ in their perception regarding inclusive digitalization and equitable access to technology facilitated by these banks based on the asset category.

To test whether there is any location-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative banks, Analysis of Variance was performed. The results are presented in Table 8.

Table 8. Location-wise Perception on Inclusive Digitalization and Equitable Access to Technology – Analysis of Variance

	Sum of Squares	Df	Mean Square	F	p
Inclusive Digitalization					
Location	2012	3	670.6	82.8	<0.001
Residuals	2682	121	22.2	30.3	
Equitable access to technology					
Location	1854	3	618.0	27.9	<0.001
Residuals	2679	121	22.1		

Since the p values are less than 0.05, it is inferred that customers significantly differ in their perception regarding inclusive digitalization and equitable access to technology facilitated by these banks based on their location.

To understand whether there is any gender-wise difference in the perception of customers regarding Inclusive Digitalization and Equitable Access to Technology as facilitated by the Urban cooperative

banks, one sample t test was performed. The results are presented in Table 9.

Table 9. Gender-wise Perception on Inclusive Digitalisation and Equitable Access to Technology – One Sample T-Test

		Statistic	df	p
Inclusive Digitalisation	Student's t	52.9	124	< .001
Equitable access to technology	Student's t	53.9	124	< .001

Note. H_a $\mu \neq 0$

Since the p values are less than 0.05, it is inferred that customers significantly differ in their perception regarding inclusive digitalization and equitable access to technology facilitated by these banks based on their gender.

Relationship between Equitable Access to Technology and Inclusive Digitalization

To test whether there is any significant relationship between equitable access to technology and inclusive digitalization among the customers of Urban Co-operative Banks, regression analysis was done. The results are presented in Tables 10 and 11.

Table 10. Model Fit Measures

Model	R	R^2
1	0.796	0.763

Table 11. Model Coefficients

Predictor	Estimate	SE	t	p
Intercept	-0.428	0.24249	-1.76	0.080
EA	1.014	0.00815	124.36	< .001

It is evident from Tables 10 and 11 that the correlation coefficient was 0,796, which means that there is a positive relationship between equitable access to technology and inclusive digitalization. The coefficient of determination is 0.763. Thus, it is inferred that 76 percent of the variation in inclusive digitalization is facilitated by equitable access to technology. the regression coefficient is positive; thus, it is concluded that both equitable access to technology and inclusive digitalization is moving in the same direction. It is also inferred that when there is one unit change in equitable access to technology, inclusive digitalization increases more than proportionately.

5. Conclusion and implications

The current study was intended to understand the role of UCBs in ensuring inclusive digitalization and equitable access to technology to its customers. Based on a survey conducted among the customers of urban co-operative banks, we tried to assess the perception of customers regarding the level of inclusive digitalization and equitable access to technology facilitated by these banks. The findings of this study revealed that the level of inclusive digitalization and equitable access to technology is only moderate. This is indicative of the fact that Urban Co-operative Banks have to strengthen their initiatives to ensure inclusive digitalization as well as equitable access to technology. This finding has some practical as well as policy-level implications. First, our findings shed light on the need for co-operative bankers to focus more on their digitalization initiatives. More efforts should be required to digitalize the operations of the Urban Co-operative Banks to make them at par with the operation of other commercial banks. Second, policy-level interventions need to be initiated to reinforce the inclusive digitalization efforts and to ensure equitable access to technology to all the customers of the bank.

6. Annexure

Questionnaire

Inclusive Digitalization and Equitable Access to Technology among Members of Co-operative Banks in Kerala

Section One: Inclusive Digitalization and Equitable Access
(Rate the following statements on a five-point scale ranging from strongly agree to strongly disagree)

	Inclusive Digitalization **Shekhar, Mohanty, & Sarkar (2023).**	**SA**	**A**	**N**	**D**	**SD**
1.	Services of credit cooperatives are accessible everywhere					
2.	Availing the services of credit cooperatives is quite simple and powerful as they facilitate the use of digital technology					
3.	No more waiting in queues for the transfer of funds saves a lot of time and money.					
4.	All transactions are updated in real-time					
5.	Facilitates reliability and flexibility in the decision-making process through digitalization					
6.	All digital channels are fully integrated					
7.	Co-operative banks promotes digital financial inclusion					
8.	Co-operative banks promotes inclusive digitalization					
9.	Increased customer base with technology support					
10.	Credit cooperatives make use of digital marketing channels to reach the members					
	Equitable Access to Technology **(OECD, 2022) questionnaire for Public-private**					

	relations and support for digital innovation					
1.	Rules about equitable access to and use of digital technologies in					
2.	Guidelines about equitable access to and use of digital technologies in					
3.	Rules about the use of digital technologies in					
4.	Guidelines about the use of digital technologies in					
5.	Rules about banking operations automation					
6.	Guidelines about banking operations automation					
7.	General rules about the protection of data and privacy of the members					
8.	Specific rules about the protection of personal data of the members and their privacy					
9.	Rules about the access and use of banking data					
10.	Guidelines about the access and use of banking data					

Section 2: Profile of the Respondents

1. Age
   a. 21-30 years ☐ b. 31-40 years ☐
   c. 41-50 years ☐ d. Above 50 years ☐

2. Gender: Male ☐ Female ☐

3. Location: *North* ☐ *South* ☐ *East* ☐ *West* ☐

4. Occupation: Govt. job ☐ Private job ☐
   Busines ☐ Agriculture ☐

5. Years of Experience with Co-operative bank
   Less than 3 years ☐ 3-6 years ☐
   7-10 years ☐ Above 10 years ☐

6. Marital Status: Married ☐ Unmarried ☐

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Team-based leadership for Indian cooperatives: Gleanings from Indian knowledge systems

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Abstract

Leadership as a critical driver of organizational outcomes is well established in modern management literature. Various leadership theories such as individual based, dyadic, group based etc. have been studied to further understand the role of leadership. However, there are two major gaps in this extant literature - (1) Most of this literature is in the domain of the conventional investor-owned corporate organizations and (2) These are primarily in the context of western corporate organizations. The uniqueness of a cooperative organization is that, unlike the conventional investor-owned corporate organizations, it is an association of people who have come together voluntarily for achieving a common purpose through a jointly owned democratically controlled enterprise. There is need for more collaborative and team-based leadership approaches rather than the traditional individual (solo) based leadership. In addition, there are studies that have conclusively established that Indian leaders differ from their western counterparts is several ways such as being more emotional and relationship oriented, being more outcome-driven than process, etc. The Indian civilization has been in existence for thousands of years and leadership has been a critical driver for the same. While ancient Indic leadership is mainly reflected through the leadership of kings, it was never an individual (solo) leadership alone. Study of texts such as the Arthaśāstra of Kauṭalya provides insight into an evolved 'team-based' leadership model that coexisted with the individual authority of the kings. There were governance forums such as the sabhās and samitis to keep watch on the administration of the king. In addition, the study of Vedic literature informs us of the presence of cooperative organizations in the form of guilds for various occupations which were known by varied names such as śreṇīs, vrātas, gaṇas, etc. All these inform us of a vibrant 'cooperative' system that existed in ancient India. This paper aims to explore this further through a thorough review of relevant contemporary literature thus building a case for this topic, textual study of various relevant extant Indic literature and presenting a view on the principles of team-based leadership for Indian cooperative organizations.

Keywords: Cooperative, Vedic, Arthaśāstra, Indic, team-based leadership

1. Introduction

Organizations can be classified based of various criteria such as size, nature of business ownership, legal status etc. Based on ownership status, they generally categorized into investor-owned and non-investor-owned organizations. The latter comprise of organizations such as non-profit organizations, trusts, cooperatives, etc. Investor-owned organization have an investor or group of investors who put in the capital to build an enterprise which is run professionally and is required to generate the expected returns to the investors. Majority of organizations in market economy operate as investor-owned businesses where profit maximization and returning the expected value to shareholders is one of the primary objectives. Cooperatives, on the other hand, are a very different type of organization. International Cooperative Alliance (ICA) defines a cooperative organization as 'an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise' (ICA, International Cooperative Alliance, 2024).

Based on the principles of cooperative organizations (ICA, International Cooperative Alliance, 2024), we can compare them with investor-owned organizations as follows:

Cooperative organization	Investor-owned organization
Voluntary and Open Membership: Cooperatives are voluntary organizations, i.e., anyone can use their services if they are willing to accept the responsibilities of membership. Also, they do not have any discrimination based on gender, social, racial, political or religious backgrounds.	Not a membership driven model. It is an investor driven model where a set of investors are investing money into an enterprise which then recruits talent and creates assets to deliver goods and services to customers and generate returns for investors.
Democratic Member Control: Cooperatives are organizations created by the people for the people and hence are democratic in nature. These are controlled by their members who are actively involved in setting policies and making decisions. Those elected as representatives are accountable to the members. In primary cooperatives, members have equal voting rights i.e., one member, one vote.	Decision making is done primarily by the upper echelons – the top management team in the organization. It may or may not be participatory for the rest of the organization who are employees. There is no election among the larger employee group for the posts of leaders. They are mostly selected through well-defined recruitment processes.
Member Economic Participation: The capital of the cooperative is contributed to equitably by the members. This capital is also democratically controlled. Generally, a portion of this capital is the common property of the cooperative and members generally receive limited compensation, if any, on the capital subscribed as a condition of membership. Surpluses are allocated for purposes such as: cooperative development; providing benefits to members proportional to their transactions with the cooperative; and supporting other activities approved by the membership.	Economic contribution comes from investors while the organization is run by a completely different set of individuals who are recruited for the job.
Autonomy and Independence: Cooperatives, by their very spirit, are autonomous in nature. They are organizations controlled by their members – the ones we would call self-help. Hence whatever nature of transactions they do with the external world, they do so in way that does not compromise their autonomy.	Controlled by many stakeholders of which the investors/ shareholders exert the maximum control.
Education, Training, and Information: Upskilling the members is a critical part of any organization and the cooperatives are no exception. In this case, its all the more important to keep honing the 'already innate' skills of the members and provide a cutting edge over the market.	Training is provided to employees to be able to contribute effectively to the output.
Cooperation among Cooperatives: While the cooperative itself is a coming together of people for	Not applicable

a common cause, coming together of such cooperatives helps to provide strength to the cooperative movement by working together through various structures - local, national, regional and international.	
Concern for Community: Cooperatives took shape in a sense to satisfy a need in the community and since they are driven mostly by individuals belonging to specific communities, the concern is enhanced.	While this is applicable for investor-owned organizations as well, especially with concepts of ESG and Tripple bottom line taking center-stage, it still is not the core of the business in most cases. It is generally handled as Corporate social responsibility which is a mandatory but not core part of the business model.

Table 1

Among the various factors that drive organizational outcomes, the role of leadership has been heavily debated (Bass & Riggio, 2006) and its importance as a critical driver of organization outcome has been well established in contemporary management literature (Ibrahim & Daniel, 2019). Leadership is defined variously, one of which is the ability to influence others (Kolzow, 2014). Different approaches have been proposed in the past to study, analyze and understand leadership. These led to the formulation of various leadership theories, three of them being the prominent classifications – (1) Solo/ individual leadership (2) Dyadic leadership and (3) Distributed/ team-based leadership. While the solo/ individual leadership theories focus on the attributes, traits and behaviors of the individual leader, typically at the helm of the organization, as critical factors determining organizational success, the distributed/ team-based leadership theories recognize the importance of leadership as a distributed responsibility amongst a group of people, typically the top management or leadership team of the organization. While distributed/ team-based leadership is gaining prominence in investor-owned organizations, it assumes a larger relevance for cooperative organizations that are essentially built on the concept of distributed capital and control. Hence the focus of this paper.

2. Review of contemporary literature: building a case

An assessment of extant management literature would yield sparse results in the area of distributed/ team-based leadership especially in the context of cooperative organizations. In addition, many studies have pointed out leadership as a major challenge for the failure of cooperative organizations (Kispál-Vitai, Regnard, Kövesi, & Guillotte, 2019) (Fairbairn, Fulton, & Pohler, 2015).

Based on the differences pointed out between the principles of investor-owned and cooperative organizations in Table 1, let us look at the implications on leadership expectations.

Cooperative organization principles	Leadership implications
Voluntary and Open Membership: Cooperatives are voluntary organizations, i.e., anyone can use their services if they are willing to accept the responsibilities of membership. Also, they do not have any discrimination based on gender, social, racial, political or religious backgrounds.	• Leader has lesser control on the composition of the organization and hence needs to deal with greater diversity and complexity.
Democratic Member Control: Cooperatives are	

organizations created by the people for the people and hence are democratic in nature. These are controlled by their members who are actively involved in setting policies and making decisions. Those elected as representatives are accountable to the members. In primary cooperatives, members have equal voting rights i.e., one member, one vote.	• Democratic participation gives rise to varied viewpoints on each decision area → need for collaboration and alignment more frequently to arrive at decision points. • Solo leadership approach not looked at favorably most times. • Distributed leadership approach or at best team-based leadership is highly recommended. • Also, each member is driven by their own limited understanding of outcomes → leader is required to provide a common vision and sustain this vision for the organization
Member Economic Participation: The capital of the cooperative is contributed to equitably by the members. This capital is also democratically controlled. Generally, a portion of this capital is the common property of the cooperative and members generally receive limited compensation, if any, on the capital subscribed as a condition of membership. Surpluses are allocated for purposes such as: cooperative development; providing benefits to members proportional to their transactions with the cooperative; and supporting other activities approved by the membership.	
Autonomy and Independence: Cooperatives, by their very spirit, are autonomous in nature. They are organizations controlled by their members – the ones we would call self-help. Hence whatever nature of transactions they do with the external world, they do so in way that does not compromise their autonomy..	
Education, Training, and Information: Upskilling the members is a critical part of any organization and the cooperatives are no exception. In this case, its all the more important to keep honing the 'already innate' skills of the members and provide a cutting edge over the market.	Leaders must be invested in developing and upskilling the people.
Cooperation among Cooperatives: While the cooperative itself is a coming together of people for a common cause, coming together of such cooperatives helps to provide strength to the cooperative movement by working together through various structures - local, national, regional and international.	Leaders needed with high collaborative streak.
Concern for Community: Cooperatives took shape in a sense to satisfy a need in the community and since they are driven mostly by individuals belonging to specific communities, the concern is enhanced.	Leaders who have high 'social responsibility' and are able to take decisions that place social cause/ benefit at par with if not higher than member value add.

From the above, we infer that leadership for cooperative organizations need to be more distributed/ team-based with a collaborative approach, lesser hierarchy and able to drive the sense of larger purpose and vision for the organization over individual member gains. This is quite contrary to leadership in investor-owned organizations where the primary objective is to maximize shareholder

value which even solo leadership could achieve in many cases.

Now, coming to the Indian context, today, the history of cooperatives in India is traced back to the beginning of the 20th century, probably with the Cooperative Credit Societies Act, 1904, when 'the seeds of cooperation in India' were believed to have been sown (Singh, 2016). While the Indian cooperative sector has grown significantly since its inception in 1904, there are lot many challenges facing this sector today ranging from credit issues to management issues. Of these, those concerning with leadership and management are detailed below.

Lack of democratic control

While the concept is that all farmers, however big or small, are stakeholders in the cooperative and have right to contribute to decision making of the cooperative, over the years, this concept seems to have got corrupted. Farmers with larger holdings started wielding greater power in the decision making and activities of the cooperatives. The leadership of the cooperatives (say the chairman and vice-chairman) went into the hands of the largest and richest farmers though majority of members were farmers with small and medium-sized land holdings (Singh, 2016). Thus, the integrity of the leadership itself is becoming questionable.

Lack of awareness amongst members

Many people and even members are not completely aware of the concept of cooperatives, their role, their rights and duties towards it, etc. In many cases, the cooperatives are viewed as instruments or tools to solicit concessions from the government (Singh, 2016). This again could be seen as a gap in the leadership of the cooperatives which has not been authentic and transparent enough to educate the members of their true rights.

Lack of coverage of scope

Most of the cooperatives lack the vision to understand the true needs of the members and scope the activities of the cooperative accordingly. Many cooperatives are single purpose societies – societies serving a single cause (Singh, 2016).

Lack of motivation to attract good talent

The cooperatives are facing issues of poor infrastructure, lack of good quality management, overdependence on government, dormant membership, non-conduct of elections, lack of strong policy related to human resources, neglect of professionalism, etc., (Singh, 2016). These are deterring people to join hands with the cooperatives which is leading to lack of trained personnel needed to run the operations of these cooperatives efficiently.

Lack of application of cooperative principles

In most cases, we find that the principles of cooperatives that have been outlined earlier are not implemented completely as they are not legally binding. Legal requirements typically emphasize only on common capital ownership and democratic control within the firms. However, there are many examples including that of the Mondragón Cooperative Corporation or MCC in Spain, UK and rest of Europe which consider adherence to the co-operative as one of the key reasons for their success (Novkovic, 2008).

While we do have studies that deliberate on the solutions related to challenges on credit, financing, not very many studies are available to deal with the kind of issues as enumerated above. The extant studies speak of solutions around more state/ government control, merging of smaller single-purpose societies into larger multi-purpose societies, etc.

Indic perspectives

Indian civilization has been known for its rich culture and tradition that hinges a lot on living in harmony, peaceful co-existence, etc. A popular mantra from the Vedas says – 'Let everyone in the world be peaceful, let everyone be without diseases, let everyone see good, let no one be sorrowful.' While thoughts of this kind can be found throughout the Indic literature, we also have evidence of cooperative institutions or organizations that flourished in ancient India mainly in the form of guilds.

Contemporary literature

Few scholars have studied the guilds of ancient India in detail, and this provides a good starting point for our research in this area. Kiran Kumar Thaplyal has written an entire chapter on 'Guilds in Ancient India' (Thaplyal, 1996), noted historian and scholar R. C. Majumdar has written an entire book on 'Corporate life in Ancient India' (Majumdar, 1922), etc.

Majumdar (Majumdar, 1922) states that cooperation was a key feature in all activities of ancient India. He postulates the aspects of jāti – caste; saṅgha – community of Buddhist monks; gaṇa – political corporation; and śreṇī – guilds; to be manifestations of this cooperation.
Kiran Kumar Thaplyal (Thaplyal, 1996) mentions that the guilds were variously mentioned as śreṇī, vrāta, gaṇa, etc.

Vedic literature

Economic activity in the Vedic literature has been primarily associated with the 'vaiśya' class of the society that comprised of traders, merchants, farmers, etc., starting from its reference in the famous Puruṣasūkta in the 10th maṇḍala of the Ṛgveda. In this context, it is interesting to see that the same concept appears in the Bṛhadāraṇyaka-upaniṣad where the vaiśya is referred to as 'gaṇaśa' . Śaṅkara explains this as the 'viśa' class who works as gaṇas – groups or cooperatives. Majumdar postulates that the term 'śreṣṭhin' seen in Vedic literature is sued in the context of the 'head of the śreṇī or guild'.

Smṛti literature

While speaking of the legal aspects, Gautama-dharmasūtra states that the class of Vaiśyas which comprises the cultivators, traders, herdsmen, and money lenders; can formulate their own laws that might be applicable to their community/ profession and that the king would consider that while meting out legal decisions. Thus, we see that the guilds were empowered to create their own laws.

Manu-smṛti states that a king must know the laws of the various jātis (classes of the society), the townships/cities/villages, the guilds and the various families/lineages before meting out his laws.

Arthaśāstra of Kauṭilya

The Arthaśāstra of Kauṭilya is generally ascribed to the 4th century BCE and is regarded as the most comprehensive book on polity and administration. Kauṭilya, the author of the work, is identified with Cāṇakya, the kingmaker minister who brought Candragupta Maurya to power and overthrew the Nanda dynasty. Thus, Arthaśāstra encapsulates the practical aspects that were implemented during the time of the Mauryan empire.

Arthaśāstra mentions saṅgha, sāmutthāyaka, śreṇī, pravahaṇikā, etc., as references for cooperative organizations. Sāmutthāyaka referred to cooperative groups that were aligned to activities that are in the interest of the kingdom and not against it . Pravahaṇikā referred to the group of foreign traders . Śreṇī was a term used in general for the guilds of various professions.

Arthaśāstra references the guild for the first time when speaking of setting up the villages. Those who was not part of any cooperative could still offer their services for which the expenses would be reimbursed . However, they had no claim to the share of profits . Only local guilds were allowed to

be established within the villages . The guilds of washermen, weavers, tailors, etc., were located at various corners of the township .

Arthaśāstra devotes an entire chapter (14th chapter of the 3rd adhikaraṇa) towards laborers and cooperatives. Herein, he mentions of two kinds of cooperatives – Cooperatives of workers/ laborers who work for an employer and cooperatives of individuals working towards a common output. The former would be called a 'labor union' in today's parlance. The latter is what we call as 'cooperatives' today. In case of cooperatives, Kauṭilya says that the members of the cooperative shall divide their earnings equally or in proportion to the share mutually agreed amongst themselves . Any (healthy) member leaving the guild without completion of work is to be punished .

Arthaśāstra speaks of the management of the deposits of the members of the guild of artisans which include carpenters, goldsmiths, ironsmiths etc. These are be managed/ safeguarded by any of the five kinds of people – who are ethical and non-corrupt in nature, those who can guide the artisans on their work, those who know management of deposits, those who have self-finance their work, and heads of guilds (śreṇī-pramāṇa) . This is not to be confused with the capital that each member puts into the cooperative. This deposit was a form of insurance that would be returned to the member at time of distress – death, loss of wealth, etc.

While these are the aspects of guilds mentioned in the Arthaśāstra, it speaks elaborately of team-based leadership for the success of any organizational set-up. It says that no administration can be done with just the leader just as a cart cannot move with one wheel alone . There is need for leadership team that can support the leader in executing the vision of the team

Jātaka tales

The Mūgapakkhajātaka – that speaks of the life of the Buddha refers to eighteen guilds that existed during the time. These are referred to as 'aṭṭhārasa seṇiyo' in Pali which translates in Sanskrit as 'aṣṭādaśa śreṇī' or eighteen guilds. Here again the guild is referred to as śreṇī. Majumdar (Majumdar, 1922), while discussing this point, enumerates a list of twenty-seven possible occupations that could have qualified to have guilds. These are (1) wood-workers (2) metal-workers including gold and silver (3) workers fabricating hydraulic engines (4) oil makers (5) ivory workers (6) stone-workers (7) bamboo workers (8) braziers (9) jewellers (10) weavers (11) potters (12) leather workers (13) basket makers (14) painters (15) dyers (16) corn dealers (17) cultivators (18) fishermen (19) garland makers (20) barbers (21) butchers (22) robbers (23) herdsmen (24) traders and merchants (25) mariners (26) forest police (27) money lenders.

Majumdar (Majumdar, 1922) speaks of the two different types of guilds spoken of in the Jātaka tales – those of traders & merchants and those of artisans. Each guild had the concept of the head of the guild called 'Jeṭṭhaka' (could be translated as 'Jyeṣṭhaka' or elderly person). The Jeṭṭhaka held an important place in the network of the king which shows the connections and leverage the guilds had with political power. The guilds, especially of the artisans were hereditary in nature and also inhabited large areas of the township where all families of the guild were co-located. The population of the guild reached even thousand families in many cases. This created the necessary ecosystem for the thriving of the profession.

The Nigrodhajātaka mentions of the bhaṇḍāgārika – treasurer as the judge of all the guilds . One of the major duties of the bhaṇḍāgārika was to resolve disputes between heads of guilds. Thus, there seems to have been governance of the guilds from the state.

3. Summary

The above aspects from Indic literature could be summarized as follows:

- Importance of guilds
  a. Cooperatives or guilds formed an important institution in ancient India primarily for the traders, merchants and various artisan groups. Hence, they were not dispensable.
  b. They had a significant position in the society as well as in polity. Their welfare was considered one of the key priorities for the king.
  c. The king himself consulted the guilds and considered their laws before deciding anything that could impact them.

- Structure, governance and leadership
  a. They were empowered to create laws and rules that were relevant to the specific group they represented.
  b. They had leaders who were elderly people from the same profession and hence commanded respect and obedience from the members of the guild. These leaders could easily resolve conflicts within the guild.
  c. Though we understand of a solo leader for each guild, there were many such leaders in the society for the same profession who came together for various topics. Hence, the leaders worked more as teams rather than solo leaders.
  d. The leaders, being part of the community which lived as one family, had the best interests of the community in mind.
  e. They were ethical, non-corrupt and could guide the community in the best way.
  f. A large part of the guild membership was hereditary which automatically solved for issues such as lack of awareness, lack of expertise etc. Every member of the guild knew well their job, role of the guild and their duties and responsibilities towards the guild and the larger society.
  g. Governance of the guilds was largely left to the members and heads of the guild. However, there was state intervention when conflicts and disputes arose between guilds.

4. Learnings and concluding thoughts

Thus, from the above narratives, we can draw the following implications for the Indian cooperatives:

1. Importance of cooperatives

a. While the Indian cooperative sector has significantly grown over the years, it is still not a significant share of the Indian GDP or economy to command a natural attention from stakeholders. This needs to be investigated and seen how the growth of the cooperative sector can be unleashed.

2. Leadership and governance

a. While genetic heredity may not hold good today entirely, many of the issues of the current Indian cooperatives around lack of awareness, expertise etc. can be resolved by created professional heredity – generations of people who are invested into this profession and willing to pass it on to suitable successors thus mapping the ‘heredity structure’.
b. The cooperatives must have a strong internal governance structure that has evolved from the members itself rather than being forced upon them. However, the state must also have a mechanism to remain plugged in to the workings of the cooperatives.
c. All these need a capable leadership at the helm of the cooperative who operates not as one

individual but as a group of leaders, grown from the cooperative itself, who can lead the cooperative ahead.

d. The leaders must be the ones who command respect and obedience from the members owing to their contributions, experience and non-corrupt nature. Only they could represent the cooperative in the best of interests

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Role of Dairy Cooperatives in Addressing Gender Inequality and Fostering Rural Development at Puducherry

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Abstract

This study explores the transformative potential of dairy cooperatives in Puducherry as a means to address systemic gender inequalities and promote rural development. By focusing on collaborative approaches, the research paper highlights how the dairy cooperatives empower marginalized groups' particularly small-scale farmers and women, enhance socio-economic conditions, and foster sustainable community growth? The study examines the operational dynamics of dairy cooperatives, their impact on members' livelihoods, particularly women, and the broader socio-economic benefits to the community. Through qualitative and quantitative analysis, the research paper aims to provide insights into effective cooperative models and strategies that removes the gender inequalities that ultimately leads to rural development. The result of the present study reveals that addressing gender inequalities and fostering rural development through dairy cooperatives in Puducherry. Furthermore, dairy cooperatives have played a pivotal role in fostering rural development by investing in local infrastructure, such as milk collection centers and chilling units. These improvements have not only benefited cooperative members but also the wider rural community.

Keywords: Dairy cooperatives, gender inequality, women empowerment, rural development, Puducherry, inclusive growth, economic empowerment

1. Introduction

With 70 percent of the workforce in the dairy sector being women and the new A-HELP (Accredited agent for Health and Extension of Livestock Production) initiative, which involved community-based women activists bridging the gap between local veterinary services and livestock owners while providing primary services. (Ministry of Fisheries, Animal Husbandry & Dairying, 2023) This initiative contributes to better livestock management, increased milk production, and the overall development of dairy cooperatives, while simultaneously promoting women's leadership and empowerment in rural communities. (Ministry of Fisheries, Animal Husbandry & Dairying, 2023) Cooperatives provide fair opportunities for resource sharing and encourage member participation in decision-marking, promoting decent work and social inclusion through transparent and participatory practices. (Falendra Kumar Sudan , 2019) India contributes nearly 25% of the world's milk supply, (Invest India, 2023) with a growth rate in milk production more than twice the global average. The dairy industry plays a vital role in ensuring nutritional security for 1.4 billion people and supports the livelihoods of over 100 million families across the country. Dairy farming is not just an economic activity but a way of life that empowers rural communities, significantly contributing to the nation's Gross Domestic Product (GDP) and overall income.

Puducherry, a Union Territory with a rich cultural and historical backdrop, has a significant rural population. The role of women in the economic development of these rural areas is often hindered by social norms, lack of access to resources, and limited employment opportunities. Gender inequality

remains a pervasive issue, limiting women's participation in formal employment sectors, especially in agriculture and allied activities. Dairy cooperatives, which have gained traction across India, serve as a potential solution to address these challenges by providing a platform for women to participate in income-generating activities, decision-making processes, and fostering rural development.

Dairy cooperatives are essential drivers of both gender equality and rural development. By empowering women economically and socially, they contribute to reducing gender disparities. Simultaneously, these cooperatives strengthen rural economies by providing critical infrastructure, improving incomes, and fostering social unity.

2. Objectives

The main objective of this paper is to examine the role of dairy cooperatives in addressing gender inequalities and promoting socio-economic development that leads to rural development in Puducherry. It seeks to explore the ways in which these cooperatives drive rural progress and development. Additionally, this paper provides policy recommendation for women members and dairy cooperatives to improve their efficiency and long-term sustainability.

3. Literature Review

Existing research highlights the operational dynamics, impact on livelihoods, and community benefits of such cooperatives. Studies emphasize the importance of cooperative models in enhancing agricultural productivity, fostering sustainable practices, and promoting inclusive growth in similar contexts.

4. Methodology

This study combines both qualitative and quantitative research methods. The Primary data were gathered through interviews and surveys collected with members of dairy cooperatives in Puducherry, comprising a representative sample from one-third of the total 98 cooperatives. Hence, a sample of 330 respondents were selected from 33 Primary Milk Producers Cooperative Societies (PMPCS) i.e., 10 participants from each society. Secondary data were gathered from audit reports, annual reports, journals, books, and online sources related to cooperative institutions. Statistical techniques will analyze quantitative data, while thematic analysis will interpret qualitative data, aiming to comprehensively evaluate the impact and operational dynamics of dairy cooperatives in fostering rural development and addressing gender inequalities.

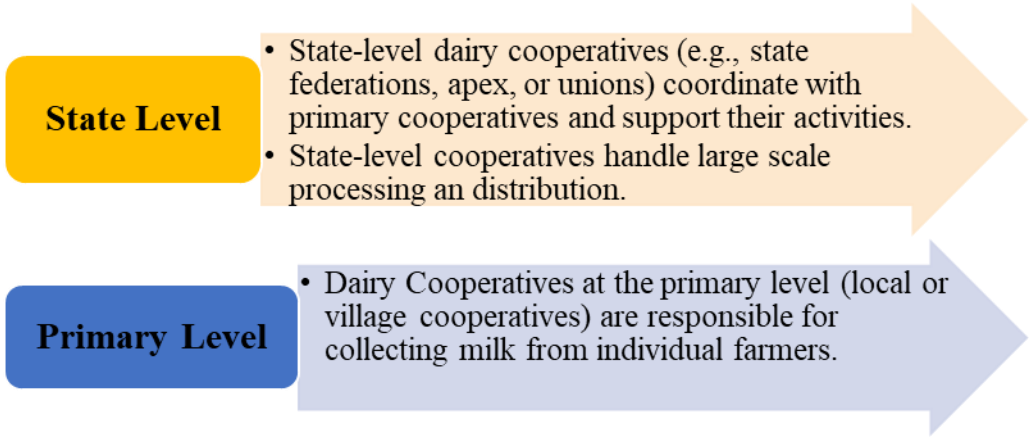
5. Over View of Dairy Cooperatives in Puducherry

Ponlait is a very old milk brand in the Puducherry region, known for its diverse range of value added products including paneer, flavored milk, ice cream, and various other byproducts. The name "*Ponlait*" is derived from a combination of "*Pondicherry*" and "*Lait*" the French word for milk.

The Pondicherry Cooperative Milk Producers' Union Ltd., (PCMPU) initially established as the Pondicherry Cooperative Milk Supply society on February 7, 1955, initially focused on supplying milk to urban consumers. (V Dhanalakshmi & S V Akilandeeswari, 2024) It was the first cooperative society registered in Puducherry under the Pondicherry Cooperative Societies Act of 1972. (The Pondicherry Cooperative Milk Producers' Union Ltd., 2022) However, the supply society faced challenges in providing substantial support to its members and in ensuring quality, functioning mainly as an intermediary between dispersed producers and consumers. (V Dhanalakshmi & S V

Akilandeeswari, 2024)

In 1973, the name was changed to the Pondicherry Cooperative Milk Producers' Union Ltd., Currently, there are 108 registered societies, with 101 actively functioning, including Women PMPCS. The union has approximately 41,938 enrolled milk producers at the village level, with around 7,605 actively participating members.



State Level Dairy Cooperatives in Puducherry

At the state level, the Pondicherry Cooperative Milk Producers' Union Ltd., (PCMPU) manage the activities of PMPCS across the Union Territory, they handles milk processing, quality control, and milk marketing. As well as they provide technical support, training, resources to local cooperatives to improve milk productions and facilitates the implementation of government schemes, subsidies, and financial support for dairy cooperatives.

Primary Level Dairy Cooperatives in Puducherry

Primary level dairy cooperatives operate at the grassroots level, directly engaging with milk producers and managing local dairy activities. The main functions of PMPCS includes milk collection, farmers support services, quality control, financial services and contributing to community development.

Addressing Gender Inequality through Dairy Cooperatives

Dairy Cooperatives have been instrumental in addressing gender inequality by ensuring equal rights for both men and women with economic opportunities and empowering them within rural communities. Through cooperative structures, women are given a platform to participate in the economic and social life of their communities, which is often restricted due to traditional gender norms.

In India, dairy cooperatives playing a major role in income generation of the rural farmers in which Amul have led to significant empowerment of women. Women in rural areas, who are not allowed to engage in market activities, but now majority of the women are actively participants in dairy production, which will generates their increase decision making power, income, and promotes financial independence. According to a study by the International Labour Organization (ILO) dairy cooperatives have helped women gain access to critical resources such as credit, technology, and training, which enhance their productivity and income.

70% of the women were contributing in dairying in India. A study by the Food and Agriculture Organization (FAO) reveals that women involved in dairy cooperatives not only experience higher household incomes but also report increased confidence and social mobility, with many taking on leadership roles within their communities. By being part of a cooperative, women break away from traditional roles and engage in activities that were previously male-dominated, thereby challenging gender norms.

Dairy Cooperatives in Puducherry Contributing to Gender Equality and Rural Development

The Union Territory of Puducherry covers an area of 492 Square Kilometers and is divided into four geographically distinct regions namely Puducherry, Karaikal, Mahe, and Yanam. The Puducherry region itself is further subdivided administratively into two urban municipalities like Puducherry and Ozhukarai.(A. Rajadurai & et al., 2018) For this study conducted Pondicherry with 33 Primary Milk Producers Cooperative Societies (PMPCS), a stratified proportionate random sampling method was employed. Using the formula P=1-(N-1/N) (N-2/N-1)…(N-n/N-(n-1)).

The formula of random sampling is given by P=1-(N-1/N) (N-2/N-1)…(N-n/N-(n-1)). Were P is represents the probability, n is the sample size, and N represents the population. Simplifying this by canceling out the term 1-(N-n/n), results in P=n/N. (Vedantu , 2024)

This sample of 330 (dairy farmers) was selected from each PMPCS. The socio-economic profile of the participants, a comprehensive survey was conducted using a proper interview schedule. This approach ensured that the data collected accurately reflected the characteristics and conditions of the dairy farmers within each PMPCS. The structured interview schedule facilitated systematic data collection, allowing for a thorough analysis of the socio-economic factors impacting the participants. The Socio-Economic Overview of Dairy Farmers, based on the data from a sample of 330 respondents.

Table: 1 Socio-Economic Overview of Dairy Farmers

Particulars (Dairy Farmers)		**Respondent (N=330)**	
		N	**%**
Age	18-27	6	1.8
	28-37	46	13.9
	38-47	79	23.9
	48-57	129	39.1
	Above 58	70	21.2
	Total	**330**	**100.0**
Gender	Male	100	30.3
	Female	230	69.7
	Total	**330**	**100.0**
Marital Status	Married	285	86.4
	Unmarried	2	.6
	Widow/Widower	43	13.0
	Total	**330**	**100.0**
Education	Illiterate	100	30.3
	School	207	62.7
	Degree	19	5.8
	Post Graduate	4	1.2
	Total	**330**	**100.0**

Family Type	Joint family	132	40.0
	Nuclear family	198	60.0
	Total	**330**	**100.0**
Experience	Up to 5	37	11.2
	6-10	76	23.0
	11-15	44	13.3
	Above 16	173	52.4
	Total	**330**	**100.0**
Primary Occupation	Primary	205	62.1
	Secondary	125	37.9
	Total	**330**	**100.0**
Secondary Occupation	Agricultural	95	28.8
	Employed	22	6.7
	Others	8	2.4
	Total	**125**	**37.9**
Annual Income	Below 2000	9	2.7
	2001-4000	65	19.7
	4001-6000	91	27.6
	6001-8000	59	17.9
	Above 8000	106	32.1
	Total	**330**	**100.0**

Source: Primary data though interview schedule

Age

The more number of the respondents fall within the 48-57 age group (39.1%), followed by 38-47 years (23.9%), and those above 58 years (21.2%). Only a small portion are in the younger age brackets, with just 1.8% aged 18-27. This suggests that dairy farming is predominantly managed by middle-aged and older.

Gender

A notable majority of the dairy farmers are female (69.7%), indicating the significant role women play in dairy farming activities, while males constitute 30.3%. this highlights the gendered aspect of dairy farming, with a focus on female participation.

Marital Status

Majority of the respondents are married (86.4%), with a small percentage being widowed (13%) and an even smaller number of respondents were unmarried (0.6%).

Education

A significant portion of dairy farmers are illiterate (30.3%), while 62.7% have finished school-level education. A small minority hold a degree (5.8%) or a postgraduate qualification (1.2%). The relatively low levels of higher education may indicate a need for improved educational opportunities or agricultural training for these farmers.

Family Type

Most of the respondents live in nuclear families (60%), with 40% living in joint families.

Experience

More than half of the respondents (52.4%) have over 16 years of experience in dairy farming,

showing that many have a deep knowledge of the field. In contrast, a smaller number have less than 10 years of experience, suggesting that new members enter into dairy cooperatives are relatively few.

Primary Occupation
A majority of the respondents (62.1%) engage in dairy farming as their primary occupation, while 37.9% consider it a secondary source of income. This highlights that for many of the dairy farmers is a central component of their livelihood.

Secondary Occupation
28.8% of the respondents are engaged in agriculture, 6.7% are employed in other jobs, and 2.4% have other secondary occupations. This diversification suggests that while dairy farming is important, some households depends on other sources of income for economic stability.

Annual Income
The annual income shows that 32.1% of the respondents earn more than ₹8,000 annually from dairy cooperatives, while 27.65% earn between ₹4,001-6,000. Only 2.7% earn below ₹2,000. This variation in income levels indicates that economic disparities among dairy cooperatives, with a significant portion earning moderate to low income.

Overall, the data presents dairy cooperative is one of the important sector for increasing the livelihood of the rural people.

Gender Equality and SDG
Achieving gender equality is crucial for fostering a peaceful, prosperous, and sustainable future. Despite advancements in recent years, the world remains behind schedule in meeting the targets set for gender equality by 2030, this goal emphasizes that equality is not just a fundamental human right but a necessary foundation for a stable and thriving society. (United Nations, 2024) Which is the focus of the fifth Sustainable Development Goal (SDG).

"*Active gender equality and empower all women and girls*"

Approximately 2.4 billion women of working age worldwide still lack equal economic opportunities compared to men. (United Nations, 2024)

Dairy cooperatives in India are significantly contributing to reducing gender inequality, particularly in rural areas, while supporting the achievement of the Sustainable Development Goals (SDGs), especially Goal 5 on gender equality. These cooperatives play a key role in promoting women's empowerment and economic inclusion. Here's how dairy cooperative align with gender inequality (SDG5).

SDG5- Gender Equality

- **Women Empowerment**

Dairy cooperative provide women, particularly in rural areas, opportunities for income generation and economic independence. This reduces gender disparities by increasing women's participation in the workforce.

- **Leadership Roles**

Many dairy cooperatives encourage women to take on leadership positions within the organization, promoting decision-making power and enhancing their visibility in the community.

- **Skill Development**

Dairy Cooperatives often offer training and capacity-building programs that equip woman with the technical skills needed for dairy forming, business management, and financial literacy.

Gender Equality in Dairy Cooperatives and their Impact on Rural Development

Dairy Cooperatives have played a pivotal role in transforming rural economies across the world, Particularly in India. As engines of rural development, these cooperatives are not only a source of economic empowerment but also platforms for fostering gender equality. In regions like Puducherry, gender sensitive approaches within dairy cooperatives have yielded significant benefits in terms of income generation, decision-making, and social mobility for women.

Education

Table 2: Association between Gender and Education

Gender	Education				Total
	Illiterate	School	Degree	Post Graduate	
Male	24 (24.0)	65 (65.0)	10 (10.0)	1 (1.0)	**100** **(100.0)**
Female	76 (33.0)	142 (61.7)	9 (3.9)	3 (1.3)	**230** **(100.0)**
Total	**100** **(30.3)**	**207** **(62.7)**	**19** **(5.8)**	**4** **(1.2)**	**330** **(100.0)**

Source: Primary data though interview schedule
Note: % in brackets

Value	Df	Sig.
6.538	3	.088

Table 2: shows that the relationship between gender and education levels among males and females, using four categories: illiterate, school education, degree holders, and postgraduates. Among males, 24% are illiterate, 65% have completed school, 10% hold a degree, and 1% are postgraduates. For females, 33% are illiterate, 61.7% have completed school, 3.9% hold a degree, and 1.3% are postgraduates. The overall distribution indicates that both genders have a majority of individuals with school-level education, but females have a slightly higher percentage of illiteracy and lower

percentage of degree holders compared to males.

The Chi-Square test shows a value of p-value is 0.088, which is greater than the commonly used significance level of 0.05. This indicates that there is no statistically significant association between gender and education level in this data, meaning the observed differences in education levels between males and females could be due to chance.

Fig: 2 Association between Gender and Education

Occupation

Table 3: Association between Gender and Occupation

Gender	Is Dairying Primary or Secondary Occupation		Total
	Primary	Secondary	
Male	50 (50.0)	50 (50.0)	**100** **(100.0)**
Female	163 (70.9)	67 (29.1)	**230** **(100.0)**
Total	**213** **(64.5)**	**117** **(35.5)**	**330** **(100.0)**

Source: Primary data though interview schedule
Note: % in brackets

Value	df	Sig.
13.265	1	.000

Fig 3: Association between Gender and Occupation

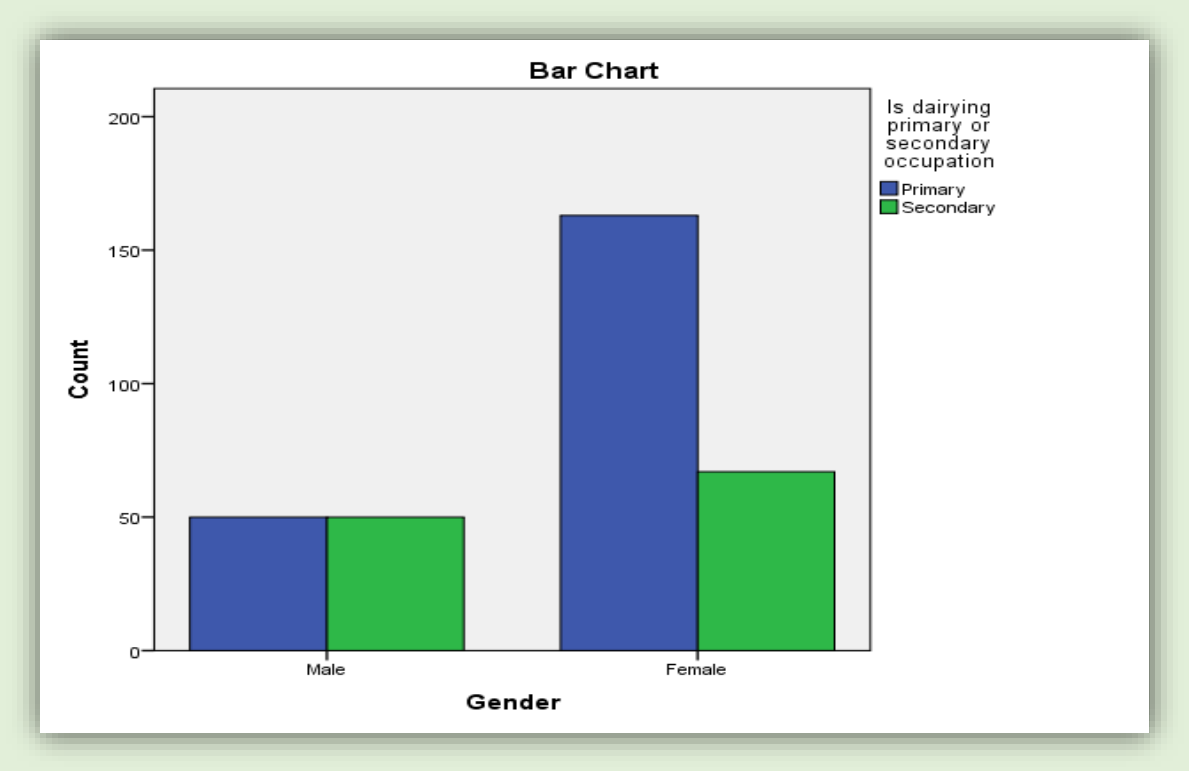


Table 3: presents the association between gender and whether dairying is a primary or secondary occupation. Among males, 50% consider dairying as their primary occupation, while the other 50% consider it secondary. For females, a larger percentage, 70.9%, regard dairying as their primary occupation, with 29.1% viewing it as secondary. Overall, 64.5% of the total respondents consider dairying their primary occupation, and 35.5% view it as secondary. The Chi-Square test result shows a value of 13.265 with a significance level of 0.000, which is below 0.05. This indicates a statistically significant association between gender and occupation. The significance of this association could be rooted in sociocultural norms, where women are more likely to engage in dairy-related work, either due to traditional roles in livestock care and milking or due to greater involvement in cooperative structures that promote women's participation

In contrast, the data reveals a significant difference for females, where a larger proportion (70.9%) regard dairying as their primary occupation, while only 29.1% view it as secondary. This indicates that women are more likely to rely on dairying as their main source of livelihood. the higher percentage of females considering dairying a primary occupation could suggest that women in rural or cooperative settings are more engaged in dairying activities, potentially due to limited alternative income opportunities or because dairying is integrated into household responsibilities, making it a more accessible and essential occupation for them.

The overall trend shows that 64.4% of the total respondents, irrespective of gender, consider dairying their primary occupation, with 35.5% regarding it as secondary. This underscores the importance of dairying as a key economic activity for a significant portion of the population, particularly in rural areas where dairy cooperatives may play a vital role in supporting livelihoods.

Table 4: Association between Gender and Income

Gender	Monthly Income from Dairy Cooperatives					Total
	Below 2000	2001-4000	4001-6000	6001-8000	Above 8000	
Male	5 (5.0)	22 (22.0)	28 (28.0)	14 (14.0)	31 (31.0)	**100 (100.0)**
Female	4 (1.7)	43 (18.7)	63 (27.4)	45 (19.6)	75 (32.6)	**230 (100.0)**
Total	**9 (2.7)**	**65 (19.7)**	**91 (27.6)**	**59 (17.9)**	**106 (32.1)**	**330 (100.0)**

Source: Primary data though interview schedule

Note: % in brackets

Value	df	Sig.
4.377	4	.357

Fig 4: Association between Gender and Occupation

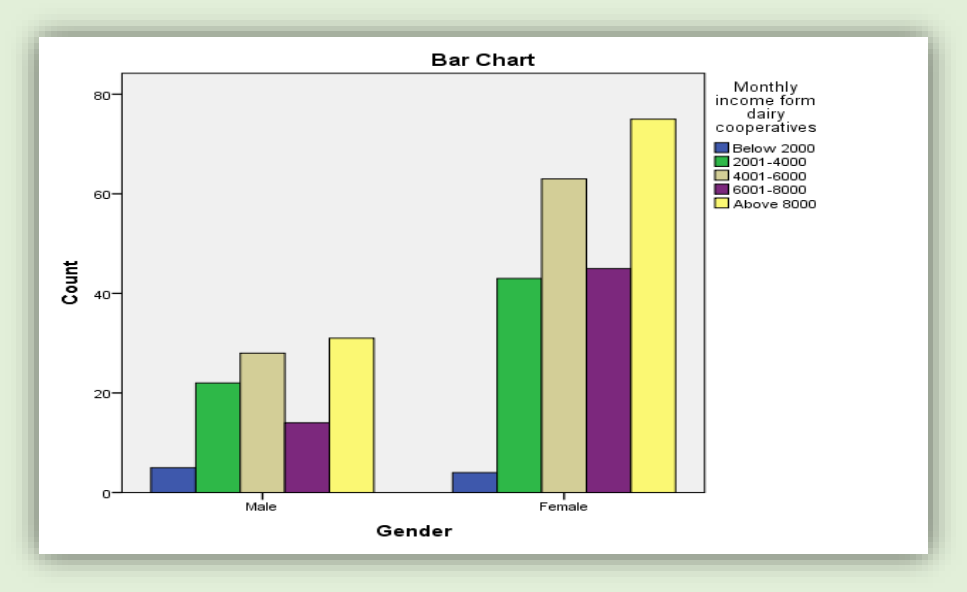


Table 4: explores the association between gender and monthly income from dairy cooperatives, providing insights into the distribution of income across different categories for males and females.

For males, income is spread across all ranges, with the largest proportion (31%) earning above ₹8000, followed by 28% earing between ₹4001 and ₹6000. A smaller percentage (5%) of males earn below ₹2000. In contrast, females have a slightly different distribution, with the highest proportion (32.6%) also earning above ₹8000 but with a larger share (27.4%) earning between ₹4001 and ₹6000 compared to males. Fewer females (1.7%) fall into the lowest income bracket of below ₹2000.

The overall trend shows that the majority of both males and females earn in the high income ranges, with over 32% of the total respondents earning above ₹8000. However, there are more females in the ₹4001-₹6000 category than males, indicating a slight skew in income distribution based on gender.

Despite these differences, the Chi-Square test result (4.377 with a significance level of 0.357) suggests that the observed income differences between males and females are not statistically significant, meaning that gender does not have a strong influence on the income levels derived from dairy cooperatives.

This lack of statistical significance could imply that factors other than gender, such as role in the cooperative, level of involvement, or other socioeconomic factors, may be influencing income levels. While the majority of both genders earn higher incomes, females tend to have a slightly more equitable distribution across income categories, potentially indicating greater variation in the economic benefits they receive from dairy cooperatives compared to males.

6. Dairy Cooperatives and their Impact on Rural Development

Addressing gender inequality, dairy cooperatives play a critical role in fostering rural development. These cooperatives provide small-scale farmers, including women, with access to a stable market for their milk, which is essential for sustainable rural livelihoods. Dairy cooperatives improve rural incomes by pooling resources and enabling collective bargaining, which ensures fair prices for milk producers.

In states like Gujarat, dairy cooperatives have been crucial in improving infrastructure, such as the establishment of veterinary services, milk collection centers, and milk chilling plants. These infrastructure improvements, driven by cooperative efforts, contribute to the overall development of rural areas by enhancing the local economy and providing jobs. The World Bank also notes that dairy cooperatives have led to better nutritional outcomes in rural areas, as farmers receive higher incomes, allowing them to improve household diets.

Further, the cooperative model fosters social cohesion and trust among community members. Cooperatives are built on principles of mutual support, ensuring that farmers work together to solve common challenges. This collective effort contributes to the sustainability of the agricultural economy and reduces vulnerabilities to market fluctuations. Studies show that dairy cooperatives not only increase milk production but also contribute to the development of ancillary sectors such as fodder production, animal health services, and rural credit systems.

7. Policy Recommendations

To strengthen the dairy cooperatives and addressing gender inequality and promoting rural development, the following policy recommendations are proposed:

Policy Recommendations	
Financial Support	Set up programs that provide grants or low interest loans to women for dairy cattle purchase. Government subsidies and low-interest loans should be make available to cooperatives for infrastructure development.
Training Programs	Regular training programs for women in leadership, financial management, and modern dairy practices will improve productivity and strengthen governance within cooperatives.
Entrepreneurship Development	Provide entrepreneurship programs that encourage women to start their own dairy-related businesses, such as processing and value-added product creation, can expand income-generating opportunities
Access to credit and	Expanding access to credit facilities and livestock insurance schemes

insurance	tailored for women members to reduce financial vulnerability and encourage active participation in dairy cooperatives.
Women Dairy Cooperatives	Promote the formation of women Dairy Cooperatives, offering them technical, financial, and managerial support to foster autonomy and confidence among women.
Networking Opportunities	Facilitate networking and exchange programs between women-led cooperatives to share knowledge, best practices, and innovative solutions.
Inclusive Decision Making Processes	Foster an environment where both men and women's perspectives are valued equally, promoting inclusive discussions and decisions that benefit all members of the cooperative.
Gender Audits	Conduct regular gender audits of cooperative policies and practices to ensure they are gender-sensitive and actively addressing gender disparities.

8. Conclusion

Dairy cooperatives play a crucial role in addressing gender inequality and promoting rural development. By integrating women and marginalized groups, particularly small-scale farmers, into the economic framework of dairy farming, these cooperatives empower them both financially and socially. Women, in particular, are able to break traditional barriers, access essential resources, and participate in decision-making processes, leading to improved gender equity and stronger roles within their households and communities.

This study, focused on Puducherry, highlights how dairy cooperatives enhance socio-economic conditions by fostering collaborative approaches that benefit not only cooperative members but also the wider rural community. Through investments in local infrastructure, such as milk collection centers and chilling units, cooperatives not only stabilize incomes and improve market access but also contribute to sustainable community growth and economic resilience.

Ultimately, dairy cooperatives are powerful examples of how collective action can effectively tackle social and economic challenges. By removing systemic gender inequalities and fostering rural development, they promote inclusive growth and offer a sustainable model for transforming rural economies, creating a more equitable and prosperous future for all.

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Ease of Doing Business through Digitalization in Agricultural Producer Cooperative Marketing Societies (APCMS)

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1. Introduction

A Market Society can be considered a cooperative group of cultivators created largely for the goal of assisting members to market their goods as profitably as feasible through private commerce. (Reserve Bank of India, 1969). The first Cooperative marketing societies in Tamil Nadu was established in 1913 in Kumbakonam town in Tanjavur district (Mrutyunjay Sarangi, 2005). Digital marketing may be traced back to the early 1990s, when the internet was widely used for business reasons. (digitaldefynad, 2024) . Amazon was founded in 1994 as an online bookstore but rapidly grown, affecting digital marketing with its massive e-commerce platform. (digitaldefynad, 2024). Cooperatives began to adopt computerization in the late twentieth century, with a noticeable push in the 1980s and 1990s as computer technology became more accessible and affordable.

2. Objectives

1. To identify the business doing the through digitalization in APCMS
2. To identify the opportunities and challenges in the APCMS

3. Methodology of the study

This study used secondary sources. Data were gathered from journal, book, and targeted URL records, as well as other relevant sources. The relevant papers were searched through several scientific databases. In order to achieve useful results for agricultural producers cooperative marketing societies.

4. Review of literature

The author (Rameshkumar 2022) addressed **the impact of digital marketing in the agricultural** industry in this essay. However, there may be a gap in understanding how multiple digital tools can be linked into a coherent system. The term "digitalization" refers to the act of converting analog data or processes into a digital format, which includes altering and upgrading operations, services, or items with digital technology (Shobana and Suresh Kumar, 2024). **The paper Digitalization of Agriculture in India: The Case for Doubling Farmer Income investigates** the digitalization of Indian agriculture to create value for farming and increase opportunities to double farmer income (Visal Katekar & Veeran Kumar Cherku, 2023) by explaining Digital Approaches in Agriculture, Digital Agricultural Extension, and Digital Financial Services. The study evaluates the Indian government's policy initiatives and identifies holes in the digitalization process. The study explore the opportunities, concerns, and challenges of digitalization, as well as the government's actions. It highlights several central and state government efforts, like e-NAM. Farmers reach many buyers, get greater purchasers, and boost agricultural entrepreneurs (Rameshkumar, 2022).Tamil Nadu's

agricultural marketing cooperatives' administration and operations-This book includes an Impact Assessment study. Explain the six Agricultural producers' cooperative marketing societies (Mrutyunjay Sarangi, 2005) the performance, Management, sale, Economic benefit, price benefit, service rendered by CMS, social benefit, Democratic benefits, empowerment benefits etc… An analysis of Tamil Nadu's Agricultural Producers Cooperative Marketing Society shows that farmers' income has doubled. in this paper explain the " Doubling Yield, and Tripling income" the cooperatives are the front runners in executing the plan of doubling the farmers income (Tamil Nadu's Agricultural Producers Cooperative Marketing Society: A Study on Increasing Farmers' Income, 2019).

5. Profile of the Society

The Tiruchengode Agricultural Producers Co-operative Marketing Society Ltd No.S 351 (TCMS) is located at the foothills of Lord Arthanareeswara Hill temple at No.9 Katchery Street, Velur Road, and Thiruchengode as taluk headquarter of the Namakkal district. This society was registered in 16.4.1930 and commenced its business on 30.04.1930 and has successfully completed 88 years of its service. Received award from National Cooperative Development Corporation (NCDC) for outstanding performance for the year 2021. (Tiruchengode Agricultural Producers Cooperative. Marketing Society) The EAPCMS was founded by seasoned co-operator Thiru S.K. Paramasivan Ex. M.P.and it was registered on 31st January (Tiruchengode Agricultural Producers Cooperative. Marketing Society)1960. It commenced its business on 29th June (Tiruchengode Agricultural Producers Cooperative. Marketing Society) 1960. It started with 58 members with a shares worth Rs. 14, 885. The society now has 35,405 members and a share capital of Rs. 43.35 lakh as of March 31, 2023.It area of operation shall be confined to Erode Taluk, Modakurichi Taluk and Kodumudi Taluk. However the Turmeric growers residing in all the other taluks in Tamilnadu may be admitted as 'A' class members and they may be granted loans in the Pledge of Turmeric produce subject to the conditions that they shall not be eligible for the other rights and privileges available to 'A' class members residing in the society's operational area. The EAPCMS is registered under TNCS Act 1983 are following Limited Liability only. (Governement of Tamil Nadu, 2023)

6. Digitalization of APCMS

Online purchasing and selling of goods and services is known as e-commerce. The phrase "e-commerce" originated around 1948-49 (Britannica, Money.com, 2024). Creating e-commerce platforms to offer products directly to consumers eliminates the need for middlemen. Through digital media and other marketing methods, products gain greater visibility and reach a larger audience. Agricultural commodities, for example, are increasingly being sold via online channels, such as apps. Today, e-commerce plays a significant role in society, with platforms like Flipkart, Amazon, Meesho, and Zomato being major players. However, most of these apps operate for profit.

In contrast, the cooperative sector operates with a service-based motto. The Erode Agricultural Marketing Society has introduced "Mangalam Masala," the initial comprehensive online shopping platform for value-added products. The raw materials, including spices, masala, groceries, millets, and oils, are sourced directly from farmer members of the cooperative society. (Mangalammasla.com, 2024).

The Erode Agricultural Producer Cooperative Marketing Society sells products like "Mangalam Turmeric Powder" through their e-commerce platform. The website has distinct categories for (i) spices, (ii) masala, (iii) groceries, (iv) pooja items, and (v) millets. E-commerce simplifies the connection between clients and sellers, with raw materials sourced directly from farmer members

concerned with cooperative societies (Mangalam, 2024). This initiative serves the farmers, ensuring they receive a fair price for their products, while eliminating middlemen.

Digitalization in APCMS

- Trichengode Agricultural Commodities – Auction Details
- E-Tender Flow chart
- E-Marketing is the process of marketing a commodity using the e-platform

Trichengode Agricultural Commodities – Auction Details

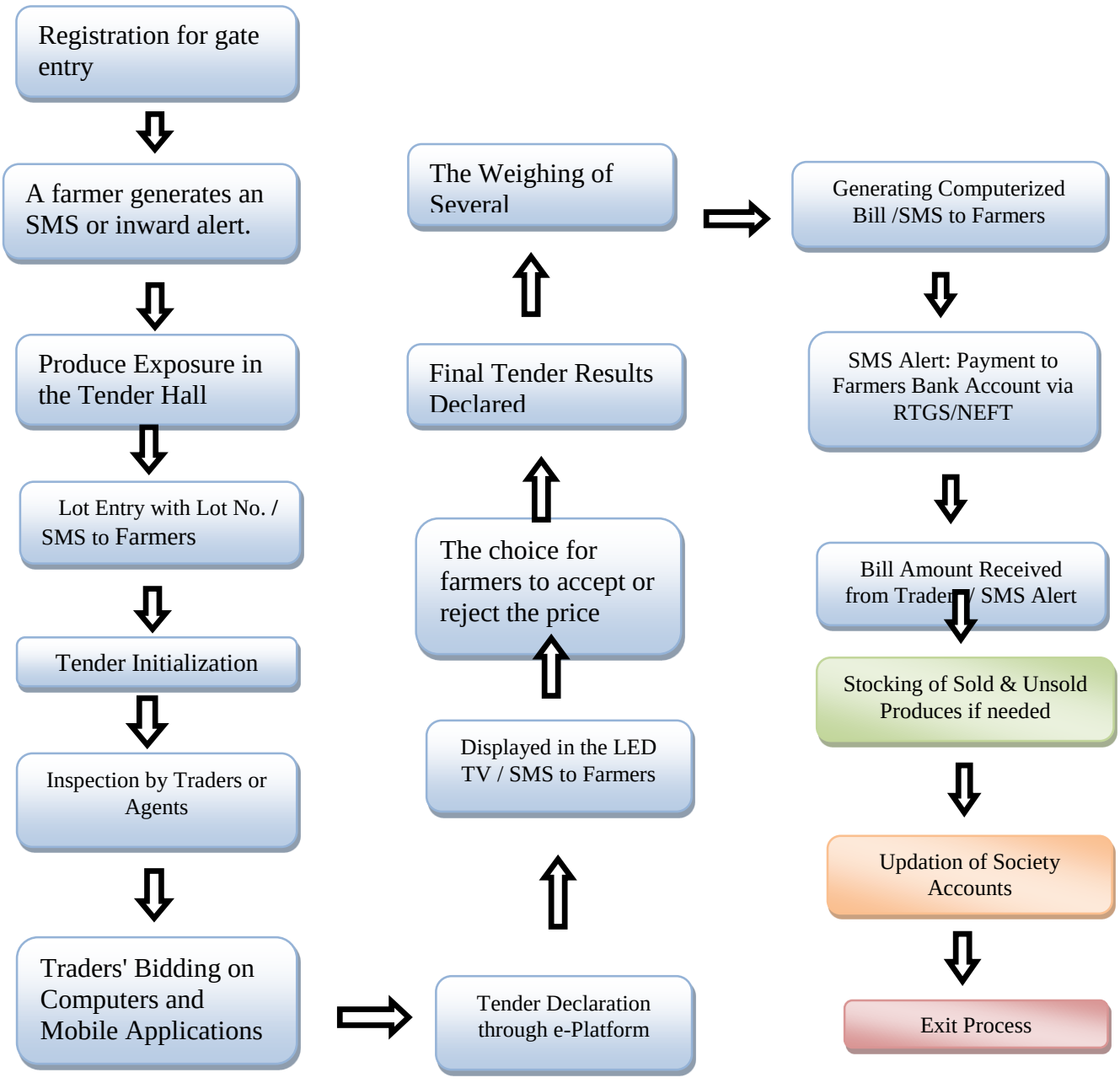
Name of the Place	Name of the Crops	Auction Day
Trichengode Head Office	Cotton, Gingelly, Groundnut	Tuesday
	Coconut Kernals	Friday
	Turmeric	Saturday
Konganapuram Branch	Groundnut	Sunday,Monday,Tuesday
	Cotton,Gingelly	Saturday
Mallasamudram Branch	Maize	Monday
	Cotton	Wednesday
	Groundnut,Coconut Kernals	
Jalagandapuram Center	Coconut Kernals	Tuesday

The above table provides information on the auction days for various crops at different centers under the management of the Agricultural Producers Cooperative Marketing Societies. Each center specializes in specific crops, and auctions are conducted on designated days of the week. This schedule helps coordinate the sale of agricultural produce such as cotton, Gingelly, groundnut, coconut kernels, turmeric, and maize across multiple locations. (Tiruchengode Agricultural Producers Cooperative. Marketing Society)

E-Tender Flow chart

All the necessary information is easily accessible via mobile phones or smartphones. Although this information is available in the public domain, it can be difficult for some to find. The majority of Indian farmers are small-scale growers, many of whom are not familiar with digital technologies and the use of mobile phones. The EAPCMS launched a mobile app tender procedure in February 2016. (Srideep).

E-Tender Flow chart



(Dr.C.Pitchai, 2024)

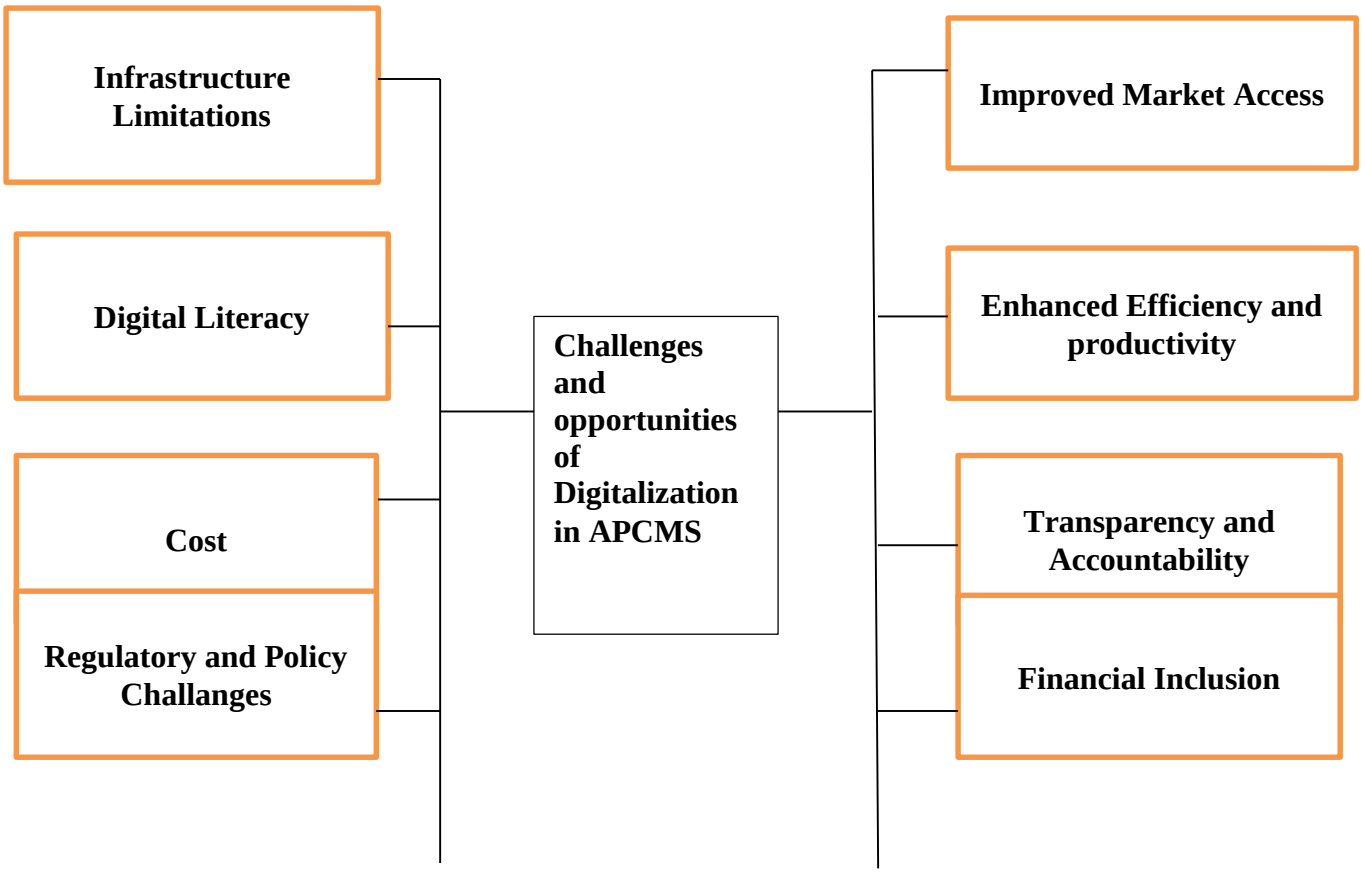
The society conducts e-tenders on all working days of the week. In this process of bid, quoted the maximum price by the trader for this agricultural produce is confirmed, in consultation with the farmers. The E-Tender process is over, the farmers are paid the money immediately from the society's fund. The society collect the service charge of 1.5%. E-Tender system by the society functions through offline system with extensive Wi-Fi Infrastructure. (Dr.C.Pitchai, 2024)

E-Marketing is the process of marketing a commodity using the e-platform

E-Marketing	• Pre e-Trade activity • e-Trade • Post e-Trade activity • Reports
Pre e-Trade Activity	• Farmer Registration • Trader Registration • Inward Entry • Grading • Assaying
E-Trade	• E-tender • E-auction
E-Tender	• Lot entry • Tender Initialization • Bidding • E-Tender closing • E-Tender Declaration • Trade Cancellation(only for farmers) • Final Declaration
Post E-Trade Activity	• Lot Weighing • Generation of Bill of Supply(as per GST U/S 31(3) (c) Read with rule • Online payment • Farmer stock entry • Stock delivery

Benefits of E-Trading Transparent and secure system, completion of the trade process in the shortest possible time, online traders can bid from anywhere, farmers will obtain a better price due to competition, and the procedure of interlinking markets is simple. Transparency of farmers' transactions is shown for live news updates, and real-time data is sent via SMS to farmers instantly. Digital Banking and payment systems have contributed to financial inclusion. As of 2020, India's digital payment transactions accounted for 34% of total non-cash transactions (NITI Aayog 2020)

Challenges and Opportunities of Digitalization in APCMS



7. Infrastructure Limitation

Opportunities

Digitalization offers numerous opportunities for Agricultural Producer Cooperative Marketing Societies (APCMS) to improve their operations, enhance efficiency, and better serve their members, Improved market access through digitalization it connect the local, National, Intrnational.It reach the customer, across the border. Digital communication tools can keep members informed about meetings, market prices, weather conditions, and best practices in farming. Digital platforms can provide real-time information on market prices, helping farmers make informed decisions about when and where to sell their produce. Blockchain and other digital technologies can ensure transparency and traceability in transactions, building trust among members and buyers Digitalization can provide members with access to banking services, including loans, savings accounts, and insurance, which can be crucial for their financial stability.

8. Challenges

Infrastructure Limitations: Many rural areas continue to lack consistent and fast internet connectivity, which is crucial for digital platform. Frequent power outages and inconsistent electricity supplies might affect digital activities.

Digital Literacy: Many farmers and cooperative members may be unfamiliar with digital tools and platforms, necessitating extensive training sessions. Older generations may be reluctant or resistant

to adopting new technologies.

Cost: Installing digital infrastructure, including hardware and software, can be expensive. The ongoing expenditures of maintaining and updating digital systems can strain limited budgets.

Regulatory and policy challenges: Meeting local, national, and international regulations governing digital transactions and data management can be difficult. The absence of supportive policies and frameworks from the government can hinder digitalization attempts.

9. Conclusion

The high cost of technological tools so in cannot be possible to applicable all the Agricultural cooperative marketing societies. Over all the 113 currently running the in Tamil Nadu. Ministry of cooperation take the initiatives to digitalize the cooperation in the way marketing societies On July 6, 2023, the Hon'ble Minister for Cooperation announced a unified mobile APP (CO-OP Mart) for cooperative items sold online. (Government of Tamil Nadu, 2024).Now, only start to adopt the digitalization like E-Tender/E-Auction, Digital Payments, E-marketing..In future agricultural cooperatives have adopted digital tools for precision farming, supply chain management, and market access. Technologies such as IOT devices, drones, and Blockchain are improving productivity and transparency. Creative online forums for members to share knowledge, discuss challenges, and collaborate on solutions.

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Performance of PACCS and Digitalization Process in Puducherry

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Abstract

This research explores the performance of Primary Agriculture Cooperative Credit Societies (PACCS) in Puducherry, focusing on the ongoing digitalization process and its impact on operational effectiveness and member satisfaction. PACCS is vital in providing credit and financial services to rural communities, contributing significantly to financial inclusion. However, many PACCSs face challenges related to outdated processes, manual operations, and limited access to modern financial technologies. With increasing emphasis on digitalization in the cooperative sector, this study seeks to understand how these societies are integrating digital technologies and the effects on their performance.

The study employs a mixed-methods approach, using both quantitative and qualitative data. Quantitative data includes performance metrics such as loan disbursement, recovery rates, and financial health indicators from various PACCS. Qualitative data comes from surveys and interviews with PACCS members and staff to assess their perceptions of the digitalization process. Results reveal that digitalization has led to moderate improvements in service delivery, such as faster loan processing, enhanced transparency, and easier access to financial services for members. However, key barriers to full digital adoption remain, including limited digital literacy among members, inadequate technological infrastructure in rural areas, and institutional resistance to change.

This study concludes that while digitalization offers significant potential to enhance PACCS operations, overcoming these barriers is essential for sustained improvements. Recommendations include increasing government support for infrastructure development, implementing digital literacy training programs for PACCS members and staff, and fostering a culture of innovation within these cooperative structures.

Keywords: PACCS, digitalization, Puducherry, rural credit, cooperative performance, financial inclusion

1. Introduction

Primary Agriculture Cooperative Credit Societies (PACCS) have long served as the backbone of rural credit systems in India, playing a crucial role in promoting financial inclusion, economic growth, and social equity. PACCS are grassroots-level cooperatives that provide short-term credit to farmers and rural populations, enabling them to access funds for agricultural inputs, small-scale businesses, and personal needs. Despite their significance, these societies have historically relied on traditional, manual methods for financial operations, resulting in inefficiencies, delayed services, and limited outreach. With the rise of digital technology and economic innovations, cooperatives like PACCS are under increasing pressure to modernize and adapt to changing technological environments.

Digitalization in the financial sector promises to enhance operational efficiency, transparency, and member satisfaction by streamlining processes such as loan disbursement, recovery, record-keeping, and communication. Digital tools can also broaden the outreach of PACCS, providing members with easier access to services like mobile banking, digital loan applications, and real-time account tracking. However, the extent to which PACCS have embraced digitalization, especially in rural regions like Puducherry, remains underexplored.

Puducherry, a union territory in southern India, presents a unique context for studying the digitalization of PACCS. The region has a diverse socio-economic landscape, where agriculture and rural livelihoods remain central to the economy. While some PACCS in Puducherry have begun adopting digital technologies, others lag due to infrastructural limitations, low digital literacy among members, and resistance to change. These disparities raise critical questions about the overall impact of digitalization on the performance of PACCS in Puducherry, particularly regarding service delivery, financial health, and member satisfaction. This study aims to fill the gap by evaluating the performance of PACCS in Puducherry and assessing the role that digitalization plays in their operations. Specifically, the research seeks to determine how digital technologies have influenced key performance indicators such as loan disbursement rates, recovery rates, operational efficiency, and customer satisfaction. Furthermore, the study explores the challenges PACCS face in adopting digital solutions, including infrastructural barriers, resistance from staff and members, and the need for digital literacy.

By employing a mixed-methods approach, this research combines quantitative analysis of PACCS performance data with qualitative insights from interviews and surveys with members and staff. The findings are expected to provide a comprehensive understanding of how digitalization transforms PACCS in Puducherry and what policy interventions are needed to support this transition. In doing so, this paper contributes to the broader discourse on cooperative modernization and rural financial inclusion in India.

2. Objectives of the Study

1. To assess the process of digitalization and the financial performance of Primary Agriculture Cooperative Credit Societies (PACCSs) in Puducherry.
2. To suggest suitable suggestions on implementing digitalization, including infrastructural limitations, and digital literacy gaps in PACCSs.

3. Methodology of the Study

This study employs a mixed-methods approach, combining quantitative and qualitative data to assess the performance of PACCS and the impact of digitalization in Puducherry. A survey-based technique is used for the study. Primary data were collected through semi-structured interviews with PACCS members, while secondary data from PACCS financial records and government reports provide additional context. Quantitative analysis focuses on key performance indicators such as loan disbursement and recovery rates. Ethical considerations, including informed consent and confidentiality, are observed throughout the study. While geographically limited to Puducherry, the study aims to provide valuable insights into the digitalization process of PACCS and the barriers to successful adoption.

4. Historical Profile of Agricultural Credit Cooperatives in India and Puducherry

During British rule in India, Sir Frederick Nicholson, a British officer, introduced the German

Agricultural Credit Cooperative model to rural India. This led to the enactment of the Cooperative Credit Societies Act in 1904, which established agricultural credit cooperatives as legal entities with government support. In 1912, this act was replaced by the Cooperative Societies Act, extending legal recognition to all types of cooperatives. Since then, rural India's agriculture sector has seen significant growth, improving both the farming industry and the livelihoods of farmers and the general population. Agricultural credit cooperatives expanded rapidly, reaching nearly every village in India. Today, India boasts the largest network of credit cooperatives in the world, providing comprehensive credit support to people, often surpassing the services of commercial banks. Agricultural credit cooperatives play a critical role in supplying essential resources to the farming community at concessional rates, helping them improve their agricultural practices. The rural cooperative credit system in India operates through a three-tier structure for short- and medium-term credit. At the grassroots level, there are numerous Primary Agricultural Cooperative Credit Societies (PACCS), which are supported by Central Cooperative Banks at the district level and State Cooperative Banks at the state level. According to the National Cooperative Database (NCD) portal, India has 1,03,304 Primary Agricultural Cooperative Credit Societies (PACCS), with approximately 95% (98,486) of them located in rural areas. PACCS has grown significantly, from around 2,982 societies between 1900-1923 to 14,391 societies between 2011-2023. Maharashtra has the highest number of PACS at 21,059, followed by Gujarat with 10,266 and Bihar with 8,476. Kerala leads in terms of membership, with 25,628,261 members, followed by Bihar with 13,629,113 members, and Tamil Nadu with 13,339,395. Furthermore, about 78% of PACCS (78,489) are affiliated with federations or unions. Nearly 89% of India's 2,69,503 gram panchayats (2,41,075) are covered by PACCS.

In Union Territories and smaller states, the credit cooperative banking system operates with a two-tier structure. Here, PACCS functions at the local level, while State Cooperative Banks fulfil the apex-level requirements. The table below provides insights into the performance of the two-tier short-term cooperative credit structure in the Union Territory of Puducherry.

Table: 1 Progress of Pondicherry State Cooperative Bank (PSCB) and Primary Agricultural Cooperative Credit Societies (PACCS) in the Puducherry Region

Performance Indicator	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022	
	PSCB	PACCS	PSCB	PACCS	PSCB	PACCS	PSCB	PACCS	PSCB	PACCS
No.of.Societies*	1	53	1	53	1	53	1	53	1	53
Membership*	137	131313	179	137882	172	137882	280	190	280	193
Share Capital	2750	1226.33	2836	1253.5	2815	1431.84	2848	1257.37	2885	2062.19
Deposits	67730	14824.6	71101	15782	72765	17259.85	75352	19900.44	79902	21366.27
Borrowings	62	3326.54	0	3937.52	0	4216.14	0	4917.3	0	4910.88
Reserves	2041	1678.21	2076	1538.06	2115	1520.93	4774	1640.32	4684	1754.05
Working Capital	78371	21055.68	85497	22511.99	80198	24428.76	82323	28494.07	6200	30093.39
Total Loan Issued (ST+MT)	56126	40140.83	68733	7275.89	60707	4997.89	74914	2948.83	59408	47392.04

(Source: NAFSCOB)
(in numbers)*

Due to French colonisation, the Union Territory of Puducherry was merged with India in 1954, marking the beginning of the cooperative movement's history in that region. Despite the movement's delayed start in UT, it has quickly expanded throughout all industry sectors, including credit, dairy, consumers, handlooms, sugar, spinning, and housing. There is a robust and active cooperative system in the Union territory of Puducherry, and every hamlet has at least one cooperative society, whether it be a dairy or agricultural credit cooperative. The table provides evidence of Puducherry's cooperative movement's enormous development and advancement over time.

Table: 2 Progress of All Cooperative Sectors in the Puducherry Region

Details	2001-02	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
No. of societies	482	524	520	516	516	508	507
Membership (No.)	3,93,256	5,97,103	5,77,097	6,60,960	6,21,780	6,24,010	6,33,540
Total working capital* (Rs.)	35,584.30	1,75,389.70	1,95,435.98	2,15,151.50	2,19,535.68	2,37,824.02	2,51,710.04
Share capital paid* (Rs.)	10,743.45	32,257.46	33,313.32	35,858.17	38,115.55	40,205.66	42,489.32
Population* (Nos.)	9.74	12.44	12.48	12.48	12.48	12.48	12.48
Average working capital*	3,657.17	14,098.85	15,659.93	17,239.70	17,591.00	19,056.41	20,169.07

(Source: Cooperation Department, Government of Puducherry)

Table: 3 Financial Performances of the PACCSs in Puducherry

(Rs.in.Lakh)

Year	No.of. Societies	Membership	Working Capital	Deposits	Lending	Recovery	Profit	Loss
2017-18	41	1.54	16514.26	13938.38	14740.74	16898.99	273.14	1781.06
2018-19	41	1.57	18755.42	13767.96	16227.45	16012.08	251.52	2546.96
2019-20	41	1.58	19928.44	15615.27	18813.78	18019.42	293.22	2226.21
2020-21	41	1.61	21486.56	16824.73	19765.58	20863.98	362.61	2418.63
2021-22	41	1.64	22894.07	17536.83	23882.23	22582.87	447.89	2558.89
Mean	0	0.03	1824.73	1346.77	2561.49	2278.37	63.66	242.17
SD	0	0.03	2202.48	1506.57	3155.70	2471.33	71.57	288.66

CV	0.00%	0.12%	48508990 0.87%	2269756 50.62%	9958434 29.56%	6107456 77.30%	512258.3 5%	833256 8.52%
CAGR	0	0.01	0.07	0.05	0.10	0.06	0.10	0.08

(Source: Compiled from Audit Report of the Societies)

The performance of PACCS in Puducherry from 2017-18 to 2021-22 shows a consistent growth trajectory, with key improvements in financial metrics such as working capital, deposits, lending, and recovery. The number of societies remained stable at 41, while membership increased modestly from 1.54 lakh to 1.64 lakh, reflecting gradual member engagement. Financially, working capital grew from ₹16,514.26 lakhs to ₹22,894.07 lakhs, lending increased significantly from ₹14,740.74 lakhs to ₹23,882.23 lakhs, and recovery improved from ₹16,898.99 lakhs to ₹22,582.87 lakhs, indicating healthy financial operations. Profits also rose steadily from ₹273.14 lakhs to ₹447.89 lakhs, showing effective financial management. However, losses expanded from ₹1,781.06 lakhs to ₹2,558.89 lakhs, signalling concerns that need to be addressed, such as potential operational inefficiencies or increased risk in lending practices.

The statistical analysis indicates considerable variability in financial performance, with high standard deviations in key metrics like lending and working capital, suggesting fluctuations that could be due to market conditions or internal challenges. The high coefficient of variation (CV) underscores this variability, indicating dynamic but non-linear growth. While the compound annual growth rates (CAGR) for working capital, lending, and recovery reflect positive trends, the parallel rise in losses highlights the need for more prudent risk management and cost control. In summary, while PACCS in Puducherry is expanding and generating higher profits, addressing the growing losses will be crucial for its long-term financial sustainability and operational efficiency.

Digitalization of the Puducherry State Cooperative Bank

The Puducherry State Cooperative Bank has embraced digitalization by offering a range of modern banking services aimed at enhancing customer convenience and improving operational efficiency. Services like ATM facilities, RTGS/NEFT, and SMS alerts allow customers to access their funds, make real-time transactions, and receive instant updates on their accounts. The introduction of these digital services reflects the bank's commitment to transitioning from traditional banking methods to a more technology-driven model. With the ATM service, customers can access their accounts 24/7 for cash withdrawals, fund transfers, and balance inquiries, while RTGS/NEFT facilitates seamless electronic fund transfers across banks in India. The SMS alert system further strengthens communication with customers by providing real-time notifications about their transactions, enhancing security and transparency.

In addition to these services, the Puducherry State Cooperative Bank is now fully computerized, offering a streamlined and efficient banking experience. Core services like Demand Drafts, Pay Orders, chequebooks, and Bank Guarantees are all integrated into the bank's digital infrastructure, allowing for quicker processing and improved accuracy. This shift towards complete automation is in line with national efforts to computerize cooperative banks under the guidance of the Ministry of Cooperation and NABARD. By adopting a centralized ERP-based system, the bank has enhanced its internal processes, enabling better management of customer accounts, faster transaction processing, and increased transparency. As a result, the bank is well-positioned to provide modern financial services, contributing to greater financial inclusion and rural development in Puducherry.

Computerization Process in Puducherry State

In Puducherry, the computerization of PACCS is still in its initial stages, with only a few societies

selected for the process. Although the region has not fully embraced digitization across all cooperative societies, these selected PACCS are part of a pilot initiative aimed at modernizing their operations. Computerization will enhance the efficiency of financial management, improve transparency in record-keeping, and provide better services to members.

At the national level, the Ministry of Cooperation has launched a significant initiative to enhance the efficiency of PACS through large-scale computerization. Under this project, proposals for the computerization of 67,930 PACS from 30 states and union territories have been sanctioned, with ₹654.23 crore released as the Government of India's share to the concerned states/UTs. In Puducherry, 45 PACS have been sanctioned for computerization, with ₹60.75 lakh allocated as the GoI share for hardware purchase, digitization, and setting up support systems.

This project aims to bring all functional PACS onto an Enterprise Resource Planning (ERP) based common national software, which links them with NABARD through State Cooperative Banks (StCBs) and District Central Cooperative Banks (DCCBs). The ERP system incorporates a Common Accounting System (CAS) and Management Information System (MIS), enhancing the overall performance of PACS by improving financial transparency and operational efficiency. With more than 13 crore farmers associated with around 1.05 lakh PACS, these initiatives significantly expand farmers' access to short-term, medium-term, and long-term credit facilities. Moreover, the computerization project enables PACS to diversify its economic activities, providing farmer members with additional and sustainable sources of income, thus contributing to rural economic development and financial inclusion in regions like Puducherry.

Perception of the Members on the Digitalization Process in PACCS in Puducherry
Perception of Members on Computerisation of PACCSs

Category	Highly Beneficial	Moderately Beneficial	Neutral	Slightly Beneficial	Not Beneficial	Total
Respondents	180	150	40	30	10	410
Percentage (%)	43.9%	36.6%	9.8%	7.3%	2.4%	100%

(Source: Primary Data)

The table reveals that 80.5% of members view the computerization of PACCS as either highly or moderately beneficial, likely due to the perceived improvements in efficiency, transparency, and access to services. 9.8% are neutral, possibly because they haven't yet experienced significant benefits. Meanwhile, 9.7% see limited or no advantage, which could be due to challenges in adapting to new technology or a lack of awareness about its potential benefits.

Perception of Members on Introduction of Digital Services into PACCSs

Category	Highly Satisfied	Satisfied	Neutral	Dissatisfied	Highly Dissatisfied	Total
Respondents	**160**	**140**	**60**	**40**	**10**	**410**
Percentage (%)	**39.0%**	**34.1%**	**14.6%**	**9.8%**	**2.4%**	**100%**

(Source: Primary Data)

The table shows that 73.1% of members are either highly satisfied (39.0%) or satisfied (34.1%) with

the introduction of digital services in PACCS, likely due to improved convenience, faster transactions, and better access to banking services. 14.6% remain neutral, possibly because they haven't fully explored the services or feel the changes haven't significantly impacted them yet. On the other hand, 12.2% of members are dissatisfied or highly dissatisfied, which could be due to difficulties in adapting to digital platforms, technical issues, or lack of proper support and training in using these services.

Member's Willingness to Use Digital Services after being introduced in PACCSs

Category	Willing	Probably Willing	Neutral	Probably not Willing	Not Willing	Total
Respondents	190	120	60	30	10	410
Percentage (%)	46.3%	29.3%	14.6%	7.3%	2.4%	100%

(Source: Primary Data)

The table indicates that 75.6% of members are either willing (46.3%) or probably willing (29.3%) to use digital services after their introduction in PACCS, likely due to the perceived benefits such as convenience, speed, and improved service access. 14.6% of members are neutral, suggesting that, they are undecided or may not have fully engaged with the digital services yet. Meanwhile, 9.7% are probably not willing or not willing, possibly due to discomfort with technology, lack of digital literacy, or concerns over trust and usability.

5. Suggestions for the Study

Investment in Digital Infrastructure: To accelerate the digitalization process, there is a need for substantial investment in technological infrastructure, especially in rural areas where PACCS operate. High-speed internet access, better connectivity, and digital banking infrastructure must be prioritized to ensure seamless digital operations.

Digital Literacy and Capacity Building: Conducting digital literacy programs for PACCS staff and members is essential for the successful adoption of digital tools. Tailored training programs should be implemented to enhance their comfort and competence with digital platforms, enabling better use of online banking, mobile apps, and other digital financial services.

Policy Support and Incentives: The government and cooperative regulatory bodies should introduce policies that incentivize PACCS to adopt digital technologies. Financial incentives, such as subsidies for digital infrastructure, tax benefits for digital investments, or grants for technology upgrades, could motivate PACCS to transition more rapidly into the digital domain.

Customized Digital Solutions for PACCS: Digital tools must be adapted to the specific needs of PACCS and their members, many of whom belong to rural communities with limited exposure to advanced financial systems. Simplified user interfaces, mobile apps in local languages, and easy-to-navigate platforms can ensure that the benefits of digitalization reach all members, irrespective of their tech savvy.

Continuous Monitoring and Evaluation: It is essential to establish mechanisms for regularly monitoring and evaluating the digital transformation process within PACCS. Continuous feedback from members, staff, and management should be collected to assess the effectiveness of digital tools,

address challenges, and make timely improvements.

Create a Roadmap for Digital Transformation: It is recommended that PACCS develop a comprehensive digital transformation plan that includes well-defined objectives, schedules, and benchmarks. The planning, execution, and assessment stages of digitalisation will be methodically addressed with the aid of this roadmap. To make sure that initiatives for digital transformation are well-planned and efficient, it will also help with resource allocation, priority setting, and progress tracking.

Encourage Campaigns for Engagement and Awareness: In the following days, PACCS should launch awareness and engagement efforts regarding the advantages and features of adopting digital services to boost members' involvement and buy-in. Workshops, educational pamphlets, and digital tool demonstrations are a few possible campaign components. PACCS members can adopt a more proactive and tolerant approach towards digitalisation by raising awareness among themselves.

Use Data Analytics to Make Decisions: PACCS can make decisions by using data analytics tools to learn more about member behaviour, market trends, and operational performance. Analysing financial transactions and member interactions can yield useful data for decision-making, problem-solving, and service customisation that better suits the needs of members.

Encourage Peer Learning and the Sharing of Best Practices: It can be quite helpful to set up forums where PACCS members can discuss their experiences, difficulties, and best practices about digitalisation. Peer learning events, such as conferences, webinars, and forums, help PACCS grow collectively and increase the overall efficacy of digital transformation initiatives by allowing them to learn from each other's triumphs and errors.

Form Alliances with Academic Institutions: Working together with academic institutions can give PACCS access to cutting-edge research, new technologies, and specialised training courses. To support PACCS personnel and members in making a more educated and successful transition to the digital age, universities and research institutes can provide insights into cutting-edge technology and assist in creating specialised training programs.

Provide Unviable PACCS with Financial and Technical Support: Due to their limited resources, Unviable PACCS may have more difficulty implementing digital technology. By providing focused financial aid, like subsidies or low-interest loans, along with technical support, like advice and training, these unviable PACCS can get beyond obstacles and effectively adopt digital solutions.

6. Conclusion

This study examined the performance of Primary Agriculture Cooperative Credit Societies (PACCS) in Puducherry, focusing on the digitalization process their operations, efficiency, and member satisfaction. The findings indicate that digitalization has the potential to significantly enhance the operational efficiency of PACCS by streamlining processes such as loan disbursement, recovery, and record-keeping. Digital tools have improved transparency, reduced delays, and increased accessibility for members. However, challenges such as low digital literacy, inadequate infrastructure, and resistance to change still impede the full adoption of digital technologies. While some PACCS have successfully integrated digital solutions, others remain constrained by these barriers, limiting their ability to leverage the benefits of modernization. Overall, the study highlights that although digitalization presents a promising pathway for PACCS to enhance their services and expand financial inclusion, overcoming the existing challenges requires focused interventions and support from multiple stakeholders.

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Crafting Public Private and Cooperative Partnership: Tool for Shared Success

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Abstract

Cooperative societies are value-based and people-based economic enterprises, with well-defined ethos and principles which include 'concern for the community'. The cooperative sector in India stands alongside the public and private sectors. Rural socio-economic development is the unique characteristic of the cooperative movement. A cooperative can explore higher rewards by "doing different things" instead of focusing on "doing better". The public-private-cooperative contractual relationship facilitates the sharing of skills and assets of each sector in delivering the product, service, or facility. In addition to sharing resources, each party can optimally share risks, tasks, obligations, and potential rewards. Value chain partners should have a legally blended conflict resolution mechanism, shared vision, strength, risk, and cost allocation among them. The legal framework for dispute resolution and settlement may be embodied in different laws, rules, and procedures of the country. They come together without compromising the stated vision and mission of either partner and can become a champion team instead of a team of champions. This type of collaboration helps to attain the socio-economic goals of the country. The value chain can use the public and private infrastructure and technology to become a global perspective business concern. It also facilitates the standardization and cost-effectiveness of goods and services. The challenges of the value chain in India are financial risk, market risk, demand risk, and problems related to the acquisition of land.

The partnership can be successful only if both sides agree on the scope of the alliance. They have one mindset in their strategic, economic, and operational aspects. The creation of a value chain through public/private and cooperative partnerships helps to reform and reallocate those sectors. Private/ public collaboration with the cooperative sector helps to attain UN Sustainable Development Goals (SDGs) and assist in making India a $ 5 Trillion economy. Today, almost every sector of the economy has cooperatives – credit, consumer, producers, industry, labor, information technology, agriculture, services, etc. This paper analyzes the scope of collaboration in the above-mentioned sectors.

The researcher used a descriptive research method for the study. Qualitative research is used to understand concepts and thoughts in public/private and cooperative value chain. Data are from secondary sources. This paper offers a theoretical approach to analyzing the scope and implementation areas of public/private and cooperative partnerships.

Keywords: Private/public cooperative partnership, shared value chain, diversification, collaboration.

1. Introduction

The Cooperative movement has been in existence in one or the other forms from the era of ancient civilization. Cooperatives started emerging along with the development and modernization of civilizations across the world. In 1844, the Rochdale pioneers had an important role in the formation of the cooperatives. In India, the cooperative movement originated in the last quarter of the 19th century to provide relief to the farmers from the clutches of money lenders. Various reforms and regulations in the cooperative sector facilitated the ever-expanding growth of the cooperative movement in India. The cooperative sector in India stands along smartly with the other two sectors, public and private. Cooperatives can promote economic democracy and the empowerment of

marginalized groups. Cooperative societies are value-based and people-based economic enterprises, with well-defined ethos and principles which include 'concern for the community'. The unique characteristics of cooperatives ensure rural socio-economic development. In 1995, the Manchester Declaration of the International Cooperative Alliance (ICA) reformulated the Cooperative Principles. This paper offers a theoretical approach to analyzing the scope and implementation areas of private/public partnerships in the cooperative sector. A private-public-cooperative partnership is a contractual relationship between a cooperative society and a public/private sector entity. Through this contract, the skills and assets of each sector are shared in delivering the product, service, or facility. In addition to the sharing of the resources among them, each party shares the risk, tasks, obligations, and optimally reward potential among them. The public partners are government entities, including ministries, departments, municipalities, state-owned enterprises, etc. The private partners include businesses or investors with technical and/or financial expertise. The role of the cooperative sector in the partnership is to make use of external expertise in commerce, management, operations, and innovation to run the business efficiently. The private partner may contribute investment. It is expected that private sector actors are more creative, innovative, and dynamic and have excellent managerial resources to adapt to the changes and abandon unsuccessful business activities. The public sector executes huge capital-intensive economic tasks efficiently and effectively and has highly skilled and efficient manpower. That is, both the public and private sectors have specific qualities and the cooperative societies are combined with private/public enterprises, the result should be better for all parties. This may improve the efficiency in operations of cooperative societies and thus ensure economic sustainability along with profit requirements. It also helps to reform the sectors through the reallocation of the role of cooperatives. Private/ public collaboration with the cooperative sector helps to attain UN Sustainable Development Goals (SDGs) and assist in making India a $ 5 Trillion economy.

Statement of the Problem

This research is proposed to study on role and importance of public/private and cooperative partnerships. In this study, the researcher analyzes collaborative business models and of their practical implications. The study highlights the today's scope of collaboration in changed business culture.

2. Scope of the Study

The study covers an analytical review of public/private cooperative partnerships and their practical aspects in their business operations. The growth of the cooperative sector has been phenomenal and now it has a major role in the socio-economic development of the country. The study is relevant because cooperative movement is a fast-changing segment and a wide range of innovations occurs in this area. Here, this study attempts to bring the relevance of business relations among public/private and cooperative societies. This study sheds more light on the managerial and technical areas for collaboration.

3. Objectives of the Study

- To make a theoretical overview of public/private and cooperative collaboration.
- To identify the business areas of collaboration.

4. Research Methodology

The study adopts descriptive research method based on secondary data. Qualitative research is used to disseminate knowledge and understand concepts and thoughts. Through this study, the researcher

attempts to analyze the scope of collaboration of cooperative societies with public/private undertakings.

Data used for the Study

The study is concerned with secondary data. Data are collected from research papers, books of references, standard publications, published reports of reputed institutions, periodicals, the internet, etc.

5. Value Chain and Cooperative Societies

A value chain refers to the entire system of production, processing, and marketing of a particular product, from inception to the finished product. It consists of a series of chain operators, linked together by flows of products, finance, information, and services. The value chain helps a cooperative society to attract more capital, increase efficiency, and effectively use available resources. While making a value chain agreement, both parties should define the roles, responsibilities, financial rewards, and risk-sharing strategies among them. Technical issues such as system efficiency, investment planning, managerial efficiency, professional expertise, and customer responsiveness should also be considered while establishing a partnership. Identifying and understanding the partner, identifying priorities, understanding the common goal and building corporate communication bring a positive mindset, transparency, and efficient work culture among the members of the value chain. A cooperative can explore higher returns by "doing different things" instead of focusing on "doing better". A cooperative society can use different strategies to diversify products and services. For example, farmers' society may start growing a new crop, keeping a new species, or beginning a new enterprise such as dairying or agro-tourism. For cooperative societies, diversification can be used as a tool for mitigating risks. Cooperative societies can upgrade a value chain by transferring their skills and experience from their existing enterprises to a new activity with another partner.

Essential Elements for Successful Partnership

- Conduct feasibility and viability studies of the proposed project.
- Identify the scope of delegation among partners within the defined policy and regulatory framework.
- Assess the financial soundness, training facilities, staff, and technical know-how of participant institutions.
- Determine the legal and institutional frameworks for evaluating and reporting progress, and enforce the contract provisions and dispute handling mechanism.
- Measures taken for conflict resolution, risk allocation, and cost allocation among the value chain through shared vision without compromising the stated vision and mission of either partner.

Risk Analysis and Management

Risks are inherent in all investments and they arise due to unpredictable future events. Risk may directly affect the financial and commercial viability of a business. Risk analysis is the identification of all possible risks, assessing their chance of occurrence, and considering the suitable mitigation measures. There are various operational challenges in value chain models such as financial risk, market risk, demand risk, land acquisition risk, and lack of proper coordination between public-private and government. To ensure unity in strategic, economic, and operational aspects, both sides agree on the scope of the alliance. If any mistrust in the partnership, it will fail; and the profit needs to be shared at an agreed ratio. Partnership reduces the cost of development of technologies and the burden of investment constraints.

Dispute Resolution

The legal framework for dispute resolution and settlement may be embodied in several laws, relevant rules, and procedures of the country. The legal instruments may include contract law, company law, tax law, competition law, consumer protection law, insolvency law, property law, foreign investment law, intellectual property law, environmental law, acquisition law, and various other commercial and industrial laws. The commonly used methods for dispute resolution include facilitated negotiation, conciliation and mediation, non-binding expert appraisal, review of technical disputes by independent experts, arbitration, adjudication by the regulatory authority, and legal proceedings.

Rationale behind Collaboration

- To assist in the socio-economic objectives of the country.
- To become more socially acceptable, responsible, and accountable.
- To ensure the cost-effectiveness and standardization of goods and services.
- To provide diversified products/services.
- To become a global perspective concern.
- To attain the advantage of value chain competition.
- To use the public and private infrastructure.
- To become a champion team instead of a team of champions.

6. Scope of Collaboration

Cooperative sectors have no more drastic growth than public and private sectors. But they face competition from the public and private sectors. They are expected to generate profit and at the same time are subjected to various government control and rigidities. Existing cooperative laws restrict the cooperatives from involvement in the value chain. Cooperatives often lack cohesion within the sector and lack professionalism in their business. Besides these, they have no competency to survive and sustain when there has been massive entry of multinational undertakings. So public/private cooperative partnership is essential for the existence of the cooperative sector.

7. Primary Agricultural Cooperative Societies / Farming Cooperatives

More than 50% of the Indian population is dependent on agriculture and is thus connected with agricultural cooperatives. Other sectors such as fertilizer production and distribution, processing, transport, and farm extension are also closely linked with agricultural cooperatives. Cooperation acts as a weapon for preventing poverty of mass people at the grass route level. As per the economic survey 2022-23, Rs. 13,681 Crore was sanctioned for Post-Harvest Support and Community Farms under the Agriculture Infrastructure Fund. Agricultural cooperatives have strong linkages with cooperative banks and marketing unions. To ensure adequate production and productivity, farming and allied agricultural cooperative societies should tie up with agricultural universities and agricultural research centers. They can participate in research areas such as hybridization, transgenic crops, cross-breeding, field trials, pesticide testing, bio safety studies, animal feeding studies, ecological studies, seed technology, plant protection, artificial insemination, feed compounding and supplementation, eco-friendly technology for hatchery management, poly culture technology, bio control agents, bioremediation, microbial biotechnological applications, etc. Production and marketing of veterinary products, vaccines, and consumables are other areas for collaboration. Technical feasibility and viability studies of proposed projects of farming and primary agricultural cooperative societies can be done with the support of agro-research institutes. As a supply chain member, cooperative societies can use infrastructure facilities such as ultra-low oxygen storage (controlled atmosphere storage) for high-value crops to stabilize their demand. Technical alliance can be done for a reduction in post-harvest losses and better economic utilization of agro-residues as

byproducts. By sharing the packaging technologies of R&D labs, farming cooperatives can effectively pack their perishable agricultural products. It is more useful for effective transportation and long-term storage. Cooperatives can enter into exporting business through collaboration with shipping and cargo companies. Agricultural universities and research centers can also act as knowledge partner for sharing their technical know-how with agricultural cooperatives. Agricultural research institutions can provide technical assistance and advisory services that address the needs of farmers and rural communities. The efficient collaboration makes the development of better nutrition and high-acceptance products.

Dairy Cooperatives

One of the oldest commercial initiatives in the agricultural sector was dairying. Technical knowledge of dairy farming leads to the production of value-added items from milk. Milk producers supply their milk to the primary cooperative society. Nowadays, the industrial nations implement technology-driven agricultural practices in livestock produce to optimize their resources and manpower, whereas most of our rural practices lie on the traditional home-grown labor-intensive system. The processed or value-added milk and milk products reach the consumers through the channel of direct marketing or apex co-operatives. Dairy society can develop a supply chain with private/public transporting and warehousing entities in milk collection and marketing. The supply chain may provide services to the individual farmers or the cooperative like technical assistance, support in business management, certification support, financial management, and organizational strengthening in a dynamic environment. Dairy societies can tie up with private and government dairy institutions in the areas of disease control and animal health care.

Fisheries Cooperatives

Aquaculture plays a vital role in domestic nutritional security and rural economic development. The varied agro-ecological zones of our state provide immense potential for marine fisheries, coastal aquaculture, and pond aquaculture. Aquaculture practices like integrated fish farming, inland saline aquaculture, ornamental fish culture, and prawn farming are highly recommendable areas to cooperatives for private/public collaboration. For the increased fish production from the marine sector, the industry needs ocean-going vessels and highly sophisticated onboard facilities which are capital-intensive. Due to the complexity and scale of operations both in size and investments, small rural fishery cooperatives cannot do these businesses without external support. They need financial, technical, and managerial assistance for introducing and implementing highly sophisticated aquaculture practices. The bilateral proposals can be executed in different areas of fisheries like marine fisheries management, marine ornamental fishes, inland fisheries, freshwater aquaculture, and brackish water aquaculture. Fishery cooperatives can collaborate with marine research centers and marine fishery research institutes in research areas like identification of potential fishing zones, stock enhancement through sea ranching, installation of fish aggregating devices, and artificial reefs. Hiring of deep-sea vessels and on-board and on-shore infrastructure facilities can be availed by establishing a supply chain. Technological collaboration in fish processing has led to the bulk production of value-added products. Private and public sector enterprises can facilitate the cold storage areas for rural fishery societies. They can also work as a team to conduct market research and market intelligence to identify the local, national, and international demand for marine products. Manufacture of fishing boats and nets, aquaculture implements and establishment of aqua-shops and aqua-tourism are the other attractive areas for supply chain relations. Fishery farming communities are always being served by the agencies of the government department, ICAR, and state agricultural universities in India.

Educational Cooperatives

In the educational sector, an educational cooperative society can make research-based collaboration

and act as a knowledge broker and knowledge disseminator. Cooperative educational societies can start affiliated educational institutions under central, state, and private universities and are deemed to be universities. They can make a platform for Massive Online Open Courses (MOOCs) as a learning ecosystem for formal and non formal education and skills development. Establishing finishing Schools with private educational research institutions, setting up off-the-job/on-the-job training centers for industrial personnel, technical collaboration with industrial undertakings and research centers, collaboration for experiential learning models for cooperative studies, conducting short-term courses in production management, gold appraising, etc are significant areas for public/private and cooperative partnership.

Labour Cooperatives

Management contracts allow private/public sector skills to be brought into service design, operational control, labor management, and equipment procurement in the construction and manufacturing sectors. It may be done through executing a long-term contractual agreement for designing, building, operating, and/or maintaining capital-intensive projects by appropriate allocation of risk. To eliminate constraints of capital-intensive construction equipment, the labour society can enter into to lease contract to avail and use the types of equipment from the government/public/private sector undertaking for an agreed period. Here, the labour society does not make any huge investment and thus no investment risks. The operational risks are only transferred to the cooperatives. By setting up Special Purpose Vehicles (SPV), societies can enter into contractual relationships for BOOT (Build-Own-Operate-Transfer), BOO (Build-Own-Operate), Build-Operate-Transfer (BOT), Build-Transfer-Operate (BTO), Build-Rehabilitate-Operate-Transfer (BROT) and Build-Lease-Transfer (BLT) with public undertakings or government departments. Labor societies may also undertake the projects works of "Bharat Nirman" a plan for rural infrastructure by the Government of India in partnership with State Governments and Panchayati Raj institutions in connection with road construction, power generation, drinking water, housing, telecommunication, and irrigation. The inclusion of Cooperative Societies in the GeM Portal is another opportunity for Cooperative Societies to be registered as 'Buyers' on Government e-Marketplace.

Consumer cooperatives

Implementing public/private and cooperative partnerships in consumer cooperatives can open doors to a global customer base to the local cooperatives. Through collaboration, a society can differentiate itself from competitors, demonstrate a customer-centric approach, and understand the diverse economic conditions of the target market. Consumer cooperatives can make more accessibility to a wider range of customers by adopting the adjustment pricing strategy based on the purchasing power of the target audience. This accessibility may increase sales and market share of primary consumer cooperatives and consumer wholesale stores. Tie up with supermarkets and departmental stores, marketing through social media platforms, B2B marketing, B2G marketing, etc are some of the integration areas for consumer cooperatives. They can also collaborate with marketing research institutions to implement AI-based demand analysis and consumer relationship management.

Housing cooperatives

Housing cooperatives can make contractual relationships with private real estate business undertakings in the areas of finance and administrative services for land development, housing projects, and RERA-licensed projects. The fruitful collaboration reduces the risk of real estate development through careful project design, planning, and budgeting. The private sector real estate enterprises are more efficient in designing, financing, and associated services at predetermined standards and costs within the specified timeline. The value chain members play their role in the pre-construction phase, construction phase, allocation phase, and operation and maintenance phase which are the different phases of construction. Through collaboration with housing finance institutions,

housing cooperatives can avail housing loans and project loans to their customers at an appropriate rate of interest and appropriate tenure. They can also act as an implementation agency for corporate firms in their CSR fund utilization for homeless people.

8. Findings and Conclusion

Cooperatives provide significant contributions to rural and agricultural development and have great potential for the future. They occupy an important place in India's rural economy in terms of their coverage of the rural population and their share in the total supply of agricultural inputs, and marketing of agricultural produce, including credit. Cooperative partnership with the public or private sector helps to strengthen the leverage of both parties. The supply chain is a strategic alliance or relationship between two or more organizations for sharing the resources, risks, responsibilities, and rewards to increase efficiency in project delivery, operation, and management. Successful partnership in the supply chain is often based on trust, equality, and mutual understanding and obligations. Extension of partnership would improve commercialization of technology and make the product/service available at the global level. The public/private and cooperative partnership should be based on a symbiotic relationship with confidence and trust is vital in the national development of the country. Public, private, and cooperative institutions are important stakeholders in the development of the country. The contractual relationship can be applied in the areas of governance, leadership, management, finance, marketing, customer service, and technology. Partnerships enhance productivity, profitability and minimize fixed costs, and boost the country's developmental goals such as poverty reduction, employment generation, increased market competitiveness, and environmental security. The strong partnerships between and within cooperatives and with external can help to enhance the emerging role of the cooperative movement Cooperatives being an integral part of rural development have to play a significant role in the Indian economy.

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Cooperative Directory to Digitalization an Inductive Approach

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Abstract

The expeditious pace of digital transformation presents cooperatives with both opportunities and challenges. Cooperatives operate on a unique way on the basis of democratic member control and cooperative decision making. This research investigates how cooperatives can adapt to the tech-driven world which helps to identify the gap between cooperative principals and technologies. This has left the cooperatives without a proper framework or a guide to navigate and stay ahead in this digital world. This study aims to identify the unique advantages that cooperatives have compared to all other forms of business. The research implies a grounded theory approach to analyse various real life case studies on cooperatives across the world and analyse their method in successfully adapting to digital technologies. This methodology is particularly suitable as it aids in the development of theories based on empirical data, which can provide a nuanced understanding of the complex ways in which cooperatives interact with digital technologies. The case study analysis helps to identify common patterns on the problems, strategies, and outcomes, which will help to form a theoretical framework for cooperatives. As cooperatives are navigating their way through digitalisation, this paper provides an essential framework to help them adapt effectively to digital technologies in their operations and member engagement. This approach provides with all the necessary tools that help the cooperatives to stay ahead in the Next Industrial Revolution.

Keywords: Digital transformation, Cooperatives, Grounded theory, Technology, Case study analysis, Next Industrial Revolution

1. Inroduction

Navigating Digital Transformation in Cooperatives

In the contemporary world, the acceleration of digital transformation has reshaped the economic landscape, presenting both opportunities and challenges for businesses. Among these, cooperatives stand as unique organizations due to their foundational principles of democratic member control, shared ownership, and community-oriented objectives. Cooperatives are driven by a distinct set of values that prioritize collective well-being over profit maximization, which often sets them apart from their conventional counterparts. As digitalization sweeps across industries, reshaping operational processes, consumer interactions, and market dynamics, cooperatives are faced with a critical question: how can they adapt to and thrive in this rapidly evolving digital world while staying true to their core principles?

Digital technologies, such as artificial intelligence (AI), machine learning, big data analytics, blockchain, and cloud computing, have become powerful tools for enhancing efficiency, improving customer engagement, and driving innovation. These technologies offer unprecedented possibilities for streamlining operations, improving decision-making processes, and fostering stronger connections between cooperatives and their members. Yet, the cooperative model's reliance on participatory governance, inclusive decision-making, and community-oriented objectives can pose unique challenges when attempting to integrate digital technologies. The very principles that

underpin cooperatives, such as transparency, democratic control, and equitable distribution of resources, may be at odds with the fast-paced, often hierarchical nature of digitalization.

Despite these challenges, the digital age presents cooperatives with a golden opportunity to redefine how they engage with members, manage operations, and expand their reach. Through the adoption of digital platforms, cooperatives can enhance their capacity for collective decision-making, foster deeper connections within their communities, and build more resilient, adaptable business models. However, there remains a significant gap between the principles that guide cooperatives and the tools and frameworks that digital technologies offer. This gap has left many cooperatives uncertain about how to navigate the complexities of digital transformation and fully capitalize on the benefits that these technologies can provide.

The Role of Digitalization in Modernising Cooperatives

Digitalization, in its broadest sense, refers to the adoption of digital technologies to improve business processes, customer engagement, and overall operational efficiency. For cooperatives, digitalization can serve as a powerful catalyst for modernization. By leveraging digital tools, cooperatives can streamline administrative processes, enhance member participation, improve resource allocation, and gain access to new markets. Moreover, the adoption of digital platforms can facilitate the democratization of knowledge and decision-making, allowing members to participate more actively in governance and operational decisions.

One of the most significant benefits of digitalization for cooperatives is the potential for enhanced operational efficiency. Digital tools can automate time-consuming administrative tasks, such as member registration, voting, financial management, and reporting. This can free up valuable time and resources for cooperatives, allowing them to focus on more strategic initiatives. Additionally, digital technologies can enable cooperatives to better manage their supply chains, optimize inventory management, and improve product traceability, all of which contribute to greater transparency and accountability within the organization.

Furthermore, digital platforms have the potential to transform the way cooperatives engage with their members. Online platforms, mobile applications, and social media channels provide cooperatives with new opportunities to connect with members, share information, and foster a sense of community. By embracing these tools, cooperatives can enhance member participation in decision-making processes, improve communication, and create a more inclusive and engaged membership base. This is particularly important for cooperatives operating in geographically dispersed or rural areas, where physical meetings and traditional methods of engagement may be impractical.

However, while the benefits of digitalization are clear, the process of integrating these technologies into cooperative structures is not without its challenges. Many cooperatives, especially those in developing regions or sectors with limited technological infrastructure, may struggle to implement digital solutions due to a lack of resources, technical expertise, or access to digital tools. Additionally, the cooperative model's emphasis on democratic control and member participation may conflict with certain aspects of digitalization, such as the use of automated decision-making tools or the reliance on centralized data systems.

Challenges in Aligning Cooperative Principles with Digital Technologies

The core principles of cooperatives—voluntary and open membership, democratic member control, economic participation, autonomy and independence, education, and concern for community—are what distinguish them from other business models. These principles provide cooperatives with a strong foundation for fostering social cohesion, community empowerment, and equitable resource

distribution. However, they also present unique challenges when it comes to adopting digital technologies, which are often designed to prioritise efficiency, scale, and profit over participation and collective decision-making.

One of the primary challenges cooperatives face in their digital transformation journey is ensuring that the use of digital technologies aligns with their commitment to democratic member control. In many digital systems, decision-making processes are automated or centralised, which can reduce the level of member input and control. For cooperatives, it is essential to find ways to integrate digital tools that enhance, rather than diminish, member participation. This may require the development of new governance models that incorporate digital decision-making platforms, allowing members to participate in real-time voting, feedback, and discussions through online channels.

Another significant challenge is the issue of data ownership and privacy. As cooperatives adopt digital tools, they generate vast amounts of data related to their operations, members, and customers. Ensuring that this data is managed transparently and ethically is crucial to maintaining the trust and confidence of cooperative members. Cooperatives must navigate the complexities of data governance, ensuring that members retain control over their personal information and that data is used in ways that align with the cooperative's values and objectives. This may involve adopting decentralised data storage solutions, such as blockchain, which provide greater transparency and control over data ownership.

Moreover, digitalization can create disparities in access to technology, particularly for cooperatives operating in rural or underserved areas. Ensuring equitable access to digital tools and platforms is essential for maintaining the inclusivity and openness that are central to the cooperative model. Cooperatives must invest in training and education programs that equip their members with the digital literacy skills necessary to participate fully in the cooperative's digital transformation. This is particularly important in sectors such as agriculture, where many cooperative members may have limited access to digital technologies or may lack the skills needed to use them effectively.

The Need for a Digital Framework for Cooperatives

Given the unique challenges that cooperatives face in adapting to digitalization, there is a pressing need for a comprehensive framework that can guide them through this process. Such a framework should address the specific needs and constraints of cooperatives while providing practical tools and strategies for integrating digital technologies into their operations. This framework should be grounded in the principles of the cooperative movement, ensuring that digitalization enhances, rather than undermines, the values of democratic control, member participation, and community development.

To develop this framework, it is essential to conduct empirical research that examines how cooperatives around the world have successfully—or unsuccessfully—navigated the digital transformation process. By analysing case studies of cooperatives in various sectors and regions, we can identify common patterns, challenges, and strategies that can inform the development of best practices for cooperative digitalization. This research will also highlight the importance of supportive policies and regulatory frameworks that enable cooperatives to access the resources, infrastructure, and technical expertise they need to thrive in the digital economy.

2. Related Work

In this paper, digitalisation is believed to be a revolutionary change in how cooperatives work in the

current society. However, there is very little scientific research published on digital transformation of cooperatives, as most published work focuses more on traditional forms of business and not for cooperatives. Most published works, which are few, relate to the digitising of information in a cooperative rather than digital transformation journey in the cooperative. We drew inspiration from qualitative research by Parviainen et al (2017). Their review aims in providing a conceptual framework for traditional businesses to tackle digitalisation via case study analysis. This inspired us to form a similar framework for cooperatives with successful case studies in which cooperatives have adopted digitalisation.

3. Research Design

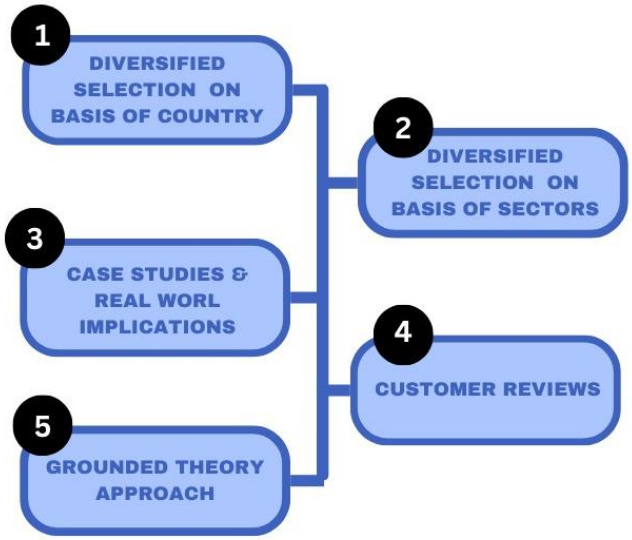
In today's rapidly evolving digital landscape, the transformation of industries through digitalization has become essential for fostering innovation, enhancing operational efficiency, and improving stakeholder engagement. Cooperatives, as member-driven organisations with a focus on collective benefit, are no exception. Digital tools and technologies present cooperatives with new opportunities to streamline their processes, expand their reach, and strengthen their capacity to serve their members effectively.

This directory aims to serve as a comprehensive guide for cooperatives at various stages of their digital transformation journey. Through our research we try to build up a “cooperative directory to digitalization”. We have adopted a qualitative research design which uses various real life case studies on cooperatives, which have displayed success in digital transformation. We use a grounded theory approach to analyse these case studies to form a structured theory for cooperatives to stay ahead in digitalisation.

The common hurdles we faced where in course of our research were

1. Unequal base for benchmarking
2. Different economic conditions
3. Different cultures
4. Varying customer behaviour
5. Unsimilar government regulations

So, with the aim of drafting a perfect directory, we concentrated on minimising the effects of such factors in our hypothesis. We effectively did this by incorporating such a structure to our research work. The research design is highlighted in figure **(fig. 1)** given below.



1. Diversified selection based on country

Cooperatives in general is a huge concept. There can be several factors that can affect the conduct of business in these cooperatives. The format differs according to the geography in which these cooperatives operate. This can be due to interconnected factors such as behaviour, culture, economic and government regulations. Thus, to effectively tackle these hurdles, we have focused on diverse selection of cooperatives across the world to benchmark the best practices. We in this research have incorporated cooperatives from around the globe, so as to provide a diverse understanding of all cooperatives.

2. Diversified selection based on sectors

The cooperatives lack unity when it comes to the sectors in which they work. The needs of one cooperative can differ from the other because of its nature. For example, ABC an agriculture cooperative may not need that level of digitalisation as that of XYZ a Cooperative bank. We have chosen cooperatives from various sectors ranging from Housing, Healthcare, Agriculture, Education, finance, consumer cooperatives etc. we believe this provides us the ability to provide a directory to all cooperatives regardless of their sectors.

3. Case studies

Though there are several theories and findings in the books and papers, all these may not always work. When it comes to the real-world implications these may turn out to be true or false. Thus, we thought it is important to collaborate the real-world practical implications to draw out meaningful conclusions. We as part of our research have gone through several case studies with regard to the effects of digitalisation in cooperatives. We were keen on unwrapping the best practices in the industry. We in this study have analysed both the positive and negative implication to provide the readers with the true image.

We have also added several appealing cases in the later sections of this paper. By reading them one can easily understand the base of our findings

4. Customer reviews

“Anyone in this world can be wrong, but not the customers” is the sole principle in which most of the businesses in this world operate. Cooperatives are no exception to this. All that the cooperative

does is ultimately to enhance the user experience of its customers. They try to streamline their efforts in such a way that it benefits the customers in some or the other way.

All theory can go false, but not the customer. No theory can ignore the perspective of the customers. If ignored, it wouldn't be a working theory. Thus, we have specially put our efforts in this aspect. We have studied the pattern of customer experience through various forms. We have also taken inputs from various customers in drawing a perfect directory. We have made efforts to include some of the reviews from customers in the later sections of this paper.

We believe by doing this we have increased the accuracy of our conclusions, in turn making this more suitable for the readers.

5. Grounded theory approach to analysis

Grounded theory is a systematic methodology that involves construction of hypotheses and theories through the collecting and analysis of data. This is very much efficient in our case as we do have enough data via these case studies which have shown success in their specific areas. By adopting this approach, we can construct theories that will be useful for cooperatives and provide a hand in their digital journey.

4. Case Studies

1. Crédit Agricole - Cooperative bank (France)

Crédit Agricole, founded in 1894 and headquartered in Montrouge, France, is one of the world's largest banking groups with a strong presence in retail banking, insurance, asset management, and corporate services. As a cooperative and mutual bank, it operates through regional banks and focuses on both individual and corporate clients. Its retail banking services include savings accounts, loans, mortgages, credit cards, and online banking. On the corporate side, it offers lending, trade finance, mergers and acquisitions advisory, and capital markets services. A notable commitment to sustainability is reflected in the bank’s emphasis on supporting green projects and adhering to ESG standards. As a cooperative bank, it prioritises serving its members and local communities.

Driving force

2025 Ambitions growth strategy - The bank is undergoing a major technological transformation through the IT 2025 program. The program includes initiatives such as:

- Developing technology for digital acceleration
- Establishing minimum best practices
- Making cybersecurity training mandatory

Current status

The annual ICT spending of Credit Agricole was estimated at $1.7 billion for 2023.Big Data, Blockchain, Cloud, Fintech, Online Payments, Cybersecurity and Digital Lending

In December 2023, Credit Agricole Auto Bank (CA Auto Bank), a mobility bank, and I3P, the Incubator of the Politecnico di Torino, jointly introduced Digital Factory, an open innovation platform designed for Italian and international startups and SMEs. The initiative aims to discover the most innovative solutions and technologies to drive digital transformation of the Bank.
As a part of its, 2025 Ambitions growth strategy Credit Agricole is accelerating its technological, digital, and human transformation, by investing around EUR30 billion in IT and digital over the

period, including one billion euros in investment programs for technological transformation.

In 2024, Crédit Agricole CIB in partnership with Demica, a leading supply chain finance fintech, launched the Optim Receivables and Supply Chain Finance (RSF) platform. This platform aims to meet the growing demand for supply chain finance in the Asia-Pacific region while enhancing customer experience. It also facilitates automation and reduces operational risks, allowing clients to optimise working capital and access financing for invoices in various currencies and high volumes.

Crédit Agricole CIB had therefore launched a major ideation campaign in 2021 called IDEACT. It offered all employees the opportunity to get involved in a practical way in the Bank's digital transformation by proposing an idea that could impact its growth. More than 100 ideas were received on which about 15 were selected.

They proudly say their customers can choose their preferred means of contact with their advisor, evaluate their needs or monitor their transactions at any time, whether online, on smartphones and tablets, by phone.

"We work hard every day to create a new banking experience that is both 100% digital and 100% personal." - Credit agricole

Customer reviews
This was how their customers reacted

" The staff in the sourdeval branch are always helpful. But I mostly use the Credit Agricole app for all my banking needs and it works very well. I would prefer it to have an English option but that is more of my problem than the bank's ." - David DaCosta (4 July 2024)

"Far better than the other French bank we used to use. Security now improved and much quicker to access the app with biometric security. All good. "- Mark coulthwaite (14 august 2024)

2. REWE Markt GmbH (Germany)
REWE Markt GmbH, with more than 3,000 REWE locations and 90,000 employees, ranks among the leading corporations in the German food retail business. The Company focuses on supermarkets, hypermarkets, discount, food, and specialist stores. REWE Markt offers products including food items, fruits, vegetables, medicines, beverages, and other farm and organic products. REWE is not only a big player as a brick-and-mortar retailer, but it is also a leading online pioneer with the recent establishment of an online supermarket which offers delivery services. Since its opening in 2011, it has grown to reach roughly 40 percent of German households. Those customers are served from 30 locations that deliver to more than 75 cities and their suburban areas.

Driving force
"We strive to offer our customers supreme service, regardless whether it is on site at the supermarket or online "says Dr. Johannes Steegmann, Director of Marketing, Strategy and Ventures at REWE Digital GmbH. REWE delivery service offers a large selection of the products of the brick-and-mortar supermarkets. REWE's mission as well as its challenge is to get the merchandise to the customer's doorstep at peak quality and promptly within the requested delivery window.

Current status

To ensure and further improve customer satisfaction while growing and expanding service, REWE decided in 2015 to implement new software for planning the routes of their delivery vehicles. Its main objective is to optimize timely fulfilment within short delivery windows. For that purpose, the software must be able to consider real time components such as heavy traffic or varying idleness in its planning. The technology must be flexible to be customized to REWE's delivery service, specifically providing scalability as well as customization and interfacing with other systems. The decisive factors for choosing FLS as their software partner were the flexibility of the FLS software solutions FLS VISITOUR and FLS MOBILE as well as the performance of their PowerOpt algorithm and their pricing.

Customer friendly delivery windows

Customers make their purchase at the Online-Shop or with the REWE delivery service app. Then they decide their delivery window which can be set up to 13 days in advance. The choices are either short 2-hour delivery windows or half-day windows. The available appointments are provided via direct real time interface with FLS VISITOUR. FLS VISITOUR then calculates an optimized virtual constellation route. This provides not only high-level customer service, but also ensures a cost-efficient line-up of delivery appointments for the company. As soon as customers choose and confirm their delivery date and time those appointments are entered into real-time route planning, optimized with "what-if-when" considerations. FLS VISITOUR calculates routes in real time and to street level detail and despite the high user count and large offering of delivery slots the software proves its enormous computing capacity.

Mobile App for real time communication

Drivers receive their route data for the following day on their mobile app FLS MOBILE. Drivers then report their status back to FLS VISITOUR via the app and indicate, which deliveries have been completed. That way, central planning always has a real-time update on the status of all deliveries.

Benefits:

- Considerable improvement of the appointment planning with simultaneous increase in cost efficiency.
- Automation and simplification of route planning processes.
- Ensuring the operative growth through transparency and continuous performance.
- Seamless connection of the appointment portal for the customers and the operative route planning.

Customer reviews

"There are so many Non-germans who wants to use this App.. But unfortunately just German language option available. Due to that there is also so much business that Rewe could lose and also from our end!!Please Rewe Systems.!!. Hope you read this and try out to make it in English!"

"The app looks fantastic but for English speakers it is nightmare to use it. Hope you guys contour good work and release the app in English too. Much needed feature. Thanks"

3. RABOBANK NETHERLANDS

Rabobank, headquartered in Utrecht, Netherlands, is a leading cooperative bank founded in 1898, with a strong focus on supporting the agriculture and food industries. As a cooperative, it is owned by its members, emphasizing community-oriented decision-making and long-term sustainability over short-term profits. Rabobank provides a broad range of services, including retail banking for individuals, corporate banking for businesses, and specialized financing for the food and

agribusiness sectors. Globally recognized for its expertise in agricultural finance, it operates in 38 countries and plays a key role in supporting sustainable food production worldwide. Rabobank is also deeply committed to sustainability, integrating environmental and social responsibility into its operations. It actively invests in sustainable farming practices, renewable energy projects, and the global transition to a more responsible food system. Additionally, Rabobank is embracing digitalization, offering online and mobile banking services to enhance customer convenience and efficiency.

Driving force

Low barriers to entry have increased competition from non-traditional financial technology firms and like-companies in other sectors. For this reason, legacy banks face the pressing need to adapt to new ways of business if they want to build future-focused operations. The rise of automation and the consequent increase in data will drive innovation and unlock value for organizations. Secondly, with remote working here to stay, organizations need to be able to cater to this hybrid workforce. "The future lies in being a digital-first company," said Alexander Zwart, head of digital transformation & tribe lead, at Rabobank. "Besides the immediate payoffs, we believe a digital transformation strategy will pay off significantly in the years to come," he further explained.

Current status

Rabobank uses AI to analyse customer data and provide personalized recommendations, such as suitable financial products or investment strategies.The bank has embraced open banking principles, allowing customers to share their financial data with third-party providers to access innovative services.

Imagine you're looking for a better deal on your home loan. Instead of manually providing your financial information to multiple lenders, you could authorize a third-party financial app to access your banking data from your current lender. This app could then compare rates from various lenders and present you with the best options tailored to your specific financial situation.

Customer reviews

"Super convenient. App is awesome and very good. The interface is clean too." – App user
"Super useful. The chat function is especially great!" – App user

4. MARIGOLD CO-OP HOUSING (CANADA)

Marigold co-op housing, faces unique challenges in managing applications, communications, and administrative tasks. Traditional methods, including paper forms and social media groups, can be cumbersome, inefficient, and insecure. This has driven them into automating a lot of these processes to increase their efficiency.

Current status

i. Automating the Application Process with Online Website Forms:

Processing applications is a critical yet often cumbersome task for housing cooperatives. Many still rely on paper applications or online PDFs, which can be time-consuming and labour-intensive. This approach not only consumes valuable member time but can also necessitate additional staffing to handle administrative tasks.

Marigold Cooperative addressed this issue by implementing an automated, multi-stage online application form. This solution replaces outdated PDF submissions with a user-friendly web form that provides a clear overview of the application's length and progress. Once submitted, the form

automatically sorts and directs information into designated databases—housing applications to the membership board and financial details to the accounting team. This automation significantly reduces administrative workload and simplifies the application process for prospective members.

ii. Enhancing Community Engagement with a Members-Only Intranet

Effective communication within a housing cooperative is essential for both administrative efficiency and community engagement. Traditional platforms like Facebook Groups offer convenience but come with privacy concerns and may exclude members who are not active on social media.

Marigold Cooperative tackled these challenges by developing a custom, secure members-only intranet. This platform provides several key benefits:

Privacy and Security:

With multi-level permissions, the intranet ensures that sensitive information is protected and accessible only to authorized members.

Direct Requests and Oversight:

The "Make a Request" feature allows members to submit maintenance or other requests directly, streamlining communication and reducing the need for administrative intermediaries.

Enhanced Interaction:

The intranet includes user-friendly features such as an events calendar, navigation menus, and forums, promoting member engagement and facilitating direct communication without privacy concerns.

iii. Reducing Administrative Overhead with Custom Cloud Applications

Managing administrative tasks often requires substantial time and effort, whether from volunteers or paid staff. Traditional methods like spreadsheets and email chains can become unwieldy and inefficient.

To address this, Marigold Cooperative adopted a custom cloud application to handle financial and maintenance operations. This modernized approach automates key processes, such as billing and record-keeping, thereby minimizing manual input and reducing administrative hours. The cloud application ensures that tasks are managed efficiently and securely, with permissions-based access to sensitive information

5. SARASWAT BANK - Cooperative bank (INDIA)

Saraswat Cooperative Bank, headquartered in Mumbai, is one of the largest and most established urban cooperative banks in India. Founded in 1918, it provides a wide range of banking and financial services, catering to both retail and corporate customers. The bank's functions include offering savings and current accounts, fixed deposits, loans (such as personal, home, and vehicle loans), and credit facilities for businesses. Over the years, Saraswat Bank has adopted a strong focus on digitalization, providing services like mobile and internet banking, UPI payments, and seamless fund transfers through NEFT and RTGS. Additionally, the bank offers services in insurance, mutual funds, and wealth management.

Driving force

The bank looked at enhancing its existing IT infrastructure to modernize its traditional core banking solutions to support its growth and new-age customer requirements built around real-time offerings and capabilities.

Current status

The bank engaged with IBM to deploy a high-performance platform to deliver enhanced customer experience and faster business results. The upgrade helped the bank increase throughput, memory and I/O bandwidth and reduced the response time.

Through this Saraswat bank has approximately reduced 50% time to produce critical reports, also, 30% increase in customer experience and managed to Reduced OPEX and staffing costs.
Milind Varerkar, General Manager IT, Saraswat Co-operative Bank said, "The number of channels for customers to transact has significantly grown, increasing the complexity of multi-channel banking. This necessitated investments into modernizing our core banking solutions to handle an increasing volume of product-channel transactions and payments."

The bank was adding 1000 new customers each day, and it was becoming a challenge to offer a stable client experience. To address the growing customer base, the bank decided to revamp the infrastructure, including the core banking solution, for better scalability, robustness and security. With the help of the new CBS-Finacle, the bank offers both Core Banking and Net Banking facilities, which helped the cooperative bank scale up its operations.

The bank currently uses technology and AI to address the new age banking requirement of the customers, the bank added few functionalities to internet banking, such as video KYC and Wealth Management Apps.

The dive in into the digitalization of Saraswat bank provides us the following insights

- Enhanced security via multi-factor authentication, biometric login etc.
- Self-registration functionalities that will be available for retail user will aid the Bank in improving operational efficiency of customer service functions
- Intuitive and omnichannel UX to accelerate the customer adoption of digital channels whilst expanding the current functionalities provided by the bank.
- Stable and 'always on' environment for their customers

Management believes Saraswat Bank has always been at the vanguard in adopting new-age technologies and implementing various technology-powered initiatives.

Customer reviews

“Worst banking application. Money gets stuck in loop for frequent times. Got the message for account debited but transaction successful screen doesn't appear. Concern department should look into it. Although, money gets reverse credited to account after 2 days but what's the point to use this application when customer is in urgent need for sending money to someone. Really fed up with this application.” – App user

6. GROUPE BPCE - Cooperative bank (France)

Groupe BPCE is one of France's largest banking groups, formed from the merger of Banque Populaire and Caisse d'Épargne in 2009. It operates through a cooperative model, with around 14 million cooperative shareholders, and provides a wide range of financial services. These include retail and corporate banking, insurance, asset management, and real estate services. BPCE serves individuals, businesses, and institutional clients across France and internationally.

Driving force

It is known for its focus on digital transformation and innovation, with investments in fintech partnerships and digital banking solutions aimed at enhancing customer experience. The group operates under various brands, including Natixis, which handles investment banking and financial

services. BPCE is also committed to sustainable finance, supporting green projects and integrating environmental, social, and governance (ESG) criteria into its operations.

Current status

This cooperative currently stands with a income of about €22.2bn from the facilitation of net banking. The annual ICT spending of BPCE was estimated to be $1.2 billion for 2023. In 2016, BPCE launched 89C3, an organisation dedicated to accelerating the group's digital transformation process, enhancing customer relations, and making employees more efficient. This includes partnering with fintech, Insurtech, and tech giants such as Google, Amazon, Facebook, and Apple for innovative solutions.

The group also offers digital training programs for partners and employees using its mobile learning platform B'digit, which provides a game-based platform for skills development in line with digital innovation.

Groupe BPCE has implemented an API-driven strategy as part of its urbanisation initiative, breaking down large IT systems into smaller, more manageable services. Using Axway's Amplify Platform, the ecosystem supports over 7 billion flows per month, 350 consumer applications, and a central catalogue of 180 APIs.

BPCE aims to support and encourage startups and fintechs by providing them with an environment conducive to engage with each other and helping foster an ecosystem in which these companies can grow and prosper. BPCE is a partner of Truffle Capital, which supports the creation of innovative startups and fintech and helps them grow.

BPCE-IT, an independent IT entity serving the BPCE Group implemented THEIA, an application developed on Elastic technology, to enhance data management efficiency. The initiative helps BPCE to prioritise data for improved customer services and innovative banking activities.

7. UNIMED - Health Cooperative (Brazil)

Confederação Nacional das Cooperativas Médicas (in English: National Confederation of Medical Cooperatives), commonly known as Unimed, is a Brazilian medical work cooperative and health insurance operator. It is considered the largest of its kind in the world, with more than 115,000 affiliated physicians, 386 branches and more than 15 million beneficiaries. Its name is a composite of união and médicos (Portuguese for "union" and "physicians"). Unimed operates as a physician-owned cooperative. This means doctors hold a dual role: they are both members of the cooperative and providers of healthcare services.

Driving force

As a medical cooperative, Unimed deals with extremely sensitive data regarding their patients and doctors. This poses a huge challenge for them to protect it from any potential threats. Unimed wanted to tackle this issue with integration of powerful software and cloud-based solution.

Current status

Unimed understood that they needed to establish greater control of their environment to ensure safety. This led them into choosing Akamai Guardicore Segmentation which is a cloud migration system. Akamai Guardicore Segmentation is an extremely powerful tool. It’s a robust solution with plenty of grip and even a few features that ease implementation.

Akamai Guardicore Segmentation took care of the cloud migration process of Unimed which

provides remarkable visibility into the entire connectivity structure of their environment despite its complexity. They have a hybrid environment today. This has helped Unimed in making continuous correction and improvements (and even make new investments) based on the information provided by Akamai Guardicore Segmentation solution. This gives a sense of security, and allows technical analysts to act on an objective information. This greater control on the environment with a cloud-based solution, Unimed can now secure their data from any form of cyber-attacks.

8. AMUL – Dairy cooperative (India)

Amul is an Indian dairy brand owned by the cooperative society, Gujarat Cooperative Milk Marketing Federation (GCMMF), based in Anand, Gujarat. GCMMF is controlled by 3.6 million milk producers. Amul spurred India's White Revolution, which made the country the world's largest producer of milk and milk products, and has since ventured into overseas market.

Driving force

The Covid-19-induced lockdown disrupted many industries, including the FMCG sector.
Gujarat Cooperative Milk Marketing Federation Limited (GCMMF), the company that owns the Amul brand, also experienced a massive imbalance in its supply chain. Amul saw a surge in demand for its fresh dairy products while there was a steep drop of frozen products arising from wariness about spread of the virus.

To gauge the complexity of Amul's supply chain, consider this - the co-operative has a total of:

- 3.6 million farmers
- 18,700 societies
- 5,000 milk tankers that go to
- 200 chilling stations
- 750 SKUs
- 62 branches
- 10,000 distributors
- 1 million retailers

For Amul, the use of technology was critical to its survival as one of India's biggest FMCG companies. Every single aspect of this complex supply chain was integrated through technology enabling GCMMF to have visibility into each step.

Current status

This was possible because of Amul's decision to embark on a digital transformation journey way back on 2009 when it partnered with IBM to reinvent its technological infrastructure. The infrastructure pivoted around planning to have control over the supply chain and introducing IT-based solutions across all stages of production to better manage inventory. The key objective was to ensure flexibility and scalability across the complex chain.

This system has become integral to Amul's functioning due to its complicated supply chain which went beyond factories, to the real source of milk production. IBM developed a comprehensive IT roadmap that took all this into account to create a highly responsive platform that provides real-time insights and control over every stage.

IBM developed a private cloud with a data centre and a disaster recovery system that has automatic

back-ups in place. So, whenever there are issues the disaster recovery kicks in, ensuring zero down time. This was proven during the recent lockdown when Amul was able to divert idle resources overnight and ensure steady supply of dairy products.

In the past decade Amul's digital transformation has helped it gain a 10x growth in business. By improving data accuracy and integration with the distributor management system, processes are seamless now. Coupled with mobile applications and automations that efficiently manage applications, Amul not only has better operations, but also gained much-needed insight into the logistics-side of things.

Customer reviews

"Commendable app. Amul team is very nice as it solve all the problems of the users who faces authentication errors very promptly." – App user

"Very good improvement in Indian dairy sector. need to add statement type milk data instead of only 4 day details. Then you can past few months data & analyse all details. Also need to passbook details monthly base. (not overall total)" – App user

" You should work on the App Ul. "They are farmers, not statistician." If you're sending payment per week, priorities that on the home screen, remove those useless graphs, or menus and include milk quantity and amount of seven days, it will help farmers to track better, adopt a milestone INTERFACE, on the seventh day there will be a tick mark or like that... For reference, you can see Google Pay, Facebook Viewpoints etc. Check the interface of 2nd one - very smart! Keep the Graph optional" – App user

9. DAIRY FARMERS OF AMERICA (America)

Dairy Farmers of America (DFA) is a cooperative which operates in collaboration with 13,000 family farmers from across the United States. DFA aids these farmers in operating plants to process their milk, assist in finding the outlets to sell their produce, and invest in new business opportunities. One may not bet aware of DFA, but almost everyone must be aware of the brands they represent, which range from nationally recognized names such as Borden and Breakstone's to specialty brands like Plugrá and La Vaquita.

It has invested in 85 manufacturing facilities over the years to enable hinder less manufacturing of milk and dairy products.

Driving force

DFA is ultimately about finding opportunities — ones we might not even know exist yet — to position the Cooperative and our family farm-owners for future success. From researching and developing new products to take to market to implementing technology that creates efficiencies in our plants, we are committed to achieving innovation in all that we do.

Current status

The pandemic had provided them with no other option, other than to invest in technology.

Funded by Cisco's Country Digital Acceleration program, which is active in 34 countries, Cisco has supplied Cisco Webex room kits, DX-80 video conferencing kits, Webex Teams and Webex Expert-on-Demand software, and RealWear HMT-1 hands-free "head-mounted tablet" devices to help DFA connect its teams across the country in multiple manufacturing facilities.

DFA's CoLAB Accelerator program where participating startup companies give their pitches to an audience of potential customers, partners and investors.

The equipment used in collaboration will provide manufacturing workers with secure, remote access to experts and first-line support teams working from home or at other plants. Specifically, DFA will now have real-time visibility into operations through hands-free video devices, which will enable DFA's workforce to remain productive while adhering to physical distancing guidelines.

To enable real-time communication between DFA co-workers, Cisco Webex Teams technology is being used to provide workers with access documentation using Realwear HMT-1 head mounted devices for routine process evaluations, maintenance, and training. With everyone using Cisco Webex Teams, users don't need to rely on disconnected methods such as text messaging, phone calls or emails to connect. Instead, a quick Teams message in a project space allows for collaboration between the necessary resources and keeps all the related data connected and retrievable.

Malyszko said Cisco's Expert on Demand technology, accessed using the Realwear HMT-1, can close this experience gap by connecting workers from the plant floor to plant management or experts at other locations while allowing them to keep their hands free to work, rather than having to hold a smartphone or tablet.

Through this level of digitalisation DFA farmers can:

i. Launch two-way or multi-party video meetings hands-free and collaborate with remote experts to resolve problems at the source without requiring workers to be onsite.

ii. Request and receive a call back from an individual expert or an entire team.

iii. Search the company directory to find the right expert or teams to resolve an issue immediately.

iv. Access resources such as documentation for common troubleshooting steps.

v. Frontline workers and experts can augment live streaming with annotations to help resolve problems faster and provide guidance for day-to-day activities.

These show that the DFA are so keen in upgrading their cooperatives to a highly digitalised one. The DFA understands digitalisation being a indispensable part in their operations especially during and after Covid pandemic. According to DFA a digitalised organisation can benefit its stakeholders i.e. the organisation, farmers and customers. Thus, being a perfect cooperative for benchmarking with regards to the digitalization.

5. Directory to Tackle Digitalisation

The importance of digitalisation has been understood and established so far, but the question is how to practically apply and equip the cooperatives to embrace their digital journey. With analysing and reflecting on various case studies of cooperatives from various sectors and from different parts of the globe, a conceptual framework has been established. The main goal of this framework is to provide a structured and comprehensive model to assist cooperatives in their digital transformation. The framework aims to be as general as possible, so as to provide valuable inputs to cooperatives regardless of background, region or sector.

By analysing all the case studies, we have come up with a five-step formula, which combines all our

learnings and puts it in a structured format, making it simple to understand and to be applied. The model tackles digital transformation in a cooperative, as illustrated in the figure (fig.2) given below.

(fig.2)

The first step is to determine the digitalisation goals of the cooperative and where it aims to be after implementing digitalisation into its operations. The second step is to review the current position or the current state of the cooperative in terms of digitalisation with respect to the desired position it aims to be in the upcoming future. This helps in identifying the gap that needs to be filled in the upcoming processes. The third step is to identify the various challenges that the cooperative faces because of the gap in its level of digitalisation. This provides a detailed understanding of the problem, which helps in tailoring appropriate solutions to tackle them. The fourth step is the actual implementation of various digital tools as per the need of the cooperative to fill out the gap and help in reaching its full potential. This further has been divided into five broad steps which will be discussed in detail further down the paper. The fifth and final step is, continuous learning and improving from feedbacks from its members and various other stakeholders of a cooperative. This model is used to build a solution to all cooperatives who aim to stay ahead of the curve in the era of digitalisation. Next, we'll discuss each of these steps in more detail.

Identification of the goals

The identification of the goals is the primary step in the "5 step formula" developed by us. This plays a crucial role as it makes the directions and the purpose of the organisations clear. It priorities the operations according to its importance. Analysing the core important area can assist a cooperative in adopting the best digital standards.

As part of our research, we found many cooperatives could implement effective systems because they were so clear with their objectives. Cooperatives with a proper goal have the following advantages:

- Shall help in resource allocation
- Assists in the decision making
- It can enable the measuring of progress
- Can act as a motivation factor
- Improves Adaptability and Refinement

Most of the cooperatives had a clean vision that served as the running blood for them. Thus, we felt the importance of having a proper vision for the organisation.

A cooperative before drafting the goals must pay attention on the following aspects

- What is the organisation's core purpose?
- What problem does it aim to solve, and for whom?
- Where does the organisation see itself in the future?
- What are the expectations of the stakeholders?

Positioning the company

The second most important step is to check the position of the organisation with respect to its goals and long-term visions. This reflects the cooperative's true picture by acting as a mirror. This shows both, the distance covered as well as distance yet to be covered. Hence playing an important role.

This step requires some internal as well as external examination before deriving conclusions. The conclusions from this step can enable in knowing the pace at which digitalization should be carried forward.

Many cooperatives being a part of our research effectively identified their TOWS (threat, opportunity, weakness and strengths). This enhanced their depth of the knowledge which in turn streamlined the process of digitization in a positive way.

Failure of understanding the current status may complicate the process of digitization. This can also make the existing system numb, further increasing the costs associated. One such example is MARIGOLD CO-OP HOUSING (Canada), they earlier were invested in building up a static webpage for their business which performed very few functions, later on they realised their business model no longer supported the static system. They were a bit late to realise their importance cooperative housing and their customers' expectation regarding an online system that can perform vast functions. To cope up with the demand they had to renovate their online system which again involved cost.

Thus, the cooperatives must concentrate upon understanding their existing position before bringing up a new system into the organisation.

Identifying the gap

Identifying the gap in the cooperatives current position and future goals involves a thorough analysis of the disparities that exist. This process requires a detailed evaluation of existing systems, processes, digital tools, etc. against the envisioned future goals of the cooperatives.

By assessing current practices, resource allocation and digitalisation level, cooperatives can pin point specific strategies and solutions to bridge these gaps.

This gap analysis not only highlights the shortcomings in the current digital infrastructure but also clarifies the strategic adjustments needed to align with future digitalisation objectives. Accurate identification of these gaps is crucial for formulating effective strategies to enhance digital integration and achieve the cooperative's long-term goals.

Bridging the gap

In this step, the cooperative finally decides on the appropriate solutions to tackle the problems they have faced. This is a very important step in the process as the cooperatives must analyse and consider all the available options and routes that they can take. The cooperatives must take the best route out

of these considering various factors such as, cost of setting up, complexity of the system, reliability, etc.

From the case studies, we have found out common patterns and routes that the cooperatives have taken on their digital journey. These patterns have been studied and consolidated to form a theoretical roadmap on a general perspective, which will assist any cooperative who look forward to embrace digitalisation. Though there are common patterns, each and every cooperative has tailored solutions in such a way that they are unique and satisfy the exact needs that they aim to fulfil.

This step is divided into five broad categories that a cooperative must focus while transforming itself into a digital entity. These five categories must be considered and the cooperative must come up with a plan by which these are implemented in a way which is unique to that specific cooperative.

i. Websites and applications

In this digitally driven world, it is very important and necessary for a cooperative to have a website. A website creates a sense of trust and legitimacy to stakeholders of the cooperative. A website is primarily necessary to increase the reach of a cooperative and not be bound by region. All of the cooperatives from the above cases have a well dedicated website which can be accessed globally, which has been a key factor to their global reach and success.

It is also important for cooperatives to utilize these websites to not only provide information regarding them, but to also use these websites actively to automate various processes. This can be learnt from the example of case study no.4 (Marigold co-op housing). This cooperative transformed their website to automate the application process for housing. They integrated AI to automate the approval of applications which has saved them a lot of time and effort. Websites can also be used as a member only intranet for better connectivity to its members.

Applications are next level to a website which provides a smoother and more intimate experience for its users. Creating dedicated applications will help its members and customers have a seamless experience. The integration of websites and applications have proved to be an effective tool for cooperatives in improving their efficiency.

ii. Partnering with third party digital service providers

From our research, it is evident that a lot of cooperatives reach out to third party digital service providers who have had quite a bit of experience. It is not absolutely necessary for the cooperatives to hire other companies for solutions, but this has proved to make the digital transformation easier for the cooperatives.

Cooperatives have different needs and reasons for digitalisation. They must be identified and established thoroughly by them, which will help them in finding service providers who are willing to tailor solutions according to their needs, the cooperatives must look at different options available to them and must choose the right route to cater their specific needs.

A lot of traditional companies have been relying on many service providers for digital solutions to their organisational problems. A lot of service providers have also been helping traditional companies in their digital journey. It is really important to spread awareness and shed light on how cooperatives might just be the next industrial revolution, which will help in new startups coming up which concentrate on services which can be provided to cooperatives, specifically.

iii. Cybersecurity and member security

As the world moves toward digitalisation, one main threat to all entities has been cybersecurity. Cooperatives are no exception to this threat and must be really careful while adopting digitalisation strategies. Some cooperatives, often financial cooperatives, health cooperatives, etc. deal with very sensitive and confidential data which are prone to cyber-attacks. This poses the need for improved cybersecurity.

From research, we have understood that cooperatives must have full and complete control over all the processes taking place in it. They can adopt a cloud-based solution by which they can have complete track over the flow of information. Microsegmentation is the solution to this as it enables security architects to construct network security zones boundaries per machine in data centres and cloud deployments in order to segregate and secure workloads independently.

It is important for cooperatives to aim in implementing some form of security along with adopting new digital technologies in their day-to-day process. This is especially necessary when the cooperative deals with highly confidential and sensitive data, prone to attacks.

iv. Improving control over the internal environment

Now, cooperatives must come up with solutions to have better control of the internal environment. They must establish complete control over all the processes taking place internally to efficiently automate these processes to save a lot of time, cost and money.

As we have seen earlier a centralised cloud-based system is the solution to ensure slow of information within the cooperative. The cooperatives, as seen in the case studies, can hire service providers to create personalised software to manage logistics, inventories, supply-chain, etc.

It is to be noted that this solution is similar and must be integrated with everything discussed earlier to establish a strong digital system for cooperatives to unlock their full potential.

v. AI integration

Artificial intelligence is the next up and coming technology, which has also been regarded as the next technological breakthrough. The cooperatives can integrate AI in creative and powerful ways to provide them with an edge compared to others.

As observed from the case studies, cooperatives who have been successful in integrating AI have improved efficiency drastically, revolutionising the existing processes. Ai has been used in financial cooperatives to understand customer preferences and provide them with loans and policies according to their profile. Cooperatives have used AI to study the market in a better way. These could keep going on, emphasizing how important artificial intelligence is in the digital journey.

Feedback and Improvements

Customers are considered crucial to the success of any business for several reasons. Customers are the readymade foundation upon which all the organisations are built. It is the responsibility of the organisation to keep the foundation strong because this determines the growth of the organisation.

This can effectively be done only if suggestions from the customers are taken seriously. Customers take up an unbiased eagle eye view on the functions of the organisations and they are the most qualified people who can advise an organisation in each and every aspect.

Undoubtedly, all cooperatives must place their customers first. In our research we came through many such cooperatives who take up customer suggestions as an important tool for their betterment.

For instance, Credit Agricole, (A finance cooperative from France) had very few language options in their online services a few years back. But many of its customers faced difficulty with the usage of the applications as their preferred language was absent. Credit Agricole realised this problem through various suggestions put forth by their customers then focused on developing applications that supported the usage of several regional languages across Germany and other parts. This improved the adaptability of their applications also created a sense of inclusion, which turned out as one of the reasons for its success in digitalisation.

Also, we came across several cooperatives who weren't paying importance to its customers' suggestions. Customers of such organisations showed their agitations through the public reviews. Over a period, this may have a negative impact on the cooperative's growth as it lacks customers' trust. This represents their digitalisation ineffectiveness.

Cooperatives improve on this aspect by setting up a proper grievance redressal system inhouse. They can also invite customer suggestions on a regular basis with the use of emails and their websites. This step ensures two-way satisfaction as both the customer as well as the cooperative is getting benefited.

6. Conclusion

Who will benefit from our Directory?
Our directory will benefit a wide range of stakeholders within the cooperative ecosystem. Cooperative leaders and management teams can use our directory to guide their digital transformation efforts, ensuring that they make informed, strategic decisions. Members will benefit as cooperatives become more efficient, connected, and responsive to their needs. Additionally, IT professionals and digital service providers can leverage the framework to offer tailored solutions that align with the cooperative's specific goals and objectives.

The directory can be utilised to connect small, medium and large cooperatives across varied sectors from finance to agriculture, opening up a world of new possibilities for them ultimately leading to operational efficiency and deeper engagement with members. At the end of the day, it is a general guide for anyone working in a cooperative who wants to adopt digital change and prepare their own organisation for future.

Practical means of our Directory
Our research offers a practical and accessible helps the cooperatives to navigate their path through the implementation of these digital strategies and technologies. With easy-to-follow, step-by-step guidance, the report gives organisations the tools to confidently navigate this often-intimidating digital world. This directory can help any cooperatives scheduling a new, or refining an old one, better identify gaps, pick which tools to implement first and iterate.

And crucially, it is a flexible road map in other words, it could apply to cooperatives more generally in different industries, regions and scales. This flexibility is crucial for organizations who need to remain up-to-date, efficient and well-connected with members in a digital environment that is always evolving. In the end, though, this directory will be more than just a technical manual it is about connecting people and resources so cooperatives can not only survive but help each other prosper economically while improving access to technology in their community.

Lastly, the trajectory to digitalisation for cooperatives is more than just a passing phase it marks a transition that would determine their long-term legitimacy and survivability. This has further underscored our belief in how digitalisation is crucial to increase operational efficiency, expand reach

and be closer to our members. Our five-step model are a revolutionary process that gives cooperatives a precise idea of the journey in which they can undertake, no matter the size of the organization or sector and regardless of their geographical area.

Setting objectives, measuring where they are from maturity standpoint of digital Canada, identifying room and adopting the right solutions, Cooperatives can become modern and dynamic ones. In addition, embracing of continuous feedback and changing member needs as well ensure cooperatives stay strong, innovative and responsive to the demand that come along with digital age. In the end, cooperatives who embrace digitalisation are not just catching up with the times but unleashing new capabilities and propagating further inclusivity and building trust across all its stakeholders throughout the way.

Our digitalization directory empowers cooperatives to embrace technology, turning digital challenges into opportunities for growth and innovation. We are confident that the inductive approached directory will be an invaluable asset, guiding cooperatives to embrace digital transformation effectively, unlock new opportunities, and drive significant growth and innovation.

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Mapping the Research Landscape on Cooperative Marketing in Agriculture: A Bibliometric Study

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Abstract

The ability of farmers to increase their agricultural incomes largely depends on market access, particularly in developing countries where they face challenges such as limited access to markets, insufficient market information, inadequate storage and transportation, and exploitation by intermediaries. Existing studies has increasingly highlighted the role of cooperatives in overcoming these marketing challenges, fostering resilience, and building sustainable business practices. Using a moderated PRISMA model and data from the Scopus database, the study analyzes the evolution of cooperative marketing over recent decades. A thematic analysis reveals two key factors contributing to the success of marketing cooperatives: external strategies, such as responding to market competition, price fluctuations, and regulatory changes, and internal adaptations, including changes in governance and ownership structures. However, these adaptations often have conflicting outcomes, challenging cooperatives to balance external pressures without compromising member ownership. The findings suggest that future research should explore how cooperatives manage these internal and external challenges and their long-term sustainability in a dynamic market environment.

Keywords: Cooperative marketing, Bibliometric analysis, Agricultural cooperatives, External challenges, Internal adaptation, Cooperative resilience.

1. Introduction

Agriculture plays a crucial role in the global economy. Agricultural growth is observed to be more effective compared to other sectors in increasing income for the poorest sections of the population (Townsend, 2015). Globally, agriculture contributes 4% of the GDP, while in some developing nations it can be over 25% of their GDP (World Bank, 2024). However, the agriculture sector has recently been experiencing a structural transformation, which is reflected in the decreasing contribution of agriculture in output and employment (Liu & Wang, 2022). These trends suggest that the sector is facing a crisis today. The growing unattractiveness of agriculture as an economic activity is argued to be the principal cause of this crisis. This is evident from the declining share of agriculture in total employment across countries (Kühn, 2019). The majority of the farmers around the world are struggling to cope with the declining profitability arising due to rising costs and non-remunerative market prices for crops (Narayanamoorthy, 2013).

In order to address this crisis in agriculture, it is necessary to ensure that agriculture remains profitable (or remunerative) to the farmers. This is particularly important as the potential of farmers (especially the smallholders) to increase their agricultural incomes increasingly depends on their ability to access markets for their outputs (Satyasai & Pereira, 2019). A closer look at the current agricultural scenario reveals that farmer across the world face numerous marketing challenges. These are in the form of lack of market access (Mpandeli & Maponya, 2014; Solanki & Attari, 2016), unavailability of market information (Azam et al., 2019; Chokera et al., 2014; Mpandeli & Maponya, 2014), lack of access to better storage (Azam et al., 2019; Chokera et al., 2014; Solanki & Attari, 2016) and transportation

facilities (Chokera et al., 2014), and exploitation by middleman (Badar & Mustafa, 2008; Mitchell, 2011). Cooperatives can play an instrumental role in addressing these marketing challenges (Knutson, 1978; Shaffer, 1987).

Cooperatives can play an important role in linking small scale farmers to markets. Cooperatives provide a platform in which individual small-scale farmers can aggregate their produces and sell those produces collectively. This can ensure the smallholders not only to access markets but also to capture better prices (Gouët & Paassen, 2012). It is also believed that cooperative can play a crucial role in helping the smallholder farmers in entering into in high value markets, which would otherwise be inaccessible to them (Dellinger, 1995; Markelova et al., 2009). Many studies have found that with the help of marketing cooperatives small scale farmers were able to access organic or fair-trade markets and command premium prices for their products (Bacon, 2005; Reynolds, 2014; Utting-Chamorro, 2005). It has been also observed that cooperatives can play a crucial role in the value chain of agricultural produce (Kumari et al., 2021). Evidence also suggest that cooperatives can increase the economic returns of the farmers by strengthening the agricultural value chain through their participation in processing, packaging and labeling of the products (Kashyap & Bhuyan, 2021; Kumari et al., 2021; Maretzki, 2007; Prakash, 2003). Furthermore, cooperatives can also increase the bargaining power of the farmers[1] and thus helping them to negotiate better terms with their buyers.

Marketing cooperatives can play a crucial role in protecting the interest of the small-scale farmers from the exploitations by middlemen (Abad et al., 2020). Through marketing cooperative, farmers can establish a direct linkage between the buyers which can eliminate the role of middlemen (Abad et al., 2020). Evidence also showed that by participating in a cooperative, farmers can get the required market information about prices, consumer demand and market trends (Israel et al., 2022) which help them to make informed decision about what crop to produce and when to sell them.

Furthermore, cooperatives can manage operations of post harvest-activities, allowing small scale farmers to maintain quality of their produces and attract better prices (Anania & Rwekaza, 2016). For instance, members (especially, the smallholders) of the cooperatives can pool resources among themselves in order to get access to better storage facilities[2], facilitate better arrangement for the transport of the produce and bring down the cost of transportation (Anania & Towo, 2016). Therefore, a collective dimension of the cooperative allows the farmers to concentrate on their marketing efforts, reduce the cost associated with selling their produce and thereby increase their marketing efficiency (Sumalde & Quilloy, 2015). However, the success of cooperatives is significantly shaped by the interactions between external challenges and internal adaptations. From the literature, it has been observed that cooperatives can address these challenges by adopting different strategies.

Keeping in mind the growing importance of agricultural cooperatives (cooperative marketing in particular), it is imperative to understand the development of this body of literature in the academic discourse. A systematic review of agricultural cooperative is made by some studies (Candemir et al, 2021; Grashuis & Su, 2018; Islam et al, 2015; Luo et al, 2020; Marcis et al, 2019; Qorri & Felfoldi, 2024). However, such studies made a special reference to the impact of agricultural cooperatives on

[1]A report prepared by the European Commission focusing on the role of marketing cooperatives (engaged in eight different sectors in 27 member states of the European Union) found that all of the marketing cooperatives under study played a key role in improving bargaining powers of its members and offering benefits in terms of economies of scale (Bijman et al., 2012). The report also pointed out that these cooperatives are instrumental in reducing market risks, bringing down transaction costs, providing access to resources and strengthening their competitive position through product innovation and guaranteeing food and quality.

[2]Access to better storage facilities through cooperatives can minimize the post-harvest losses of the small scale farmers (Anania & Rwekaza, 2016)

expansion of markets to smallholders in developing countries (Islam et al, 2015), performance, ownership and governance of farmer cooperatives (Grashuis & Su, 2018), embracing sustainability in the dimensions of economic, social and environmental issues (Marcis et al, 2019), challenges of agricultural cooperatives in Western countries (Luo et al, 2020), role of agricultural cooperatives in influencing farm performance (Candemir et al, 2021), and recent trend on agricultural cooperative research (Qorri & Felfoldi, 2024). In a different perspective, Gardner et al (2022) identified some priority topics on agricultural cooperatives by compiling survey responses from cooperative industry leaders and academics. Among the whole body of systematic reviews, however, we could find only some recent studies (Luo et al, 2020; Marcis et al, 2019; Qorri & Felfoldi, 2024), which relies on bibliometric analysis. Such quantitative analysis is relatively scanty as the discipline of agricultural economics is not familiar with such review method (Luo et al, 2020).

In this backdrop of the recent trend, a separate systematic review on the researches on cooperative marketing needs to be done. This bibliometric study is objectively placed in addressing this gap of research. Specifically, this study analyzes the research evolution of cooperative marketing over the past few decades to identify the measures relating to meeting external challenges and internal adaptations. Based on this systematic review, future scopes of study are also outlined. The article is divided into five sections. The next section details the materials and methods to select papers for bibliometric analysis. Section 3 highlights an in-depth performance analysis to identify the themes from the existing cooperative marketing literature. Section 4 offers future scope of study and concluding remarks are presented in section 5.

2. Material and Methods

To review the existing literature in a systematic way, the following steps are undertaken:

- Application of an adopted version of a protocol (PRISMA).
- Use of performance analysis in a bibliometric framework.
- Use of a visualization map indicating a graphical framework on co-occurrence of the keywords in bibliographical text.

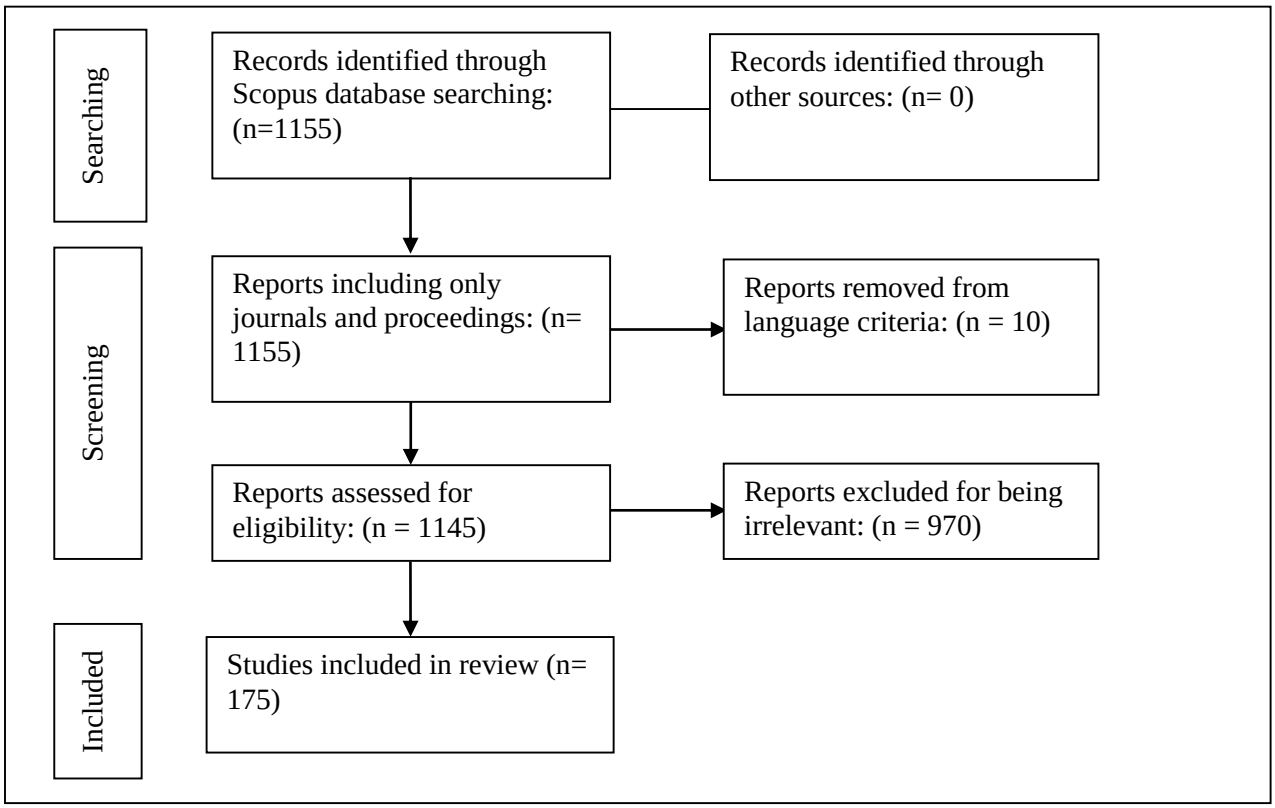

Figure 1: Systematic Literature Review Flow Diagram in a PRISMA Framework

The systematic review is performed using a moderated version of PRISMA model (following Musinguzi et al., 2023). Even though this protocol is commonly applied in medical science reviews, now-a-days it is increasingly popular in business and management research, including agricultural cooperative marketing (Musinguzi et al., 2023; Qorri & Felföldi, 2024).The study is conducted on the scientific documents available on the Scopus database[3] (Elsevier). In the search, a search string consisting of the following keywords is used to identify the documents: "TITLE-ABS-KEY ("agriculture cooperatives" OR "marketing cooperatives" OR "farmer cooperative" OR "agricultural marketing cooperative" OR "agriculture coop" OR "agri-coop" OR "marketing coop" OR "agriculture co-op" OR "cooperative societies")". Then some inclusion criteria are applied to reduce the scope of the study:

Criteria 1: subject area is limiting to Social Sciences, Environmental Sciences, Agricultural and Biological Sciences, Economics, Econometrics, and Finance, Business, Management and Accounting, Arts and Humanities.

Criteria 2: scope of the study is limited to agricultural marketing.
Applying these search inclusion criteria, ultimately number of eligible studies reduced to 175.

[3] Scopus database is used as it offers extensive and up-to-date coverage of high-quality academic sources across diverse disciplines. It also provides comprehensive coverage of academic publications and is regarded as the largest database of peer-reviewed literature and international publishers (Luo et al, 2020).

3. Results

Performance Analysis

To understand the current trend of research works on agricultural cooperative, we analyzed the publication trend using total publications by year and country, most relevant sources and most cited sources.

Total publication by year and country: The role of cooperatives in agriculture has long been an area of interest among the researchers. However, the cooperative marketing has received increasing attention in the recent years. The publication data also show a sudden spike in the publications of article in this domain of research in the 21st century. A significant portion of the research on cooperative marketing has been carried out in the context of USA, China and India.

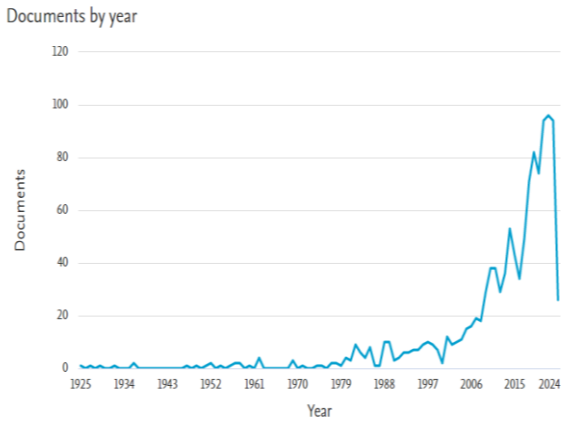

Figure 2.1: Documents by year

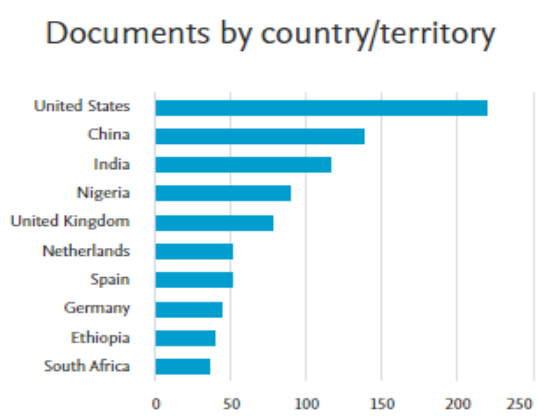

Figure 2.2: Documents by country/territory

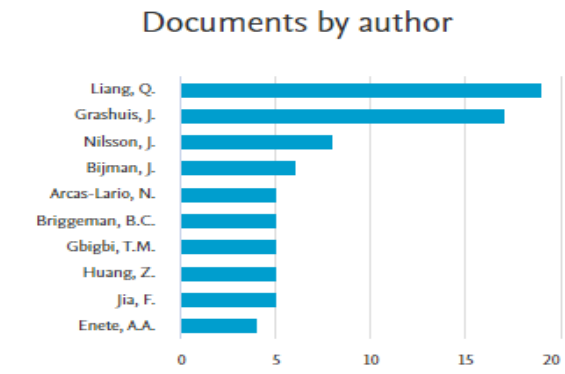

Figure 2.3: Documents by author

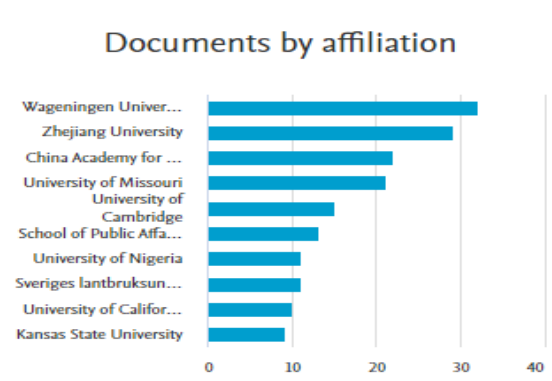

Figure2.4: Documents by affiliation

Figure 2: Analysis of Bibliometrics Information

Most relevant sources: Among the articles identified on the topic cooperative marketing in agriculture, the three most prominent journals in this field are *Agribusiness* (United States) published by Wiley, *American Journal of Agricultural Economics* (United Kingdom) published by John Wiley & Sons and *International Food and Agribusiness Management Review* (United States) published by International Food and Agribusiness Management Association. A summary of the other journals is given in the following table.

Table1: Most relevant sources

Journal	TP[a]	H-Index[b]	SJR[c]	SJR Quartile[d]	Country	Publishers
"Agribusiness"	11	49	0.77	Q1	United States	Wiley
"American Journal of Agricultural Economics"	8	126	2.08	Q1	United Kingdom	John Wiley & Sons
"International Food and Agribusiness Management Review"	8	42	0.4	Q2	United States	International Food and Agribusiness Management Association
"Annals of Public and Cooperative Economics"	6	42	0.54	Q2	United Kingdom	Wiley-Blackwell
"Agricultural Economics"	5	96	1.38	Q1	United Kingdom	Wiley-Blackwell
"Cogent Food and Agriculture"	5	36	0.52	Q2	United Kingdom	Informa Healthcare
"Food Policy"	4	126	1.9	Q1	United Kingdom	Elsevier
"Journal of Agribusiness in Developing and Emerging Economies"	4	19	0.54	Q1	United Kingdom	Emerald
"Journal of Co-operative Organization and Management"	3	17	0.63	Q2	Netherlands	Elsevier

Source: Author's own presentation

Note: a: TP denotes total publications on marketing cooperatives by each journal.

b:H-index or Hirsch index is a metric that reflects the impact and influence of a journal's articles, calculated based on the number of papers published by the journal and the number of citations those papers have received.

c:SCImago Journal Rank (SJR) is a metric that assesses the scientific prestige and influence of scholarly journals based on the citations received by the articles published in those journals.
d:SCImago Journal Rank (SJR) quartile indicates the relative position of a journal's impact within its field, with quartile 1 representing the highest impact and quartile 4 representing the lowest.

Most cited sources: Table 2 presents a list of academic contributions based on their citations in descending order.

Table 2: Most cited sources

Source	Title	DOI[a]	TC[b]
"Bernard & Spielman (2009)"	"Reaching the rural poor through rural producer organizations? A study of agricultural marketing cooperatives in Ethiopia."	10.1016/j.foodpol.2008.08.001	257
"Mojo et al. (2017)"	"The determinants and economic impacts of membership in coffee farmer cooperatives: Recent evidence from rural Ethiopia."	10.1016/j.jrurstud.2016.12.010	194
"Bernard et al. (2008)"	"Impact of cooperatives on smallholders' commercialization behavior: Evidence from Ethiopia."	10.1111/j.1574-0862.2008.00324.x	178
"Hansen et al. (2002)"	"The impact of trust on cooperative membership retention, performance, and satisfaction: An exploratory study."	10.1016/S1096-7508(02)00069-1	140
"Valkila & Nygren (2010)"	"Impacts of Fair-Trade certification on coffee farmers, cooperatives, and laborers in Nicaragua."	10.1007/s10460-009-9208-7	132
"Mendez et al. (2010)"	"Effects of fair trade and organic certifications on small-scale coffee farmer households in Central America and Mexico."	10.1017/S1742170510000268	131
"Francesconi & Heerink (2011)"	"Ethiopian agricultural cooperatives in an era of global commodity exchange: Does Organizational form matter?"	10.1093/jae/ejq036	128
"Roy & Thorat (2008)"	"Success in High Value Horticultural Export Markets for the Small Farmers: The Case of Mahagrapes in India."	10.1016/j.worlddev.2007.09.009	112

Source: Author's own presentation

Note: a: Digital Object Identifier (DOI) of an article is a unique alphanumeric string assigned to it, providing a permanent link to its online location
b: TCs denotes Total Citations each article has received.

Visualization map: To obtain a better understanding about the current trend of research on cooperative marketing and to uncover the links between these research studies, a network visualization map is illustrated (figure 3) by a method of co-occurrence of keywords. The open-source VOS viewer software is used for this purpose. In this network visualization, 3 clusters are identified.

The largest cluster is displayed in red. It features "marketing cooperative" as the main theme linking with "price volatility", "consumer preferences", "policy changes", "market access", and "agricultural cooperative". The second cluster in green consists of "financial stability", "member participation", and "diversification". The third cluster in blue consists of "smallholders", "collective action" and "rural area".

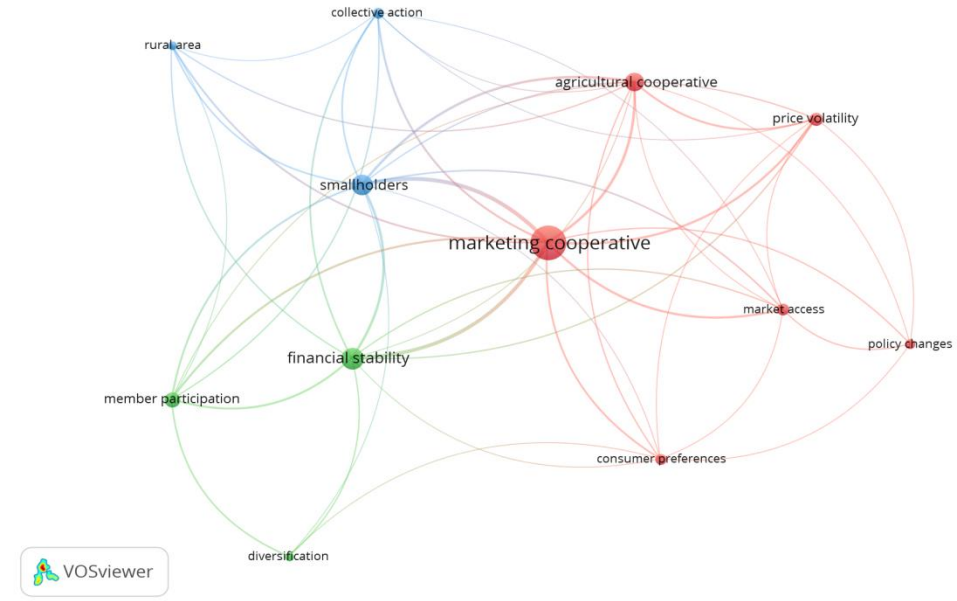

Figure 3: Network Visualization

Thematic analysis using keywords:
The thematic analysis outlines the contributing factors in determining the success of marketing cooperatives in a dynamic setting. The analysis is grouped into two categories. The first category of external factors outlines the strategies adopted by cooperatives worldwide in meeting challenges to the external environment (Getnet et al., 2018; Grashuis, 2018) and the second category focuses on internal adaptation measures (Dejene & Getachew, 2015; Grashuis, 2018; Moon & Lee, 2020).

External Challenges:
Marketing cooperatives faces a range of external challenges that can significantly impact their operations. These challenges are generated from factors beyond the control of the cooperative, such as fluctuating market conditions, increasing competition from private agribusinesses, and changing consumer preferences. Additionally, regulatory constraints, inadequate infrastructure, and limited market access can hinder their ability to compete effectively. Globalization and trade policies further complicate the situation by exposing cooperatives to international market forces and price volatility, making it difficult for them to secure stable markets and fair prices for their members. Addressing these external challenges is critical for the sustainability and success of marketing cooperatives.

Competition: Agricultural marketing systems in recent years have transcended due to globalization and liberalization (Singh & Sonker, 2014).These changes have led to the emergence of new market players and new market opportunities but also exposed farmers to increased risks. For instance, globalization has resulted in the concentration of massive buying power in the hands of a few companies, especially international supermarket chains. As a result, large and integrated agribusiness firms have created difficulties for cooperatives to survive in the market (Montemayor, 2007). In this context, cooperatives can address the problems associated with the survival of farmers in the market (Liang, 2020).

An example is Louisiana Sugar Cane Products, a raw sugar marketing cooperative, which adopted vertical integration in 2009 to safeguard its bargaining power. By entering into a joint venture with two other sugar companies, the cooperative gained more control over its final products in the market (Gunderson et al., 2009). Similarly, in response to growing competition from international firms, the

Finnish dairy cooperative - Valio ventured into new countries, enabling it to increase revenues globally (Ollila & Pyykkonen, 2012). In the United States, the United Agricultural Cooperative, a multi-purpose cooperative, improved its profitability by selling off an unprofitable business division to better compete in the market (Siebert & Park, 2017). Likewise, in New Zealand, the Kiwifruit Marketing Board pursued product differentiation by developing a strong brand to stay competitive in international markets (Beverland, 2007).

Table 3: Responses to competition by Farmer cooperatives

Strategies	Country	Authors
Vertical integration	United States	Gunderson et al. (2009)
Geographical expansion	Finland	Ollila & Pyykkonen (2012)
Divestment	United States	Siebert & Park (2017)
Brand development	New Zealand	Beverland (2007)

Source: Author's own presentation

Market Access: Market access is crucial for the success of agricultural producers by realizing fair pricing and outreaching broader consumer bases. However, farmers often face significant challenges, such as limited bargaining power, inadequate infrastructure, and fluctuating demand, which hinder their ability to access profitable markets. Moreover, farmers encounter challenges in tapping unexplored markets, caused by the requirement of third party certifications (Barrett et al., 2001; King & Venturini, 2005).

Cooperatives can play a vital role in improving farmers' market access. For example, marketing cooperatives in India and Kenya helped smallholders in meeting food safety standards, enabling them to adapt to evolving global food safety requirements (Roy & Thorat, 2009). Similarly, the Kuapa Kokoo cooperative in Ghana supported its members in obtaining organic certification by offering technical assistance, training, and meeting the standards for organic and fair trade certification (Donovan et al., 2016).

Table 4: Responses to Market access by Farmer cooperatives

Strategies	Country	Authors
Maintaining safety standard	India	Roy & Thorat (2009)
Organic and Fair trade certification	Ghana	Donovan et al. (2016)

Source: Author's own presentation

Price volatility: Commodity prices became increasingly volatile in recent times, leading cooperatives to implement various strategies. These strategies include closing membership, managing supply, facilitating price discovery, and integrating value-added activities. Several examples of these approaches are found in the literature.

Organic Valley, an organic marketing and processing cooperative, managed milk demand by lowering prices and limiting new membership (Abbate, 2017). Similarly, the United Potato Growers addressed stagnant potato demand by reducing supply and enforcing penalties on members who failed to comply with supply reduction (Guenthner, 2012). Additionally, sugar beet producers in the United States mountain region established a cooperative to integrate downstream supply chain to ensure stable and competitive prices (Brester & Boland, 2004). Furthermore, to reduce imperfect information and realize price discovery, the Plains Cotton Cooperative Association developed an

electronic cotton marketing system. This platform enables sellers to provide all relevant product information while allowing buyers to negotiate and make purchases remotely (Welch et al., 2007). Further, a study by Müller et al. (2017) conducted across 27 European Union member states found that cooperatives were able to reduce milk price volatility by expanding their market share.

Table 5: Strategies in Mitigating Price Volatility by Farmer Cooperatives

Strategies	Country	Authors
Limiting membership	United States	Abbate (2017)
Production quota	United States	Guenthner (2012)
Vertical integration	United States	Brester & Boland (2004)
Price discovery enhancement	United States	Welch et al. (2007)
Increasing market share	European Union	Müller et al. (2017)

Source: Author's own presentation

Changing consumer preferences: In an increasing competitive market, cooperatives face the challenge of differentiating their products to maintain and grow their market share. However, some cooperatives are responding to the product expectations of the consumers by adopting a different strategy.

In New Zealand, sheep farmers established a cooperative to access alternative outlets in the international market. Through harnessing local networks, the cooperative could respond to evolving product demands by integrating new production technologies into its operations (Goldsmith & Gow, 2005). Similarly, in response to the growing demand of organic food, Organic Valley, a United States based milk marketing cooperative, expanded its product line to include new organic food and beverage offerings (Su & Cook, 2015). Additionally, facing intense competition in the domestic market, Florida's Natural, a farmer cooperative in the United States implemented two specific strategies. First, cataloging orange growers in the juice packaging reveals the cooperative model to consumers. Second, advertising to highlight that Florida oranges are used in preparing juice (Campbell, 2017).

Table 6: Strategies in Meeting Consumer Preferences

Strategies	Country	Authors
Social capital	New Zealand	Goldsmith & Gow (2005)
Portfolio diversification	United States	Su & Cook (2015)
Brand development	United States	Campbell (2017)

Source: Author's own presentation

Regulatory Changes: Effective policy adoption and regulation are vital for the agricultural cooperative sector, ensuring its sustainability and growth. By addressing market failures, improving access to resources, and promoting fair trade practices, government policies help cooperatives to enhance farmer livelihoods and stabilize food supply chains. However, policy changes also present significant challenges. Regulatory shifts can create uncertainty, disrupt operations, and impose compliance burdens, particularly on smaller cooperatives with limited resources. Inconsistent or poorly designed policies may hinder access to funding, restrict market participation, or fail to address the unique needs of cooperative members.

To counter these challenges, cooperatives all over the world have adopted various strategies. In 2012, anticipating the move of European Union towards abolishment of milk supply quota system,

Milcobel, a Belgian dairy cooperative expanded its processing facilities to meet the anticipated growth in milk production (Gijselinckx & Bussels, 2012). The cooperative also heavily invested in drying of milk and cheese production. Further, in Tanzania, coffee cooperatives improved their resilience by forming contractual arrangements with private investors, which mitigate moral hazard behaviors among farmers due to policy changes (Lumenyela et al., 2023). Additionally, in response to the European Union's reformation of its policies, Tereos, a major French sugar cooperative, has implemented a strategy of diversification. This approach involved expanding both its product offerings and its geographical reach to ensure resilience in a more competitive market environment (Filippi et al., 2012).

Table 7: Responses to Regulatory Changes by Farmer Cooperatives

Strategies	Country	Authors
Vertical integration	Belgium	Gijselinckx & Bussels (2012)
Contractual agreement	Tanzania	Lumenyela et al., 2023
Geographical expansion	France	Filippi et al., 2012

Source: Author's own presentation

Internal Adaptation Measures:

From the literature it is observed that cooperatives employ a variety of internal adaptation measures to mitigate the impacts of external challenges, which are crucial for their resilience and sustainability. These measures can be broadly categorized into strategies that enhance financial stability, foster member engagement, and promote operational flexibility.

One of the significant internal adaptation measures is the enhancement of financial stability through improved liquidity management and strategic investments. For instance, wine cooperatives in Castilla-La Mancha, Spain demonstrated resilience during financial crises by maintaining strong liquidity and leveraging export strategies to stabilize their financial performance (Elorz & Valero, 2022). This approach enabled cooperatives to buffer against economic downturns and maintains operational continuity. Additionally, cooperatives can adopt strategies which involve maintaining uncommitted financial resources that can be utilized during periods of economic stress, thereby shielding them from the adverse effects of external shocks (Chakrabarti, 2014).

Another critical internal adaptation measure is fostering member engagement and participation. Studies have indicated that cooperatives that actively involve their members in decision-making processes tend to be more resilient. This engagement encourages collective action in response to external challenges (Billiet et al., 2021). For example, tobacco farmers who participate actively in their cooperatives are better equipped to mitigate production risks and improve their income levels through shared resources and knowledge (Zhang & Chen, 2023). This collective approach is particularly effective in times of crisis, as it allows cooperatives to mobilize resources and coordinate responses more efficiently. Moreover, cooperatives often focus on operational flexibility by diversifying their activities and markets. This diversification strategy enables them to spread risk and reduce dependency on a single source of income, which is particularly important in volatile economic environments. For instance, cooperatives that have diversified their product offerings or expanded into new markets have shown greater resilience to external shocks, as evidenced by the adaptive strategies employed during the COVID-19 pandemic (Kpadé, 2023). The ability to change and adapt operations in response to changing market conditions is a hallmark of successful cooperatives.

4. Future scope of study

As external adaptation ensures sustainability of cooperatives, it also brings a structural transformation in the ownership of the organization. There exist several examples of farmer cooperatives which pursued market orientation and forfeited cooperative ownership structure (Boland & McKee, 2009; Grashuis & Cook, 2017; Hardesty, 2009; Stanford & Hogeland, 2004). Moreover, there are also examples of farmer cooperatives that have managed to maintain their ownership structure and thrived despite of adapting to the external developments (Hemphill; 2016; Hogeland, 2006). This highlights the need for future research on how adaptation to external challenges affects internal dynamics and the long-term sustainability of cooperatives. Besides, existing literature lacks studies that explain why some cooperatives failed to survive in the market despite adapting to both internal and external conditions, while others remain successful. Thus, investigating how cooperatives navigate both internal and external challenges and how this affects their long-term sustainability could offer valuable insights for future research.

5. Conclusion

Over the past few decades, cooperative marketing has undergone significant transformation in response to global market pressures, technological advancements, policy reforms, and shifting consumer demands. This study highlights the key trends in the literature, such as the increasing focus on sustainability and the role of cooperatives in addressing market failures. Internally, cooperatives have had to adapt to changes in organizational structures, governance, and member participation to remain competitive. Externally, they face challenges such as globalization, fluctuating market conditions, regulatory changes, and competition from large agribusinesses. The study identifies several measures cooperatives have taken to meet these challenges, including enhancing supply chain efficiency, fostering innovation, expanding market access, and promoting value addition through branding and certification.

Overall, cooperatives have shown resilience, evolving from traditional approaches to more sophisticated and flexible models capable of navigating complex market environments. This study not only highlights the importance of continuous adaptation but also points to the need for future research that focuses on how cooperatives address both internal and external challenges and the impact these strategies have on their long-term sustainability in an increasingly competitive global environment.

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A Model Framework for Digitalization in Cooperative- A Tool for Sustainable Development and Community Resilience in Evolving Digital Landscape

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Abstract

Promoting inclusive digitalization and evenhanded access to technology is essential for empowering cooperative members and improving operational efficiency. By utilizing data-driven insights, cooperatives can strap up technology to support sustainable development and make resilient communities. A collaborative plan that emphasizes member participation and incorporates Artificial Intelligence, Financial Engineering, and Techno-readiness ensures that digital initiatives address the diverse needs of cooperative communities. The study intended to identify and analyze the key factors that influence the successful implementation of digital technologies in cooperatives, evaluate the impact of digitalization on operational efficiency and the correlation between investment levels and beneficiary satisfaction, and assess the role of digitalization in fostering sustainable development and community resilience within cooperatives. The major goal of the research was to craft a model framework for digitalization specifically designed for cooperatives. Result indicated a positive correlation between the adoption of digital technologies, increased member engagement, and enhanced decision-making. In addition, there is a significant relationship among digital technology, operational efficiency, and the investment percentage related to beneficiary satisfaction. Based on these findings, the researcher has developed a model with a copyright known as the "4-WAY DEVELOPMENT CONQUEROR MODEL (DC MODEL)."

Keywords: Digitalization, Technology, Cooperative members, operational efficiency,Artificial Intelligence, Financial Engineering, Techno-readiness.

1. Introduction

Encouraging inclusive digitalization and guaranteeing reasonable access to technology for cooperative members is vital for promoting financial empowerment and improving operational efficiency in cooperative societies. In day-to-day's rapidly evolving digital landscape, the skill to harness technology effectively can significantly improve the capabilities of cooperatives, enabling them to thrive in cutthroat markets. By focusing on inclusive digitalization, cooperatives can make certain that all members, regardless of their technological proficiency or financial status, have the opportunity to advantage from digital tools and resources. This inclusivity not only fosters wisdom of belonging and contribution among members but furthermore enhances the largely productivity and effectiveness of the cooperative.

Utilizing data-driven insights is a different key aspect of this digital revolution. By analyzing data related to member needs, market trends, and operational performance, cooperatives can make well-versed decisions that drive expansion and sustainability. For instance, data analytics can assist to identify areas where resources are being underutilized or where there are opportunities for new services that assemble the evolving demands of members. This strategic use of data empowers cooperatives to adapt to shifting circumstances and to innovate in ways that align with their task of

serving their communities.

Moreover, cooperatives are capable of successfully leverage technology to promote sustainable development and build resilient communities in an increasingly digital globe. By adopting digital tools that facilitate competent resource management, enhance communication, and streamline operations, cooperatives can trim down their environmental footprint while also improving their financial viability. For example, digital platforms can enable improved supply chain management, reducing waste and optimizing logistics, which is crucial for sustainability.

Adopting a collaborative move toward digitalization is essential for ensuring that the digital initiatives implemented by cooperatives are successful and applicable. This approach involves actively appealing members in the decision-making process, allowing them to voice their opinions and preferences concerning the technologies and tools that are adopted. By fostering a culture of association cooperatives can ensure that their digital strategies are aligned with the needs and aspirations of their members, leading to higher levels of fulfillment and engagement.

Integrating advanced technologies such as Artificial Intelligence (AI), Financial Engineering, and Techno-readiness into cooperative operations can further enhance their capabilities. AI can be utilized to examine large datasets, forecast market trends, and personalize services for members, thereby improving overall member experience. Financial Engineering can provide cooperatives with innovative economical solutions that enhance their funding capabilities and investment strategies, ensuring long-term sustainability. Additionally, fostering Techno-readiness among members—by providing training and resources to progress into their digital skills—ensures that all members can effectively engage with and advantage from the digital tools available to them.

This study explores how a structured model framework for digitalization can support cooperatives in achieving sustainable development and enhancing community resilience. Understanding this course is significant as it provides insights into how cooperatives can navigate the digital epoch effectively and contribute to broader socio-economic objectives.

2. Literature Review

Chijioke Uchechukwu Uneze et al (2024) The study recognized an vital need for a strong digital infrastructure backbone, encouraging the configuration of agricultural digital solution cooperatives, digital literacy programs support from companies providing particular skill agricultural digitalization solutions, and instituting government grants to maintain the high cost of investments required for digitalization.

Bühler et al. (2023) concluded that lofty market share of big corporations, digital exclusion, unsatisfactory data governance, skill and capacity gaps, and diminishing data sovereignty are all seen as being the foremost challenges towards data usage in the future.

Ratih Purbasari,et. Al. (2022) The results show that the digital transformation of cooperatives in the Greater Bandung area is in a good enough category but still needs to be improved. Future research can use different approaches such as the helix approach to map and analyze actors and their roles in the digital transformation process in cooperatives.

Kling et al. (2022) stated in their research paper that financial inclusion expands financial services accessibility and minimizes income inequalities by promoting education and entrepreneurship for the poor. Their empirical results endorsed financial inclusion minimizes income inequality in society and

enhances human capital development through investing money to impart education and skills that result in making wise and viable investment entrepreneur activities.

Crawford (2021), AI may unintentionally play a role in creating the aforementioned issues in an AI system which relied on good data governance for accuracy. Data governance risks are not limited to biases in data sets leading to undesirable outcomes, but improper data governance can lead to data security risks.

Hewa Wellalage et al. (2021) have studied how ICT affects entrepreneur financial inclusion in five countries (Ghana, Kenya, Tanzania, Uganda, and Zambia). They empirically asserted that ICT has the potential element for the financial inclusion of innovative entrepreneurs. They also provided evidence that the main factor promoting widespread access to and use of financial services is m-money. Thomas et al., (2019) articulated that m-money (M-PESA) has accelerated the 70 percent of active users in Kenya.

Farzin et al. (2021) examined the UTAUT2 model among Iranian m-banking customers to draw major factors of mobile banking adoption. The empirical results observed all variables of UTAUT2 including effort expectancy, performance expectancy, social influence, facilitating conditions, perceived value, habit, hedonic motivation, and trialability were the major elements of mobile banking adoption. Further, the authors observed that word of mouth (WOM) significant influence on intentions and behavior.

Ajefu et al. (2020) studied the impact of financial inclusion on mental health in Nigeria. The results observed that financial inclusion improves financial services accessibility and usages like deposit accounts, loan facilities, and insurance products. The enhanced access and use of financial services reduce mental health issues and improve physical and mental health. This study asserts that using financial services significantly improves the overall well-being of human livelihood.

World Bank, (2019), Cooperatives contribute to these goals by promoting confined economic development and social inclusion. Digital tools be able to enhance these contributions by improving access to resources and fostering innovation.

Bertelsmann Stiftung (2018), Digitalization in cooperatives involves integrating digital tools and technologies to enhance operational efficiency and member engagement. Studies demonstrate that digital tools can perk up communication, facilitate better decision-making, and increase transparency.

Tornatzky& Fleischer, (1990), Existing models of digitalization, such as the Technology-Organization-Environment (TOE) framework, highlight factors influencing technology adoption, including organizational readiness, technological compatibility, and external pressures. However, these models often lack a focus on cooperatives and their unique needs.

3. Research Gap

While there is extensive literature on digitalization and its benefits for organizations, there is a lack of specific models addressing the digitalization requirements and financial assistance of cooperatives. Most existing frameworks do not explain for the cooperative model's unique characteristics, such as member participation, democratic governance, and local community focus. To bridge this gap in the literature, the following objectives can be formulated:

4. Objectives And Hypotheses

Objectives:

1. To identify and analyze key factors influencing the successful adoption of digital technologies in cooperatives.
2. To assess the impact of digitalization on operational efficiency and percentage of investments on satisfaction of beneficiary
3. To evaluate contribution of digitalization to sustainable development and community resilience within cooperatives.
4. To develop a model framework for digitalization tailored to the needs of cooperatives.

Hypotheses:

1. The adoption of digital technologies will positively correlate with increased member engagement and improved decision-making.
2. There is significant impact of components like digital technology on operational efficiency, and percentage of investment on satisfaction of beneficiaries provided by Cooperative Societies.
3. There is a significant relationship between digitalization, sustainable development, and community resilience.

5. Research Methodology

Research Design
In this part a brief description of the methodology adopted for the study is given. It included, data base, sampling design and analytical procedures adopted in the present analysis.

Data Base
Questionnaire method has been used for the collection of data. The data for the study were collected from both secondary and primary sources.

Secondary data
Records of societies, circulars and policy letters are the main sources of secondary data. Secondary data were also gathered from various publications and reports of committees. The details of the Credit Cooperative Society in the Amravati City were collected from the DDR office of Co-operative Societies.

Primary Data
The study adopted methodological approach where hypotheses were statistically tested using Correlation, and Multinomial Logistic Regression based on survey data of 37 non-agricultural credit societies, with 163 beneficiaries and 97 Board of Members from Amravati District. Devising the model based on results and observation of the research.

Sampling Design
A purposive sampling technique was used for the collection of primary data.

Analytical Procedure
The collected data were classified and tabulated by using 4 point Likert scale. Tables and statistical results have been derived through SPSS. To analyse and interpret data collected for the study from

different sources, mathematical and statistical tools such as Descriptive Statistics were made use of. Statistical techniques like 'Multinomial Logistic Regression', 'Regression', and 'Correlation', have also been suitably employed. Tables and statistical results have been derived through SPSS version 26. In order to delve about the Credit Cooperative Societies time period of two years 2022-2024 was studied.

Limitations of the study

Every study has some or the other limitations which are common for all studies based on social survey. The present study also suffers from certain limitations. The study is confined only to the Non-agricultural Credit Cooperative Society of Amravati District for the reason of manageability. The study is limited for the period of 2 years.

6. Data Analysis

Table 1. Profile of Respondents (Beneficiaries)

Particulars	Category	Frequency	Percentage
AGE	20-30 years	29	17.79%
	30-40 years	76	46.62%
	40-50 years	37	22.69%
	Above 50 years	21	12.88%
GENDER	Male	106	65.03%
	Female	57	34.96%
MARITAL STATUS	Married	136	83.43%
	Unmarried	19	11.65%
	Widow	8	4.90%
YEARS OF ASSOCIATED	Below 5 years	18	11.04%
	5-10 years	27	16.56%
	10-15 years	53	32.51%
	15-20 years	33	20.24%
	20-25 years	25	15.33%
	More than 25 years	7	4.29%

Source: Primary data

Table 1 indicates that the majority of respondents belong to the age groups of 30-40 years and 40-50 years, with a higher proportion of male respondents who are married. Regarding the duration of association, respondents are evenly distributed across categories, with each category representing an average of 15%, except for those with more than 25 years of association.

Table 2. Digital Technologies and Percentage of Investment

Particulars	Category	Frequency	Percentage
DIGITAL TECHNOLOGIES IN COOPERATIVE SOCIETY	Used frequently	28	17.17%
	Used rarely	37	22.69%
	Never used	21	12.88%
	Not available	77	47.23%
PERCENTAGE OF INVESTMENT	0-20%	52	31.90%
	20-40%	29	17.79%
	40-60%	38	23.31%
	60-80%	00	0%
	80-100%	00	0%

Source: Primary data

Table 2 illustrates that a significant number of respondents indicated the absence of digital technologies within specific cooperative societies, while only a small fraction reported frequent usage of such technologies. The majority of beneficiaries, 52 in total, indicated that their investment ranged from 0-20%. This was followed by investments of 40-60% and 20-40%, which accounted for 23.31% and 17.79% respectively. A concerning observation is that no respondents reported investing between 60% to 100%. This includes beneficiaries who have never utilized digital technologies, as well as those who noted the lack of a digital technology investment system in their cooperative society.

Correlation

Bi-variate Correlation analysis is used to show whether there is any the significant relationship between the variables. In this study, it is used to find out the strength of relationship between adoption of digital technologies on increased member engagement and improved decision-making.

H0: The adoption of digital technologies has no positively correlate with increased member engagement and improved decision-making.

H1: The adoption of digital technologies has positively correlate with increased member engagement and improved decision-making.

Table 3: Correlation between adoption of digital technologies on increased member engagement and improved decision-making

Correlations				
		Adop. of Digi. Tech.	Imp. D. M. Avg.	M. E. Avg.
Adop. of Digi Tech.	Pearson Correlation	1	.822	.754
	Sig. (2-tailed)		.246	.076
	N	97	97	97
Imp. D. M. Avg.	Pearson Correlation	.782	1	.803
	Sig. (2-tailed)	.046		.028
	N	97	97	97
M. E. Avg.	Pearson Correlation	.832	.796	1
	Sig. (2-tailed)	.034	.028	
	N	97	97	97
	*. Correlation is significant at the 0.05 level (2-tailed).			

Source: Primary data

The table presented above clearly indicates a strong positive correlation between the adoption of digital technologies and both increased member engagement and enhanced decision-making. This suggests a significant relationship among these factors. Therefore, it can be concluded that the alternative hypothesis is supported, affirming that the adoption of digital technologies positively correlates with greater member engagement and improved decision-making.

Multinomial Logistics Regression

Multinomial Logistic Regression is the regression analysis to conduct when the dependent variable is nominal with more than two levels. Multinomial regression is used to explain the relationship between one nominal dependent variable and one or more independent variables.

H0: There is no significant impact of components like digital technology, operational efficiency, and percentage of investment on satisfaction of beneficiaries provided by Cooperative Societies.

H1: There is significant impact of components like digital technology, operational efficiency, and percentage of investment on satisfaction of beneficiaries provided by Cooperative Societies.

Table 4: Likelihood Ratio

Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	309.981	58.430	4	.000
Digital Technology	261.843	10.292	4	.036
Operational Efficiency	261.363	9.812	4	.044
Percentage of Investment	344.682	93.131	4	.000

Source: Primary data

Given that the p-value is below 0.05, this indicates that there is a statistically significant relationship

between the predictors and the outcome variable in the final model. In statistical analysis, a p-value less than 0.05 typically suggests that the likelihood of observing the data, or something more extreme, under the null hypothesis is very low. Therefore, we can reject the null hypothesis, which posits that there is no effect or relationship. As a result, these predictors are considered significant contributors to the model, meaning they have a meaningful impact on the outcome being studied. This significance implies that the inclusion of these predictors enhances the model's ability to explain variability in the dependent variable, making them essential for understanding the underlying dynamics of the data. Consequently, researchers and analysts can place greater confidence in the findings associated with these predictors when interpreting the results of the model.

Table 5: Parameter Estimates

Parameter Estimates									
Working[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
1	Intercept	-130.375	2144.344	.004	1	.952			
	Digital Technology	14.003	.000	.	1	.	1205955.627	1205955.627	1205955.627
	Work Experience	12.871	.000	.	1	.	388916.884	388916.884	388916.884
	Percentage Investment	-2.511	2144.343	.000	1	.999	.081	.000	.[b]
2	Intercept	7.249	1.704	18.090	1	.000			
	Digital Technology	-.585	.574	1.037	1	.308	.557	.181	1.717
	Operational Efficiency	-.200	.293	.464	1	.496	.819	.461	1.455
	Percentage of Investment	-1.904	.345	30.388	1	.000	.149	.076	.293
3	Intercept	8.924	1.581	31.840	1	.000			
	Digital Technology	-.972	.543	3.203	1	.074	.378	.130	1.097
	Operational Efficiency	-.404	.290	1.941	1	.164	.668	.379	1.178
	Percentage of Investment	-1.590	.295	28.982	1	.000	.204	.114	.364
a. The reference category is: 4.00 that is Excellent									

Source: Primary data

Aside from two interactions, other factors play a crucial role in shaping predictions regarding opinions on the functioning of society.

Table 6: Model Fitting Information

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	384.019			
Final	251.551	132.469	12	.000

Source: Primary data

The data presented in the Model Fitting Information table indicates a significant value of less than .05. Therefore, we accept the alternative hypothesis, concluding that there is a notable effect of the independent variables—such as digital technology, operational efficiency, and investment percentage—on the satisfaction levels of beneficiaries served by Cooperative Societies.

Regression Analysis

H0: There is no significant relationship between digitalization, sustainable development, and community resilience.

H1: There is a significant relationship between digitalization, sustainable development, and community resilience.

Table 7: Relationship between digitalization, sustainable development, and community resilience.

"Model"	"Unstandardized" "Coefficients"		"Standardized" "Coefficiencts"	"t"	"Sig."
	"B"	"Std. Error"	"Beta"		
"(Constant)"	.553	.380		1.458	.046
Sus. Dev.	.283	.058	.459	4.876	.000
Comm. Resi.	.163	.053	.563	3.100	.002

Source: Primary data

The calculated value of 0.046 is less than the standard verge of 0.05, which is commonly used in statistical analysis to determine the significance of outcome. This finding suggests that there is a

statistically significant relationship among the variables of digitalization, sustainable development, and community resilience. In other terms, the facts indicates that as digitalization increases, it is likely to have a meaningful impact on sustainable development efforts and the resilience of communities.

This association may imply that digital tools and technologies can enhance the ability of communities to adapt to challenges, promote sustainable practices, and improve overall quality of existence. The connotation of this relationship underscores the importance of integrating digital solutions into strategies aimed at fostering sustainable development and strengthening community resilience. Consequently, policymakers, researchers, and practitioners should consider the role of digitalization as a critical aspect in their efforts to build more sustainable and resilient communities.

7. Conclusion

The study findings have provided precious insights into the potential of digitalization for cooperatives, highlighting its function in driving sustainable development and community resilience. The study has obtained practical recommendations for cooperatives seeking to implement digitalization strategies, emphasizing the significance of a holistic approach that considers the unique wants and context of each cooperative. The conclusions are emphasizing the significance of integrating values of sustainability, member empowerment, and community engagement into the digitalization process.

Digital technologies streamline operations, lessen costs, and perk up decision-making, leading to increased efficiency. Digital platforms facilitate communication, collaboration, and knowledge allocating, fostering member engagement and contribution.

The research also identifies key areas for further investigation, counting the development of best practices for ethical and responsible data management in cooperatives, the assessment of digital literacy and skills development needs within cooperative organizations, and the exploration of innovative financing mechanisms for supporting digitalization initiatives.

8. Suggestions

1. Technology Readiness:
    - Assess current technology infrastructure and identify gaps.
    - Invest in scalable and compatible technologies.

2. Member Participation:
    - Engage members in the digitalization process through training and feedback mechanisms.
    - Incorporate member needs and preferences into technology adoption strategies.

3. External Support:
    - Build partnerships with technology providers and government agencies.
    - Access funding and resources to support digital initiatives.

4. Incremental Implementation:
    - Develop a phased plan for digital transformation.
    - Monitor progress and make adjustments based on feedback and performance metrics.

9. Model Based on Results

4- WAY DEVELOPMENT
CONQUEROR MODEL (DC MODEL)
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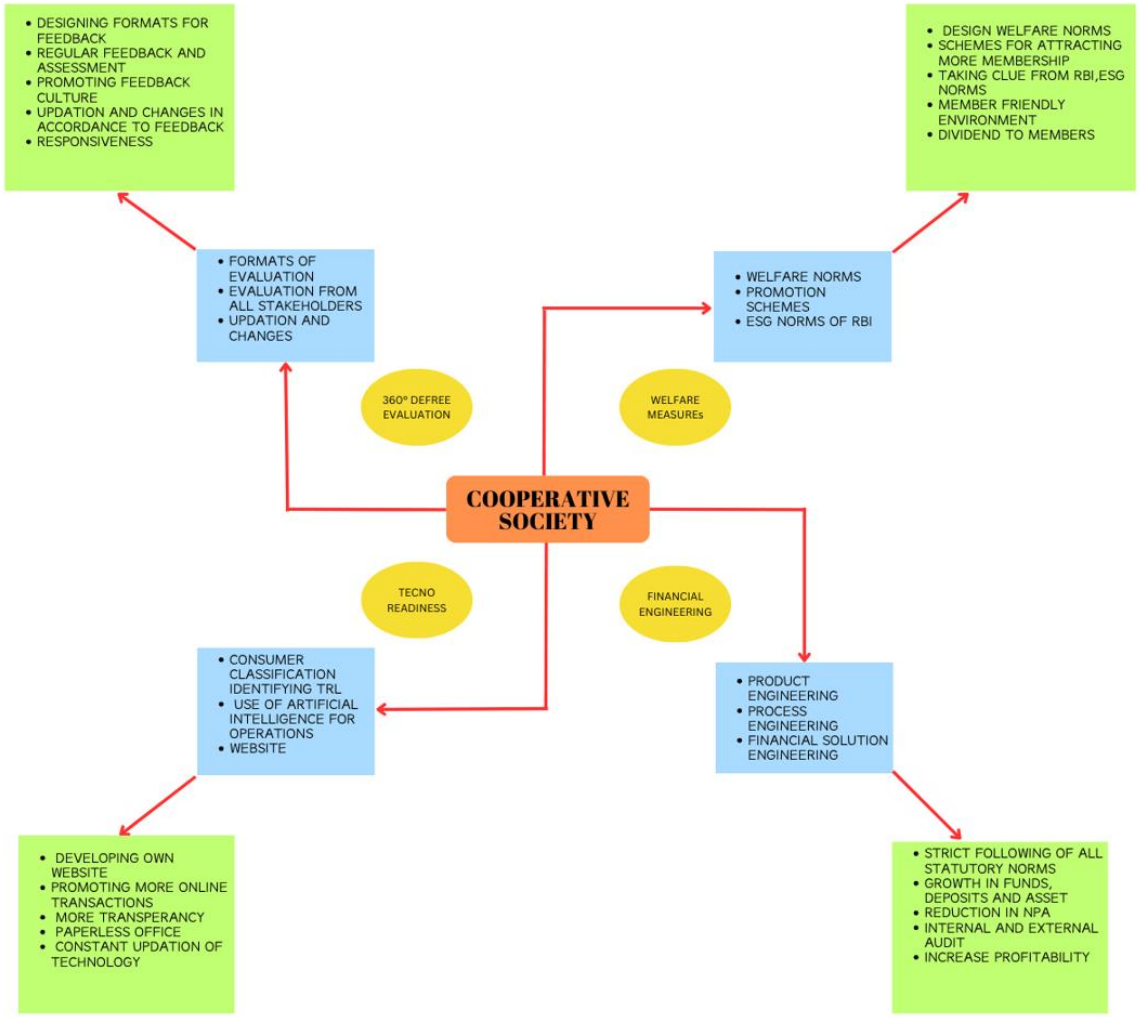

The researcher has created a model for Cooperative societies called the 4-Way DC Model, which stands for 4-Way Development Conqueror Model, based on the conclusion of the research. All rights are reserved with the Researcher. This model is designed in the shape of a 'Swastik,' an emblem that represents the affirmation of positive life principles. With its four arms extending in different directions, the Swastik model provides four perspectives for the sustainable development of Cooperative societies, reinforcing the importance of positive ethics in life.

The researcher aims to emphasize that in order to fully develop a cooperative society, it is crucial to prioritize welfare measures. These measures should focus on the well-being of both employees and beneficiaries of the society, such as motivation, a hygienic environment, work culture, and congenial relationships. These aspects are commonly referred to as welfare norms. Additionally, the society

should introduce and promote promotion schemes that offer benefits like mortality, insurance, retirement plans, deposits, loans, and more. This will help attract beneficiaries towards the cooperative society. To ensure sustainable and ethical practices, the cooperative society should adopt the Environmental, Social, and Governance framework. This framework enables the assessment of the organization's business practices and performance in terms of sustainability and ethical issues. It also provides a means to measure business risks and opportunities in these areas. Implementing this framework is essential for the development of the cooperative society.

The second component of the model is Financial Engineering, which involves utilizing mathematical techniques to address financial issues. This approach is useful for testing and introducing new investment tools and analysis methods. It can also aid in Risk management and analytics, Behavioral finance, Quantitative portfolio management, Technology and algorithmic finance, Pricing of options and additional financial derivatives, Generation of structured financial products and personalized financial vehicles, Credit management and Credit Risk, and Investment analysis. As such, cooperative societies must closely monitor their financial mechanisms. They should increase the amount of loans and advances, accept deposits, and introduce various deposit schemes to mobilize more deposits from members and beneficiaries to increase working capital. Paid-up capital should also be increased, funds should be invested, operational expenses should be reduced, and sufficient funds should be made available for loans to meet the needs of beneficiaries.

In the third phase, known as Techno Readiness, cooperative societies will need to categorize their customers and shift their operational methods from manual to technological. They must assess the level of technological awareness and utilization among their customers by classifying them as Innovators, Early Adopters, Early Majority, Late Majority, or Laggards. Not all customers may be familiar with upcoming modern techniques such as ATM and Net Banking, which may cause discomfort when handling transactions. It is crucial for societies to play a significant role in educating and assisting their customers in this area. Additionally, some employees in these societies may lack the necessary knowledge or skills to handle sophisticated technology. Therefore, the management of cooperative credit societies should take the necessary steps to provide adequate training to their employees. To promote online transactions and enhance transparency, cooperative credit societies should develop their own websites and offer services such as ATM, RTGS, NEFT, AT PAR cheque books, and Net banking. Furthermore, it is important for these societies to maintain proper accounting records and prepare financial statements in accordance with accounting standards and norms, which will provide a clear financial position of the society.

Feedback plays a crucial role in maintaining employee engagement and motivation in the workplace. The increasing popularity of 360-degree feedback, also known as multi-rater feedback, is evident. In the fourth part of this feedback approach, it offers a comprehensive perspective on employee performance from various individuals. Peers, managers, and direct reports provide anonymous feedback on employees. When implemented effectively, 360-degree feedback brings numerous advantages, such as enhancing accountability and collaboration within teams and minimizing biases. Similarly, a cooperative society must assess its overall performance. To achieve this, they need to gather feedback from their members and stakeholders to evaluate their performance. Any identified deficiencies should be addressed promptly through necessary changes or process updates.

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Technological Advancement and Challenges in Cooperative Banking: A Study on the Impact of CBS Implementation in Rural India

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Abstract

Cooperative banks play an important role in economic development. The Cooperative sector forms the base of rural banking business. They understand the requirements and provide help and guidance to their customers and building strong relationships with customers in rural areas. In the beginning, consumers in rural areas were reluctant to accept the new, cutting-edge technology known as the CBS (Core Banking System). For them, it took some time. The beginning of CBS (Core Banking Solutions) is a new development in the realm of cooperative banking.

The TCS developed the Core Banking System (CBS), which is in use at more than 100 cooperative banking locations in India as of 2024, Particularly in rural areas, this method enhances financial inclusion and streamlines operations. To further encourage adoption throughout the industry, the Reserve Bank of India has mandated full implementation of CBS as a requirement for identifying urban cooperative banks (UCBs) as financially sound (Rustagi G, 2014). The development of advanced technological innovations in DCCBs offers Remedies for sustainable growth and unique transformations in the development of the Indian economy. The objective of this study is to identify challenges faced by Cooperative banks after adopting new technology (CBS) from the perspectives of customers, employees, and management. It also aims to explore methods to increase awareness about new technology and assess the risks associated with online transactions for DCCB customers. Upon analysis, it is observed that cooperative banks face several challenges post- digitalization. These include a lack of knowledge and difficulty in understanding technology due to age, gender, education level, ethnic background, and area of residence. Additional challenges encompass the need coextensive training, fear factors, customer education and awareness, attitudes towards changes, ease of use, and a lack of confidence in internet security. Banks also struggle with inadequate knowledge, perceived high costs, cyber risk and fraud management, security and maintenance issues, and the necessity for a strong technical team.

This research paper's methodology uses a variety of techniques to collect thorough data. Customer feedback using thorough questionnaires will be used to obtain samples. Additionally, information will be gathered from relevant websites to acquire insights into current trends and practices. Self-experiences.

District Central Cooperative Bank (DCCB) will also be incorporated into the research to offer useful perspectives and real-world insights. This multifaceted strategy guarantees a thorough and comprehensive examination of the difficulties cooperative banks are facing in the wake of digitization.

The study on the sustainability of DCCBs after adopting new technology shows increased efficiency and effectiveness in operations. Additionally, the study finds that, new technologies such as ATMs, online transactions save time and money and providing significant assistance to customers. The study report showed that there were results that are both positive and negative. Improving client satisfaction, expanding financial inclusion, and better operational efficiency are a few positive effects. On the other hand, difficulties were noted in areas including resistance to change, insufficient

training, obstacles to the adoption of new technology, and cyber security issues. Additionally, the paper recommends suggestions for resolving these issues and maximizing the advantages of implementing CBS in rural cooperative banks.

Keywords: Digitalization, Internet Banking, Online Banking, Cyber Risk, CBS (Core Banking System), Technology

1. Introduction

'सहकार से समृद्धि slogan for cooperatives and cooperative play's major role in development of this sector. District Cooperative Banks (DCBs) are a vital part of India's cooperative banking structure, serving as an important link between the grassroots Primary Agricultural Credit Societies (PACS) and the apex State Cooperative Banks (SCBs). Established to cater to the financial needs of rural and semi-urban areas, DCBs play a crucial role in promoting agricultural development and supporting small-scale industries.

Key Features:

1. Structure: DCBs operate at the district level, pooling resources from various PACS. They provide financial services to their member societies and individuals in the district.

2. Objectives: The primary aim is to provide affordable credit and promote economic development in rural areas. DCBs focus on agricultural loans, small business financing, and other community-oriented financial services.

3. Membership: Membership is typically composed of PACS, individual farmers, and other local stakeholders. Members have a say in the governance of the bank, promoting democratic participation.

4. Regulation: DCBs are regulated by the Reserve Bank of India (RBI) and are also subject to state government oversight, ensuring adherence to banking norms and promoting stability.

5. Social Impact: Beyond financial services, DCBs contribute to rural development by fostering community initiatives, promoting self-help groups, and empowering marginalized communities.

District Central Cooperative Banks (DCBs) operate at the district level, pooling resources from Primary Agricultural Credit Societies (PACS) to provide financial services to both member societies and individuals. Their primary objective is to offer affordable credit, particularly through agricultural loans and small business financing, to promote rural economic development. Membership typically includes PACS, farmers, and local stakeholders, ensuring democratic participation in governance. Regulated by the Reserve Bank of India (RBI) and subject to state government oversight, DCBs adhere to banking norms while promoting stability. Additionally, they play a key role in rural development by supporting community initiatives, self-help groups, and empowering marginalized communities.

2. History of the DCB's

In India, the co-operative movement began with the introduction of the Indian Co-operative Act of 1904. Before this, farmers were heavily burdened by loans and indebted to moneylenders, who often

exploited them. The 1904 Act aimed to address this by enabling the establishment of credit co-operative societies. These societies were intended to attract deposits from both members and non-members. However, this expectation was not fully realized, as credit co-operative societies struggled to increase capital and adequately supply loans to farmers. Recognizing the shortcomings of the 1904 Act, a more comprehensive second Co-operative Act was passed in 1912. This new legislation allowed for the formation of co-operative societies across all sectors. It also led to the creation of District Central Co- operative Banks, which were a direct result of the provisions in the 1912 Act. In 1914, the government appointed a committee, chaired by Sir E. D. Maclagan, to review the progress of the co-operative movement in India. The Maclagan Committee submitted a report that offered valuable recommendations for improving the movement. One of the key suggestions was the establishment of District Central Co- operative Banks, which would serve as a vital link between State Co-operative Banks and Primary Credit Co-operative Societies at the village level. The operational area of these banks was limited to the district, and they became members of the State Co-operative Bank. The first District Central Co-operative Bank in Maharashtra was established in Akola, marking a significant development in the co-operative banking structure.

3. CBS in Cooperative Bank

The centralized software system that enables cooperative banks to oversee all of their daily activities and services from a single platform is known as the Core Banking Solution (CBS) in cooperative banking. In addition to facilitating real- time data access, CBS simplifies a number of banking operations, including loans, deposits, withdrawals, and client support across many locations. Core Banking Solutions (CBS) in District Cooperative Banks (DCCBs) have transformed how these institutions operate, significantly enhancing their efficiency, customer service, and overall reach.

Here's an Overview of CBS in DCCBs

1. Centralized Banking: CBS enables DCCBs to centralize their operations, allowing customers to access banking services from any branch, regardless of where their account was opened. This real-time processing streamlines transactions and improves accessibility.

2. Customer Convenience:
   With CBS, customers can perform various transactions such as fund transfers, account inquiries, and loan applications online. This accessibility significantly enhances customer satisfaction and engagement.

3. Operational Efficiency:
   Automation of routine banking processes reduces manual errors, speeds up transaction times, and allows staff to focus more on customer service rather than administrative tasks.

4. Comprehensive Data Management:
   CBS allows for better data management, enabling DCCBs to generate accurate reports and analytics for decision-making, compliance, and performance tracking.

5. Integrated Financial Products:
   DCCBs can offer a wider array of financial products, including loans, deposits, and investment services, all from a single platform, enhancing customer experience and cross-selling opportunities.

6. Regulatory Compliance:
   CBS helps maintain compliance with regulatory standards by ensuring accurate and transparent

record-keeping, which is essential for audits and governance.

7. Security Enhancements:
   Modern CBS solutions incorporate robust security measures to protect customer data and transactions from fraud and cyber threats, addressing a key concern in digital banking.

Advantages of Implementing CBS in District Cooperative Banks (DCCBs):
The implementation of Core Banking Solutions (CBS) in District Cooperative Banks (DCCBs) is essential for modernizing their operations and enhancing service delivery, particularly for rural customers. CBS increases accessibility to banking services, promotes financial inclusion, and improves customer engagement by offering better services and streamlining processes, resulting in long-term cost efficiency. However, challenges such as the need for robust IT infrastructure, reliable internet connectivity, staff training, and managing resistance to change must be addressed. Additionally, investments in cybersecurity are crucial to protect sensitive data. By overcoming these hurdles, DCCBs can enhance their efficiency, transparency, and contribution to rural economic development and broader financial inclusion.

Challenges in CBS
The computerization of District Cooperative Banks (DCCBs) in India brings several benefits, but it also presents a range of challenges that need to be addressed for successful implementation. Here are some key challenges:

Implementing Core Banking Solutions (CBS) in District Cooperative Banks (DCCBs) faces several challenges. The high cost of implementation, including initial investments in hardware, software, and network infrastructure, along with ongoing maintenance expenses, can strain financial resources. Training and skill development are critical, as staff may resist transitioning to computerized systems, requiring time-consuming and costly training programs. Technological infrastructure issues, such as inadequate internet connectivity in rural areas and outdated hardware, pose further difficulties. Data security and privacy concerns arise due to the increased risk of cyber threats, making compliance with regulations essential. Additionally, integrating CBS with existing legacy systems and migrating data can be complex and error-prone. Customer adaptation is another challenge, as many rural customers may lack digital literacy or trust in computerized services. Finally, DCCBs must navigate evolving regulations and ensure compliance with auditing standards, adding to the complexity of implementing CBS effectively.

The challenges of implementing CBS in District Cooperative Banks:

While the compute rization of DCCBs holds great potential for enhancing efficiency and customer service, overcoming these challenges requires a strategic approach. This includes investing in training, improving infrastructure, ensuring robust cyber security measures, and actively engaging with customers to facilitate the transition to digital banking.

4. Research Methodology

The method used in this investigation takes an integrated approach to ensure a thorough comprehension of the topic. The majority of the data has come from secondary sources, including reports, official documents, and pertinent websites. In order to learn more about the experiences and satisfaction levels of the customers', standardized questionnaires were also used to collect client reviews. The analysis has also benefited from the researcher's own observations and experiences,By including both qualitative and quantitative data to support the study's conclusions, these combined methodologies provide a well-rounded viewpoint.

However, a major issue faced by DCCB customers is illiteracy, which poses challenges when filling withdrawal forms at bank branches.

5. Biometric Payment Solutions in Cooperative Banks

In the cooperative banking sector, a significant portion of customers are over 50 and often illiterate, making traditional transaction methods challenging. When they need to withdraw money, they may

struggle to fill out forms, and relying on assistance raises the risk of fraud.

Proposed Solution: Aadhar-Enabled Biometric Payments
Implementing Aadhar-enabled Payment Systems (AePS) allows customers to authenticate transactions using their biometric data, specifically thumb impressions. This innovative system enhances security and simplifies the transaction process, particularly for individuals who may struggle with literacy or complex forms. The benefits of this approach are significant: it offers ease of use, enabling customers to perform transactions without the need to fill out forms, relying solely on their thumbprints. Additionally, biometric authentication greatly reduces the chances of fraud, as it is based on unique physical characteristics that are difficult to replicate. This system also improves accessibility, catering to illiterate customers and making banking services more inclusive. Moreover, it facilitates faster transactions by minimizing the time spent on paperwork, ultimately enhancing customer satisfaction. To implement this solution, several steps are necessary, including infrastructure setup with biometric scanners integrated into existing banking software, comprehensive training for bank staff to assist customers effectively, and public awareness campaigns to educate users about the system's ease of use and security features. A pilot program in select branches will allow for feedback collection and necessary adjustments before a wider rollout. However, challenges such as technology adoption, where some customers may be hesitant to embrace new technology, data privacy concerns requiring robust protective measures for biometric information, and the need for high system reliability to avoid service disruptions must be carefully considered and addressed.

Enhancing Transaction Efficiency and Security in Cooperative Banks Through Aadhar-Enabled Biometric Payment Systems:

Implementing Aadhar-enabled biometric payment systems in cooperative banks is an effective solution to address the transaction challenges faced by older, illiterate customers. This approach not only simplifies the banking experience but also enhances security and reduces fraud risks, ultimately fostering greater financial inclusion and customer trust within the cooperative sector.

Enhancing Efficiency in DCCB Transaction Workflows:
In District Cooperative Banks (DCCBs), the traditional workflow for processing withdrawal forms—moving time consuming process, lThis inefficiency is particularly problematic given the high footfall in these banks.

Revolutionizing Customer Service with a Single Window Counter System:
Providing outstanding customer service is essential in the immediate environment of District Cooperative Banks (DCCBs), especially considering the growing volume of business these institutions undertake. Long wait times and dissatisfied customers are two consequences of traditional transaction processes, which frequently call for several steps and interactions. Installing a Single Window Counter System offers a revolutionary way to solve these issues. By combining all transaction processes into one convenient place, this cutting-edge method enables clients to swiftly and effectively meet their banking demands. The Single Window Counter System intends to transform how DCCBs serve their audience, thereby encouraging more happiness and loyalty among consumers, by optimizing operations, empowering staff, and improving the overall customer experience.

Implementing a Single Window Counter allows all transaction processes to be handled at one location, enabling quicker and more efficient service for customers.

6. Key Benefits

Faster Transactions: By consolidating multiple steps into a single interaction, customers can complete their transactions in one go, significantly reducing wait times.

Enhanced Customer Experience: Streamlined processes lead to shorter queues and a more pleasant banking experience, increasing overall satisfaction.

Empowered Staff: Bank staff at the Single Window Counter can handle all aspects of the transaction, including authentication and disbursement, improving operational efficiency. Flexibility and Responsiveness: Staff can quickly address customer needs and adapt to varying transaction volumes without the delays inherent in multi-step processes.

7. Implementation Strategy

Counter Setup: Establish a dedicated Single Window Counter equipped with the necessary technology for processing transactions, including biometric devices for authentication.

Staff Training: Train staff to manage all transaction types, ensuring they understand compliance protocols and customer service best practices.

Customer Awareness: Communicate the benefits and procedures of the new system to customers, making them comfortable with the changes.

Adopting a Single Window Counter system in DCCBs can dramatically enhance the efficiency of transaction processing, reduce wait times, and improve customer satisfaction. By empowering staff to manage the entire process at a single location, cooperative banks can create a more streamlined, responsive banking environment that better serves the needs of their customers.

8. Conclusion

The success of Aadhaar-enabled payments in District Cooperative Banks serves as a model for cooperative banking and financial inclusion initiatives globally, showcasing India's leadership in innovative and inclusive financial technologies.its cost effective refused leakage increased efficiency and enhanced transparency.for senior citizen and illiterate persons enjoy hassle free and secure transaction and also encouraged independency ,And single window counter in a Disttrict Cooperative Bank offers numerous benefits, making banking more efficient, convenient, and accessible for customers, while improving operational efficiency and financial inclusion.

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From Looms to Likes: Unpacking the Digital Tapestry and Transformation of Chendamangalam Handloom Weaving

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Abstract

The handloom sector in India is a significant generator of employment and has national and international markets, yet weavers remain marginalized and impoverished. This study focuses on the Chendamangalam handloom cluster in Kerala, which has a rich history and distinct weaving tradition. Despite facing numerous challenges, including natural disasters and the COVID-19 pandemic, the sector has shown resilience through collective community efforts and digital adoption. This research explores the role, challenges, and opportunities of digital adoption among weaver cooperatives in the handloom sector. It analyzes systemic barriers to digital adoption and suggests policy measures to promote digital adoption and sustainability. The study uses a mixed-methods approach, combining systematic literature review, surveys, in-depth interviews, and multi-criteria decision-making analysis. The findings highlight the importance of digital adoption in enhancing the livelihoods of weavers, promoting sustainable practices, and preserving cultural heritage. The study contributes to the existing literature on digitalization and sustainability in the handloom sector and provides insights for policymakers and practitioners.

Keywords: Handloom sector, e-Commerce, Digitization, Digital marketing, Labour Cooperatives, Crisis management, Resilience

1. Introduction

The handloom sector in India is the second-largest source of employment after agriculture (Mamidipudi, 2019). Despite hand-woven fabrics being in demand both nationally and internationally, the weavers themselves remain marginalized and impoverished. This disparity is driven in part by the dominance of the power loom industry and the gradual decline of centralized production and distribution models.

The handloom sector in Kerala provides direct and indirect employment to over 1.75 lakh of people. The state has five main centers for weaving the traditional handlooms- Balaramapuram, Chendamangalam, Kuthampully, Kannur and Kasaragod. Chendamangalam in Ernakulam district is chosen for this study because the town has been bestowed with the title, 'The Handloom Village' after it's finest and best quality of handlooms in the state of Kerala.

Chendamangalam is a small town and a panchayat in Paravur Taluk, Ernakulam district in the state of Kerala. The distinctness of Chendamangalam weaving lies in its quality. It is often believed that the cotton muslin dhotis woven by the Chendamangalam weavers are so fine that it could still pass through a ring. Also, although all the other handloom apparels manufacturers of the district have moved to machines, Chendamanglam weavers not only still follows the traditional hand-woven mechanism but also make use of organic and natural dyes for colouring.

2. Need for the study

The handloom sector represents a wealth of knowledge, skills, and intricate social relations, making it a vital area for sustainable socio-technological innovations, such as digitalization (Mamidipudi et al., 2012). Digital tools, including e-commerce and digital marketing, have the potential to overcome physical barriers between suppliers and consumers, expand market reach, and streamline value chains, contributing significantly to the sustainability of the handloom sector (Loebbecke & Picot, 2015; Rachinger et al., 2019).

The co-operative model is positioned by advocates as an alternative business form capable of advancing economic democracy and social justice in the digital age. (Peuter, Verteuil, and Machaka (2022)). The evolving industrialization and globalization have revolutionized the market and labour scenario and calls for the rise of collective community efforts rather than institutionalized efforts. This emphasizes the role that labour cooperatives can play in boosting the sector.

In times of uncertainty, the Public-Private Partnership (PPP) adopted by the handloom sector has enabled the weavers to successfully tide over the major setbacks. Chekutty and Bhoomika as mascots of resilience and the innovative ideas fostered during those times which pose as saviours to contextual mishaps, also could be extended as measures for effective rehabilitation and disaster management. Although many studies have focused on potential barriers to digital marketing for handloom sector, the contextual focus, especially during crises, has remained under-explored. This further substantiates the existing literature gap, which the current study tries to cover.

3. History of Chendamangalam Handloom

Chendamangalam's weaving tradition traces back to its royal patronage, producing fabrics for the Paliam family, the rulers of the Cochin Province. By the early 20th century, the sector faced a decline due to diminishing patronage. However, the formation of the Chendamangalam Handloom Co-operative Society in 1954 and the subsequent Kerala Co-operative Societies Act of 1969 revitalized the sector, providing employment to thousands. The Act ensured that the quality of textiles was maintained, preserving the heritage of hand-woven fabrics. In 2011, the Government of India officially recognized Chendamangalam's puliyilakara border by GI (Geographical Indicator).

The weaving cluster suffered a major setback in 2018 after the devastating floods in Kerala. It destroyed the weavers' homes, their factory, damaging fabric worth lakhs of rupees and bringing their livelihoods to a virtual halt. The weavers were able to climb up the huge financial loss with the help of various NGOs and volunteers. The 2020 corona-virus induced lock-down again affected this cluster. 60% of the handloom stock is sold during Onam while remaining 40% during Vishu. But, during the lockdown, not a single piece of festive wear was sold and due to this, they are facing the challenge of procuring raw materials. However, during the lockdown in March 2021, NABARD and Kerala Bank had sponsored a three-day exhibition and 15 lakhs worth of handloom stock was sold. In April 7th, 2022, the second edition of the same exhibition, Chela was conducted to sell the stock which again met a resounding success. During this exhibition, the NABARD supported e-commerce platform (coop loom) for handloom cooperatives to sell their stocks directly to customers across India and internationally.

Thus, in the long history of its development, the industry has withstood several adversities such as war, famine, cultural invasion and lifestyle changes and it managed to survive largely because of a strong community preference and cultural identity associated with it. Though labelled primitive, traditional handlooms used in India are capable of adapting to varied materials (fabrics) and

accommodate a wide range of weaving patterns and progressive designs (including mixed fabrics).

Despite the success of recent initiatives, the cooperatives have yet to take significant steps to further adopt digital marketing strategies. The sector continues to rely heavily on traditional referral marketing and government-backed channels, both of which limit its outreach. It remains dependent on state government rebates and subsidies, which, instead of boosting growth, have allowed private corporate entities existing within the sector to exploit the system for higher profits. Interestingly, Kerala handloom products remain in demand, as evidenced by rising sales in niche apparel houses featuring intricate traditional designs. The challenge lies not in lack of demand but in the sector's inability to compete with large power loom industries and corporate design houses. The failure to penetrate urban and international markets further contributes to the sector's slowdown.

4. Objectives of the study

The present study aims to:

a. Explore the role of digital adoption among weaver cooperatives and producer companies in the handloom sector.
b. Analyze the systemic barriers to digital adoption within these cooperatives and companies.
c. Propose policy measures to foster digital adoption and enhance sustainability in the handloom sector.

5. Research Questions

The present study aims to answer the following research questions:

a. What is the state of digital adoption among weavers and the handloom collectives in India?
b. What are the challenges faced by weavers and primary weavers' cooperatives in the handloom sector in adopting digital tools?
c. What are the policy and program level interventions required to promote digital adoption among weavers and the handloom collective enterprises?

6. Methodology

This study develops an integrated sequential approach for understanding the current state of adoption of technology in marketing and for modelling and ranking the critical barriers within the sector in scaling up the tools adopted during the crisis. The overall analysis was done in two phases. In phase 1, the factors affecting the digital marketing performance of the traditional handloom sector were identified through a systematic literature review (SLR). The process included the definition and testing of search terms based on research questions, the literature search and selection and reporting of results. The barriers so identified are validated using surveys and in-depth interviews with Chendamangalam handloom weavers, social entreprenuers, industry experts and government officials involved. Their consent to participate was verbally obtained. Further, a quantitative method is followed using a multi- criteria decision-making technique to establish the contextual relationship among these barriers. In phase II, the structured questionnaire and interview method is again used to rank the importance of the barriers found in round 1 interviews on a five-point Likert scale, ranging from unimportant to extremely important.

Empowering Coconut Farmers: A Study on the Cost Awareness and Role of Co-Operative Societies

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Abstract

An essential feature of commercialised agricultural economy is the proper ascertainment of farm cost. It helps to ensure efficiency in agricultural enterprises, develop effective pricing strategy, foster global competitiveness, expand markets, and contributes towards promoting the economic interest of all the stakeholders.

In general, farmers in India face difficulty of accurately determining the costs of their agricultural products due to lack of understanding of cost accounting principles and standards. Proper ascertainment of cost by applying cost accounting principles and Cost Accounting Standards is important for farmers' sustainability. In this study, a model is created to assess the level of awareness of coconut farmers on cost computation associated with coconut production. The study shows that around 73 per cent of the respondents have low level of awareness on cost computation.

It is important that farmers get fair return which is on par with or above the living income for their family and the farm labourers are paid wages which are at or above the minimum wages and living wages. The study shows that around 32 per cent of the respondents earn at or above the living income. Farmers also face challenges such as price fluctuation, identifying the customers, logistics issues, lack of awareness on agricultural practices and technological advancements, access to quality raw materials, and financial constraints. The farmers can overcome the above difficulties and challenges, when they become members of a co-operative society. The study shows that around 23 per cent of the respondents are the members of the Coconut Producers' Societies. It also states that most of the CPS are inactive. The study also reveals that farmers do not get any assistance from CPS regarding cost computation. It is suggested that the Government should take the responsibility to revive the functioning of inactive CPS.

The current study was undertaken in Palakkad district of Kerala. Convenience sampling method was used to collect primary data from 120 respondents by using interview schedule technique. Appropriate statistical tools are used wherever required.

Keywords: Co-operative society, Cost ascertainment, Cost awareness model, Coconut, Coconut Producers' Society, Living income.

1. Introduction

"Agriculture is the backbone of the Indian economy" said Mahatma Gandhi decades ago. This extends beyond India and is relevant globally. The World Bank group supports this in its report by highlighting agricultural development as one of the most powerful tools to end extreme poverty, boost shared prosperity, and feed a projected population of 10 billion people by 2050. (World Bank, 2024).

Agribusiness plays a significant role in India's economy as agriculture is one of the key contributors to the economy. It includes activities such as crop production, livestock farming, fishing, food processing, forestry, etc. and is an essential industry that supports millions of people in India. Agriculture and its allied sector are significant for Kerala's economy too.

In agribusiness, coconut industry's contribution is significant in more than 90 countries where coconut palm is grown. It is grown for about 12.25 million hectares and consumed by people in more than 110 countries worldwide (International Coconut Community, 2023). Coconut and related industry contribute to around Rs.307,498 million (US$ 3.88 billion) to India's GDP (Indian Trade Portal, 2024). In India, the State of Kerala has the largest area of coconut cultivation. The State is economically benefited by coconut and its products such as copra, coconut oil, coir, coconut shell, etc. Though the State has largest area under coconut cultivation, it is only the second largest producer state of coconut during 2022-23 after Karnataka.

Farmers can continue farming only when there is sustainability, which depends on fair return received from the produce. Ensuring the attainment of fair return depends on the proper ascertainment of cost. The farming community in India generally face difficulty in accurately determining the costs of their agricultural products due to lack of understanding of cost accounting principles and standards. Coconut being a perennial crop, the cost computation includes establishment cost along with the annual maintenance and harvesting cost. The cost computation would also include imputed cost, depreciation of farm assets and interest on capital, which is often neglected by farmers. It is important that farmers get fair return after considering all the cost incurred in cultivation. Thus, cost awareness among coconut farmers is essential to ensure fair return which is on par with or above the living income for their family. A model is created to assess the level of awareness of coconut farmers on cost computation associated with coconut production.

The coconut farmers face several challenges such as climate change, soil infertility, weak palms, inefficient irrigation, natural calamities, etc. Apart from these, coconut farmers also face issues of frequent price fluctuation, labour scarcity, higher labour cost, difficulty in accessing market, limited access to credit, etc. These challenges can be addressed to some extent when the farmers form a collective such as farmer producer organisations or co-operative societies.

This study aims to assess the level of awareness of coconut farmers on cost computation associated with coconut production and to know the role to be played by Co-operative society to face the challenges faced by the small holding coconut farmers.

Objectives of the study

1. To know the socio-economic profile of the coconut farmers
2. To assess the level of awareness of coconut farmers on cost computation associated with coconut production
3. To know the role to be played by Co-operative society in general and in particular on the ascertainment of the cost

2. Methodology

Both primary data and secondary data were used for the study. Non-probability convenient sampling method was used to collect the primary data. The sample size was chosen as 120. Interview schedule along with observation was used to collect the data from the respondents. The secondary data were collected from books, journals, government reports and websites.

The pilot study was conducted among 30 respondents and the necessary modification was made in the interview schedule. Reliability test was conducted by using Cronbach's Alpha model and the score obtained was more than 0.7 and hence the interview schedule was considered reliable.

Area
The study was undertaken among the farmers producing coconut in Palakkad district of Kerala.
Hypothesis

There is no significant relationship between age and awareness on ascertainment of cost of production of coconut

3. Statistical tools

The following statistical tools are used for the study: Cronbach's Alpha, Minimum, Maximum, Range, Mean, Median, Correlation, One-way ANOVA.

Limitations of the study

1. Only 120 samples were chosen for the study
2. Only Palakkad district of Kerala is studied

4. Review of related literature

The farmers can continue the farming only when there is sustainability. Farming practices is one of the factors that determine the sustainability. Thus, it is important that the farmers producing coconut must be aware of the farming practices relating to coconut.

Greeshma Susan Mathew and Allan Thomas (2020) in their study tried to determine the extent of knowledge of coconut farmers regarding coconut farming. Primary data were collected from 120 coconut farmers from eight panchayats in Kozhikode district of Kerala. The result stated that, more than half of the farmers (56.67 per cent) possessed medium level of knowledge about the recommended coconut farming practices. The study suggests that, farmers have to improve their knowledge on practices of coconut farming.

Another factor that influences sustainability is fair return to the farmers. Fair return can be determined only when the cost of production is ascertained properly. While computing cost of production of coconut, cash cost and non-cash costs have to be considered. In addition, certain costs such as family labour have to be imputed. The establishment cost and the preliminary expenses should also be taken into account while computing the cost of production.

The research paper by **Sud et al. (2009)** on estimating the cost of production of coconut proposed a methodology to determine the cost of production by considering the establishment cost and the annual maintenance cost of coconut garden. A stratified multistage sample approach was utilised to collect data from three districts of the state of Kerala: Kozhikode, Ernakulam, and Thiruvananthapuram. Cost A and Cost A + imputed value of family labour cost concepts were used in the study. Cost A includes all paid out charges.
This research study helps in understanding the cost structures and the methodology to compute cost of production in coconut farming.

For successful farming, financial management is to be done properly. There are several factors that

influence the financial management practices of the farmers.

Baihaqi, Ramadhani, Bagio and Marsudi (2022) analysed the financial management behaviour of coconut farmers in Bireuen regency. The aim of the study was to consider the influence of education, financial knowledge, income, financial attitudes and financial institutions on the financial management behaviour. The results stated that, among 100 coconut farmers, the variables of education, financial knowledge, income, financial attitudes and use of financial institutions have a significant impact on the financial management behaviour of coconut farmers.

The study showed that financial literacy is essential for the effective management of the finance. Farmers face several challenges in coconut cultivation such as quality raw materials, information on agricultural practices, price fluctuation, etc.

George and Kuruvila (2023) examined the price behaviour of coconut and its related products in Kerala in the pre- and post- liberalisation periods. The monthly prices of coconut, copra and coconut oil from major markets of Kerala from January 1980 to March 2022 were gathered for the study. The findings of the study showed that, prices of coconut, coconut oil and copra increased following liberalisation. The price of coconut products remained high in the peak months of production. The instability and volatility in coconut sector were mainly due to import of edible oil, especially palm oil. The study suggested that, provision and use of timely market intelligence would help farmers in making relevant decisions, thus overcoming the consequences of fluctuations in the prices of coconut. The study states that timely market intelligence would help them to face the challenge of price fluctuation.

It is difficult for the farmers to face the challenges individually, instead if they respond collectively, they can face challenges. Thus, there is a need for the farmers to form groups or associations, which paved the way for Coconut Producer Societies (CPS).

Aparna and Asokhan (2020) analysed the impact of Coconut Producer Societies in Thiruvananthapuram district of Kerala. Primary data were collected from 130 respondents in three districts using Proportionate random sampling method. The analysis revealed that 59 per cent of the respondents had medium level on the overall perceived impact on coconut producer societies, followed by 23 per cent of the respondents who have low level and only around 18 per cent of the respondents who have high level of overall perceived impacts. The results show that, the overall impact of CPS was in medium category. The study further suggests initiatives like Coconut Producer Societies will assist in shaping the unorganised coconut sector and suitable strategies will have to be framed.
The study reveals that the functioning of coconut producer societies in Kerala has to be improved. Coconut producer societies become a member of coconut producer companies in Kerala. Coconut producer companies help the coconut producer societies in many ways.

Kalidas, Nila, Priyadharshini and Sudhesh (2023) analysed the willingness of coconut growers to join Farmer Producer Companies (FPC) in the western part of Tamil Nadu. The study aimed to analyse the perception and preference of coconut farmers in joining coconut producer companies in the study area. The result showed that, the price offered by FPC was good and fair enough compared to the market price which has been cited as the main reason behind joining FPC. Lack of awareness on benefits obtained, share capital contribution requirement and benefits not distributed evenly were the major problems for coconut growers while not joining the FPCs. The study also states that FPC plays a major role in marketing of agricultural products.

Vivek, Joseph and Jesma (2019) in their study have identified the various constraints faced by the members of coconut producer company. Primary data were collected from 60 respondents through Interview Schedule. The major problems observed by members of the company include insufficient subsidy amount, low price for produce in the market, high cost of inputs, lack of information about recommendations and multiple duties. The study also suggests that establishing marketing networks of coconut products, ensuring support from the government, providing skill development trainings and framing proper guidelines to the members regarding modern Information and Communication Technology tools will help the members to overcome the constraints faced.

The above studies show that FPCs and CPCs can play a major role in helping the farmers cultivating coconut. At the same time, FPCs and CPCs also face several challenges.

Thus, it becomes imperative that co-operative societies have to be formed for coconut producers to help them to face the challenges.

The Report of the **Agriculture Division (2022)** on "How can Kerala use the power of cooperation to raise agricultural growth?", states how cooperatives and Local Self-Government (LSG) led organisations can come together to boost the agricultural industry and related sector, and offer practical solutions in this regard. The report highlighted the potential of LSG - Co-operative alliances with agriculture and its related sector through collective power. The report has discussed about major constraints in the farming sector and how it can be mitigated through convergence. The report also highlighted that, to ensure convergence, Kerala should utilise two features of institutional strength namely decentralised governance and cooperative movement. It provided the scope of alliance and status of co-operative sector in Kerala. The report further provided key suggestions to address the issues of agriculture sector, where assistance from Government can help farmers solve their challenges and panchayats playing a lead role for planning agricultural activities to ensure the agricultural regional policies are in line with the needs of specific agroecological zones.

The study on the awareness level towards Agricultural co-operative society in Patna district of Bihar by **Kumar, Bose, Jahanara and Sarraf (2021)** was conducted in three blocks from Patna district namely Baruna, Chipra and Faziabad. Primary data were collected from 120 respondents using Interview Schedule. The results stated that, 48 per cent of the respondents were aware of the functions of the co-operative society and 45 per cent of the respondents opined that functioning of co-operative society was average in marketing of agricultural products in Patna. The study has further suggested that, regulations and laws may be framed and standardised to regulate co-operative societies.

5. Analysis and Discussion

I: Socio-economic profile of the respondents

Table 1: Gender and educational qualification of the respondents

Particulars	Categories	Number	Percentage
Gender	Male	100	83.3
	Female	20	16.7
Educational qualification	No schooling	4	3.3
	Schooling	100	83.3
	Graduate	16	13.3

Source: Primary data

Table 1 shows that majority of the respondents (83.3 per cent) are male. It also shows that majority of the respondents (83.3 per cent) have schooling.

Table 2: Descriptive statistics on age and income of the respondents

Statistics	Age	Income
Mean	61.53	2,74,053
Median	61.50	2,25,500
Range	50	7,20,000
Minimum	36	80,000
Maximum	86	8,00,000

Source: Computed data

Table 2 shows that the mean age of the respondents is around 62 and the median is also around 62, which shows that half of the respondents' age is more than 62. The minimum age of the respondents is 36 and the maximum age is 86. The table also states that the mean income of the respondents is Rs.2,74,053 and the median is Rs.2,25,500. The annual family income of the respondents varies between Rs.80,000 and Rs,8,00,000.

II: Awareness of coconut farmers on cost computation associated with coconut production

Sustainability in farming greatly depends on the current earnings. The true earnings can be known only when accounting is properly done. The study shows that none of the respondents maintain proper accounts regarding cost of coconut farming, only 20 per cent of the respondents record the expenses incurred and income received. The farmers have to be encouraged to maintain proper accounts.

Ascertainment of cost of production is the key factor in knowing the true earnings. The study shows that only 10 per cent of the respondents ascertain the cost.

As per Indian Cost Accounting Standard on Classification of Cost (CAS-1), cost of production of a product or a service consists of cost of materials consumed, direct employee costs, direct expenses, production overheads, quality control costs, packing costs, research and development costs and administrative overheads relating to production.

Costs incurred in cultivation of coconut can also be classified into cash cost and non-cash cost. Cash Costs (Paid out cost) are the costs for which farmer spends money for acquisition of material inputs like seeds, fertilizer, chemicals or labour inputs like hired labour etc. On the other hand, non-cash costs are attributable to items of cost, which do not require spending money like family labour, household made manure (own), exchange labour, depreciation, etc.

Direct material cost is the cost of material which can be attributed to a cost object in an economically feasible way (CAS 1). Direct material used in the cultivation of coconut by the respondents is farm yard manure, fertiliser and pesticides. As per Indian Cost Accounting Standards 6 (CAS-6) on Material Cost, the material cost may include imputed costs. In coconut farming, the value of own materials (farm yard manure and fertiliser) used by the respondents can be imputed. The non-cash cost can be valued on the basis of the normal market value.

Direct labour is used in the cultivation of coconut for land preparation, application of farm yard manure, fertiliser, and pesticides, weeding, pruning, irrigating and harvesting. Direct labour cost is the cost which can be directly attributed to a cost object in an economically feasible way (CAS-1). As per Indian Cost Accounting Standard 7 (CAS-7) on Employee Cost, principles of measurement

state that employee cost shall not include imputed costs. It also states that any change in the cost accounting principles and methods applied for the measurement and assignment of the Employee Cost during the period covered by the cost statement which has a material effect on the Employee Cost must be disclosed.

But, as per "Concept note on augmenting the farmers' income: Road map for CMAs", the cost estimates must take into account real factors of production and include all actual expenses in cash and kind incurred by the farmer for the production, rent paid for leased land, imputed value of family labour, interest value of owned capital assets (excluding land), rental value of owned land (net of land revenue), depreciation of farm implements and buildings and other miscellaneous expenses.

In coconut farming, the imputed cost of labour can be included in the Direct Labour Cost for better understanding and reporting.

As per the Report of the Expert Committee to examine methodological issues in fixing MSP, Government of India, the value of family labour must be imputed by considering the statutory wage rate or actual market rate whichever is higher. On this basis, the value of family labour (farmer and family members), can be imputed.

Overheads comprise costs of indirect materials, indirect employees and indirect expenses (CAS-1). In coconut farming, overheads comprise of land rent, land revenue, electricity charges, irrigation charges, depreciation on motors and others, farm machine hire charges for ploughing, repairs and maintenance of motors and others, amortisation of preliminary expenses and interest on working capital. While apportioning overheads for coconut, appropriate bases are to be used. Activity based costing is the best technique to apportion the overheads based on the activities involved in the farming.

The respondents may cultivate coconut in their own land. As per the Report of the Expert Committee to examine methodological issues in fixing MSP, Government of India, the rent of owned land is to be estimated on the basis of the prevailing rents in the village for the identical type of land or as reported by the sample farmers subject to the ceiling of the fair rents given in the land legislation of the concerned State.

Depreciation on motors and other farm machineries may be charged by following Straight Line Method of depreciation by taking the useful life of the asset. While apportioning depreciation to coconut, weightage is to be given for the cultivation area of the coconut.

Preliminary expenses in coconut farming refers to cost incurred in initial five to six years before the coconut bearing year. It includes material cost such as a) cost of saplings, b) farm yard manure and c) fertiliser and pesticides used, labour cost incurred in a) land preparation, b) pitting and planting, c) farm yard manure, fertilizer and pesticides application d) weeding and e) irrigation, overheads such as irrigation charges. The preliminary expenses are to be amortised over the useful life of the coconut trees.

The study shows that of the respondents who ascertain cost, none of them include non-cash cost. In small farm holdings, where the participation of family labour is more, the non-cash cost may constitute around 65 per cent. Thus, major portion of the cost is not included while ascertaining the cost.

Thus, it is essential that the cost is ascertained by following cost accounting principles and Indian Cost Accounting Standards. In this study, a model is created to know the awareness of the coconut producing farmers regarding the cost computation. To know the level of awareness on cost computation, a questionnaire is developed. The questionnaire contains 15 questions relating to cost computation with multiple options with one correct answer. Based on the responses, the level of awareness is identified.

Table 3: Percentage of awareness on ascertainment of cost of production of coconut

Q. No.	Question	Correct response	Farmers' awareness	
			Number	Percentage
1	Which of the following is used to compute cost of production of coconut?	(A) Cost Sheet	60	50.00
2	What is the period over which the establishment costs/ preliminary expenses are accounted for in coconut cultivation?	(D) During the economic life span of the coconut tree	20	16.67
3	Which of the following is not true with regard to preliminary expenses?	(D) Preliminary expenses are written off in the first year itself	52	43.33
4	What is the total establishment cost/preliminary expense in coconut cultivation?	(C) Cost at the time of planting + Cost during the gestation period	40	33.33
5	As per Indian Cost Accounting Standard 6 (CAS-6), principles of measurement state that	(C) Material cost shall include imputed costs	64	53.33
6	As per Indian Cost Accounting Standard 7 (CAS-7), principles of measurement state that	(A) Employee cost shall not include imputed costs	28	23.33
7	Which of the following is non-cash cost in coconut cultivation?	(C) Depreciation on farm equipment and machinery	92	76.67
8	Which is an example of imputed cost in coconut cultivation?	(C) Rental value of own land	108	90.00
9	Which of the following is not true with regard to depreciation on farm machineries while computing cost of production of coconut?	(B) Depreciation is to be charged over the gestation period of coconut trees	44	36.67
10	Overheads comprise costs of	(A) Indirect materials, indirect labour and indirect expenses	68	56.67
11	Which of the following cost is not an overhead cost while computing cost of production of	(B) Fertiliser cost	44	36.67

	coconut?			
12	Activity based costing is used to apportion	(D) Overheads	44	36.67
13	While computing the cost of production of coconut, which of the following should not be considered?	(C) Income tax paid	48	40.00
14	As per the Report of the Expert Committee to examine methodological issues in fixing Minimum Support Price, Government of India, the value of family labour	(C) Must be imputed by considering the statutory wage rate or actual market rate whichever is higher	32	26.67
15	Which of the following statements is false while computing cost of production of coconut?	(D) Cost incurred at the time of gestation period is to be written off during the gestation period	44	36.67

Source: Primary data

Table 3 shows that 90 per cent of the respondents have given the correct response of "Rental value of own land" for the question "Which is an example of imputed cost in coconut cultivation?", whereas only around 17 per cent of the respondents have given the correct response of "During the economic life span of the coconut tree" for the question "What is the period over which the establishment costs/ preliminary expenses are accounted for in coconut cultivation?" It also shows that only for 5 questions, 50 per cent or more of the respondents have given the correct response.

Each correct response corresponds to a score of 1, allowing respondents to achieve a total score ranging from 0 to 15. By converting this score into percentages, the awareness percentage of the respondents is calculated.

Table 4: Descriptive statistics on awareness on ascertainment of cost of production of coconut

Statistics	Percentage
Mean	43.78
Median	46.67
Range	66.67
Minimum	13.33
Maximum	80.00

Source: Computed data

Table 4 shows that the mean percentage of awareness on ascertainment of cost of production of coconut is 43.78 per cent. The median is 46.67 per cent, which shows that for half of the respondents, the percentage of awareness is around 47 per cent. The minimum percentage of awareness is 13.33 and the maximum is 80.

Relationship between age and awareness on ascertainment of cost of production of coconut: To know the relationship between age and awareness on ascertainment of cost of production of coconut, Pearson Correlation tool was used. The analysis shows r (120) = 0.328, p = 0.000. Since the p value is less than 0.05, there is a significant weak positive relationship between age and awareness on ascertainment of cost of production of coconut, that is, when the age increases the level of awareness also increases marginally.

Relationship between income and awareness on ascertainment of cost of production of coconut:

To know the relationship between income and awareness on ascertainment of cost of production of coconut, Pearson Correlation tool was used. The analysis shows r (120) = -0.259, p = 0.004. Since the p value is less than 0.05, there is a significant weak negative relationship between income and awareness on ascertainment of cost of production of coconut, that is, when the income increases the level of awareness decreases marginally.

Difference between educational qualification and awareness on ascertainment of cost of production of coconut:

To know the difference between educational qualification and awareness on ascertainment of cost of production of coconut, one-way ANOVA test was used. The analysis shows F = 0.327, df = 2, N = 120, p>0.05 (p = 0.722). Since the p value is not less than 0.05, there is no significant difference between educational qualification and awareness on ascertainment of cost of production of coconut.

Level of awareness: The level of awareness of the respondents is classified into high, medium and low. If the respondents are able to score above 75 per cent, they have a high level of awareness, if they score between 50 per cent and 75 per cent, they have a moderate level of awareness and if they score below 50 per cent, they have a low-level of awareness.

Table 5: Level of awareness on ascertainment of cost of production of coconut

Level of awareness	Number of respondents	Percentage
Less than 50 per cent	88	73.3
50 per cent and above and upto 75 per cent	27	22.5
More than 75 per cent	5	4.2
Total	120	100.0

Source: Primary data

Table 5 shows that only 4.2 per cent of the respondents have high level of awareness, around 23 per cent of the respondents have moderate level of awareness and around 73 per cent of the respondents have low level of awareness. Majority of the respondents have to improve their knowledge on the ascertainment of cost of production of coconut.

It is found in the study that around 57 per cent of the respondents are interested in attending training programme on cost computation and financial management.

Consideration of Living wages while computing cost of production: It is also important for a farmer

to ensure that living wage, generally above the minimum wage, is given to the workers. If living wages are not given to the workers, they may switch over to other jobs where the wages are attractive. The cost of production is to be ascertained after incorporating living wages. Global Living Wage Coalition, (2016) defines Living wage as "Remuneration received for a standard work week by a worker in a particular place sufficient to afford a decent standard of living for the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, health care, transport, clothing, and other essential needs, including provision for unexpected events."

The minimum wage for agricultural operations in Kerala is Rs.490 (8 hours work) for agricultural works of hard nature and Rs.410 (8 hours work) for agricultural works of light nature. The prevailing living wages of rural Nilgiris, Tamil Nadu estimated by Living Wage Coalition of Rs.536 per day can be taken for Palakkad district of Kerala. The male farm workers in Palakkad district of Kerala is given around Rs.900 per day which is well ahead of minimum wages and living wages and the female farm workers is given Rs.500 per day, which is ahead of minimum wages and closer to living wages. The coconut climbers are given wages of around Rs.750 per day, which is also above the minimum wage and living wage.

The farming to be sustainable must give living income to the farmers. Living income is the net annual income required for a household in a specific location to provide a reasonable quality of life for all household members. As stated earlier, food, water, shelter, healthcare, transportation, clothing, and other fundamental requirements, including accommodations for unexpected events, are all components of a good level of living. The prevailing living income of rural Nilgiris, Tamil Nadu estimated by Living Wage Coalition of Rs.22,548 per month can be taken for Palakkad district of Kerala. The study shows that around 32 per cent of the respondents earn at or above the living income.

III: Role played by Coconut Producers' society in general and in particular on the ascertainment of the cost

Challenges faced by coconut farmers: Coconut farmers face several challenges in coconut farming. Some of the important challenges are given below:

1. Low and fluctuating yield: Coconut farmers are always faced with the risk of production due to low and fluctuating yield. Major reason for this is the occurrence of pests and diseases, old and weak palms, poor irrigation facility, inefficient nutrient management, natural calamities, poor farming practices, etc.
2. Climate change: The climate and soil conditions are significant factors affecting the quality and quantity of coconut production. The rise in temperature and change in rainfall pattern adversely affects the production of coconut.
3. High labour costs: The largest expenditure in coconut production was recorded for human labour at 69.1 per cent of the total cost for the year 2021-22. The wage rates have increased significantly in all major coconut producing states, with Kerala recording the highest wages at Rs.813 during 2022-23 (Commission for Agricultural Costs and Prices, 2023). This poses a major concern for coconut farmers as the price of coconut has not made much improvement.
4. Labour scarcity: Coconut farming requires skilled labourers like coconut climbers, labourers for dehusking and deshelling etc. The shortage of skilled labour impacts timely management, harvesting and processing of coconut.
5. Market fluctuations: The coconut farmers face risk due to fluctuating market price for coconut. The irregular variation in short time span causes instability in the income of coconut farmers. Table 6 and 7 show the percentage change in price during 2023.

Table 6: Monthly percentage change in coconut price from January 2023 to June 2023

Month	January	February	March	April	May	June
Average Price (Rs. /MT)	25833.33	24333.33	23750	23500	22250	20000
Price change	-	-1500	-583.33	-250	-1250	-2250
Percentage Change	-	-5.81%	-2.40%	-1.05%	-5.32%	-10.1%

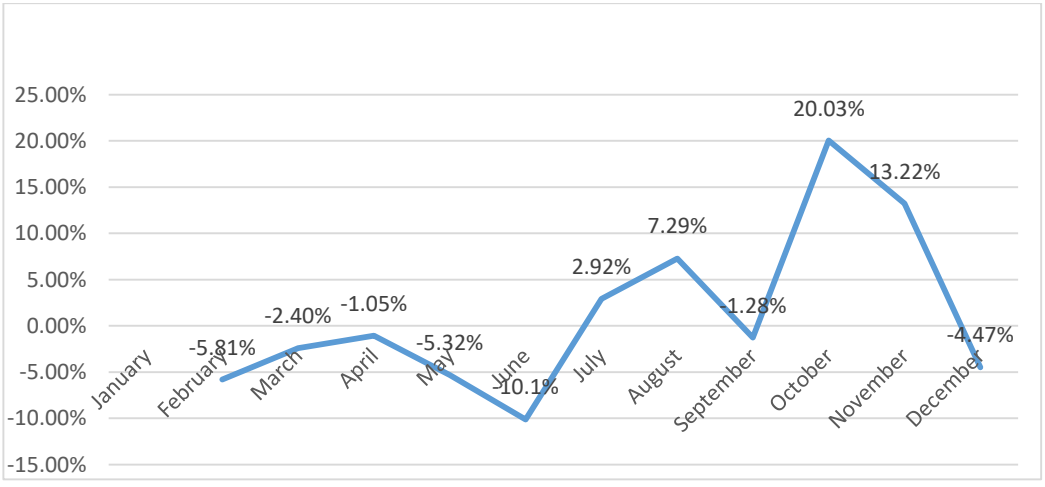
Source: Coconut Development Board, Ministry of Agriculture and Farmers Welfare, Government of India (https://coconutboard.gov.in/)

Table 7: Monthly percentage change in coconut price from July 2023 to December 2023

Month	July	August	September	October	November	December
Average Price (Rs. /MT)	20583.33	22083.33	21800	26166.67	29625	28300
Price change	583.33	1500	-283.33	4366.67	3458.33	-1325
Percentage Change	2.92%	7.29%	-1.28%	20.03%	13.22%	-4.47%

Source: Coconut Development Board, Ministry of Agriculture and Farmers Welfare, Government of India (https://coconutboard.gov.in/)

Figure 1: Monthly percentage change in coconut price for 2023



Source: Computed data

1. Value addition: According to Coconut Development Board (CDB), the value-addition in coconut is less than 15 per cent of the total coconut production but demand for coconut-based products are rising. The coconut farmers are unable to reap the benefit of this demand due to the requirement of huge investments in processing units to manufacture value added products like desiccated coconut powder, virgin coconut oil, coconut cream, etc.
2. Challenge in coconut procurement: Coconut farmers are forced to sell their produce to local traders at relatively low price due to unorganised and weak nature of coconut producers.
3. Limited access to credit and technology: A significant portion of the coconut farmers are economically weaker and marginal. They face difficulty to access credit and implement modern farming techniques. Often farmers are exploited by money lenders. This limits their ability to improve productivity and profitability.
4. Inadequate return on investment: Coconut farmers receive insufficient income from the investment they have made. The farmers usually involve their family members for farming and they also use their family resources for farming, even then they do not get adequate return on their investment.
5. Other challenges: The farmers also face difficulty to process coconut to copra as the purchase of deshelling machine and dryers is not viable to them. The involvement of middle men in the sale of coconut and its related products results in decrease of the farmer's income. Higher commission charged by these middlemen affect the return on sales made by the farmers. Higher transportation cost involved in transferring the coconut from one place to another is considered as one of the major challenges faced by coconut farmers.

It may not be possible for a small holding farmer to solve his or her issues individually which paved the way for Coconut Producers' Societies in the coconut farming. The objective of forming CPS is socio economic upliftment of the farmers through productivity improvement, cost reduction, efficient collective marketing and processing and product diversification. Those farmers who are having minimum 10 yielding coconut palms are eligible to be a member of the CPS. There are around 40-100 members in a CPS. Each CPS has 4000-5000 yielding trees under its operational area. Each society is registered under the Charitable Societies Act and also with Coconut Development Board.

As on 10th July, 2024, 9791 CPS have been registered in India as shown in table 8. Of which 7233 CPS (around 74 per cent) have been registered in Kerala.

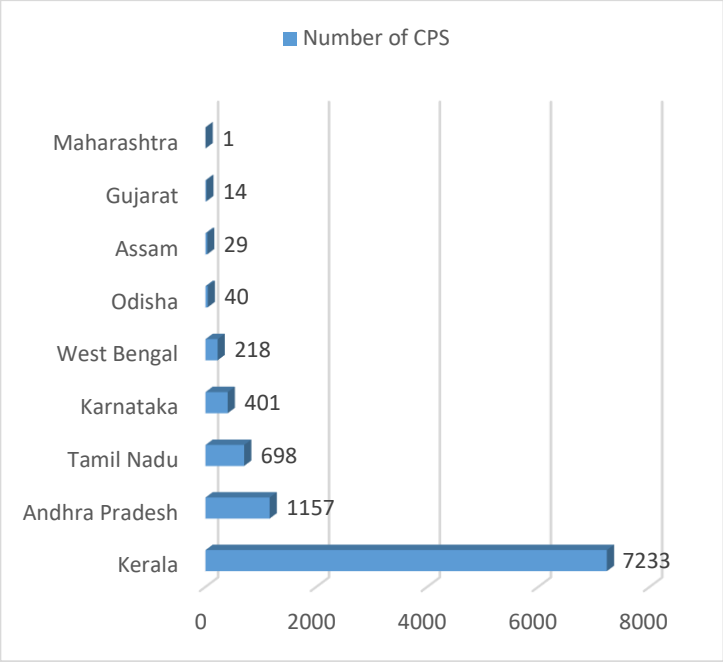
Table 8: Number of Coconut Producers' society registered in various states as on 10th July 2024

State	Number	Percentage
Kerala	7233	73.87
Andhra Pradesh	1157	11.82
Tamil Nadu	698	7.13
Karnataka	401	4.10
West Bengal	218	2.23
Odisha	40	0.41
Assam	29	0.30

Gujarat	14	0.14
Maharashtra	1	0.01
Total	9791	100.00

Source: Coconut Development Board, Ministry of Agriculture and Farmers Welfare, Government of India (https://coconutboard.gov.in/)

Figure 2: Number of Coconut Producers' society registered in various states as on 10th July 2024



Source: Coconut Development Board, Ministry of Agriculture and Farmers Welfare, Government of India (https://coconutboard.gov.in/)

In Kerala, most of the CPS have been registered between 2011-12 and 2015-16. The registration was in the increasing trend from 2010-11 to 2014-15, then it started decreasing as shown in table 9.

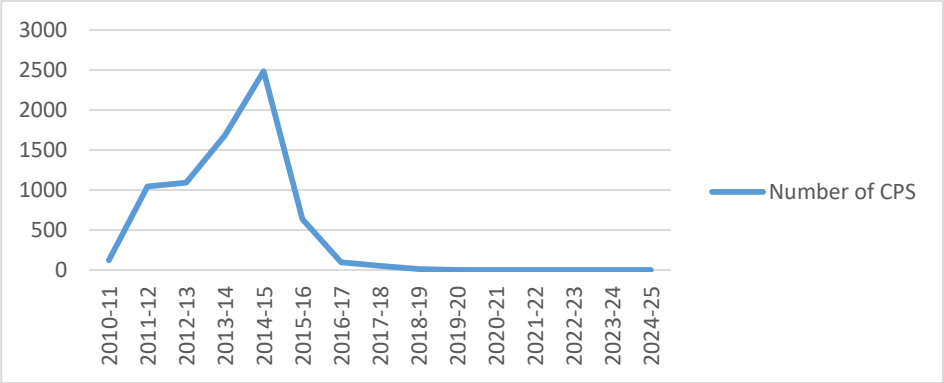
Table 9: Number of Coconut Producers' society registered in Kerala

Year	Number	Percentage
2010-11	121	1.67
2011-12	1044	14.43
2012-13	1095	15.14
2013-14	1686	23.31
2014-15	2484	34.34
2015-16	636	8.79
2016-17	96	1.33
2017-18	53	0.73

2018-19	13	0.18
2019-20	2	0.03
2020-21	0	0.00
2021-22	0	0.00
2022-23	3	0.04
2023-24	0	0.00
2024-25	0	0.00
Total	7233	100.00

Source: Coconut Development Board, Ministry of Agriculture and Farmers Welfare, Government of India (https://coconutboard.gov.in/)

Figure 3: Number of Coconut Producers' society registered in Kerala



Source: Computed data

The study shows that around 23 per cent of the respondents are the members of the CPS. It also states that most of the CPS are inactive. The study also reveals that farmers do not get any assistance from CPS regarding cost computation.

6. Benefits of Coconut Farmers Collective as a Co-operative society

1. Economies of scale: Regular and bulk purchase of farm inputs like seedlings, fertilisers, pesticides etc. by the coconut farmers collective, enables the purchase of inputs at discounted rates. This lowers the individual cost borne by the farmers and helps in reducing the cost of production of coconut.
2. Collective bargaining: Coconut farmers are often exploited by middlemen as they face difficulty in accessing larger markets or buyers, difficulty in getting better prices for their products. Farmers collectively can approach market directly and secure fair price for the produce.
3. Eliminate price fluctuation: Farmers collective can tackle price fluctuation by making deals with buyer to sell the goods in larger quantity. They can also invest in storage facilities, enabling farmers to hold onto their produce when there is low demand and sell them at an increased price during higher demand.

4. Market search can be minimised: Co-operatives can establish links with buyers and collectively market the products of coconut farmers. Individual farmers are thus relieved from market search and promotional activities which can help them focus on production without worrying about the market.
5. Processing and value addition: There is a huge demand for value added products of coconut in India and abroad but coconut farmers are unable to reap the benefit of this demand due to the requirement of higher investment in processing units to manufacture products like desiccated coconut powder, virgin coconut oil, coconut chips, coconut cream etc. Farmer's collective can help overcome this challenge by setting up infrastructure facility for processing of coconut.
6. Access to professional advice: When farmers' form a co-operative society, they can pool resources, knowledge and connections to avail expert advice on farming, marketing, costing, finance and related matters, which would otherwise be expensive when farmers deal themselves individually. Service of an agriculturist on farming practices or cost accountant for advice on cost computation can be availed by farmers collective.
7. Problems can be addressed: Problems of coconut farmers can be addressed effectively when they form a co-operative society. Various problems faced by coconut farmers such as lack of infrastructure, market access, financial support and access to expertise advice can be availed when they come together to form a co-operative society.
8. Easy access to credit: Members of a co-operative society often have access to low interest loans from the society. Governments also help co-operative societies by providing financial assistance in the form of loans at subsidized rates. Coconut farmers can benefit from this facility to improve productivity and increase profitability.
9. Democratic decision making: Co-operative societies are managed on democratic lines. The society is managed by a group known as "Board of Directors" who are elected representatives. This ensures that each member has an equal voice in the decision making of the co-operative society. The collective work of farmers also results in benefit of its members.

Though cooperative societies have a lot of advantages, they also suffer from certain limitations.

7. Limitations of cooperative societies

1. Limited capital: The members of a co-operative society majorly comprise of weaker sections of the society, who cannot make significant amount of capital contributions.
2. Poor management: Co-operative societies have limited resources to employ efficient managerial personnel. It usually depends on its own members, who normally lack in experience and skill which in turn may lead to poor management.
3. Lack of unity and coherence: The functioning of co-operative societies is often disrupted by conflicts and politicking among its members. This is caused by various reasons such as personal motive rather than social motive, lack of proper training and education, lack of commitment etc.
4. Limited size: Co-operative society also suffers due to its small size. They generally face difficulty in expansion due to small membership. It leads to limited operation and small size.
5. Inadequate motivation: Due to low or no profit distribution and nominal remuneration paid to its members, there is no motivation to work for the society. It leads to inefficient performance of the organization.

6. Delay in decision making: The operation of a co-operative society is strictly based on the rules and regulations laid down by the Government. Complex approval process may slow down decision-making, leading to delay in operations and performance of the society.
7. Government control: Co-operative societies are under state supervision and control to safeguard the interest of its members. The co-operative society must abide by the rules and regulations relating to registration, audit of accounts, etc. which may affect its freedom of operation.
8. Lack of public confidence: Co-operative societies often fail to get the confidence of the public due to poor governance, financial mismanagement, dishonest leadership, political interventions, etc.

If the above said limitations are addressed and overcome, cooperative societies can play a vital role for the sustainable development of coconut farming.

8. Suggestions

To the Government

1. Government shall take the responsibility to revive the functioning of inactive CPS. It should provide financial and non-financial assistance to such collectives to protect the coconut farmers.
2. Government and associated bodies shall encourage farmers to form collectives like Co-operative society. Farmers collectively can benefit in many ways than operating individually.
3. The State shall monitor the functioning of farmers collective without affecting its freedom of operation. This can safeguard the interest of members from fraudulent activities of the governing body.
4. Government shall take steps for procurement of de-husked coconut through farmer's collectives and other institutions like Krishi Bhawan.
5. Financial assistance shall be provided to farmer's collectives like CPS to set up processing plants to produce value added products from coconut such as desiccated coconut, virgin coconut oil, coconut cream, coconut chips etc.
6. Government should promote coconut-based industries such as coir, value added products from coconut, coconut by products, etc. It can benefit not only the coconut farmers but also people associated with it.
7. Government shall take initiative to arrange regular training programs on modern coconut farming and also on computation and management of cost in coconut cultivation. This would help the farmers to maximise their profit.

To Co-operative society

1. Co-operative societies shall conduct elections and recruitments to benefit the functioning of the society. An ideal person shall be recruited to occupy various positions in the society.
2. Co-operative society shall have clear human resource policy and standard code of conduct like other business organisations. The governing body and the members should abide by the set policy and standards.
3. The co-operative society should maintain proper data of its members. The members should be encouraged to participate in the activities of the society.
4. The co-operative society should take initiative to educate its members about their roles and

responsibilities.

5. Co-operative society should adapt latest technology like digital platforms and mobile applications to improve the performance of society, which in turn will empower the members of the society.
6. Co-operative society should conduct trainings for its members on cost ascertainment and ways to reduce cost in coconut cultivation.
7. Co-operative society should collaborate with experts like agriculturist, cost accountants, agriculture officers to obtain professional advice on coconut cultivation and cost management.
8. Co-operative society should address the issue of its members and make necessary arrangements like processing units, storage facilities, market linkage, arrangement for coconut procurements for its members.

To coconut cultivators

1. Coconut farmers shall maintain proper record of the cost incurred and income generated on a regular basis. This is necessary to analyse the cost elements and take steps to reduce it, through which profit margin can be increased.
2. Coconut farmers should take effort to understand the cost accounting principles and standards for ascertaining the cost of production. Proper ascertainment of cost by applying cost accounting principles and cost accounting standards is important for farmers' sustainability.
3. Farmers should come together to form collectives such as co-operative society and farmers producer organization to gain collective advantage such as bargaining power, market access, expertise advice. etc.
4. Coconut farmers who are members of co-operative society should take part in its activities regularly. They should attend training programmes and workshops in farming which can help them in improving their productivity.
5. Coconut farmers should try to focus on value addition and diversification. In this way they can access larger markets and reduce the price risk caused by price drop of coconut.

9. Conclusion

Agriculture is one of the important contributors to Indian economy. Farmers can continue farming only when there is sustainability. Fair return from farming is essential for sustainability. To compute fair return, cost of production is to be ascertained properly by following cost accounting principles and cost accounting standards. This study is undertaken in Palakkad district of Kerala among the coconut farmers. In this study, a model is created to assess the level of awareness of coconut farmers on cost computation associated with coconut production. This study shows that around 73 per cent of the respondents have low level of awareness on cost computation. It also shows that there is a significant weak positive relationship between age and awareness on ascertainment of cost of production of coconut. It is essential that the farmers have to improve their knowledge on cost computation. The study also shows that around 57 per cent of the respondents are interested in attending the training programme on cost computation and financial management, hence the government, Coconut Development Board, Coconut Producers' Societies, Coconut Producing Companies can organise training programme on the same.

Farmers face several challenges including price fluctuation and inability to focus on value addition. It is difficult for them to face them individually, hence forming cooperative societies will help them in several ways. The cooperative societies can engage experts to train the farmers in good farming practices and computing cost of production. There are 7233 Coconut Producers' Societies registered

in Kerala. The study found that around 23 per cent of the respondents are the members of the CPS and the respondents state that most of the CPS are inactive and they do not get any assistance regarding cost computation. The Government should take the responsibility to revive the functioning of inactive CPS.

To conclude, the study found that the coconut farmers have to improve their knowledge on cost computation and form as cooperative societies to have a sustainable livelihood for all the stakeholders.

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Using Organisation Development (OD) to Assist Cooperatives in the Implementation and Fulfilment of the Sustainable Development Goals

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Abstract

Cooperatives, as a distinct form of organisation, are crucial in addressing the Sustainable Development Goals (SDGs). This paper examines the value compatibility of the SDGs and cooperatives, integrating themes from organisation development (OD) due to OD's humanistic value-driven approach. The study addresses three questions about the status of the 2030 Agenda and its relationship with cooperatives. It explores the extent to which cooperatives convey their role in the SDGs via, for example, their mission statements, how SDGs indicators can be adapted and applied locally, and how technologies derived from OD can help cooperatives introduce the SDGs into their core activities. The findings highlight the potential of OD to assist cooperatives align with the SDGs and their achievement.

Keywords: organisation development, OD, co-ops, cooperatives, sustainable development goals, sdgs, values alignment.

1. Introduction

In 2015, during the United Nations (UN) General assembling, the 193 members signed the 2030 Agenda, making the 'most comprehensive global political effort' in the sustainability history (Eisenmenger et al., 2020, p. 1101). This initiative proposes 17 sustainable development goals (SDGs) with the aim of creating the conditions for sustainable and inclusive economy growth by 2030 (Meier, 2023; UNGA, 2024), which includes, for example: the promotion of zero hunger; gender equality; and affordable clean energy (Ghauri, Jackson, Marinova, & Mohammadi, 2022; Helfaya & Bui, 2022; UNGA, 2024; Wymer, 2023).

The success of the 2030 Agenda implementation requires the intervention of many actors, who directly impact the economic growth of society. Alongside the importance of the activities of key institutional stakeholders such as governments and international institutions, the role of public and private sector organisations is widely recognised as pivotal to the achievement of the Sustainable Development Goals (SDGs). In effect, a strong commitment and alignment with this sustainability-oriented vision from the leaders of all types of organisations is widely considered vital if value-laden issues such as democracy, social justice, and wealth distribution, as encapsulated by the SDGs, are to be addressed. This observation makes cooperatives, as a distinctive form of organisations, an important target of study, in order to understand how their underlying philosophies and values resonate with the values of the SDGs. Thus, the main aim of the paper is to examine aspects of the value compatibility of the SDGs and cooperatives. This analysis will integrate themes from the field of organisation development (OD) due to OD's humanistic value-driven approach to organisational change and development.

Consequently, this conceptual paper addresses three questions about the status of the 2030 Agenda and its relationship with cooperatives. First, to what extent do cooperatives convey their role in the

SDGs as evidenced by, for example, their mission statements? Second, how can SDGs indicators be adapted and applied locally/regionally, to ensure local contextualization of SDG goals? Third, to what extent can technologies derived from the field of OD be applied to help cooperatives introduce the SDGs in their core and daily work in activities. In order to effectively approach such questions, this paper engages with existent literature, and policies, in areas such as the history and values of the cooperative movement, the nature of the SDGs, and the aims and values of OD.

2. The Sustainable Development Goals (SDGs)

The UN 2030 Agenda promotes 17 main goals, which have been translated in 169 targets and 231 unique indicators, which will help the monitoring and control of the progress of each initiative (Bennich, Weitz, & Carlsen, 2020; Haas & Ivanovskis, 2022). To better assess the SDGs, the goals were classified in five pillars called the 5 P's, which are: planet, people, prosperity, peace, and partnerships, with the purpose of guiding organisations in the creation of a roadmap that would lead them in the contribution to development in a more sustainable approach (Ferrero-Ferrero, Muñoz-Torres, Rivera-Lirio, Escrig-Olmedo, & Fernández-Izquierdo, 2023; Morton, Pencheon, & Squires, 2017) (see Figure 1). This guiding nature enables organisations to interconnect their values in favour of the SDGs, as (Shulla et al., 2021, p. 2) propose, the 2030 Agenda is a 'co-creative process that allowed many voices to participate, enabling a widespread feeling of ownership' making it an attractive and encouraging initiative to be part of.

5 Ps	17 SDGs
People	• No Poverty (Goal 1) • Zero Hunger (Goal 2) • Good Health and Well-being (Goal 3) • Quality Education (Goal 4) • Gender Equality (Goal 5) • Clean Water and Sanitation (Goal 6)
Prosperity	• Affordable Clean Energy (Goal 7) • Decent Work and Economic • Development (Goal 8) • Industry, Innovation and Infrastructure (Goal 9) • Reduce Inequalities (Goal 10) • Sustainable Cities and Communities (Goal 11) • Responsible consumption and production (Goal 12)
Planet	• Climate Action (Goal 13) • Life below Water (Goal 14) • Life on Land (Goal 15)
Peace and partnerships	• Peace, Justice and Strong Institutions (Goal 16) • Partnerships for the Goals (Goal 17)

Figure 1. The 5 P's and the 17 SDGs
Source: Own elaboration based on Morton (2017)

As the SDGs are not legally binding, it is expected that governments should lead in the development of local frameworks and follow up mechanisms to assess the extent to which the goals are being addressed (Janoušková, Hák, & Moldan, 2018).

The SDGs and the role of organisations

ElMassah (2020) consider that universality is the most important feature of the 2030 Agenda, stressing the significance of the global goals and their relevance to every level of the community. As Rosati (2019) mentions, organizations around the world may have a significant role in the SDGs achievement. Nevertheless, Heras, Saizarbitoria, Urbieta and Boiral's (2022) qualitative analysis of sustainability reports and its relationship with the SDGs within more than one thousand organisations worldwide, indicates an alarming lack of knowledge regarding the specific role that organisations should play in the SDGs achievement and the impact that they have in their daily work. The author mentions that most of them were silent about the topic, and when some mention was made, it was meaningless and lacking substance.

Likewise, the PricewaterhouseCoopers (PWC) in their SDG Reporting Challenge (2018) concluded that 72% of companies do mention the SDGs in their corporate or sustainability reports but only 23% specified some SDG indicators or goals. Similarly, an exploratory study on the degree of commitment and integration of the SDGs in the sustainability reports of 20 companies that are leaders in sustainability in Valencia, shown that most organisations are using the SDGs as a cosmetic tool, to appear more sustainable and eco-friendlier, even though their goals are far from aligned with the core values of the 2030 Agenda (Ferrero-Ferrero et al., 2023). The authors reflect in the need of 'adopting a corporate governance system committed to sustainability' (*ibid*, p. 468) which should be done with the goal of a richer support of the 2030 Agenda, avoiding SDG 'washing'. This strategy, they suggest, should include a whole roadmap, to attain their regular support through the designation of corporate targets, actions, and indicators (*Ibid*).

Consequently, as Haas (2022) explains, none of the 17 Goals are on their way to being fulfilled, and organisations do not have the ability of taking international actions on the SDGs implementation, so there is an imperious need of promoting norms of sustainability and clear programmes that may guide the achievement of each goal. Thus, even when the SDGs '*indicate the direction of sustainable development toward which all countries should move*' (Li, 2023, p. 773), the higher number of targets and indicators defined for every goal may be the Achilles heel that jeopardize the simplicity and collaborative spirit that is needed. Morton (2017) expressed similar concern, suggesting that it is important to consider if governments and international agencies possess the skills that are required to put in coordination all the targets with this complex system thinking, and coordinate all the actors involved.

In 2017, the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs) made an important attempt to facilitate the implementation of a global indicator framework, through a classification that divides the 231 indicators into three tiers, according to their degree of methodological development and the data accessibility on a global scale (UNSTATS, 2024) (see Figure 2). In this classification, each target is associated with its indicators; a respective Custodian Agency(ies), which oversees the status of the target; and a Partner Agency(ies) who through their expertise and influence, voluntary support the coverage and achievement of specific goals related to their mission. This framework is being constantly updated by the IAEG-SDGs, where the current version was approved at their 14th meeting in October 2023.

Tier Classification for Global SDG Indicators

	Indicator	Methodology and standards	Data availability
Tier 1	Conceptually Clear	Internationally established methodology and standards are available	Regularly produced by countries for at least 50% of countries and of the population in every region where the indicator is relevant.
Tier 2	Conceptually Clear	Internationally established methodology and standards are available	Not regularly produced by countries.
Tier 3	Non indicators yet	No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested.	

Figure 2. Tier Classification for Global SDG Indicators
Source: Own elaboration based in UNSTATS (2023)

Similarly, Janoušková (2018) contends that, as the SDGs are tightly rooted in a policy framework, and that their assessment has been significatively done through indicators, it is requisite to re-evaluate them and reconsider their efficacy. This is crucial when considering that the proper understanding of the targets and their interlinkages, will ensure a successful policy making process towards the SDGs accomplishment (Song & Jang, 2023). Biggeri et al (2019) suggest that those concerns about the number of targets and indicators, depend on the context and purpose of the goals' implementation; in other words, it is important to understand that indicators have different methods and standards, and that their correct understanding will allow to contextualise their application and limitations. In this regard they introduce a new class of indexes called the Integrated Sustainable Development Index (I-SDI) and the adjusted I-SDI2, which are designed to be aligned with the cohesive nature of the SDGs by considering the synergies and conflicts that exist between the 17 goals and 169 targets. This proposal is a significantly step in the search of new tools for a better understanding and monitoring of the SDGs achievement, which could offer a clear picture of the global status and its progress.

Another approach of this issue is that '*focusing on the SDGs' local and regional implementation indirectly influences the SDGs globally as all spheres of life are interconnected*' (Saxena, Ramaswamy, Beale, Marciniuk, & Smith, 2021, p. 4); therefore, a proper conception of the SDG framework and acknowledgment of its inconsistencies may help organizations to prioritize the goals through their interrelation and then, being able to develop new tools that would lead into further improvements. Similarly, József (2021) mention that, despite the high interest of implementing the SDGs, many countries have not developed a set of subnational indicators to assess their internal progress.

To answer this problem Saxena *et al* (2021) propose that developing countries should form partnerships with the private sector, NGOs and think tanks, with the aim to reduce these gaps. Another solution is suggested by Montera *et al* (2023) who studied 110 Italian organisations from a variety of regional macroareas. They recommend the creation of systems for the monitoring and control of the SDGs, such as an observatory to research the state of development of companies in their journey to sustainability. Likewise, Issa, Mezher and El Fadel (2024) in their analysis of 39 current studies

conclude that a valid integration between SDGs linkages, policy implementation, and innovation is still non-existent. To achieve this challenge, they recommend close cooperation between policy makers and local scientists, adding that this task should be accomplished at a local/national level. Consequently, there is an urgent need for further efforts to connect SDGs assessment to policy making, considering national and local contexts.

Another aspect that has been examined is the high attention to economic growth, which has resulted in a weakening of sustainable resources used and, further, has interfered with the goal to reduce the quantity of resources used (Eisenmenger et al., 2020). Spangenberg (2017) argues that the 2030 Agenda does not present duties and obligations for businesses, but rather a voluntary invitation to join, which limits the scope of the goals themselves. He suggests that endorsing free trade without limitations or a clear mention of their ecological and social consequences is overlooking the main principles of sustainable development.

In this regard Larsen, Haller and Kothari (2022) expose the structural inequalities and power asymmetries when addressing the obligations for each target, understanding that there are companies that have a high responsibility and impact on some goals. Unfortunately, despite inequalities, duties for meeting targets are spread to the whole community, when in reality the common public, even when they have the will, cannot have a real impact on x or y target.

Addressing similar concerns, Zanten and Tulder (2021) propose that even when companies have manifested interest in some goals, or work consciously to fulfil one, these actions have been made in an isolated way, which means they lack a systemic view and understanding that the 17 goals should be treated as a whole, where the advancement of one, may affect positively or negatively the others. Considering this approach, they have proposed a conceptualization of the interactions that organisations' actions may introduce and experience. This conceptualization draws on the previous work of Nilsson, Griggs and Visbeck (2016), who introduced a tool for rating relationships between the targets to help the development of more cohesive policies. Zanten and Tulder (2021) agree that this conceptualization of organisations' interactions with the SDGs may be considered as a starting point to develop the strategies needed with a systemic corporate sustainability perspective.

Current progress and challenges of the SDGs

The 2021 UN annual report has shown that the consequences of the economic and social crisis caused by the COVID-19 have drastically affected the successful implementation of the 2030 Agenda, particularly within those communities that suffer major poverty rates, thus causing a dramatic growth in the disparities within society (Song & Jang, 2023). Likewise, the effective achievement of SDGs is based on two main pillars: sustainable economic growth and globalization. In effect, the economic recession due to COVID-19 has affected the ability of the industrialized countries to aid the development of others (Sharma et al., 2021).

Consistently, Saxena *et al* (2021) suggest that as a successful implementation of the 2030 Agenda depends deeply on financing, to decrease the gap between knowledge and implementation, organisations require access to reliable high-quality data. They also consider that those needs are more challenging to meet in developing countries, since trustworthy and robust data systems involve the coordination of financial, human, and technical resources, which after COVID-19 seems to be harder than before. As MacHt, Chapman and Fitzgerald (2020) state, this global crisis has confirmed the importance of leaders acquiring the knowledge and skills to resolve '*complex societal and management decision-making problems*' (*ibid*, p.1075).

Analysing the 2023 UN report on the SDGs advancement, the panorama looks far from positive, that

is, it is becoming clear that the 2030 Agenda is not going to be fulfilled. Delays in reaching targets are not likely to be measured in months or years; rather, data show that for some goals decades will be needed to reach their ideal numbers (UNSTATS, 2023). Actually, only one goal (Goal 3: Good health and Wellbeing), is making positive progress towards 2030 (see Figure 3),

Figure 3. Current Status and Projection of SDGs Fulfilment by 2030
Source: Own elaboration based on UNSTATS (2023)

In summary, there are three main concerns about the current status of the 2030 Agenda, which can be summarised as follows. First, organisations do not understand properly their role in the SDGs achievement and/or there is not a proper implementation of SDG goals in their business mission. Second, indicators should be adapted and applied locally/regionally to ensure a proper contextualization of every goal in order for them to be more specific and accurate. Third, there is an urgent need for better integration between SDGs linkages and policy implementation to enable governmental institutions to develop appropriate initiatives based on their own reality (see Figure 4).

Main Current Issues about SDGs Achievement	
Issue	**Authors**
Organisations **do not understand properly** their role in the SDGs achievement or there is no a proper implementation.	Ferrero-Ferrero et al, (2023); Heras-Saizarbitoria's (2022); Larsen, Haller and Kothari (2022); Heras-Saizarbitoria's (2022); Zanten and Tulder (2021); PWC (2018); Sapangenberg (2017).
Indicators should be **adapted and applied localy/regionaly**	Montera et al (2023); Saxena et al (2021); József (2021); ElMassah (2020);
An urgent need for an integration between SDGs linkages, **policy implementation**	Ferrero-Ferrero et al, (2023); Shulla et al (2021); Janoušková (2018); Biggeri et al (2019); Morton (2017)

Figure 4. Main Current Issues about SDGs Achievement
Source: Own elaboration

In summary, the role of organisations is incontrovertibly relevant in the achievement of the SDGs, and a stronger commitment and alignment with this vision from organisational leaders is mandatory to accomplish the challenges that are being faced by the global community. Such alignment has, at times, been evident in one kind of organisation: the cooperatives, making them an important target of study to understand how an organisation's purpose and business may resonate with the SDGs, and therefore, be an active actor for their fulfilment (Bhowmik, 2021; Conde & Rodríguez, 2020; Fernandez-Guadaño, Lopez-Millan, & Sarria-Pedroza, 2020; Lafont, Saura, & Ribeiro-Soriano, 2023; Shen, Tyedmers, Adams, & Beaubien, 2019).

According to Conde (2020) the variety of contributions that cooperatives provide, cannot be reached from the perspective of traditional business. Therefore, it is important to develop more tools that can help to demonstrate the impact of cooperatives towards the Sustainable Development Goals.

Cooperativism and its role with SDGs achievement

The positive and significant influence that cooperatives may have in the 17 SDGs achievement process has been highlighted above. Therefore, we advocate that cooperatives can and should perform an active role in the current debate about policy development that would facilitate the implementation of each goal in its proper context (CEPAL, 2022; Conde & Rodríguez, 2020; Díaz de León, Fragoso, Rivera, & Rivera, 2021; Fernandez-Guadaño et al., 2020; Ghauri et al., 2022; González & Alonso, 2022; Lafont et al., 2023). Cooperatives by their core 'are expected to be consistent with the principles and values' (Díaz de León et al., 2021, p. 1) that the Association of Cooperatives (AIC) has established, this giving cooperatives the attribute of solving a variety of problems which are directly connected to the SDGs.

In this section, the relationship between cooperatives and the SDGs will be studied by analysing how their values, structure, and differences with other type of organisations can be interpreted as potential achievement tools for every SDG.

Cooperative Principles and values

Almost hundred years from the beginning of the first wave of cooperativism, in 1844 a new era was about to begin. The modern British cooperative movement is often regarded as having its roots in the

founding of the Rochdale Society of Equitable Pioneers (Webster, 2019). Near the end of the industrial revolution a group of 28 weavers from the town of Rochdale, in response to the lack of affordable, healthy food and the growing poverty, decided to establish a cooperatively owned store that offered a modest number of goods, such as food, agricultural products and wavers' supplies (Webb, 1904; Webster, 2019; Williams, 2007). After being fired from their jobs in a manufacturing company and a failed strike, these workers gathered £140 and bought flour, sugar and butter and started the first modern cooperative shop (Williams, 2007). As part of their formalization process, they decided to express their experiences and values in the "Rochdale Principles of Cooperation" (Figure 6.) which, in their first version, were set as an acronym forming the word ROCHDALE (Ratner, 2013).

Figure 5. First Rochdale list of principles
Source: Own elaboration based in Ratner (2013)

Later in 1860, The Rochdale Society of Equitable Pioneers published officially, in its annual almanac, its principles and practices (Ratner, 2013)

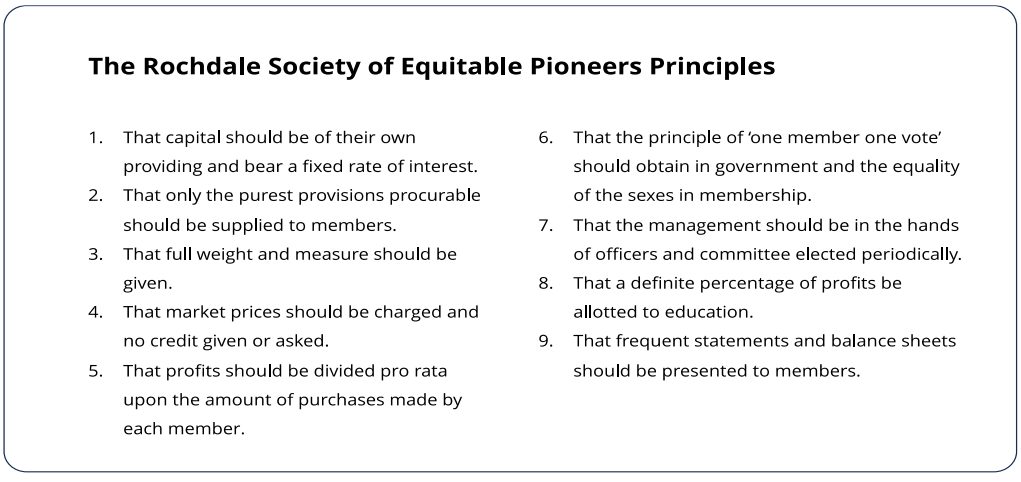

Figure 6. The Rochdale Society of Equitable Pioneers Principles
Source: Own elaboration based in (Ratner, 2013)

As the time passed, the group decided to reconstitute the cooperative under a brand-new name:

Rochdale Pioneer Society, formed by 3500 members. Consistently, the success of this society and its increasing popularity, led to the creation of cooperatives around Europe, especially in Germany and Belgium during 1848 and 1869 (Williams, 2007). The number of cooperatives stores in England had increased to 130 by 1851 (Pearson, 2020) and, by 1930, cooperatives stores became one of the major retail businesses in northern Europe (Hilson, 2018).

On August 19th of 1895, during the first Alliance Cooperative Congress, the International Cooperative Alliance (ICA) was founded in London, having representatives from Europe, the Asia Pacific, North and South America. Here, the main aims were decided. Also, the definition of the Cooperative Principles, based in the Rochdale principles, were revisited in 1937, and then revaluated in 1995, when a new principle was added (ICA, 2024) (See Figure 6). ´The first six of these principles are essentially the original Rochdale principles. Notably, the seventh principle clarifies and extends a cooperative's responsibility to the community' (Williams, 2007).

Figure 7. Values and Principles of Cooperatives according to the ICA
Source: Own elaboration based in (ICA, 2023)

The Global Panorama of Cooperativism and the SDGs

More recently, according to The International Cooperative Alliance (2024) there are more than three million cooperatives around the world. This number keeps growing and inspiring people everywhere. Due to its origins, the Cooperative movement has always been associated with democracy, social justice, better job conditions, gender equality, among others, which places it in a position to ´have a key role to play in facilitating Sustainable Development Goals (SDGs) implementation at the global, national and local levels' (Moxom & Dave, 2019, p. 3). Therefore, it is important to develop a clear framework to aid in the understanding of the impact that cooperatives have concerning the SDGs.

One alternative to this challenge, is to use the cooperative values and principles as a starting point (Figure 6.). Fernandez-Guadaño (2020) stresses that these values and principles are what make cooperatives different from other kind of organisations and may help the achievement of some SDGs. Similarly, Conde (2020, p. 61) states that cooperatives' contribution to the fulfilment of the SDGs is: 'by virtue of the enhancement of their principles'. In their study of cooperativism in Colombia and SDGs, they found that certain principles—like concern for the community and education, training, and information, to name a few—are more closely linked to achieving the SDG objectives, and as a result, actions taken in accordance with these principles will typically result in greater transversal contributions. These findings confirm Bhowmik (2021) conclusions from their study of the handloom weaving sector in India.; that is: 'the principles of cooperatives can be considered as a means to achieve sustainable development goals (SDGs) as there are serious commonalities between the two'

(*ibid*, p. 98).

Going one step forward, some scholars have decided to explicitly connect each principle with the SDGs, to provide a structured framework to analyse and at the same time evaluate the accomplishment of each goal. Accordingly, Shen (2019) after studying the local cooperatives of Nova Scotia proposes a direct linkage between six of the seven principles and some of the SDGs, as is shown in Figure 8.

Relationship between the Cooperative Principles and the Sustainable Development Goals

Principles:	SDGs
1. Voluntary and open membership	5 and 10
2. Democratic member control	5, 10 and 16
3. Member economic participation	8 and 10
4. Autonomy and independence	N/I
5. Education, training, and information	4
6. Cooperation among co-operatives	16 and 17
7. Concern for community	4 and 12

Figure 8. Shen's Relationship between the Cooperative Principles and the SDGs Source: Shen (2019)

Similarly, De la Casa (2021), based on the works of Alarcón and Álvarez (2020), expand the understanding of the connections, making a direct link between the whole 7 principles and the 17 SDGs, which implies that every cooperative would be able to contribute on every SDG (see Figure 9).

Relationship between the Cooperative Principles and the Sustainable Development Goals

Principles:	SDGs
1. Voluntary and open membership	16
2. Democratic member control	16
3. Member economic participation	1, 2, 9 and 10
4. Autonomy and independence	16
5. Education, training, and information	4, 8, 12, 13, 14 and 15
6. Cooperation among co-operatives	4 and 17
7. Concern for community	1, 2, 3, 4, 5, 6, 8 and 10

Figure 9. De la Casa's Relationship between the Cooperative Principles and the SDGs Source: De la Casa (2021)

Nevertheless, there are limited number of studies that show how these links really work and therefore, proving the factual impact of the principles on the SDGs fulfilment is problematic (Díaz de León et

al., 2021; Shen et al., 2019). Considering this gap, Díaz de León *et al* (2021) developed a qualitative study, which involved interviewing 134 cooperatives in Mexico City, to analyse if the benefits that these organizations were providing to the community, and whether they contributed or not to the fulfilment of the SDGs. As a result of her study, a direct relationship was established between goals 1, 3, 4, 5, 8 and 12 (see Figure 10).

SDGs Cooperatives Influence	Social Benefits Related to SDGs	Specific Actions Related to SDGs
Goal 1: No poverty	Decent employment Social and solidarity economy	a) Employment for vulnerable people b) Decent employment c) Local economy d) Fair trade
Goal 3: Good health and well-being	Health	a) Nutritional health
Goal 4: Quality education	Integral training	a) Education b) Partner training
Goal 5: Gender equality	Social entrepreneurship	a) Female empowerment b) Cooperative entrepreneurship
Goal 8: Decent work and economic growth	Decent employment	a) Employment for vulnerable people b) Decent employment c) Employment for society
Goal 12: Responsible consumption and production	Social and solidarity economy Preservation of the environment	a) Local and fair consumption b) Preservation of the environment

Figure 10. Alignment between the SDGs and the benefits of cooperatives in Mexico City Source: Díaz de León (2021)

Similarly in Spain, González (2022) studied the Andalusian olive oil cooperative sector through a Qualitative Comparative Analysis (QCA) technique, which allowed him to identify the top 4 SGDs, that according to his results, are most likely to be influenced by the activities of these organisations. The first one was goal 3, the Good Health and Well-Being goal. In second place, goal 5, which corresponds to Zero hunger. The author suggests that this outcome 'can be explained by the fact that the food and agriculture sector offer key solutions for development and is central for hunger and poverty eradication' (*ibid,* p.37). Finally, goals 8 and 12, Gender Equality and Decent Work and Economic Growth, also presented a causal relationship with the cooperative work, thus confirming Díaz de León's (2021) results.

Likewise, in their study of women leadership in Spanish cooperatives, Martinez-Leon (2020) has analysed the different styles applied for this role and the way they are linked with the influence that cooperatives may have in the fulfilment of SDGs. As a result, it was concluded that through their principles and values, cooperatives specifically contribute with goals 1, 5, 8 and 10.

Nevertheless, this similarity of results may be influenced by the economic sector of the cooperatives studied, which may pose questions about how to approach the study of the cooperatives and SDGs relationship. Thus, maybe it would be too ambitious to think that every cooperative could fulfil each SDGs, but it would be more realistic to consider a couple of them, depending on the sector in which they are developed.

Considering this perspective, the bibliometric analysis of Lafont, Saura and Ribeiro-Soriano (2023) offers new insights into this approach. After examining 874 studies published between 2015 and 2022, they found eight different types of cooperatives, which together, impact positively on every of

the 17 SDGs. These results may facilitate the way SDGs are promoted, helping cooperatives to concentrate on those SDGs that really relate to their main goals and business, therefore maximizing their impact in this task.

Figure 11. Shows the eight types of cooperatives and the SDGs associated with their activities.

Types of cooperatives linked to SDGs

Cooperative Type:	SDGs
Producer cooperatives	• No poverty (1) • Zero Hunger (2) • Responsible consumption and production (12) • Life on land (15)
Consumer cooperatives	• Clean water and sanitation (6) • Industry, Innovation and Infrastructure (9)
Worker cooperatives	• Life below water (14) • Decent work and • economic growth (8)
Housing cooperatives	• Sustainable cities and • communities (11) Industry, Innovation and • Infrastructure (9)
Finance cooperatives	• Decent work and • economic growth (8) • Partnerships for the goals (17)
New generation cooperatives	• Peace, justice and strong • institutions (16) Good Health and Well- being (3)
Multi-stakeholder cooperatives	• Affordable and clean energy (7) Industry, Innovation and • Infrastructure (9) • Partnerships for the goals (17)
Non-profit community service cooperatives	• Quality Education (4) • Gender Equality (5) • Climate action (13) • Reduced Inequalities (10)

Figure 11. Types of cooperatives linked to SDGs.
Source: Based on Lafont (2023)

These contributions make possible a clear and direct connection between the actions of cooperatives, moved by their values and principles, and the accomplishment of the SDGs. Once the linkage between these elements has been demonstrated, a corollary is to devise framework of evaluation and control that could assist cooperatives leaders in the assessment of their performance related with the SDGs. According to Shen *et al* (2019) this aspect its being understudied; they suggest that one approach is to evaluate cooperatives' alignment with the SDGs through a deep analysis of their mission

statements.

The United Nations, along with the 17 SDGs, proposes a list of 169 targets that detail the ways that each goal is expected to be fulfil, therefore Shen *et al* (2019) introduce a new perspective of analysis, by studying the links between every target; this approach facilitates the understanding of the goals and the way to plan the fulfilment of them.

As this section has shown, after the launching of the 2030 Agenda and its 17 SDGs, there have been a variety of attempts to link Cooperatives and their work with the fulfilment of the proposed goals. Nevertheless, regardless of the potentially positive results that the understanding of these correlations may offer, there is still a need for a tool that could guide cooperatives in their planning and assessment of their contribution (directly and indirectly) to the SDGs fulfilment.

3. OD as a tool for Cooperatives to SDGs fulfilment

Once the relationship between SDGs and Cooperativism has been established, and similarly the need for an instrument to aid the cooperatives in their application of the 2030 Agenda, it is desirable to identify the best tool that may help cooperatives to implement the SDGs into their own principles, values, and business model, guiding them through the journey to maximize their potential and results in a sustainable way.

According to Rogers and Hudson (2011, p. 4):

> 'What makes sustainability different from many other organizational challenges and opportunities is that it calls for changes in thinking and practices at every level, building on initiatives from every individual in an organization. In other words, it draws on practices, not just theories, through sharing of real experiences across organizational boundaries, economic sectors, and national borders.'

To accomplish this task, it is necessary to coordinate the so-called triple bottom line, a term first coined by Elkington and Rowlands (1999), who proposed a framework with three dimensions, which in balance can help organisations to achieve sustainability (Keller, 2012; Laszlo & Castro, 2011; Rogers & Hudson, 2011; Sala, 2020).

In this model the first dimension, *environment*, considers that society must address environmental sustainability and future demands, considering that the environment not only offers many basic resources for survival, but also services and environmental advantages. The *economic* dimension involves preserving capital, which should be differentiated into three types: economic, natural, and social. Because each organisation requires certain forms of capital and a mix that determine successful performance, it is critical to preserve an adequate level so that consumption does not exceed regeneration and recovery capabilities. Finally, the third dimension, *social*, which adheres to the equity principle, is based on the social justice concept. This may be accomplished by practically implementing sustainable ideals both inside and outside the organisation (Keller, 2012).

Foster (2013) addresses some of the alternatives that have been used for the purpose of reaching sustainability, such as HR, TQM, Business Re-engineering and Lean, mentioning that many organisations have failed in those attempts, mainly because of the unbalanced approaches that these options offer. For instance, he states that 'as organizations have become lean, globalized, cost oriented and technologically advanced, HR has placed the delivery of shareholder value, improving efficiency, reducing waste, and increasing profitability at the expense of humanistic values' (*ibid*,

p.8); this has resulted in negative consequences in the most valuable part of the organisation: the people.

This ethical HRM dilemma of combining care for employees with a focus on 'adding-value' to an organisation (Gama, McKenna, & Peticca-Harris, 2012) has been explored by scholars for decades. These scholars have questioned the practices, values and results of HRM from an ethical perspective (Foote, 2001; Holden & Napier, 2013; HRM, 2024; Mariappanadar, 2012; Valecha, 2022). Similarly, 'in the HRM literature it is common to find that most HRM practices are triggered by organisations' internally referenced efficiency focused approaches' (Mariappanadar, 2012, p. 168), a statement which implies that HRM is driven and influenced by the organisation's values and not vice versa. This represents a considerable stumbling block if what is required is to build and develop new values in the organisation, such as sustainability.

In this search for a more holistic alternative, organisation development (OD) appears to be a good fit for this task. According to Shukree *et al* (2023, p. 139) 'OD is a comprehensive and systemic process that encompasses both the economic and social dimensions of an organization' which could provide the balance between the organisation economic goals and the wellbeing of their stakeholders that is needed.

In addition, Forster (2013) mentions that OD provides a good opportunity to develop the agenda that organisations pursue to achieve shareholder value, sustainability, and organisational performance. Likewise, Lawler III (2017) argues that, in many ways, OD hold the potential to assist organisations in becoming more sustainable in their performance. He adds that key practices to attaining organisational effectiveness, such as organisational design and talent management, have played an important role throughout OD history, including an emphasis on evidence-based reform, democratic governance, and respect for human beings.

In this regard, Trottier and Chinoperekweyi (2022) agrees that OD practitioners play a significant role in fulfilling the demand to establish outstanding organisations and increasing attention to the SDGs. This requires a reassessment of the organization's internal structure in response to evolving external and internal factors, and helping the integration of humanistic and bottom-line values. Mohd Shukree *et al* (2023) add that OD programmes are critical to accomplishing an organisation's goals and improving its performance, leading to higher-quality procedures as well as better employees' productivity. For this reason, they point out that it is crucial for all organisations to complete an OD programme that evaluates their strategy, structure, process, system, and technology, in order to support organisational sustainability.

Organization Development principles

According to Burke (2022) OD is a planned change process that encompasses the organisation as a whole, with emphasis on its culture and leadership. This process has two main goals: first, it assists the organization's leadership and management in addressing a specific need for change. Second, OD aims to shift the organisation towards greater engagement of its members in the decision-making processes that directly impact them in their daily job, contributing at the same time to the organisational members' dedication to the first goal.

The fundamentals of OD are anchored in a number of theories and approaches, which have developed and structured a solid way to seek long-term organisational transformation (W Warner Burke, 2022; Cheung-Judge & Holbeche, 2015). Those interventions, which are intended to strengthen new behaviours, are developed based on the needed organisational state and executed with the aim of resulting in optimal organisation's achievements (Kwon & Kwon, 2023).

Through OD, organisations may create a culture of continual learning, development, and enhancement, where employees who improve their skills and knowledge can become more qualified and prepared to face the difficulties and expectations that their roles provide, thus contributing to the organization's overall success (Mohd Shukree et al., 2023).

As stated previously, one of the unique aspects of OD interventions is being an applied and values-driven discipline (Church, Shull, & Warner Burke, 2018; Horne, 2018; Milbrandt, DePorres, Linski, & Ackley, 2018). In an effort to frame these different values present in OD, Burke (2015) proposes that, to understand its principles, it is helpful to look back to the field's roots: the sensitivity training. This education and change method have a humanistic value orientation which contends that it is important for individuals to have the chance to learn and grow personally throughout their life in order to maximise and actualize their unique potential (W. Warner Burke & Noumair, 2015).

Reflecting on the contributions of Schein and Bennis (1965), Burke and Noumair (2015) explain that from this training method derive two main values: the spirit of inquiry and democracy. The first one, characterized for an interest in constantly checking the validity of any supposition (hypothetical spirit) and then putting those assumptions in to experiment (experimentalism). The second is centred in a collaborative style of training (collaboration), and in a rational approach of managing conflicts (conflict resolution).

Figure 12. Organisation Development Values
Source: Own elaboration based on Burke (2015)

Accordingly, Yoon, Farley, and Padilla (2021) conducted a Delphi study with 42 OD practitioners and researchers with the aim to define a set of values and principles of the discipline. The results have shown that it is possible to count nine main values, which are guiding the current practice in the field of OD. The authors also compared the results with the ones found in the OD literature, showing that those values have been present from the beginnings and remain relevant.

The nine main OD values

Values	References
Awareness of Self and System	(Self-)awareness (Minahan & Norlin, 2013; Tregoe, 1974) Systemic (Burke, 1982) - Whole person (Anderson, 2017; Jamieson & Gellermann, 2014)
Continuous Learning and Innovation	Creativity (Greiner, 1980) - Individual growth (Church et al., 1992) - Learning (Anderson, 2017; Gellermann et al., 1990; Jamieson & Gellermann, 2014)
Integrity	Authenticity (Anderson, 2017; Gellermann et al., 1990; Jamieson & Worley, 2008; Minahan & Norlin, 2013) Commitment to ethics (Church et al., 1999) - Congruence (Gellermann et al., 1990) - Integrity (Jamieson & Worley, 2008
Courageous Leadership	Appropriate confrontation (Jamieson & Gellermann, 2014) Confrontation of authority (Burke, 1982) Justice (Gellermann et al., 1990; Jamieson et al., 2018)
Trust and Respect	Trust (Anderson, 2017; Bennis, 1969; Church et al., 1992; Connor, 1977; Jamieson & Gellermann, 2014) Respect (Marshak, 2006; Minahan & Norlin, 2013)
Diversity	Cultural diversity (Church et al., 1992) Diversity (Gellermann et al.,1990; Greiner, 1980; Jamieson et al., 2018)
Collaborative Engagement	Collaboration (Anderson, 2017; Burke, 1982; Church et al., 1994; Jamieson & Worley, 2008) - Empowerment (Anderson, 2017, Church et al., 1992; Jamieson & Gellermann, 2014; Minahan & Norlin, 2013) Inclusion (Jamieson & Worley, 2008; Marshak, 2006; Minahan & Norlin, 2013)
Strategic Practicality	Pragmatism (Friedlander, 1976; Greiner, 1980; Margulies & Raia, 1990)
Client Growth and Development	Growth, development (Anderson, 2017) Promoting employee growth (Church et al., 1994)

Figure 13. The nine main OD values
Source: Yoon, Farley, and Padilla (2020)

Considering Burke and Noumair (2015) and Yoon, Farley, and Padilla's (2021) contributions, it is possible to combine them into one overriding framework of values for the current practise of OD. The following figure proposes a merged model to better understand how OD values interact (see Figure 14). Each value from the set stablished by Yoon, Farley, and Padilla (2021) has been corelated with Burke and Noumair's (2015) core values, according to their main themes and principles. The only exception is the *client growth and development*, which arguably, is being influenced and shaped for all the four core values.

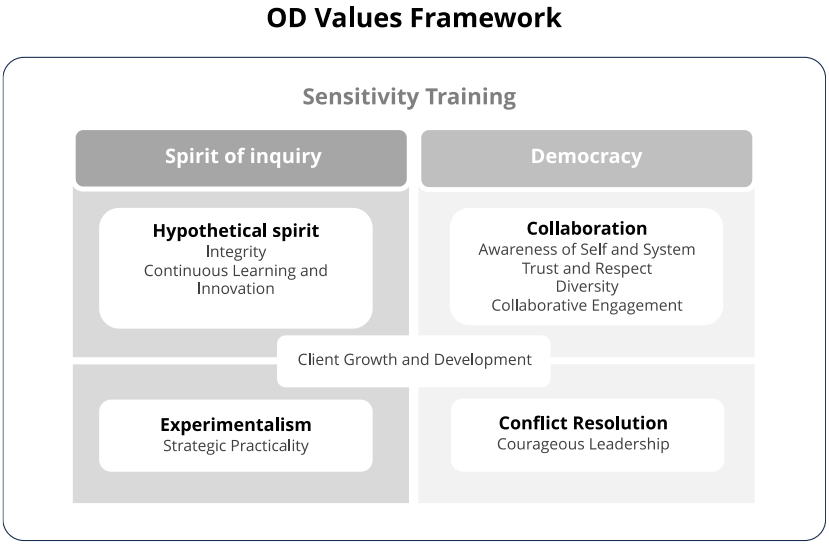

Figure 14. Proposal of OD Values Framework
Source: Own elaboration based on Burke (2015); Yoon, Farley, and Padilla (2020)

The importance of aligned values

Burnes and Jackson (2011, p. 137) affirm that 'change is associated with the value alignment of three factors: those involved in the change intervention, the objective of the intervention and the approach to change'. Likewise, Barrett (2017) highlights that in order to implement a cultural change into the organisation, it is necessary to meet four conditions.

The first one is *Personal Alignment*, which proposes that members' words, actions, and behaviours must be consistent with their values and beliefs. This is especially crucial for those who are in leadership positions. That is, leaders must be genuine and act according to what they say. If not, trust in the organisation will be lost. Second, the organization's declared values, vision, and mission, must be aligned with its actions, as reflected in the organization's structures, policies, procedures, and incentives. Therefore, a *Structural Alignment* is required. Similarly, a *Values Alignment* is essential, where employees' personal values must coincide with the organization's living values. They must feel at ease in their workplace so that they may bring their entire self to work. And finally, there should be a *Mission Alignment* to ensure that employees' feeling of purpose or vocation is aligned with the job and responsibilities they are assigned. They should also believe that the organisation is on the right path, and the amount of job complexity must equate to their level of personal growth (Barrett, 2017).

All of the above suggest that, to successfully implement a SDGs vision and plan into cooperatives through an OD intervention, it is necessary to ensure that all values are fully aligned. Therefore, a deep analysis of OD values and Cooperativism should be done.

OD and Cooperatives' values alignment

Previously it was established the strong linkage between the principles and values of cooperativism and the 17 SDGs. Now after developing a clear OD values framework, it is possible to analyse how OD is linked with the roots of Cooperativism, and how well this discipline could support the implementation of the SDGs in the whole organisation. This compatibility may be outlined by comparing each group of principles and values as it is shown in Figure 16. Thus, based on the OD values model previously proposed by the authors of this paper (see Figure 15), seven cooperatives' principles were mapped according to their common motifs, and finally the same was done with its

six core values.

OD Values and Co-ops Principles/values alignment

	OD Values	Co-ops Seven Principles	Co-ops Values
Spirit of Inquiry	**Hypothetical spirit**		
	Integrity		
	Continuous Learning and Innovation	Education, training, and information	
	Experimentalism		
	Strategic Practicality		
	Client Growth and Development*		
Democracy	**Collaboration**		
	Awareness of Self and System	Voluntary and open membership	Self-help and self-responsibility
	Trust and Respect	Democratic member control	Democracy
	Diversity	Cooperation among co-operatives	Equality and equity
	Collaborative Engagement	Concern for community	Solidarity
	Conflict Resolution		
	Courageous Leadership	Member economic participation	
		Autonomy and independence	

Figure 15. OD Values and Cooperatives Principles/values alignment.
Source: Own elaboration based on Burke (2015); Yoon, Farley, and Padilla (2020)

As a result, the linkage between OD and Cooperativism values is revealed, positioning OD as the best alternative to aid cooperatives in their mission of including the 2030 Agenda in the core of their business. Thus, as Trottier and Chinoperekweyi (2022, p. 2) conclude, 'OD must encompass that organizations in the 21st Century must co-create and achieve a 'higher social and ecological purpose' while still maximizing shareholders' wealth'.

Figure 16. Illustrates the findings related the correlation between OD, Cooperatives, and SDGs' values. Here, the growth and development of the organisation is at its core; this is one of the main aspects of OD and therefore the guiding principle that interconnects all the other values. Also, this shows a clear overlap between the values, thus reflecting the complexity and interlinkage between each element. Figure 16 highlights the importance of all the values´ being known and present to fulfil a solid and successful implementation of the SDGs.

However, the fact that there is a proven parallelism between OD, Cooperatives and SDGs values, does not necessarily ensure that, when the time for an OD intervention arrives, the client - in this case the cooperative- would be actually embracing the expected values. This observation opens question of whether cooperatives are still existing under their pioneers' principles, or if they have shifted to a regular business model. For instance, Godfrey *et al* (2017) argue that a considerable number of cooperatives seem to be opportunistic in their constitution, seeking short-term funds and reacting to public policies that promote cooperative development rather than looking for sustainability over the long term. Therefore, during the OD intervention, 'Organizational sustainability values must have to be inculcated at all levels in the system of the organization to engage the initiatives while performing the tasks' (Vargas-Hernández, 2021, p. 467)

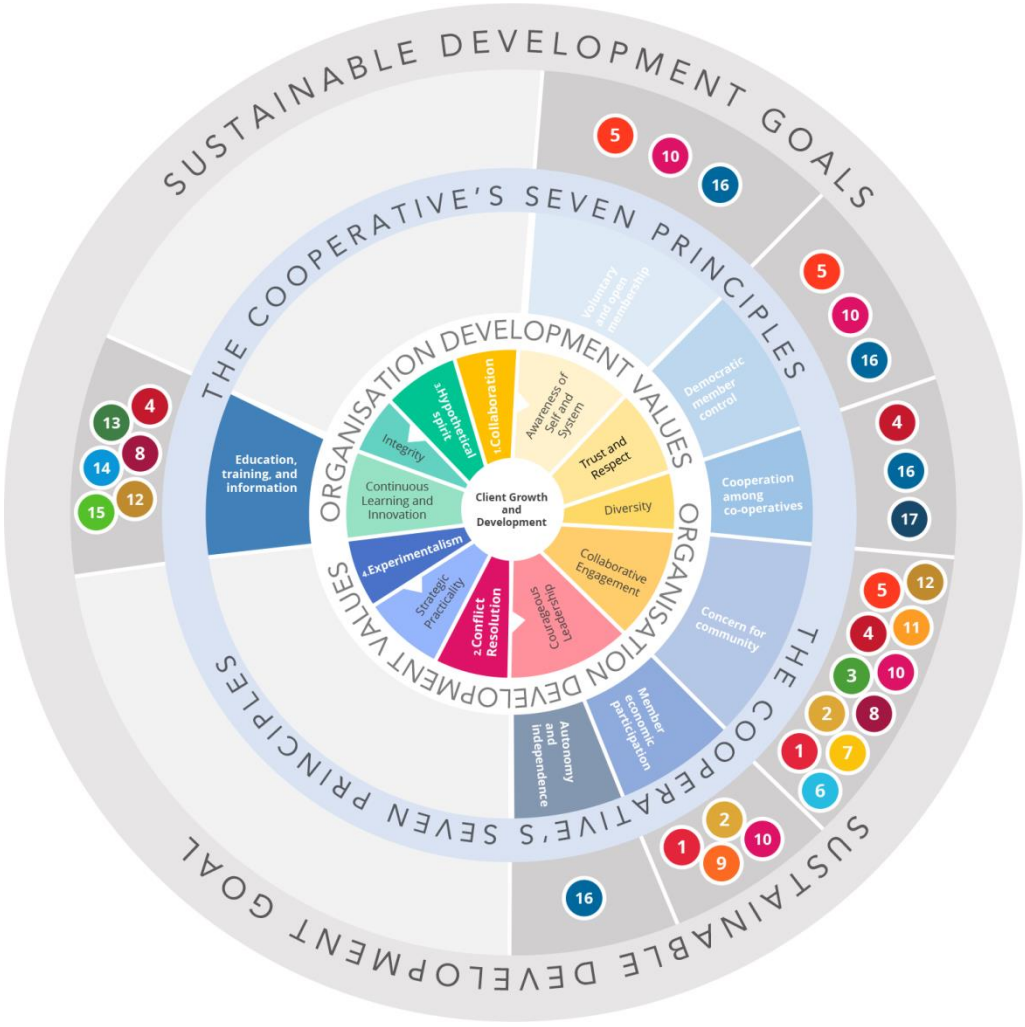

Figure 16. OD Values, Cooperatives Principles and SDGs alignment.
Source: Own elaboration based on De la Casa (2021); Yoon, Farley, and Padilla (2020); Shen (2019); Burke (2015)

Consequently, OD may be considered not only as a field with the ability to guide cooperatives to join consciously and intentionally the 2030 Agenda, but also, where necessary, to help Cooperatives to return to their main values in case they have been lost over time, perhaps due to business pressures. Thus, if cooperatives aim to adopt the SDGs as a guiding principle for their mission, vision, and strategies, this value model alignment is proposed as a guiding tool to implement a successful OD intervention.

4. Conclusions

The relevance of the 2030 Agenda and its 17 Sustainable Development Goals (SDGs) has been highly covered by scholars (Eisenmenger et al., 2020; Ghauri et al., 2022; Helfaya & Bui, 2022; Meier, 2023; UN, 2015; UNGA, 2024; Wymer, 2023), proposing that is a 'co-creative process that allowed many voices to participate, enabling a widespread feeling of ownership' (Shulla et al., 2021, p. 2). Thus, encouraging to a wide spectrum of organisations to be part of.

However, current studies have reported an alarming lack of awareness concerning the precise role

that organisations should have in achieving the SDGs, as well as an integration between SDGs linkages, policy implementation, and innovation (Heras-Saizarbitoria et al., 2022; Issa et al., 2024). Therefore, there is a considerable gap in the field of connecting SDGs assessment to policy making, considering national and local contexts (Biggeri et al., 2019; Ferrero-Ferrero et al., 2023; Janoušková et al., 2018; Morton et al., 2017; Shulla et al., 2021).

Similarly, there is a concern about the complexity of the indicators surrounding SDGs, which is becoming a problem for their application locally and regionally, limiting an adequate contextualization of each goal (Montera et al, 2023; Saxena et al, 2021; József, 2021; ElMassah, 2020, Morton, 2017). This is being increased for the lack of an updated statistical system to monitor the local advancement of the SDGs, causing an information gap, which make harder the development and implementation of more adequate policies that resonate with the current reality of each country.

Furthermore, it was established that the role of organisation in the SDGs local and global achievement is unquestionable important. Therefore, a deeper commitment and alignment with this vision from its leaders is required. Such alignment was found in the traditional cooperative model, which makes cooperatives a significant target of research to understand how an organization's mission and business might connect with the SDGs, and so, be an active participant in their completion (Lafont, 2023; Bhowmik, 2021; Conde, 2020; Fernandez-Guadaño, 2020, Shen, 2019).

The literature demonstrates that the cooperative model from its beginning was a highly value-driven organisation, characterised by its democratic principles and people centred perspectives. (Woodin, 2023; Miribung, 2020; Fernandez-Guadaño, 2020; Moxom and Dave, 2019; Ratner, 2013; Webb et al, 1904). Therefore, cooperatives should be considered as main players in the reaching of global sustainability and development, and subsequently in the 2030 Agenda fulfilment.

In addition to this, despite the many attempts to link Cooperatives and their role within the fulfilment of the SDGs, there is still a lack of a guiding tool for cooperatives in the planning and assessment of their contribution (directly and indirectly) to the SDGs fulfilment. This gap has not been resolved; addressing this gap would represent a major contribution to the 2030 Agenda. Accordingly, scholars have concluded that, for a successful implementation of sustainability, it is mandatory an alignment of values and interests between the actors involved (Sala, 2020; Barret, 2017; Keller, 2012; Rogers and Hudson, 2011; Lazlo and Castro, 2011).

Consequently, we have, in this study, sought to establish that there is a relatively seamless alignment between OD, Cooperativism and SDGs values, which positions OD as an ideal potential instrument to guide cooperatives in their mission of including the 2030 Agenda in the core of their business activities (Shukree et al, 2023; Trottier and Chinoperekweyi, 2022; Lawler III, 2017; Foster, 2013). Therefore, if Cooperatives want to pursue sustainability and be an active contributor to the fulfilment of the 17 SDGs, OD interventions hav e massive potential in strategies designed to address this challenge.

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Ride-Hailing Platforms Management Push-Structure and Drivers Solidarity Pull-Desire: The Co-operative Spark in Kenya's Digital Labour Economy

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Abstract

Ride-hailing platforms are mushrooming in Kenya due to the increasing dependency on the 'uberisation' of the work. As digital labour platforms owned by investor-owned firms (IOFs) and employing tens of thousands of e-drivers, they have been conversely characterised by non-compliance with the fairwork principle of platform management, thereby perpetuating the precarity and vulnerability of the e-drivers. Previous studies have recommended that e-drivers in the country form and join worker-platform co-operatives to mitigate and address the capitalistic tendencies exhibited by these IOFs. Nonetheless, studies have yet to gain insight into the extent of the e-drivers' willingness to form and join worker-platform co-operatives. This was the study's objective. The study was grounded on the Utility Theory. We collected data from 497 e-drivers across the Nairobi Metropolitan Region. We found that as e-drivers' agreement level of IOFs' compliance with the platform management principle of fairwork decreases, their likelihood to form and join worker-platform increases. Subsequently, we also found three possible worker-co-operative subtypes that e-drivers would prefer to form and join based on the interplay of the platform management principle's low, moderate and high disagreement levels. Overall, this paper draws affirmations in its results from most of the literature on ride-hailing platforms, worker-platform co-operatives, and social exchange and utility theories. Nevertheless, it has brought an insightful framework of a fair platform management structure in the country. This study is expected to bring practical and theoretical contributions to improve the e-drivers' benefits from the ride-hailing industry.

Keywords: Digital Labour, Ride-Hailing, Worker Co-operatives, Drivers

1. Introduction

The International Labour Organisation (ILO) recognises the potential of the gig economy platform to revolutionise how work is organised and performed, as well as the quality and content of jobs (Johnston & Land-Kazlauskas, 2018). The gig economy, with its estimated 40 million platform workers in the global South alone, offers a sense of excitement about the future of work. Digital Labour Platforms (DLPs) have been praised for creating job opportunities and commodifying labour with a sense of "freedom, flexibility, inclusivity and impartiality" (Anwar & Graham, 2022; Anwar et al., 2022; Anwar & Graham, 2021), making workers more productive and formalised (Lakemann & Lay, 2019), enhancing institutionalisation of outsourcing and flexibilisation of labour (Conaty et al., 2018), and transforming the future of work and facilitating the economic inclusivity of informal workers in the world (Rani et al., 2021).

Generally, DLPs have endeavoured to address unemployment and underemployment issues. Such benefiting platform workers include e-drivers using ride-hailing platforms. E-drivers harness digital technology (like ride-hailing platforms) more than other platforms or digital workers (De Peuter et al., 2022). Ride-hailing platforms have portrayed a high level of optimism among people seeking

taxicab jobs. Ride-hailing platforms are software or applications that enable taxicabs to be booked and dispatched online. They usually consist of three apps: driver App, rider App, and administration App.

The ride-hailing ecosystem is a complex web of interests involving ride-hailing platform owners, car owners, e-driver workers, riders, regulators, and other actors (Oviedo et al., 2021; Pasquali et al., 2022). The industry, driven by data-driven innovations, has steadily increased, especially in the global South, with a total disclosed investment of USD 56.2 billion (Holland-Letz et al., 2019). Forecasts suggest a further growth of 25% by 2025, with most investments focusing on companies from the United States, China, and Europe (Wolff et al., 2019). Oviedo et al., 2021) refer to a 2017 report by Goldman Sachs, which estimates that the ride-hailing industry will grow to USD 285 billion by 2030. This potential growth is something to look forward to in the future of work.

In Kenya, there has been an increasing dependency on expanding ride-hailing platforms (Delaunay, 2021) and the "uberisation" of work (Lakemann & Lay, 2019). Studies have identified over ten ride-hailing platforms operating in the country. Studies have identified several ride-hailing platforms in the country (Wakhu & Bett, 2019; Weru & Mugo, 2020). These ride-hailing platforms have recorded the enrolment and use of many e-drivers and riders in the country.

The country's Nairobi Metropolitan Region alone has approximately 20,000 e-drivers (Kiplagat, 2023). Okedi and Yano's (2020) study on "industry forces influencing the performance of online application-based taxi drivers in Kenya revealed that the ride-hailing sub-industry market is valued at USD 200 to 300 million annually. It is, therefore, considered among the fastest-growing industries in the country.

However, it is essential to recognise that e-drivers face significant challenges in Kenya and globally (Saner et al., 2019; De Peuter et al., 2022). The proliferation of ride-hailing platforms does not automatically translate to improved working conditions or ethical standards for e-drivers. Understanding and empathising with these challenges is crucial for any meaningful discussion about the gig economy.

One such challenge is the lack of voice and transparency on digital labour platforms (DLPs) like ride-hailing platforms, given that the workers sign on these digital platforms as independent contractors, thus having one-sided service contracts (Schwettmann, 2020; Rani et al., 2021), they lack "bargaining and negotiation power" (De Peuter et al., 2022). Unclear algorithms also regulate them and need control over their data (Bellini & Lucciarini, 2019; Borkin, 2019). In an in-depth study of 34 e-drivers, their trade unions and representatives in Kenya and South Africa by Anwar et al. (2022), ride-hailing platforms – misclassify drivers to avoid regulation and responsibilities towards workers' welfare.

Such problems exhibit injury to the decency or fairness of work. They lack transparency and tend to favour owner-investors over driver-workers. Due to the unfairness in the industry, issues of fairwork principles emerged. According to Rogers and Richmond (2016), fair work offers a compelling voice, opportunity, security, fulfilment, and respect to workers. Consequently, a team of scholars from the Fairwork Foundation, led by Prof. Mark Graham, reviewed and compared the different standards in the world on fairwork (Graham et al., 2020). These standards are based on ILO's prevention and decent work, including the Ethical Initiative Base Code (ETI, 2014) and the SA8000 certification scheme (Social Accountability International, 2014). The scholars then developed five fairwork principles for assessing and improving platform work globally. Among them are the (platform) management and representation.

On the one hand, the (platform) management involves developing and operating a ride-hailing platform with open engagement with e-drivers and honesty, objectivity, integrity, transparency, accountability, confidentiality, and legality principles. The trustworthy labour platform (TPM) principle should provide due process for decisions affecting e-drivers, establish pro-equity policies, and obtain informed consent for data collection from e-drivers. On the other hand, representation involves e-drivers' cooperativism. It includes freedom of association, e-drivers' voice mechanism, and recognising the collective body for representation and bargaining.

The "worker-owned platform enterprises" or "co-operatives" are considered the pillar of a pro-worker agenda in the platform economy (Gurumurthy et al., 2021), as the platform workers, like e-drivers, still need enhanced income, flexibility, and autonomy in the digital economy. Therefore, platform workers have been advised to jointly "clone the technological heart" of a dominant platform and re-embed it in a framework of co-operative as a "social representation" and "collective action" of the platform workers (Scholz, 2016, as cited by De Peuter et al., 2022). This has been the genesis of forming worker-platform co-operatives – as forms of collective actions and social representations (Scholz, 2018; Lawrence et al., 2019; Scholz et al., 2021). Worker-platform co-operatives are not a monolithic entity but with emerging distinct subtypes. De Peuter et al. (2022) have identified two subtypes of worker-platform co-operatives – Distributed Co-operative Organisation (DisCO) ('TypeA' worker-platform co-operatives) and Open Platform Cooperativism (OPC) ('TypeB' worker-platform co-operatives). 'TypeA' co-operatives focus on ownership of the 'technology solution', harnessing tech's utility without being completely tech-centric. They create levels of ownership in direct relation to multi-members' contributions for three contribution streams: pro-bono production work, livelihood work, and care work (Troncoso & Utratel, 2020). On the other hand, 'TypeB' co-operatives are oriented towards the 'broader socio-economic and political transformation, cultivating a commons-centric and ethical economy. They are activated by 'networks of people who freely organise around a common goal of using the shared resources and market-oriented entities that add value on top of or alongside them'. They may rent the digital platform license (i.e., a 'CopyFair' license) from a friendly digital capitalist who may not be local but is willing to adjust to a co-operative-centric community (Papadimitropoulos, 2021).

Notably, worker-platform co-operatives benefit from platform work in several ways. Lawrence et al. (2019) state that co-operatives build justice and fairness goals into their mission and structure. They are "purposeful by design, established to serve specific socio-economic needs and populations, exhibiting fairwork principle outcomes". First, worker-platform co-operatives counter various work-related problems in the digital economy and achieve several beneficial outcomes – such as resiliency, ameliorating and combating economic inequalities and injustices such as lower pay inequality and broader wealth spreads due to shared ownership (De Peuter et al., 2022). Third, worker-platform co-operatives create a more humane and ethical digital economy (Chatterton & Pusey, 2019) and advance workers' rights (Scholz et al., 2021). Worker-platform co-operatives benefit e-drivers by fostering solidarity and voluntary labour standards (Schor & Eddy, 2022).

In this breath, platform co-operatives, including worker-platform co-operatives, have succeeded in different social contexts. A study by Bunders et al. (2022) on the feasibility of platform co-operatives in the gig economy found that the success rate among ride-hailing worker-platform co-operatives in France, the UK, the USA, Italy, Canada, and France was high. Ten out of 13 ride-hailing worker-platform co-operatives had succeeded, some even owning and franchising their jointly-owned ride-hailing platforms that compete with capitalistic ride-hailing platforms.

Despite these successes of worker-platform co-operatives worldwide and their subsequent recommendations for e-drivers in Kenya, there have been limited studies to determine the extent of

formalising them in the country's societal context. Therefore, conducting an empirical study to understand how the ride-hailing platform management influences e-drivers to consider forming or joining worker-platform co-operatives in the country was critical.

This study hypothesised that the trustworthy labour-platform management (TPM) principle (independent variable) does not positively correlate with e-drivers' willingness to form and join worker-platform co-operatives (dependent variable), suggesting that e-drivers' agreement level for existing IOF-managed platforms is not likely to spark their desire to form or join worker-platform co-operatives.

The study paper was grounded on the Utility Theory (UT), which was initially hypothesised by Bernoulli in 1738 and expounded by (von Neumann & Morgenstern, 1947 as cited by Shakerinava & Ravanbakhsh, 2022). UT hold that as long as one's (like e-driver's) preferences satisfy certain rationality maxims, one's (e-driver's) behaviour could be explained as maximisation of some utility function (like willingness to form and join worker-platform co-operative and subtype) in expectation (of like the fulfilment of fairwork principle of (platform) management) (Liu, 2023) UT makes four assumptions (Shakerinava & Ravanbakhsh, 2022): completeness (individuals can rank order all possible choices, irrespective of how many choices are placed before); "more-is-better" (individuals choose a package which contains more of everything); "mix-is-better" (individuals are indifferent to the choice between one or the other good); and rationality (individuals' innate choices are fixed, regardless of the context and time).

2. Materials and Methods

This study was based on the Realism Research Philosophy (RRP) (Park & Peter, 2022; Sturgiss & Clark, 2020), especially the Critical Realism Research Philosophy (Critical RRP). According to Bhaskar (2008, as cited by Zhang, 2023), Critical-RRP is distinguished by ontological realism, where the observable events (like the emerging worker-platform co-operatives) are the actualisation of the unobservable, real, manipulable, and internal mechanisms (like the e-drivers desires for solidarity). This paradigm holds that the social world (like e-drivers' social representation or collective action) can be truly understood only if people (like the e-drivers) understand the structures (like the platform economy sector) that generate events (the e-drivers frustrations and desires). Therefore, the empirical study of the observable environment should always be guided by adequate 'ontological' studies of the hidden actual generative structures. Critical RRP is a cyclical theory-led approach that tends towards mixed methods. Each cycle involves new iterations of theory that require new testing methods using various techniques, often combining qualitative and quantitative (Allmark & Machaczek, 2018). This is to ensure methodological rigour and coherent interpretation of study findings.

Study Design

The study design related to Critical-RRP applied in this study was a multimethod research design—a combined quantitative and qualitative research—specifically, the discrete choice experiment (DCE) design (Guerrero et al., 2020) and sequential explanatory mixed method research (SEMMR) design (Taherdoost, 2022a).

According to Zubair (2023), DCE is also used by social scientists to evaluate human behaviour (like the e-drivers' willingness to form and join worker-platform co-operatives). DCE is considered the research design of an information-gathering experiment in which a variation is present and executed under the researcher's complete control. DCE was used in this study since the problem of this study was the limited studies that have assessed the viability of worker-platform co-operatives by e-drivers, and the resulting problem of the lack of worker-platform co-operatives in the country necessitates

initiating studies in the field to use DCE.

The study area was the Nairobi Metropolitan Region (NMR) of Kenya. NMR is the most populous in East and Central Africa (Mundia, 2017), including Nairobi City County (685 km2) and neighbouring Kiambu, Machakos, and Kajiado counties. NMR is increasingly dependent on expanding ride-hailing platforms (Delaunay, 2021; Friedrich-Ebert-Stiftung, 2021) and the "uberisation" of work (Lakemann & Lay, 2019). Nairobi Metropolitan Region (NMR) alone, there are approximately 20,000 e-drivers (Kiplagat, 2023). Therefore, based on the Yamane sampling formula (Olonite, 2022, July 1), the target sample was 392.

Data Collection Instruments and Administration

The study utilised questionnaires to collect quantitative primary data. Questionnaires provided structured and standardised responses, reducing biases and intrusiveness from many respondents. They quickly resulted in a high rate of responses at a low cost and made the analysis process more streamlined and less time-consuming (Pozzo et al., 2019). While the respondents' opinions were not numerical, assigning a “numerical value” allowed the researcher to perform tasks like finding their average opinions.

The researcher developed a questionnaire for this study with four sections – e-drivers’ characteristics and perceptions, fairwork principles of trustworthy labour-platform management (TPM) principle, and worker-platform co-operatives. The researcher chose and developed a questionnaire format that recreated the context of an actual situation of e-drivers in Kenya (Taherdoost, 2019). For a precise, focused, feasible, and meaningful questionnaire, the research questions were predominantly based on a recommendable 5-point Likert scale (from ‘Strongly Agree’ (1) to ‘Strongly Disagree’ (5) of (platform) management principle compliance question) and a 3-code discrete choice (of platform worker structures and platform co-operative subtypes questions) (Taherdoost, 2019; Taherdoost, 2022b) relating to the study unit of analysis and observation.

These instruments were pretested among 12 e-drivers in Nairobi City in June 2024. The pilot testing helped the researchers check the data collection tools' specificity, readability, and reliability (Hilton, 2017). Notably, the researcher ensured that the e-drivers who participated in the pilot study were excluded from the substantive study sample.

In the actual administration of the data collection tools, 600 questionnaires were distributed among ride-hailing drivers from the end of June to August 2024, and 100 face-to-face data collections were undertaken. The questionnaire was administered with an introduction, including the researcher’s name, the institution's name, and the topic or issue being studied. Then, the respondents were informed of how long the questionnaire took and what rules they were to follow – either checking all that applied or ticking appropriately. The questionnaire was administered face-to-face and online.

It is important to note that the data was collected during the heightened Gen-Z demonstrations of June – August 2024 against the 2024 Finance and Taxation Bill, with the Nairobi Metropolitan Region (NMR) as the epicentre. This led to the initial data collection being affected by missing or incomplete data, which could have compromised the study's integrity (Button et al., 2013). However, the research team responded by deploying more resources and engaging more research assistants with higher targets. This adaptability ensured that more data was collected.

In the end, 78 completed questionnaires were returned through manual measures and 419 through online Google forms, yielding an excellent response rate of 82.8%. Thus, 497 usable questionnaires were attained, surpassing the study’s target sample of 392. This relatively large number of

respondents addressed the critical issues of sampling bias, non-response, reduced 'Type II' errors, integrity of the experimental design, and statistical power (Trafimow & Myüz, 2018).

The analysis of the respondents' demographic indicates that most e-drivers are men (96.2%) compared to women (3.8%). The youth (<35 years) e-drivers are 68.6%. More than half (56.5%) of the e-drivers operate in Nairobi City County, Kenya's capital city, followed by Kiambu County (29.6%), Kajiado County (8.5%) and Machakos County (5.4%). The e-drivers use over ten ride-hailing platforms – licenced transport network IOFs – for their work. These include Uber, Bolt (formerly Taxify), Little Cab, Farasi, Yego, Wasili Cab, Fone Taxi, In-Driver, Mondo Ride, and others like Hava Cabs and Jakalo. Most of the e-drivers (65.6%) have experience of 1-6 years. Moreover, 66.6% of e-drivers hold college certificates, diplomas, and undergraduate degrees. 60.2% are in ride-hailing work full-time due to a lack of other job options (45%) and earn additional income (35%). 69.6% have leased vehicles or been employed by vehicle owners. The e-drivers operate on a 24-hour rotating work schedule (69.4%), where the majority (44.1%) do 11-15 rides and 44.7% work for 6-9 hours daily, seven days a week. Furthermore, most e-drivers (69.6%) do not own the vehicle they use for the ride-hailing work; they are either employed or have leased it from the vehicle owners. 31.2% of e-drivers have experienced or witnessed security incidents, and only 6.6% have their insurance covered by ride-hailing investor-owned firms (IOFs). Regarding income and expenses, 76.2% of the e-drivers reported getting an average daily pay of KES 401 – 800 (approximately USD 2.9 – 5.8) per ride, and on the other hand, 70.8% spend an average of KES 1,501-3,000 (USD 10.9 – 21.7) per day on fuel, maintenance, and car-rent. These ride-pay rates (especially by the most used platforms) are still deemed extremely low compared to the high operation expenses for the e-drivers, who are dissatisfied with them. 63.1% of the e-drivers indicated they (were very) dissatisfied with the fare rate per ride. In comparison, 45.7% of e-drivers perceived (very) unfairness of the commission rates per ride, despite the 18% capping by the National Transport and Safety Authority (NTSA). The majority of e-drivers (85.1%) would be willing to form and join worker-platform co-operatives compared to those with 'no preference' (9.1%) and dealing individually and directly with the existing IOFs (5.8%). It is against this that the effect of the platform management variable on the formation and joining of worker-platform co-operatives was tested.

Data Analysis

This study used descriptive and predictive analytical techniques to analyse the respondents' quantitative data (Taherdoost, 2020). The data was analysed using *Jamovi* version 2.5.6.0 statistical software. The Model was run in *Jamovi* software, version 2.5.6.0 (Navarro & Foxcroft, 2022). *Jamovi* is a statistical package for analysing data and running tests, much like SPSS. It was used in the study because it is up-to-date, user-friendly, and compatible with "R" (Sahin & Aybek, 2019).

Descriptive analytics using descriptives and data reduction methods indicated different frequencies and principal component loadings of e-drivers' characterisations and perceptions. These components were described in the study report as e-drivers' demographic and motivation characteristics, geographic location and platform usage characteristics, work patterns, incomes and expenses, and general working environment.

The predictive analysis method of logistics regression ("logit") (Guerrero et al., 2020) is based on the discrete choice experiment (DCE) study design adopted for this study. According to McFadden (1974, as cited by Train, 2009), the logit method is a choice probabilities method based on random utility theory (UT). The logit method implies that unobserved utility is distributed at an extreme value. The logit model is one of the most accessible and widely used discrete choice models – across disciplines like agriculture (Kotu et al., 2021) and health (De Bekker-Grob et al., 2012). Its popularity is because the formula for the choice probabilities takes a closed form and is readily interpretable

(Train, 2009). The error terms are assumed to be independent and identically distributed, with a Gumbel or 'Type I' extreme value distribution. The pseudo-R^2 (or McFadden's R^2) values correspond to models with a high goodness-of-fit range between 0.2 and 0.4, which is acceptable due to the complexity and variability of human behaviour (Guerrero et al., 2020).

Specifically, the researcher applied the Multinomial Logit (MNL) regression analysis in this study. The MNL technique assumes homogeneous preferences among individuals (like e-drivers of four-wheeler vehicles under this study). To mitigate the potential source of bias in parameter estimates of DCE, the researcher applied MNL to account for attribute non-attendance (ANA), where respondents do not consider all the attributes of the Independence of Irrelevant Alternatives (IIA) in making their choices (Scarpa et al., 2013, as cited by Kotu et al., 2021).

The researcher chose this logit model based on several parameters (Tudela-Mamani & Leos-Rodríguez, 2018; Kotu et al., 2021). The use of this Model was according to the data of interest, for which purpose the following aspects were to be considered: the coefficients of the independent variables were to be significant at a given confidence level; the Akaike Information Criterion (AIC) was to be low, and the Model was to have better goodness-of-fit in terms of pseudo-R^2 (or McFadden's R^2), through the estimated model parameters, kernel density estimators, and overall prediction success index. (Guerrero et al., 2020).

3. Results

Assessment of the Measurement Model

In this study, we were cognisant that validity could be external (criterion and convergent-related) or internal (theoretical and content-related) (Trochim, 2020). The tests for the external validity focused on using different question structures of a DCE survey, while the internal validity tests focused on the method's basic assumptions (Raquetonarivo *et al.*, 2016). Specifically, the study had an acceptable internal consistency of the three measure variables, exhibiting Cronbach's α of 0.824 (Table 1). This meant the questionnaire's reliability and the results' ability could be replicated using the same research methodology.

Table 2: Study's Scale Reliability Test

Scale Reliability Statistics

	Cronbach's α
Scale	0.824

Item Reliability Statistics

	If item dropped
	Cronbach's α
TPM Principle	0.746
Platform Work Structure	0.843
Platform Coop Subtype	0.626

We then the goodness of fit of the TPM principle as an individual variable, and it had a remarkably high goodness-of-fit on the Model with a pseudo-R^2 measure (i.e., the McFadden R^2) of 0.325. This corresponds to the acceptable range of between 0.2 and 0.4 for social and human behaviour studies (Guerrero et al., 2020), thus reassuring the robustness of our Model (Table 2).

Table 3: Model of Fit Measure with only TPM Principle in the Model

Model Fit Measures

				Overall Model Test		
Model	Deviance	AIC	R^2_{McF}	χ^2	df	p
1	349	357	0.325	168	2	< .001

Note. Models were estimated using a sample size of N=497.

The variable had a significant p-value of <.001, indicating that as a predictor, it carries substantial weight and has a meaningful impact on the Model, a finding of great importance. It significantly improved the Model fit as an individual variable. It was associated with the outcome of e-drivers' willingness to form or join worker-platform co-operatives, given the chi-square value of 168.

Assessment of the Regression Model

The predictor model coefficients (TPM principle) in Table 3 represent the results for the three choices of the platform-work structure: the 'IOFs', 'no-preference', and 'worker-platform co-operatives' (Table 3).

Table 4: Model Coefficients – Prefered Platform Work Structure with only TPM Principle

Model Coefficients – Platform Work Structure

			95% Confidence Interval						95% Confidence Interval	
Platform Work Structure	Predictor	Estimate	Lower	Upper	SE	Z	p	Odds ratio	Lower	Upper
No Preference – Investor-Owned Firm	Intercept	-2.27	-4.125	-0.423	0.944	-2.41	0.016	0.10289	0.0162	0.6549
	TPM Principle	1.15	0.352	1.951	0.408	2.82	0.005	3.16426	1.4225	7.0387
Worker Platform Co-op – Investor-	Intercept	-5.06	-6.908	-3.221	0.941	-5.38	< .001	0.00632	10.00e-4	0.0399

Owned Firm									
	TPM Principle	2.62	1.835	3.404	0.400	6.54	< .001	13.72874	6.2641	30.0889

The Model Coefficients (in Table 3) show that for the 'no preference' of the platform work-structure category relative to the 'investor-owned firm' (reference category), the coefficient for the TPM principle is 1.15 (SE = 0.408, Z = 2.82, p= 0.005), with a 95% confidence interval of (0.352, 1.951). The corresponding odds ratio (OD) was 3.16426. This means that for every agreement level decrease for the IOF's compliance with the TPM principle, the log odds of choosing to have 'no preference' increase by 1.15 units (or odds ratio of 216.426%), holding all other variables constant.

On the other hand, the Model Coefficients (in Table 3) show that for the 'worker-platform co-operative' category relative to the investor-woned firm' (reference category), the coefficient for the TPM principle is 2.62 (SE = 0.400, Z = 6.54, p< .001), with a 95% confidence interval of (1.835, 3.404). The corresponding odds ratio (OD) was 13.72874. This means that for every agreement level increase for the existing IOFs' compliance with the TPM principle, the log odds of choosing to form or join the worker-platform co-operative (as opposed to working directly with the investor-owned firms) increase by 2.62 units (or odds ratio of 1,272.874%), holding all other variables constant.

Considering the relatively higher positive coefficients, p-values, and odds ratios in both comparisons, the results indicated that the TPM principle significantly affected e-drivers' willingness to form or join worker-platform co-operatives, compared to no preference and IOF choices. Therefore, the null hypothesis is rejected.

Assessment of the Graphical Models

The graphic results (Figure 1) showed TPM principle agreement levels determining the e-drivers' choice of platform work structures.

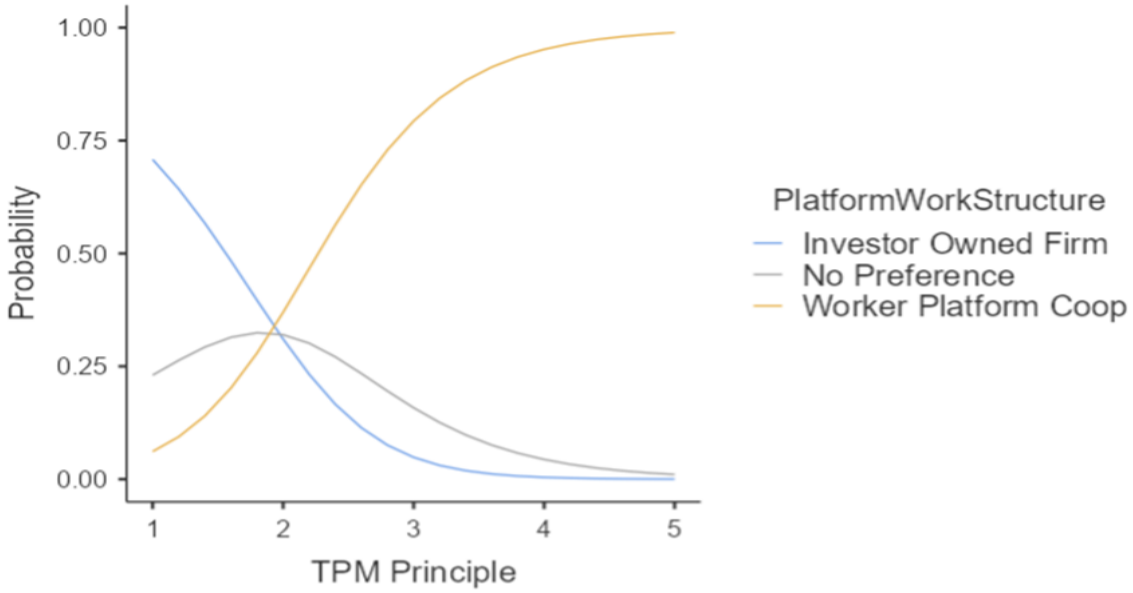

Figure 1: Probability Graph for Trustworthy Labour Platform Management Principle on

Platform-Work Structure Choice

The probability graph results show that as TPM principle compliance by existing IOFs deteriorates, the probability of e-drivers being 'strongly disagree' and ‘disagree’ increases for worker-platform co-operatives, while the probability of being 'strongly agree', ‘agree’ and 'neutral' declines for ‘no-preference’ and ‘investor-owned firm’. This indicates a stronger disagreement level increase on TPM principle compliance by existing IOFs, strongly associated with increased e-drivers' choice of worker-platform co-operatives.

The graphic results (Figure 2) showed TPM principle agreement levels determining the e-drivers’ choice of three work-platform co-operative subtypes. These include ‘TypeA’ – is an ‘only e-drivers’ worker-platform co-operative ‘with’ own managed ride-hailing platform), TypeB – is an ‘only e-drivers’ worker-platform co-operative ‘without’ their own managed ride-hailing platform, and ‘TypeC’ – is a platform co-operative that includes several stakeholders in the ride-hailing ecosystem.

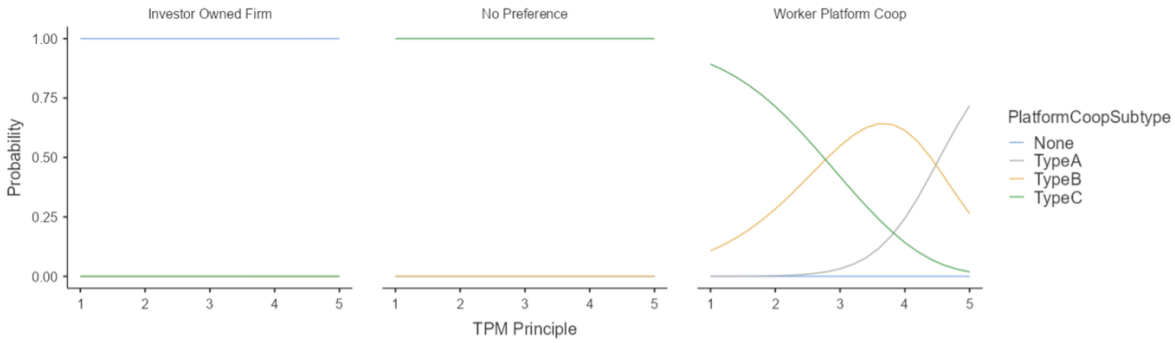

Figure 2: Probability Graph for Trustworthy Labour Platform Management Principle on Worker-Platform Co-operative Subtype Choice

The probability graph results show that as TPM principle compliance by existing IOFs deteriorates and the choice of worker platform increases, there are also variations in the latter’s subtypes. In this case, as the TPM principle agreement level decreases, the probability of choosing a ‘TypeC’ platform co-operative decreases steadily from the ‘strong agreement(1) to ‘strong disagreement (5)’. On the other hand, as the TPM principle agreement level decreases, the probability of choosing a ‘TypeB’ platform co-operative increases steadily up to between ‘neutral (3)’ and ‘disagreement (4)’ levels, then decreases when the agreement level decreases from ‘disagreement(4)’ to ‘strong disagreement(5)’ levels. Furthermore, as the TPM principle agreement level decreases, the probability of choosing a ‘TypeA’ platform co-operative remains steadily low up to between ‘neutral(3)’ and ‘disagreement(4)’ levels, then steadily increases when the agreement level decreases from ‘disagreement(4)’ to ‘strong disagreement(5)’.

This showed a higher possibility of e-drivers forming and joining both ‘TypeA’ and TypeB worker-platform co-operatives, given the perceived higher disagreement of non-compliance to the TPM principle.

4. Discussion

Significantly, platform management by the owners of the ride-hailing IOFs influences the e-drivers’ choice of platform-work structures. Substantial disagreement level increase on TPM principle

compliance by existing IOFs is strongly associated with increased e-drivers' choice of worker-platform co-operatives. Platform co-operatives embed co-operative identity's six values (of self-help, self-responsibility, democracy, equality, equity, and solidarity), four ethical values (of honesty, openness, social responsibility, and caring for others), and seven principles (voluntary and open membership, democratic member control, members' economic participation, autonomy and independence, education, information and training, cooperation among co-operatives, and concern form community) (International Co-operative Alliance, 1995 as cited by Muldoon, 2020).

Subsequently, e-drivers' desire for inclusive platform management influences their choice of the worker-platform co-operative subtype. Three worker-platform co-operative subtypes are identified, 'TypeA', 'TypeB' and 'TypeC'. E-drivers can form and join any of them based on their preference for a particular co-operative composition and operation.

'TypeA' worker-platform co-operative is an e-drivers' exclusive co-operative with its own developed and managed ride-hailing platform (De Peuter et al., 2022). 'TypeB' worker-platform co-operative is an e-drivers' exclusive co-operative but without its own developed and managed ride-hailing platform. They may rent the digital platform license (i.e., a 'CopyFair' license) from a 'Friendly' IOF for a ride-hailing platform that may not be local but is willing to adjust to a co-operative-centric community (Papadimitropoulos, 2021). 'TypeC' worker-platform co-operative is an 'all-inclusive' co-operative comprising ride-hailing sector actors, including e-drivers, riders, and app developers (Pasquali et al., 2022).

'TypeC' co-operative is an additional typology to what was identified earlier by scholars (De Peuter et al., 2022). If the disagreement level is low or not, forming and joining a 'TypeC' worker-platform co-operative becomes a choice. If the disagreement level is moderate, forming and joining a 'TypeB' worker-platform co-operative becomes a choice. Examples of 'TypeB' worker-platform co-operatives among e-drivers include the "Alternate Drivers" from Seoul, South Korea (Ji, 2020) and Cabfair from London, UK (McCann & Yazici, 2018). If the disagreement level is high, forming and joining a 'TypeA' worker-platform co-operative becomes a choice. Examples of 'TypeA' worker-platform co-operatives among e-drivers include "Eva" from Quebec, Canada (Mannan, 2020; Rani et al., 2021), "Drivers' Co-operative (Co-Op Ride)" in New York, United States (Parikh, 2023), and the "Co-op Taxi" case in Edmonton, Canada (Rijpens et al., 2023).

These findings affirm Bühler et al.'s (2023) study, which implies that fair platform work begins at the point of the TPM principle by the platform-work structure. Moreover, worker-platform co-operatives, whichever subtype, are likely to succeed, as observed in North America and Eastern Europe (Bunders et al., 2022) and East Asia (Ji, 2020).

5. Conclusions

The TPM principle statistically and practically impacts e-drivers' willingness to form and join worker-platform co-operatives in Kenya. As the e-drivers disagree on the IOFs' compliance with trustworthy ride-hailing platform management, their likelihood of forming or joining worker-platform co-operatives increases. Moreover, depending on the level of disagreement with IOFs' compliance with the TPM principle, e-drivers are willing to form and join either 'TypeA' and 'TypeB' worker-platform co-operatives in their societal contexts. Moderate disagreement will lead to a 'TypeB' choice, while high disagreement will lead to a 'TypeA' choice.

Practical Implication

This study implied that trustworthy platform management is a significant factor as the e-drivers

choose the ride-hailing platform they use or the kind of action they would employ to mitigate and address the IOFs' unfavourable management of ride-hailing platforms, including forming and joining worker-platform co-operatives. In the latter case, the e-drivers could operate in a mechanism that protects them, as they benefit from quality jobs and fair incomes and go around the role-set conflict (Mannan, 2022).

Theoretical Implication

The study depicted that there is a diminishing individual and direct relationship between e-drivers and the ride-hailing platform IOFs per the Utility Theory (UT) threshold (Bernoulli, 1738; 1954), and there is a risk aversion among the e-drivers against IOFs, thereby being ready to give worker-platform co-operatives a chance. The e-drivers' perceptions align with three of the four UT's assumptions (von Neumann & Morgenstern, 1947 as cited by Shakerinava & Ravanbakhsh, 2022), the 'completeness' assumption. Based on this assumption, the e-drivers perceived that the TPM principle is the ultimate spark for their willingness to form, join, choose and engage worker-platform co-operatives. Therefore, the preferences for the fairwork principle of platform management affirm the relevancy of UT's theory to maximise their expectations.

Recommendations

The national and county governments should promote and develop worker-platform co-operatives among platform workers, including e-drivers, to help them inclusively engage with managing the platforms they use or develop their own friendlier platforms. A clear framework and programs need to be established to realise this endeavour. Due to their large numbers of e-drivers, Nairobi City and Kiambu Counties could be the most viable counties for piloting this initiative.

Limitations and Future Studies

This research data collection exercise coincided with the Gen-Z demonstrations (with the majority of the youth in the same age-group brackets as those undertaking ride-having jobs) between June and August 2024 in most parts of Kenya against the 2024 Finance Bill and the over-taxation outcry. Even after extending the data collection period severally and also undertaking in-depth interviews, the exercise still ended when the weekly demonstration was ongoing. This could have affected the study in several ways, especially regarding the context influencing response bias and reliability of the study results' generalisation, given inconsistent data and the constraint on external validity, and the demonstration events may have served as a confounding variable, potentially influencing the outcomes in ways that are difficult to control. This may have introduced uncertainty regarding whether the observed effects are due to the demonstration or other factors. Therefore, researchers in the co-operative field should heighten research studies in this new Model of the worker-platform co-operative to better understand its taxonomical essence by both policymakers, promoters and platform workers like the e-drivers and how best they could be promoted to succeed in the societal contexts. Future research studies should be undertaken to mitigate several issues. First, to improve the accuracy of future studies, researchers should design protocols that better control for confounding variables, such as concurrent external events, to isolate the effects attributable to such events as public demonstrations more accurately. Secondly, to strengthen the robustness of the conclusions and provide a broader understanding of the phenomena under study, researchers should replicate this research in different contexts or geographical areas and for different platform workers other than the '4-wheeler' e-drivers to validate the findings and assess their generalisability.

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Compliance with Ethical Standards

The study was conducted under the ethical standards established by the Co-operative University of Kenya (CUK) and the National Commission for Science, Technology, and Innovation (NACOSTI). The research licence number is NACOSTI/P/24/37631.

Declaration of generative Artificial Intelligence (AI) and AI- assisted technologies in the writing process.

In preparation for this article, the author used ChatGPT and Grammarly to improve its readability. After using these tools and services, the author reviewed and edited the content as needed and takes full responsibility for the publication's content.

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The Role of Tourism Cooperatives in Promoting Sustainability in Sabah, Malaysia

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Abstract

Tourism was identified as one of Malaysia's national key result area. Various initiatives were engaged by the government to encourage participation in the tourism business among the interested parties in the country. This research was conducted to examine the business activities of tourism cooperatives in the state of Sabah, Malaysia. The two main objectives of this research are, first, to identify factors affecting sustainability and, second, to develop a sustainability model that suits the tourism cooperatives. The methodology used was of qualitative design based on multi-sites case study approach. Data was collected primarily through interviews with focused groups and individuals. Participants were selected using a purposive sampling approach from among the board, members and staff of cooperatives involved in the downstream tourism activities. Data collected were analysed based on pre-identified themes and using a case-by-case approach. The research found that, the strategic roles of stakeholders and cooperatives inclusive socioeconomic responsibility and continuous practice in promoting environmental sustainability are important to influence environmental as well as tourism sustainability. The benchmarked cooperative in this research emphasizes the importance of strategic responsibility of cooperatives in promoting quality education and lifelong learning regarding the concept of sustainability. Thus, these variables are presented as independent variables in the conceptual framework, while environmental sustainability and tourism sustainability are proposed as dependent variables. The study also found that awareness on sustainability and tourism best practices and support from the board, members, cooperative staff and local communities as well as financial assistance and recognition from related institutions in practicing sustainability measures may moderate the relationship between the identified independent and dependent variables.

Keywords: *Cooperatives, tourism, tourism sustainability, environmental sustainability, sustainability indicators.*

1. Introduction

Tourism is defined as the temporary movement of individuals to destinations outside their usual residence to engage in activities that satisfy their needs (Mathieson & Wall, 1982; Bukart & Medlik, 1987; Bhatia, 2001). Globally, tourism is a rapidly growing industry (Scheyvens & Momsen, 2008), and in Malaysia, it ranks as the second largest sector after manufacturing (Che Leh & Omar, 2013).

This study examines tourism cooperatives in Sabah, where cooperatives are established to achieve socioeconomic goals through members participation in decision-making. Cooperatives also aim to provide essential services and revitalize the local economy. (Leviten-Reid & Fairbairn, 2011).

Sustainable development, promoted by international bodies, governments, businesses, and communities, is valued for its ability to enhance business performance. It supports competitiveness and adds value to cooperative activities. Typically defined at the community level, sustainable development is seen as a process aimed at achieving long-term sustainability (Baumgartner & Ebner,

2010).

The objectives of this study are to:

1. Identify the factors influencing sustainability of cooperative tourism businesses
2. Develop a sustainability model for tourism cooperatives to effectively implement business activities.

This study provides valuable insights for policymakers and regulators in Sabah's tourism and cooperative sectors. It also benefits stakeholders in tourism development, including ministries such as the Ministry of Tourism, Arts and Culture Malaysia (MOTAC) and Ministry of Tourism, Culture and Environment of Sabah (KePKAS), and agencies such as Malaysia Cooperative Societies Commission (SKM) and Sabah Tourism Board (STB). Additionally, Non-Governmental Organizations (NGOs) and international agencies can use the findings of this research to support community-based tourism efforts, while local communities may apply the insights to develop their tourism activities.

Cooperatives benefit over one billion people worldwide, whether as members, workers, or both (Aris et al., 2018), highlighting their global significance. Governments should prioritize expanding cooperatives, recognizing their role as the third economic sector, alongside public and private sectors (SKM, 2001, 2010, 2016).

2. Literature Review

Sustainable development, as defined by the United Nations (1987), refers to the process of meeting current needs without compromising the ability of future generations to meet theirs. While the concept has been interpreted in various ways, certain themes consistently emerge, such as a commitment to fairness, equity, and a long-term perspective. At the heart of sustainability lies the "Triple Bottom Line" (TBL) framework, which focuses on three key areas: economic growth, social equity, and environmental preservation.

John Elkington introduced the TBL concept in 1998, arguing that businesses should not be evaluated solely on their financial performance but also on their social and environmental impact. Known as the "three Ps" – People, Planet, and Profit – these dimensions reflect the broader responsibilities of businesses to society and the environment. TBL is now recognized as a crucial aspect of corporate sustainability, where long-term success is viewed as dependent not just on profits but also on the welfare of communities and the health of the environment.

The United Nations (2001, 2011) acknowledges cooperatives as essential contributors to raising living standards, as well as to the political, economic, social, and cultural development of nations. As member-driven organizations, cooperatives are uniquely aligned with the principles of sustainability, fostering community involvement and equity in decision-making.

The International Labour Organization (ILO) further highlights how cooperatives contribute to sustainable development by promoting global partnerships, environmental sustainability, and gender equality (ILO, 2015). By empowering women and fostering inclusivity, cooperatives play a critical role in addressing social challenges while ensuring responsible use of resources.

In recognition of these contributions, the International Cooperative Alliance (ICA) identifies sustainability as one of the five key pillars of cooperatives, envisioning them as builders of economic,

social, and environmental sustainability (ICA & ILO, 2015). Through this model, cooperatives are well-positioned to lead the charge toward a more sustainable future, benefiting both their members and society at large.

The "Three Pillars Model" (also known as the Triple Bottom Line (TBL)) is one of the most widely accepted frameworks for understanding sustainable development (United Nations World Summit, 2005). This model encompasses economic capital, social capital, and natural capital, asserting that sustainable development requires balanced attention to economic growth, social progress, and environmental protection.

By integrating the TBL approach, businesses, organizations, and governments can work toward sustainability in a holistic way, addressing both immediate economic goals and long-term environmental and social needs. For cooperatives, this approach is especially relevant, as they are naturally designed to balance economic viability with community and environmental objectives.

Sustainable development, guided by the TBL, provides a framework for creating long-term prosperity without depleting resources or harming society. Cooperatives, with their focus on member involvement, social responsibility, and environmental stewardship, are particularly well-suited to lead this movement. As international organizations like the UN and the ILO continue to emphasize the role of cooperatives in fostering sustainability, it is clear that cooperatives are key drivers of social progress, economic resilience, and environmental protection. By embracing sustainable development principles, cooperatives can continue to make a lasting, positive impact on both local communities and the broader global landscape.

3. Research Methodology

This qualitative study adopts a case study approach. As Merriam (2015) categorizes, it falls under multisite studies, meaning it involves multiple locations. The cooperatives involved in the study were selected through purposive sampling, and data were collected using three methods: focus group interviews, individual interviews, and analysis of secondary data. The participants included Cooperative Board Members (board), staff, and cooperative members. Data were analysed based on predefined themes and through a case-by-case approach.

Participants were divided into two groups. The first group comprised stakeholders from the tourism industry in Sabah, including representatives from relevant agencies and ministries such as the Ministry of Tourism, Culture, and Environment Sabah (KePKAS), the Sabah Tourism Board (STB), the Ministry of Tourism, Arts, and Culture (MOTAC) Malaysia, and the Malaysia Cooperative Societies Commission (SKM). The second group consisted of participants from tourism cooperatives across nine regions in Sabah. Purposive sampling (Patton, 2002) was employed to capture a broad range of perspectives. Participation was voluntary, with informed consent obtained to ensure confidentiality. 48 individuals were interviewed with each interview lasted between 45 to 60 minutes and was recorded for accuracy.

The interview questions centred on key themes of the study, including participants' length of involvement in the tourism or hospitality sectors, their understanding of sustainability, and their views on implementing sustainability in tourism activities. The recorded interviews were transcribed for analysis, which was conducted manually without the use of specific software. A thematic analysis approach was employed to identify, analyse, and report recurring themes and patterns within the data (Braun & Clarke, 2006).

4. Research Findings

The research findings are presented from three key perspectives, each offering valuable insights into the study:

1. **Tourism Stakeholders Perspectives**: This perspective includes input from various stakeholders within the tourism industry in Sabah, such as government agencies, ministries, and related organizations. These stakeholders play a critical role in shaping tourism policies, regulations, and initiatives. Their views provide an understanding of how sustainability is being integrated into tourism practices at the policy and strategic level, highlighting challenges, opportunities, and the support available for tourism cooperatives in the region.

2. **Perspectives of Tourism Cooperatives in Sabah**: This perspective focuses on the experiences and insights of tourism cooperatives operating within Sabah. These cooperatives offer a ground-level view of how sustainability concepts are applied in daily operations. Their perspectives shed light on the challenges they face, their successes in integrating sustainable practices, and their interactions with both local communities and tourists. The findings from this group help identify the internal factors influencing the sustainability of tourism cooperatives businesses in Sabah, including governance, resources, and member participation.

3. **Benchmark Tourism Cooperative Perspectives**: The final perspective comes from examining tourism cooperatives outside of Sabah or in regions with established best practices. This comparative analysis provides benchmarks for successful sustainable tourism practices, offering insights into models, strategies, and frameworks that have proven effective elsewhere. By analysing these cooperatives, the study aims to draw lessons that can be adapted and implemented by tourism cooperatives in Sabah to enhance their sustainability efforts.

These three perspectives together provide a comprehensive view of how sustainability is perceived and practiced within the tourism sector, both at the policy level and in the cooperative movement, offering a balanced analysis for future improvements.

5. Tourism Stakeholders' Perspective

The study examines how tourism stakeholders in Sabah promote the concept of sustainable tourism. Sustainability is conceptualized through three dimensions:

i. **Management Practices and Internal Measures**: This dimension focuses on the strategic role stakeholders play in promoting sustainability. It includes the adoption of internal policies, practices, and frameworks that prioritize sustainable tourism development and the long-term well-being of the industry.

ii. **Social Costs and Financial Assistance**: This aspect highlights the socioeconomic responsibilities of stakeholders. It includes addressing the social costs of tourism, such as the impact on local communities, and the provision of financial support for sustainable initiatives, ensuring that tourism contributes to local development without creating adverse effects.

iii. **Continuous Environmental Sustainability Practices**: This dimension emphasizes the

importance of continuous efforts toward environmental preservation. It includes practices and policies that protect natural resources, mitigate environmental impacts, and ensure the tourism industry operates in harmony with the environment.

As policymakers, stakeholders are tasked with the responsibility to continuously understand, promote, and implement the "Triple Bottom Line" sustainability framework, which emphasizes the balance between **People (social equity)**, **Planet (environmental protection)**, and **Profit (economic development)**.

The analysis of stakeholder perspectives on sustainable tourism practices is summarized in the following Figure 1:

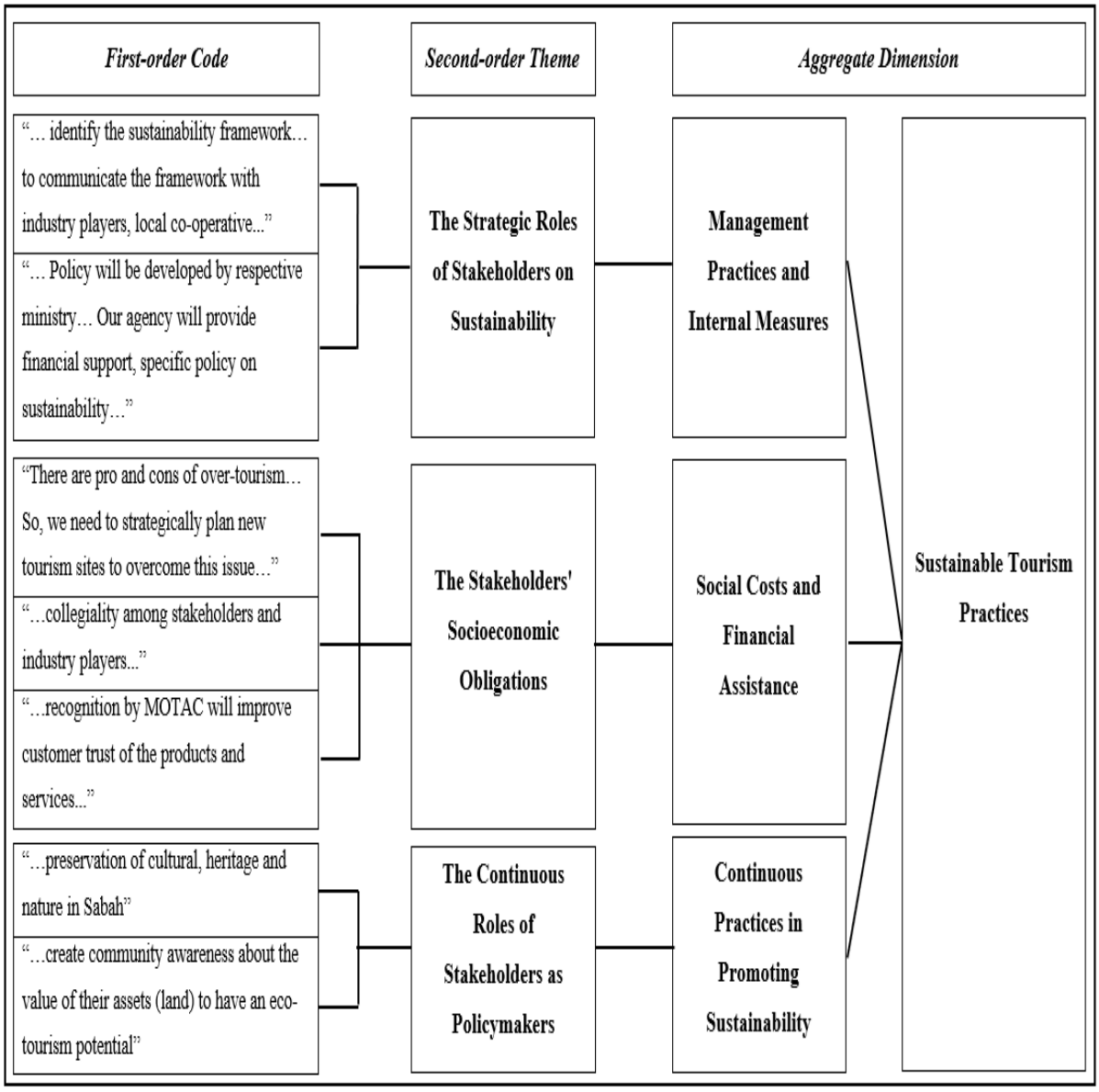

Figure 1: Tourism stakeholders' perspective on sustainable tourism practices

This Figure provides a visual overview of how different stakeholders integrate sustainability into their tourism activities, showcasing their roles and responsibilities across the three key sustainability dimensions.

6. Tourism Cooperatives' Perspectives

The analysis explores the attitudes of tourism cooperatives in Sabah concerning their efforts to advance, promote, and support sustainable tourism. It focuses on two primary aspects:

Key Success Factors for Sustainable Tourism Practices: This aspect highlights successful sustainability practices from a benchmark cooperative namely Koperasi Komuniti Kampung Kilim Langkawi Berhad, Langkawi, Malaysia. This cooperative was chosen for its exceptional performance, consistently demonstrated by its numerous awards and recognitions for excellence. The practices of this cooperative serve as exemplary models for tourism cooperatives in Sabah, providing valuable insights into effective strategies for achieving sustainability. By analysing the successes of this benchmark cooperative, the study identifies best practices that can be adapted and implemented by Sabah's cooperatives to enhance their sustainability efforts.

The study identifies three critical success factors for environmental sustainability adopted by cooperatives in Sabah. These key factors are:

i. **The Strategic Role of Cooperatives in Promoting Awareness on Sustainability.** Cooperatives play a pivotal role in promoting sustainability through "practical education" for visitors and tourists. Participants in the study emphasized that tourists can enjoy their holiday while simultaneously learning about sustainability and environmental conservation. Furthermore, tourism cooperatives also serve as role models for the local community. By integrating sustainable environmental practices into their business operations, they help raise local awareness about sustainability mechanisms.

ii. **The Cooperatives Socioeconomic Obligations to the Community.** Continuous and effective support for the community through social responsibility activities is crucial for both environmental and tourism sustainability. Several tourism cooperatives in Sabah have established "Aid Fund" as part of their social responsibility, with the primary goal of alleviating the financial burden of community members.

iii. **The Continuous Role of Cooperatives in Promoting Sustainability.** Many tourism cooperatives in Sabah are prepared to forge strategic partnerships with educational institutions to develop TVET-based (Technical and Vocational Education and Training) programs. These programs are designed to benefit the community and enhance the cooperatives' efforts toward environmental sustainability. The cooperatives involved in the study unanimously agreed on the importance of continuing to promote and encourage sustainability, recognizing their responsibility to protect and preserve the environment as key players in the tourism sector.

The perspectives of tourism cooperatives in Sabah pertaining to key success factors for tourism cooperatives in promoting sustainability are summarized in the following Figure 2:

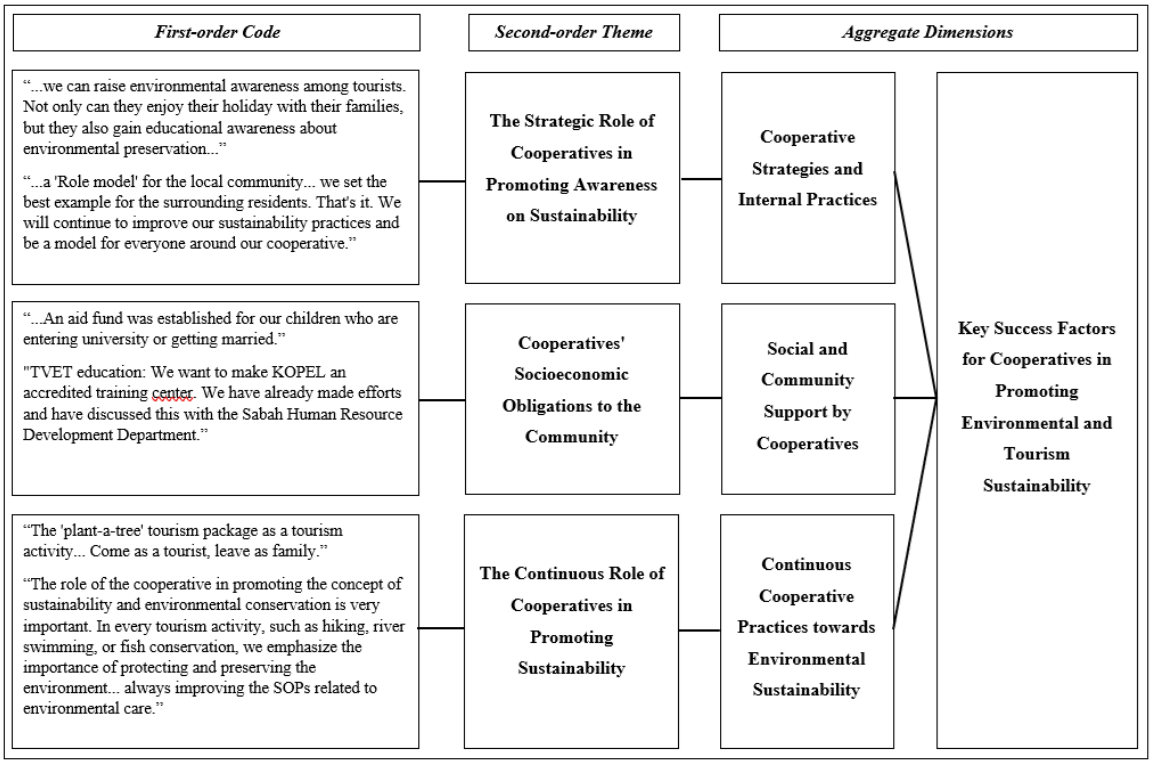

Figure 2: Key success factors in promoting environmental and tourism sustainability

Cooperatives' Perspectives on Challenges in Promoting Environmental Sustainability

On the other hand, this study also recognizes several challenges in implementing environmental sustainability practices. The study identifies three main challenges to adopting sustainable eco-tourism business practices:

i. **Lack of Awareness about Sustainable Eco-Tourism Business Practices**: Many cooperative members and management still lack exposure and knowledge about the importance and benefits of environmentally friendly and sustainable business practices. This lack of awareness makes it difficult to integrate sustainability elements into daily operations.

ii. **Lack of Support from the Board and the Surrounding Community**: The effectiveness of environmental sustainability practices relies heavily on the support from the board and the local community. However, there is a lack of commitment and involvement, which hampers the successful implementation of sustainability initiatives.

iii. **Lack of Financial Support for Sustainability Practices**: Implementing sustainability practices often requires significant financial investment. Cooperatives face challenges in securing sufficient funding or financial support to execute sustainability initiatives, such as adopting green technologies or conducting environmental awareness training programs.

These challenges highlight the need for a more holistic approach in educating, supporting, and

funding of cooperatives so they can play a more active role in adopting environmental sustainability practices.

The perspectives of tourism cooperatives in Sabah pertaining to challenges faced in promoting sustainability are summarized in the following Figure 3:

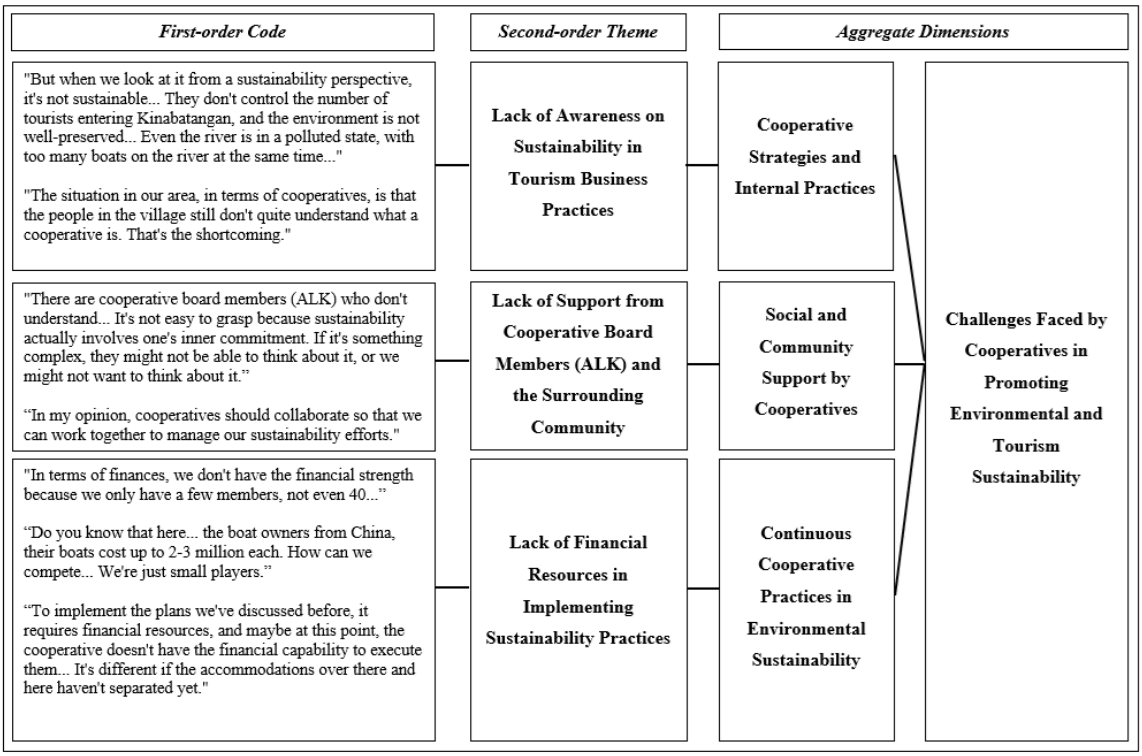

Figure 3: Challenges faced by cooperatives in promoting sustainability

7. Benchmark Cooperative's Perspective

The findings from this study propose that the benchmark cooperative namely Koperasi Komuniti Kampung Kilim Langkawi Berhad, successfully demonstrates sustainability practices through its focus on three key aspects:

I. **The strategic role of cooperatives in quality education and lifelong learning**. The benchmark cooperative emphasizes the importance and relevance of involving the local community in promoting knowledge about sustainability and environmental conservation. Additionally, their active participation is expected to enhance the economic stability of the community.

II. **The inclusive socioeconomic obligations of cooperatives**. The benchmark cooperative has established a community-based fund to provide financial support to local residents. This financial aid is valued by the community as it alleviates financial burdens. The benchmark cooperative is also noteworthy for its efforts to create an inclusive community by focusing on individuals with special needs, such as persons with disabilities and single mothers. One of the cooperative's goals is to generate employment opportunities for these groups, thereby contributing to the consistent development and economic stability of the community.

III. **The continuous role of cooperatives in environmental conservation and sustainability**. The benchmark cooperative focuses on enhancing strategic partnerships with government agencies, academic institutions, international organizations, and non-governmental organizations (NGOs) to continue promoting conservation and environmental sustainability efforts and understanding.The benchmark cooperative has also developed a Master Plan for mangrove and coral reef planting in the region. This program is seen as critical for preserving the environment not only for future tourists but also for future generations.

A summary of the analysis on the best practices of the benchmark cooperative in environmental sustainability is shown in Figure 4:

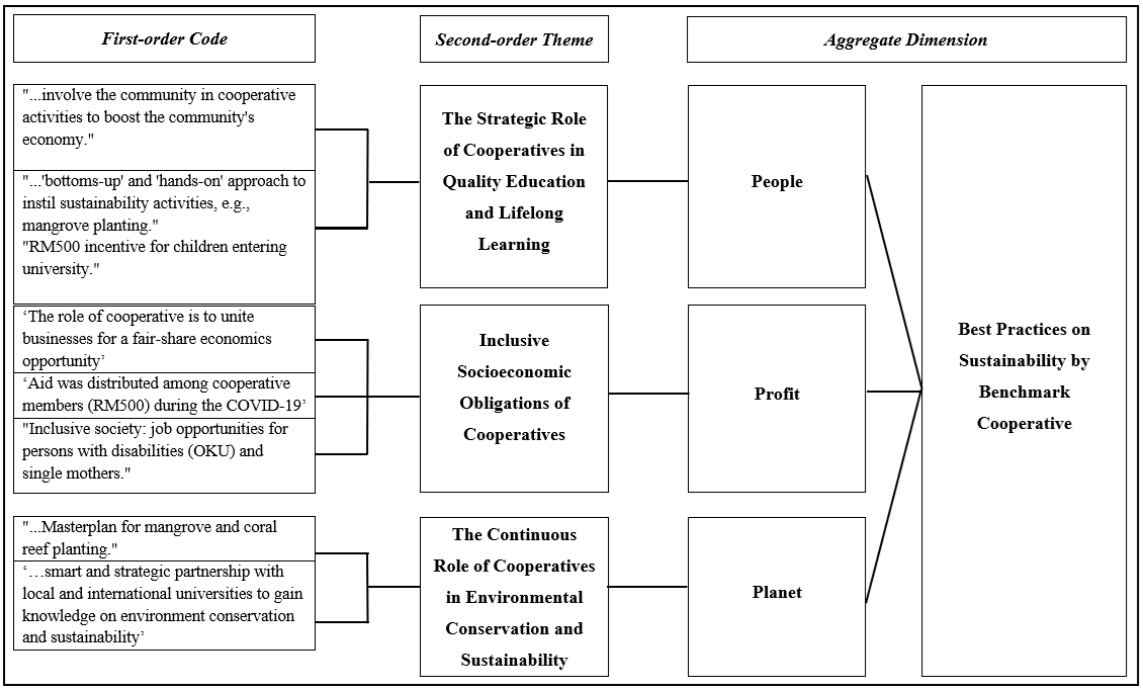

Figure 4: Best practices on sustainability by benchmark cooperative

This study suggests that promoting the concept of sustainability in the tourism industry, particularly in tourism cooperatives, is crucial for achieving long-term benefits. The findings highlight the role of stakeholders, including regulators, cooperative members, and the community, in promoting sustainable tourism practices. The proposed sustainability model can serve as a practical guide for tourism cooperatives in Sabah, emphasizing the strategic role of stakeholders, socioeconomic obligations, and continuous environmental sustainability practices.

8. Development of a Sustainability Model

This section emphasizes the creation of a sustainability model specifically designed for tourism cooperatives in Sabah, incorporating the three key pillars of the Triple Bottom Line (TBL): People, Planet, and Profit. The model is intended to provide a holistic framework for Sabah's cooperatives, enabling them to integrate sustainability into their business practices while maintaining a balance between social equity, environmental conservation, and economic success.

The study's findings emphasize the vital role that stakeholders and cooperatives play in fostering environmental and tourism sustainability. Strategic involvement, inclusive socioeconomic responsibilities, and continuous efforts are essential for influencing these outcomes from both perspectives. The benchmark cooperative in the study illustrates how cooperatives are crucial in advancing quality education and lifelong learning on sustainability. Consequently, these factors are categorized as independent variables in the conceptual framework, while environmental and tourism sustainability are considered dependent variables.

Additionally, the study highlights that factors such as awareness of sustainability and best tourism practices, support from board and the local community, and financial assistance for implementing sustainable practices may affect the relationship between these independent variables and the results in environmental and tourism sustainability (dependent variable).

Figure 5 below visually presents the study's findings and demonstrates an improved framework for integrating environmental and tourism sustainability within Sabah's cooperative sector.

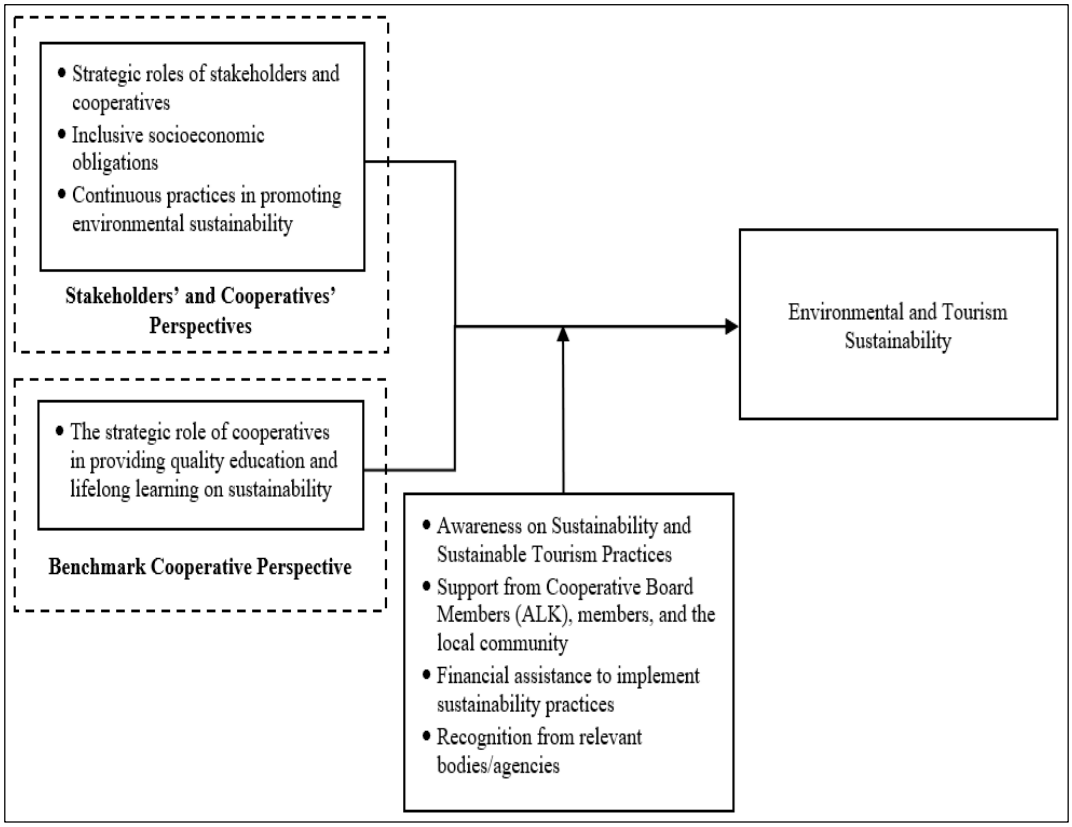

Figure 5: Sustainability model for tourism cooperatives in Sabah, Malaysia

This table provides an overview of how Sabah's tourism cooperatives perceive and implement sustainability practices, reflecting their efforts to adopt successful strategies and adapt the TBL model to their specific context.

9. Conclusion

This study offers critical insights and comprehensive guidance for stakeholders and cooperatives in

formulating strategies and action plans that align with sustainability principles, particularly within the tourism sector which has been a key contributor to the national revenue. By focusing on the developed model, standard practices, challenges, best practices, and key success factors, this research provides a robust foundation for decision-making that advances environmental, social, and economic sustainability.

Future research should adopt a quantitative approach to rigorously test the validity of the sustainability constructs and variables identified, thereby reinforcing the credibility of the tourism cooperative business sustainability model especially in Sabah, Malaysia. This approach aligns with the government's acknowledgment of the cooperative movement as a pivotal economic driver, alongside the public and private sectors. It is imperative that cooperatives further enhance their role in driving the nation's economic growth.

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Global Reach through Cooperative Roots: Trade building Industries through Cooperative Exports

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Abstract

India's cooperative sector has emerged as a significant player in the country's economy, with a presence in various industries such as agriculture, banking, and trade. One area that remains largely untapped is cooperative export, which has the potential to boost India's global trade and economic growth. Despite the government's initiatives to promote cooperative exports, the sector still faces several challenges, including lack of infrastructure, limited access to financing, and inadequate market research. This article seeks to explore the role of cooperatives in India's export sector and highlight success stories that can serve as models for others to follow. Using a mixed-methods approach, including surveys, interviews, and case studies, this research examines the current state of cooperative exports in India and identifies key factors that contribute to their success. The study finds that cooperatives that have successfully exported products abroad share certain characteristics, including strong member engagement, effective marketing strategies, and collaborations with government agencies and private sector organizations. The article concludes by highlighting the potential for cooperative exports to contribute significantly to India's economic growth and employment generation. To unlock this potential, it recommends policy interventions that address the existing challenges faced by cooperatives, including infrastructure development, access to financing, and capacity building. The study also emphasizes the need for increased cooperation between government agencies, private sector organizations, and cooperatives to promote cooperative exports and create a more enabling environment for their growth.

1. Introduction

The agriculture sector is the largest source of livelihood in India. The country is one of the largest producers of agriculture and food products in the world. In 2022-23, India’s agriculture sector growth rate was estimated to be at 3.5% and it was 3.0% in 2021-22. The gross value added (GVA) in agriculture and allied activities grew a targeted 4% for 2022-23. The first advance estimate of GVA in agriculture sector for 2023-24 is expected to be 5.5%. The country produces many crops and food grains such as rice, wheat, pulses, oilseeds, coffee, jute, sugarcane, tea, tobacco, groundnuts, dairy products, fruits, etc. During 2022-23, India’s tea production stood at 1,374.9 million tonnes. Coffee production during the same period was 352.0 million tonnes. While other products such as rice, wheat, maize, pulses, mustard, and sugarcane reached a record high production. The top crop-producing states in India are West Bengal, Uttar Pradesh, Punjab, Gujarat, Haryana, Madhya Pradesh, Assam, Andhra Pradesh, Karnataka and Chhattisgarh. Most of the wheat produced in the country comes from Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan, Bihar, and Gujarat. Uttar Pradesh is the largest producer of sugarcane in India contributing about 48%, followed by Maharashtra and Karnataka at 23% and 9% of the total production respectively.

India is one of the largest agricultural product exporters in the world. In April-January 2024, the overall value of export of agricultural products stood at US$ 38.65 billion (₹.3865 crore). In 2022-

23, the agricultural exports from India stood at US$ 52.50 billion. During 2021-22, the country recorded US$ 50.2 billion in total agriculture exports with a 20% increase from US$ 41.3 billion in 2020-21. India's agriculture sector primarily exports Agricultural & allied products, marine products, plantation, and textile & allied products. Agricultural & allied products exports were valued at US$ 37.3 billion, recording a growth of 17% over 2020-21. In 2022-23, rice exports from India were valued at US$ 11.14 billion, as against US$ 9.67 billion in 2021-22, registering a growth of 15.22%. Rice is the largest exported agricultural product from India and contributed to more than 20% of the total agriculture exports during the year 2022-23. Coffee exports from India jumped by 12.3% to 1146.2 million tonnes in 2023, on the rise in instant coffee exports and re-exports. Higher exports of marine products, at US$ 8.07 billion in 2022-23, are benefitting farmers in the coastal states of West Bengal, Andhra Pradesh, Odisha, Tamil Nadu, Kerala, Maharashtra, and Gujarat. The government's commitment to increasing farmers" income can be seen through the significant rise witnessed in Agri-exports by giving thrust on boosting exports. Various initiatives taken by the government through APEDA such as organizing B2B exhibitions in different countries and exploring new potential markets through product-specific and general marketing campaigns have worked as catalysts for the growth of exports. The government of India has created a product matrix for 50 agricultural products with strong export potential and recognized 220 labs to provide services of testing a wide range of products to enable exporters across India.

2. Why cooperatives?

The big institutions like Indian Farmers Fertilizer Cooperative Limited (IFFCO), Krishak Bharati Cooperative Limited (KRIBHCO), Anand Milk Union Limited (AMUL), etc. are the best example of the success stories in cooperative sector. As per the cooperative structure in India, a good amount of cooperatives at the state level, like urban cooperative banks, primary Agriculture cooperative societies at the village level, fishery and other forms of cooperatives are making unwavering efforts to improve the status of the people in the rural as well as urban areas. The international business through cooperatives will create capital in India.

Cooperatives and Horticulture

With the launch of Golden Revolution in horticultural production, the productivity of horticultural crops has increased significantly. A new programme that is Mission for Integrated Development of Horticulture (MIDH) is a centrally sponsored scheme for robust and sustainable growth and development of horticulture sector in a holistic way. In MIDH, Government of India contributes 60% of the total outlay in all states except North East and Himalayan state (contribute 90%). It includes major five schemes, i.e. National Horticulture Mission (NHM), Horticulture Mission for North East and Himalayan States (HMNEH), National Horticulture Board (NHB), Coconut Development Board (CDB) and Central Institute of Horticulture (CIH). It was anticipated that the cooperative movement would largely be focused in the field of agriculture and playing a significant role across the various Operations like production, marketing and distribution. Farm sector experts notified that cooperatives have impacted positively to the horticulture through post-harvest processing, storage, transportation, trade, and input procurement for a range of activities in the horticulture sector. A study conducted by National Council of Applied Economic Research (NCAER) with special reference to the role and importance of National Cooperative Development Corporation (NCDC) and found that marginal and small farmers sell their produce to local village trader at substantial lower price due to lack of adequate storage facilities for their produce especially fruits and vegetables (low shelf-life).

Horticulture and plantation crops are both perishable (e.g. fruits, vegetables, ornamentals, mushrooms, tea, etc.) and non-perishable (e.g. spices cashew nut, etc.) in nature which alone contributes to a heavy loss in the quantity and quality, and making the investments risk oriented.

According to the Swaminathan Committee (1985), postharvest handling accounts for 20 to 40% of the losses at different stages of grading, packing, storage, transport and finally marketing of both fresh and processed products. As per the study conducted by Central Institute of Postharvest Engineering and Technology (CIPHET), Ludhiana on harvest and post-harvest losses (including losses during storage for fruits and vegetables) had revealed that the range of these losses is 5% to 16%, where cooperatives can play a major role. The establishment of Cold Chain units is the need of hour; which already gave proven results in dairy sector. Cooperatives also helped in the construction and operation of cold chain which is mostly meant for storage of fruits and vegetables. NCDC provides financial assistance to primary, district and state level cooperatives, either directly or through respective State Governments. Most of the programmes of Government of India for development of cold chain projects are credit linked back ended subsidy schemes. The role of NCDC is to provide loan assistance at the reasonable rate of interest for creation of cold chain structure and dovetail the same with the grant-in-aid assistance from the Government of India. Marketing of horticultural produce is a major constraint in the production and distribution system. A subsistence amount of horticultural product is dealing by cooperative marketing societies. Various government and non-government organizations are handling with trading and processing of horticulture produces in the country, viz. HOPCOM (Horticultural Producers' Cooperative Marketing and Processing Society), DKHOPGCOMS (The Dakshina Kannada District Horticulture Produce Growers Cooperative Marketing Society Ltd.), FRESH (The Farmers' Rural Extension Service in Horticulture Marketing Cooperative Ltd), Cooperative Fruit (Banana) Sale Societies Jalgaon. HOPCOM, Bengaluru (Karnataka) is a successful cooperative organization for marketing of horticulture produce. The society is operating in the districts of Bengaluru (Urban and Rural), Kolar, Tumkur, Mandya, Shimoga, Dakshina Kannada and Mysore. The main objective of the Society is to procure fruits and vegetables from the member growers and supply to consumers through its own retail outlets. There are 405 retail outlets. HOPCOM is handling approximately 44,000 metric tonnes of fruits and vegetables with turnover of Rs.400 billion per annum. So, it is thrust area to develop such type of societies to enhance farmer's income through horticulture. Government of India under Central Sector Integrated Scheme on Agriculture Cooperation (CSISAC) provides subsidy for development of Cooperatives through NCDC and provide assistance to Cooperatives for Education and Training through National Council for Cooperative Training (NCCT) and National Cooperative Union of India (NCUI). Sahakar Mitra scheme of NCDC for training of youths. NCDC along with others organized the first ever India International Cooperatives Trade fair on 11- 13 October, 2019 at Pragati Maidan, New Delhi. The fair provided a platform to Indian Cooperatives to interact with international cooperatives and business houses. **NCDC** has released \ 61.09 crore for 80 fruit and vegetable processing units, as on 31.03.2020 (cumulatively). NCDC is assisting and strengthening the cooperative marketing structure under marketing and input scheme with the objective of ensuring facilitative and remunerative prices to the growers of horticultural commodities and minimizing the price spread between the producer and the consumer. These cooperatives exert a healthy influence on market prices and thus protect from distress sale. NCDC has implemented centrally sponsored scheme i.e. Mission for Integrated Development of Horticulture (MIDH) with collaboration of the Department of Agriculture, Co-operation and Farmers' Welfare (DAC&FW). In this scheme, credit linked back-ended subsidy @ 35% of project cost in general areas and @ 50% of project cost in Hilly, North East and Himalayan Areas, is provided under MIDH/NHB/NHM schemes for establishment of integrated pack house, pre-cooling units, cold room, mobile pre-cooling unit, ripening chambers and refrigerated transport vehicle. However, higher subsidy is available for some small components, like small pack house with size of 9 m*6 m, evaporative/low energy cool chamber (8 MT), preservation unit (low cost), low cost onion storage structure (25 MT) and Pusa Zero energy cool chamber (100 kg) and in their cases 50% of the total cost is provided as subsidy.

3. Cooperative Societies in India:

Cooperative societies are registered under the Cooperative Societies Act, 1965, and are governed by the Ministry of Agriculture and Cooperation. There are approximately 4, 00,000 primary agricultural cooperatives (PACs) in India, with over 6 million farmer members.

National Cooperative Exports Limited (NCEL) it is a National level Multi-State Cooperative, and was created to function as an umbrella organization for exports by the entire cooperative sector of the country. NCEL was set up with the approval of the Union Government and registered under the Multi-State Cooperative Society Act, 2002 on the 25th of January, 2023. It is jointly promoted by some of the leading cooperative societies in the country, namely. Gujarat Cooperative Milk Marketing Federation (GCMMF) popularly known as AMUL Indian Farmers Fertilizer Cooperative Limited (IFFCO). Krishak Bharati Cooperative Limited (KRIBHCO) and National Agricultural Cooperative Marketing Federation of India Limited (NAFED). Besides, National Co-operative Development Corporation (NCDC), a Statutory Corporation under the Ministry of Co-operation, is one of its promoter members. As cooperatives hold the key to the rural economic transformation of the nation, particularly in agriculture and related sectors with the promise of growth with equity, all efforts should be made to leverage the strengths of cooperatives and transform them into successful and vibrant business enterprises in order to realize the vision of "Sahakar-se-Samriddhi". The Ministry of Cooperation has taken initiatives to encourage cooperatives to think globally and act locally in order to leverage their comparative advantage in sectors like, - agriculture, horticulture, dairy, poultry, livestock, fisheries, sugar, spices, organic products, fertilizer, handloom, handicraft, textile, tea/coffee, minor forest produce, ayurvedic/herbal medicines, processed food, leather, etc. across the globe.

Role of Cooperative sectors in Export Marketing:
Cooperative societies in India play a significant role in the export marketing of agricultural and horticultural commodities. They act as a bridge between farmers and foreign buyers, providing services such as:

- Market intelligence and research
- Product development and grading
- Quality control and certification
- Storage and warehousing
- Logistics and transportation
- Documentation and customs clearance

Benefits of Agriculture Exports:

Largest source of income:
As of March 2022, 152 million Indians were employed in agriculture. Agriculture still provides the majority of the income for 70% of rural households.

Boost Farm Income:
Increasing the export of agricultural products at prices that are competitive worldwide would aid in boosting farmer income

Rural development:
Enhancing farm incomes will increase demand in the rural areas and support the expansion of the rural economy and development

Trade Balance:
Historically, agricultural exports have exceeded agricultural imports. The agricultural industry has consistently kept a trade surplus. This contributes to improving foreign exchange reserves and reducing the current account deficit (CAD).

Potential areas
MSAMB has the program to promote exports of fresh fruits, vegetables & flowers from Maharashtra to the various countries of world with the help of farmers & their organizations. The main products handled are grapes, mangoes, pomegranate, mandarin, banana, rice, mango pulp, cashew nut, cut flowers (from polyhouse) etc.
Regular guidance to the farmers and their cooperative societies is given in terms of pre-harvest, post-harvest, packaging, pre-cooling, cold storage and transportation. MSAMB has developed 44 export facility centers by inclusion of latest technology, fulfilling international standards, and specialized centers as vapour heat treatment facility, Irradiation Facility at Mumbai; these facilities are beneficial in promoting domestic as well as export markets and are generating employment.

These facilities can be useful for farmers/growers and exporters in the state. Trial exports are being conducted for certain commodities by the MSAMB with the help of APEDA, New Delhi.

Sector-wise Potential:
Agricultural commodities: India is a major producer of agricultural commodities like rice, wheat, pulses, and oilseeds. Cooperative societies can help farmers increase their exports of these products.

Horticultural commodities: India is a significant producer of horticultural commodities like fruits, vegetables, and spices. Cooperative societies can help farmers increase their exports of these products.

Organic and value-added products: India has a growing organic and value-added products market. Cooperative societies can help farmers produce and export these products.
Following products can be made available from the farmers' co-operative societies for export as well as for domestic marketing.

Fruits	Vegetables	Processed Products	Flowers	Cereals and others
Mango, Grape, Pomegranate, Mandarin, Banana, Papaya, Fig, Custard apple etc.	Okra, Chilli, Small Gourd, Drum sticks, Bitter gourd, French Beans, Onion etc.	Mango Pulp (Natural/Sweetened), Aseptic Packaging, OTS cans, Resins, Cashew nuts. etc.	Carnation, Gerbera, Roses, Lilium etc.	Maize, Rice, Red Dried Chilli, Tamarind, Turmeric, Jaggery etc.

Opportunities:
1. **Increasing exports:** India has set ambitious targets for agricultural exports, and cooperative societies can play a crucial role in achieving these targets.
2. **Value addition:** India can increase its value addition in agricultural products by producing value-added products like processed foods, organic products, and specialty products.
3. **Organic farming:** India has a growing organic farming sector, and cooperative societies can help farmers increase their exports of organic products.
4. **Food processing:** India has a large food processing sector, and cooperative societies can help farmers increase their exports of processed foods.

5. **International trade agreements:** India has signed several international trade agreements, including the Free Trade Agreement (FTA) with countries like ASEAN, which can increase opportunities for agricultural exports.

Agencies Involved:

1. **National Agricultural Cooperative Marketing Federation of India (NAFED):** NAFED is a statutory body that promotes the interests of cooperative societies in the agricultural sector.
2. **Ministry of Agriculture and Farmers Welfare:** The Ministry of Agriculture and Farmers Welfare is responsible for promoting agricultural development and exports.
3. **Ministry of Commerce and Industry:** The Ministry of Commerce and Industry is responsible for promoting trade and commerce, including agricultural exports.
4. **State Agricultural Marketing Boards:** State Agricultural Marketing Boards are responsible for promoting agricultural marketing and exports at the state level.
5. **Export Promotion Councils:** Export Promotion Councils (EPCs) are industry-specific organizations that promote exports of specific products.

4. Export Destinations

The largest importers of India's agricultural products, as of 2023-24 (until January 2024), were the USA, China, UAE, Bangladesh. During this period, the USA was the largest importer of Indian agricultural products at US$ 4.20 billion with a share of 10.89% of the total exports. The USA and China were the major importers of India's marine products.

The government of India is keen to organize virtual buyer-seller meets (V-BSM) on agricultural and food products with the major importing countries across the world to promote geographical indications (GI) registered with agricultural and processed food products in India. So far 17 V-BSMs have been organized with Kuwait, Indonesia, Switzerland, Belgium, and Iran. Similar programs have been organized for Canada (Organic products), UAE & USA (GI products), Germany, South Africa, Australia, Thailand, Oman, Bhutan, Azerbaijan, and Qatar.

The government has set up thirteen Agri-Cells in Indian embassies in Vietnam, USA, Bangladesh, Nepal, UAE, Iran, Saudi Arabia, Malaysia, Indonesia, Singapore, China, Japan, and Argentina to provide inputs on a real-time basis to improve Indian exports at these destinations by promoting trade, tourism, technology, and investment goals.

5. Government Initiatives

Agriculture Export Policy 2018 (AEP)

The Government of India has introduced a comprehensive Agriculture Export Policy (AEP) to promote exports of agricultural products. The key objectives of the AEP are to diversify export basket and destinations, to boost high value-added agricultural exports, to promote indigenous, organic, traditional and non-traditional Agri products exports, to provide an institutional mechanism for pursuing market access and to enable farmers to get the benefit of export opportunities in overseas market.

Financial Assistance Scheme (FAS)

FAS is the export promotion scheme by the Agriculture and Processed Food Products Export Development Authority (APEDA). It is part of the Finance Commission Cycle for the years 2021-22 to 2025-26. The primary aim of this scheme is to assist businesses in export infrastructure development, quality development and market development. The financial assistance under the

scheme will range from Rs. 5 lakh (US$ 6,500) to Rs. 5 crore (US$ 650,000).

Ministry of Commerce & Industry scheme
The Department of Commerce under the Ministry of Commerce & Industry has also initiated several schemes to promote exports, including the Trade Infrastructure for Export Scheme (TIES), the Market Access Initiatives (MAI) Scheme, etc.

In addition, assistance to the exporters of agricultural products is also available under the Export Promotion Schemes of APEDA, Marine Products Export Development Authority (MPEDA), Tobacco Board, Tea Board, Coffee Board, Rubber Board and Spices Board. Further, to boost honey exports, India has made NMR (Nuclear Magnetic Resonance) testing mandatory for honey exported to the USA.

The National Cooperative Export Limited (NCEL):- a newly established cooperative society in India, is making waves in the export sector. According to the Ministry of Cooperation, NCEL has rapidly expanded its membership to 7,500 and achieved an impressive Rs 2,000 crore in exports. On May 8, the Ministry of Commerce & Industry issued a notification allowing the export of Non-Basmati White Rice to Mauritius through NCEL. The notification specified that the Central Government, under the Foreign Trade Policy of 2023, permits the export of 14,000 Metric Tons (MT) of Non-Basmati White Rice to Mauritius via NCEL. In addition to Mauritius, NCEL is poised to export 1,600 tons of white rice to Singapore, marking a significant step in bilateral trade. Negotiations with Singapore's aggregator have already yielded this milestone, with further talks aimed at expanding exports. Union Cooperation Minister informed the Rajya Sabha that NCEL has received permissions for exporting 14,92,800 MT of non-Basmati White rice to 16 countries, 8,98,804 MT of broken rice to five countries, 14,184 MT of Wheat Grain, 5326 MT of Wheat Flour, 15,226 MT of Maida/Semolina to one country, and 50,000 MT of sugar to two countries. NCEL has also received 2,581 membership applications from 22 States/UTs. NCEL's efforts are geared towards linking farmers to export markets, addressing supply chain issues, securing export certifications, and ensuring smooth logistics. The Cooperative Export Society provides vital support for aggregation, working capital, logistics, technical know-how, and training. Its responsibilities include assessing international market demand, tapping export potential, and ensuring direct participation of cooperatives in the country's exports.

6. Government Body

Agriculture and Processed Food Products Export Development Authority (APEDA)
APEDA was formed in 1986 for the development of the exports of the agriculture industry in India. The main functions of the authority are the registration of people as exporters, fixing standards and specifications for the scheduled products, carrying out inspections, collecting statistics and providing information, training and advisory services to the exporters. APEDA is entrusted with the responsibility of the export and promotion of 14 agriculture and processed food product groups.

Other Agencies
Department of Agriculture & Cooperation
Department of Agricultural Research and Education
Agriculture and Processed Food Products Export Development Authority
Department of Animal Husbandry, Dairying & Fisheries
National Cooperative Exports Limited (NCEL).

7. Maharashtra State Agricultural Marketing Board (Msamb), Pune

The Maharashtra State Agricultural Marketing Board (MSAMB), Pune was established on 23rd, March 1984, under section 39A of Maharashtra Agricultural Produce Marketing (Development & Regulation) Act, 1963. MSAMB is a state level organization working in the field of export of various fresh fruits, vegetable & processed food products since last thirty four years. It has experience of export of fruits & vegetable to Europe, USA, South East Asian Countries, Japan, and Middle East Countries etc. The trained manpower is engaged in imparting training to farmers, guiding new exporters and maintains the facility centres etc. works in very planned and effective way of management

Some of the remarkable achievements can be enlisted as under:

- Commercial & trial export
- Implementation of subsidy scheme for GlobalGAP certification
- Erection and successful utilization of export facility centers for various commodities in the state
- Participation in various international commodity specific promotion programs
- Successful implementation of agri export zones of alphonso mango, kesar mango, onion, pomegranate, banana & mandarins.
- Nodal agency for implementation of Asian Development Bank & IFAD funded projects in Maharashtra.
- Successfully organized farmers' foreign study tour to Israel & Europe.

Mango Export

Mango is a important fruit commercially grown in Maharashtra. The main strength of the Maharashtra state lies in the cultivation of the popular exportable varieties e.g. Alphonso, Kesar, etc., with substantial production and significant share in mango export. MSAMB has leading role in export of mangoes to various countries across the globe. MSAMB has conducted the trials for exporting mangoes by CA containers to far distant markets with the help of APEDA, New Delhi and exported two containers of Alphonso and Kesar mangoes to UK and one container to Singapore in the year 1998. One more CA container of Kesar was exported successfully in the year 2000. MSAMB has exported Kesar mangoes to Hongkong, which is further exported to china. This is new opportunity to Kesar mango growers in the form of new market.

In the last mango season 2018 about 1881 Mts of mangoes have been processed for the purpose of exports to various destinations.

Irradiation Facility, Vashi, Navi Mumbai – from this facility 613.62 Mts mangoes were exported to USA and about 18.54 Mt to Australia in total 632.51 Mts mangoes were exported. Also in this season 0.352 Mts pomegranates have been exported to USA.

Vegetable processing facility, Vashi , Navi Mumbai – from this facility 245.40 Mts to European union, 3.26 Mts to Russia, 1.00 Mts to Mauritius, and 153.52 Mt mangoes to USA (process) and 16.61 Mts Mangoes to Australia (process) were processed thus in total 419.79 Mts mangoes were processed.

VHT Facility, Vashi, Navi Mumbai – from this facility 22.66 Mts mangoes were exported to EU, 24.21 Mts to Japan , 29.79 Mts to New Zealand , and 49.52 Mt to South Korea thus in total 126.18 Mts mangoes were exported.

Mango export facility center, Ratnagiri, Dist- Ratnagiri - from this facility 1.20 Mts mangoes were

exported to EU and about 4.25 Mt to Russia , 2.78 Mts for USA process and 30.90 Mts for domestic purpose processing thus in total 39.13 Mts mangoes were processed.

Mango export facility center, Jamsande , Dist- Sindhudurg - from this facility 192 mts mango pulp and 35.67 Mts of mangoes for domestic market purpose thus all total 227.67 Mts mangoes were processed.

Grape and Pomegranates export facility center, Baramati Dist Pune - from this facility 218.79 Mts mangoes were exported to EU and 217.64 Mts mangoes were processed for USA thus all total 436.43 Mts mangoes were processed.

MSAMB has promoted the partnership organization of primary co-operative societies named "MAHAMANGO" for export promotion of mangoes.

Grape Export

The MSAMB promoted an organisation called MAHAGRAPES to boost the export of grapes. MAHAGRAPES is regularly exporting around 100 -120 containers to Europe and Middle East. They could establish their brand in the European markets. MSAMB also helped farmers co-operative societies to establish their own pre-cooling and cold storage units, by providing them technology and guidance. From the year 2003 the packhouses which are being used for Grape export are recognized by APEDA. MSAMB's export facility center, Dindori Dist- Nasik has played important role in export of grapes to Europe since last three years. Also there lies a tremendous potential for export of grapes and pomegranates from Atpadi export facility center of MSAMB.

Pomegranate Exports

Pomegranate is another important fruit grown in Maharashtra. Its usage and medicinal properties made this fruit more important and gradually increasing demand in the international markets like Europe & USA. MSAMB has taken a lead and successfully exported the pomegranate containers to UAE. Initally the demand was only in gulf countries, however MSAMB realized the need of the export oriented infrastructure for pomegranates and with the help of APEDA, MSAMB has established the export facility centers for pomegranates at Baramati, Indapur,Atpadi, Latur, Kalwan and Chandwad. About 1.85 Mts pomegranates exported from irradiation facility of MSAMB, there lies a tremendous potential for export of pomegranates to USA.

Mandarin Exports

The Nagpur mandarin is a loose Jacket orange and to ensure that it reaches distant markets with least post-harvest losses during shipping, it must be devoid of pre-harvest infection by fungal organisms and skin attachments must be tight for prolonged shelf life. The Nagpur mandarin has unique features easily separable skin and segments from each other, comparatively low seed content and low acids. An export of mandarins from India is not a common phenomenon. In the history for the first time one trial container of Nagpur Mandarins was sent to UAE in the year 2002, and it reached in very good condition. MSAMB has exported one container of Nagpur mandarins to Holland in the year 2005 and achieved good results. MSAMB has developed a export facility centers at Karnja (Gh) Dist- Wardha and Varud Dist- Amaravati.Nagpur Mandarins exported to Srilanka and Gulf countries.

Banana Exports

In spite of the huge production of banana in the state of Maharashtra, the export is negligible. MSAMB is the pioneer of export of banana from Maharashtra state. For the first time one 40 feet container was exported in the year 2002 to UAE and the results are very encouraging. MSAMB has exported the banana 16 MT in February 2005 to Dubai through 40' Refer container from Mahabanana,

Jalgaon. MSAMB has developed export facility centers for Banana at Raver, Dist. Jalgaon, Basmatnagar, Dist.Hingoli and Indapur dist. Pune (under progress) which includes mechanical handling system, pre-cooling, cold storage and ripening chamber.

Lemon and Sweet lime Export
MSAMB has exported lemons and sweet lime through mix container to Dubai. Through this trial export we realized that there is a better scope of export of lemon and sweetlime in Gulf countries.

Flower Export
MSAMB has exported Gerbera and Carnation flowers through 5 air consignments to Singapore. This export is the lighthouse for export of flowers from Maharashtra. There is much more scope for Roses, Gerbera and Carnation flowers from Maharashtra. MSAMB has developed flower export facility centers at Talegaon ,Dist. Pune, Satara, and Dindori Dist. Nasik for export of flowers.

8. International Commodity Specific Promotion Programs

MSAMB always focus on promotion of various agricultural commodities grown in the state, domestically and internationally. MSAMB used to participate in the export promotional activities worldwide.

Mango - China (2003-04), Japan (2000 - 2005) , America (2003-2006), New Zealand (2013), Mauritsus (2016), Australia (2016-2017),South Korea (2018),Iran (2018) , Kazakistan (2018), New contries in EU –Poland (2018)
Pomegranate – America (2014,2016,2018)
Green Chilly – Saudi arabia (2016)
Participation in International exhibition – England, Germany, China , Japan, Dubai etc.
Farmers study tour – Spain, Holland, France, Isreal, Dubai
Trail exports - England, Germany , Japan , America, Singapore, Baharin , Dubai etc.

Organising buyer seller meets
MSAMB has exported lemons and sweet lime through mix container to Dubai. Through this trial export we realized that there is a better scope of export of lemon and sweetlime in Gulf countries.

9. Workshops for export promotion

For promoting export of agricultural produce from Maharashtra a workshop for all the stake holders viz. NPPO, APEDA, Agriculture Depatment, Exporter, Farmers group, co op federation, Processors etc. with the focus crops as Mango, Pomegranate, Onion, Banana and Vegetables is planned in Maharashtra. In the current year following workshops have been conducted in Maharashtra.

- For promoting mango export from Konkan area a Buyer seller meet was organised at Ratnagiri on dtd.27 February 2018. The export facility at Ratnagiri has been certified by APEDA.
- A workshop on Banana export has been organised under the chairmanship of Hon.Collector, Akola on dtd.27 April 2017 on the same day a container has been exported to Iran.
- A workshop on Banana export has been organised under the chairmanship of Hon.Collector, Amravati on dtd.27 April 2018.
- For promoting mango export to South Korea, Australia, Iran a reverse buyer seller meet was organized by APEDA in which about delegates from 18 countries and 100 plus delegates from leading institutes in India have participated. These delegates have appreciated the vapour heat treatment , Irradiation treatment and Vegetable processing facilities of MSAMB during their

visit on dtd.16.05.2018.

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Beyond the Industrial Age: Cooperatives in the Information Revolution

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Abstract

In a world where the "industrial revolution" signifies rigid efficiency, it is imperative to rethink business and work through the lens of cooperatives. This paper challenges the outdated belief that the industrial revolution is the pinnacle of progress. Instead, we propose that cooperatives should align with the ongoing information revolution, which values transparency, speed, and growth. Unlike the industrial model's inflexible R&D, the information revolution supports dynamic, adaptive research and development. Cooperatives, with their democratic governance and community focus, are uniquely suited to tackle crucial economic and social issues. By embracing technological advancements, cooperatives can boost their innovative capabilities, ensuring their continued relevance and impact on the future of work. The specific goal of this paper is to highlight the importance of access to credit as the essential thread driving foundational growth within various cooperative sectors in India. Credit access is crucial for the growth and sustainability of cooperatives, as it enables them to invest in new technologies, expand their operations, and enhance their services. Cooperative is an economic action but with people participation. Cooperatives are the socio-economic pillars in the Indian ecosystem. Technology with its own attributes revolutionise the ecosystem from industry to information. Cooperatives play a vital role in both the moves. The study focus on need of economic cooperative stack, its role, action plan and way forward to make the cooperative ecosystem resilient and contribute to the next industrial revolution. The research speaks more on economic cooperative stack in form of Credit Layer and Access layer which provides essential financial and market support to cooperatives and cooperative banks Simple tabular analysis, empirical models, primary and secondary factual data tools will be used and analysed to reach the end results. The study will give the facets how technology will in build the information revolution and give the unique steps, business dignity, cooperative outreach, corporate avenues, institutional building and derive the sustainable outlook for the Indian cooperative ecosystem. The research study will derive the way and means where the technology and information will go hand in hand and create a platform for cooperatives in next industrial revolution.

Keywords: Cooperatives, Technology, Information, Business, economic stack

1. Introduction

In the context of global economic evolution, the transition from the Industrial Revolution to the Information Revolution represents a fundamental shift in how businesses operate and how societal progress is measured. While the Industrial Revolution emphasized mechanization, efficiency, and mass production, the Information Revolution underscores transparency, speed, and adaptability. This paper posits that cooperatives—entities traditionally linked with the Industrial Age—can and should adapt to the Information Revolution. This adaptation hinges on their ability to leverage technological advancements, particularly in accessing credit, to foster innovation and sustain growth. The aim is to explore how cooperatives can navigate this transition and enhance their role in the modern economic landscape.

In the evolving landscape of the global economy, the integration of technology into financial systems

has become a crucial driver of growth and efficiency. Cooperatives, especially in the credit banking sector, are increasingly leveraging technological advancements to enhance their services and expand their reach. This intersection of technology and cooperative credit banking is pivotal in advancing the socio-economic fabric of communities, particularly in developing regions.

Technology's Impact on Cooperative Credit Banking

The role of technology in transforming cooperative credit banking is profound. Recent studies highlight several key impacts:

1. **Increased Financial Inclusion:** Technology has significantly improved access to financial services for underserved populations. According to the World Bank, mobile banking has enabled over 1.7 billion people globally to access financial services for the first time, many of whom are served by cooperative banks (World Bank, 2023).

2. **Efficiency and Reach:** Digital tools and platforms have streamlined operations within cooperative credit banks. A survey by the International Cooperative Alliance (ICA) found that over 60% of cooperatives have adopted digital banking platforms, resulting in a 25% increase in transaction efficiency and a 30% reduction in operational costs (ICA, 2022).

3. **Enhanced Risk Management:** The integration of advanced analytics and artificial intelligence has improved risk assessment and management. Cooperative banks utilizing AI for credit scoring have reported a 20% decrease in loan default rates (European Cooperative Banking Federation, 2022).

4. **Innovative Financial Products:** Technology has enabled the development of new financial products tailored to the needs of cooperative members. For instance, blockchain technology is being used to create secure and transparent credit histories, facilitating more inclusive lending practices (Deloitte, 2023).

Credit Access in Cooperative Banking

Access to credit is a fundamental aspect of cooperative banking, providing the necessary capital for investment and growth. Key facts include:

1. **Credit Distribution:** As of 2024, cooperative banks in India have provided over ₹2.5 lakh crore in credit to small and medium enterprises (SMEs), contributing significantly to local economic development (National Bank for Agriculture and Rural Development, 2024).

2. **Growth Trends:** The credit portfolio of cooperative banks has grown at an annual rate of 12% over the past five years, driven by increased digital adoption and streamlined processes (Reserve Bank of India, 2024).

3. **Impact on Small Businesses:** Cooperative credit institutions have played a crucial role in supporting small businesses. Approximately 70% of microfinance loans in India are disbursed through cooperative banks, highlighting their importance in providing financial services to micro-entrepreneurs (Microfinance Institutions Network, 2024).
4. **Technological Advancements:** Technological innovations, such as digital loan disbursement systems and mobile banking apps, have facilitated easier access to credit for cooperative members. For example, the adoption of fintech solutions by cooperative banks has led to a 40% increase in loan disbursements within rural areas (Financial Times, 2024).

By aligning their operations with the ongoing Information Revolution, cooperative credit banks are not only enhancing their efficiency but also ensuring their relevance in a rapidly changing financial landscape. These advancements underscore the need for continued investment in technology to support the growth and sustainability of cooperative banking systems.

2. Review of Literature

Cooperatives and the Industrial Revolution

Historically, cooperatives emerged as a response to the challenges posed by the Industrial Revolution. According to Birchall (2004), cooperatives were initially formed to address the economic and social inequalities exacerbated by industrialization. They were characterized by collective ownership and democratic governance, which offered an alternative to the exploitative practices prevalent in industrial capitalism.

The Information Revolution

The Information Revolution, marked by the rise of digital technology and information communication technology (ICT), has fundamentally altered business operations. Tapscott (1996) describes this era as one where information becomes the primary driver of economic value. Unlike the Industrial Age's focus on physical goods, the Information Revolution emphasizes data, speed, and connectivity.

Cooperatives and Technology

Recent studies highlight the potential for cooperatives to thrive in the Information Age by integrating technology. Poteete and Ostrom (2004) argue that cooperatives can benefit from technological advancements through improved communication and management systems. However, they also face challenges such as limited access to capital and technological infrastructure.

Access to Credit and Cooperatives

Access to credit is crucial for the growth and sustainability of cooperatives. According to Kydd and Dorward (2001), credit access enables cooperatives to invest in technology, expand their operations, and enhance service delivery. Despite this, many cooperatives, especially in developing economies like India, struggle with limited financial resources and credit facilities.

3. Research Methodology

a. Research Design

This study adopts a mixed-method approach, combining quantitative and qualitative data to assess the role of credit access in the growth and sustainability of cooperatives in India.

b. Data Collection

- **Primary Data:** Surveys and interviews with cooperative managers, members, and financial institutions to gather insights on credit access and technological integration.
- **Secondary Data:** Review of existing literature, reports, and case studies related to cooperatives, credit access, and technological advancements.

c. Analytical Tools

- **Tabular Analysis:** Simple tables will summarize quantitative data on credit access, cooperative performance, and technological adoption.
- **Empirical Models:** Statistical models will analyze the relationship between credit access and cooperative growth metrics.

- **Factual Data Tools:** Analysis of secondary data sources, including reports from cooperative banks and financial institutions.
- Focus Group Discussions were conducted with VAMNICOM professionals, RBI, NABARD, RBIH, NIBER, Cooperative Banks in Maharashtra (UCBs &DCCBs), NAFCUB, MAFCOCS, Bharat Cooperative Bank Summit delegates, experts in cooperative ecosystem, SAHAMATI (RBI, SRO), Maharashtra State Cooperative Bank. Simple tabular analysis, empirical models, primary and secondary factual data tools were used to analysed the end results

4. Results and Discussion

Reimagining significance of Cooperatives Credit Organizations:

Enhancing the favorable participation of the vulnerable
Market distortions are a significant risk to vulnerable. Cooperation is necessary to protect when there is market distortion. Wherever cooperatives banks have succeeded they have enhanced access, reduced friction and thus helped minimize the market distortion

Example: Successful urban cooperatives banks aid in reducing the number of intermediaries in the path of access to credit and passing better interest to borrowers that are deemed reliable and creditworthy.

Thought: Is there a technological credit automation intervention to meet the objective of protecting vulnerable in the market such that the most technologically challenged can participate with minimal friction, enhanced access and broader opportunity to benefit.

Minimizing incidences of distress sales
Better equipped cooperatives supported by infrastructure backing and adequate access to financial resources are in a better position to fight the unplanned distress situations and gain unforeseen bargaining power

Thought: Is there a technological intervention that aids just-in time credit access to needy individual, Cooperative or a MSME?

Successful business models
Learning and replicate best practices from Cooperatives and Private sectors

Organic leadership, constructive and need driven involvement of members, techno-managerial functioning, innovative mindset, customer-first approach, cross industry mentoring, collective problem solving while strict adherence to Cooperative principles etc. These are key reasons for successful business enterprise in Cooperative.

Thought: Is there a technical intervention possible to learn, educate, train, mentor, share best practice with Banks that leads to a reliable Credit Appraisal process that goes well beyond the regular financial data analysis and accommodates the alternative facets into the creditworthiness determination?

5. Challenges of cooperative banks

The need for professionalism with UCBs:
Cooperatives banks are often marred with lack of professionalism, which often results in

mismanagement of most of the membership and member interests.There is a need for transparency in capital needs, capital infusion, member inclusion and election to governing bodies. There is a vital need to employ secure methods to ensure professional management of credit societies and banks equally. RBI has a strong desire to focus on Urban Cooperative banks as growth organizations and expects them to adhere to stringent issuance, compliance and monitoring cycles for any lending activity conducted by the UCBs.

Thought: Is it possible to develop governance/compliance oversight using technological intervention to improve professionalism?

Inadequate coverage / demographic spread of UCBs
Effective policy ensures, equal opportunity, rightful participation, spread of member participants, inclusion of weaker, women and youth.

In the absence of run-time tracking and analysis, the actual cooperative banks and branches formation and operational intelligence is missing as to where the bank is doing well and where members are looking for proximity of services which is the hallmark of Urban cooperative banks. Creating and rolling out organizational level intelligence gathering mechanism and schemes that encourage adequate initiative via lending-for-business-growth, support and coverage for expected demographic spread is important.

Thought: Can there is technological intervention for analytics and intelligence generation for extending the credit portfolio expansion, bank internal policy intervention and result of it on economic activity on the ground that serves the need for cleaner credit assessment and access both?

6. Avoiding over regulating UCBs

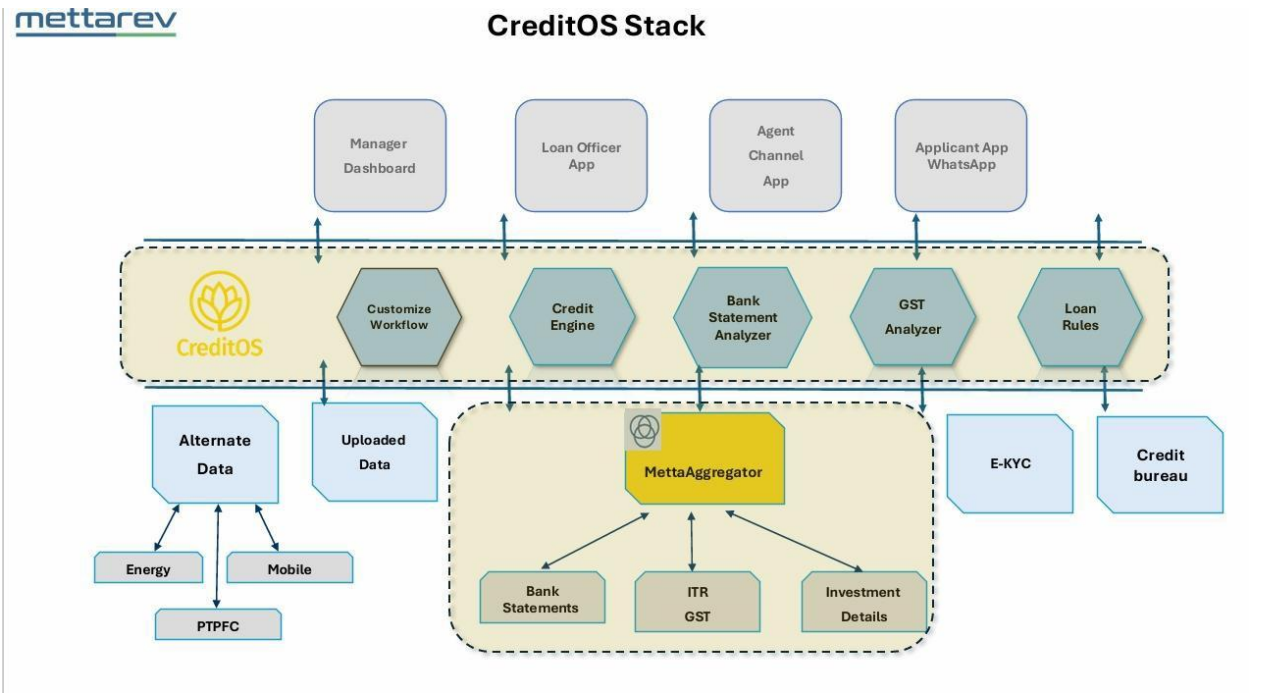
Budding financial institution needs a helping hand. Support for making mistakes and recovering is important. Ensuring risk taking has safeguards for supporting recovery is important.
Thought: Can there be technological intervention used by UCBs the one that is governed by the Reserve Bank of India, possible for determining the situation of the Banks at any given point in time?

Cooperative principles focus on individual and collective well-being. Cooperation yields collective wisdom to deliver economic benefits. Cooperative Banks are innovations in the remotest areas that support the distributed community development.

The goal of the Cooperative banks is to encourage rural, semi-urban and urban financial savings. It also offers the easiest way to seek credit and build credit to their economic activity. All these acts to improve overall improvement in productivity, enhanced employment and significant contribution to overall economic output.

With rightful policy, research education, training, mentoring and technological intervention we are sure to see Cooperative Banking sector can become a blue-eyed boy of the economy! With technology first approach they have a chance to go head-to-head with commercial banks and NBFC and become part of the digital commerce boom witness in India promoting the interests of the weaker section of the society, supporting those with utmost need for accessing the credit for building livelihood.

Recommendation to institute Digi-Sahakar – a cooperative credit technology stack for Urban Cooperative Banks (depicted below):



Way forward with the approach to solution Account Aggregator, Unified Lending Interface and the use of Artificial intelligence.

Benefits of RBI-compliant AA and ULI-based Cooperative Bank credit technology stack with Artificial Intelligence (AI):

1. Regulatory Compliance: Ensures adherence to RBI guidelines, reducing the risk of non-compliance and associated penalties.
2. Standardized Loan Processing: Streamlines loan origination, approval, and disbursement processes, increasing efficiency and reducing errors.
3. Unique Loan Identification: Assigns a unique identifier to each loan, facilitating tracking, monitoring, and reporting, and reducing fraud risk.
4. AI-powered Credit Assessment: Leverages machine learning algorithms to analyze creditworthiness, identifying potential risks and opportunities, and enabling informed lending decisions.
5. AI-driven Information Verification and Analysis: Utilizes natural language processing and machine learning to verify applicant information, detect discrepancies, and predict credit behavior.
6. Enhanced Customer Experience: Offers a seamless, digital, and user-friendly experience for customers, improving satisfaction and loyalty.
7. Data Security and Privacy: Ensures the security and privacy of customer data, maintaining trust and confidence.
8. Scalability and Flexibility: Supports business growth, enabling the bank to easily adapt to changing market conditions and regulatory requirements.
9. Cost Savings: Automates manual processes, reducing operational costs and improving resource allocation.
10. Competitive Advantage: Positions the cooperative bank as a modern, tech-savvy institution, attracting customers and talent.
11. Better Decision Making: Provides real-time insights and analytics, enabling data-driven

decisions and strategic planning.

12. Predictive Analytics: Identifies trends, patterns, and potential risks, enabling proactive measures to mitigate losses and improve portfolio performance.

By integrating AI into the RBI-compliant AA and ULI-based credit technology stack, the cooperative bank can further enhance its credit assessment capabilities, improve operational efficiency, and drive business growth while ensuring regulatory compliance.

The main contribution of this layer is to offer access to market opportunities to producers, consumers and marketers to get together and create a viable Cooperative enterprise.

Layer also focuses on ease of access to credit and supporting determination of financial health risks via cooperative banks and credit societies. The layer is important for determining authentic credit requests, checks for legitimacy of Cooperative documentation and consistency in the credit underwriting process necessary for supporting worthy Cooperatives' growth journey.

The layer goes on to support a community approach to providing advisory, training and collective problem-solving forum. This is important to alleviate market distortion risks undermining the hard work of the Cooperative when market fluctuations arise. The community network is expected to be a digitally connected volunteer network supported by researchers, academicians, cooperative sector experts, influences

Credit Access and Cooperative Growth

The analysis reveals a strong correlation between access to credit and the growth of cooperatives. Cooperatives with better credit access reported higher levels of investment in technology and expanded operational capacity. This aligns with findings by Kydd and Dorward (2001), which underscore the importance of financial resources in cooperative development.

Technological Integration

Technological advancements have significantly impacted cooperatives. Cooperatives that adopted digital tools and ICT reported improved efficiency and better market reach. The data suggests that technology has enabled cooperatives to overcome traditional barriers related to scale and management.

Challenges and Opportunities

Despite the benefits, cooperatives face challenges such as inadequate financial infrastructure and limited technological expertise. The study highlights the need for targeted support in these areas to ensure that cooperatives can fully leverage technological advancements.

Strategic Action Plan

Based on the findings, the following action plan is proposed:

- **Enhance Credit Access:** Develop policies to improve credit facilities for cooperatives, including lower interest rates and more accessible loan structures.
- **Invest in Technology:** Provide subsidies or grants for technology adoption and digital infrastructure.
- **Strengthen Support Systems:** Build partnerships with tech firms and financial institutions to support cooperative development.

7. Summary and Conclusions

The study concludes that cooperatives are well-positioned to thrive in the Information Revolution if they can effectively integrate technology and improve credit access. By leveraging these advancements, cooperatives can enhance their operational efficiency, expand their market reach, and contribute to the modern economic landscape. The research underscores the need for a supportive ecosystem that includes better financial access, technological support, and strategic partnerships. This paper aims to provide a comprehensive examination of how cooperatives can navigate the transition from the Industrial Age to the Information Revolution, focusing particularly on the pivotal role of credit access and technological integration.

Recommendations:

1. **Policy Development:** Governments should create favorable policies to enhance credit access and technological support for cooperatives.
2. **Training and Support:** Provide training programs to build technological and financial skills among cooperative members.

3. **Collaborative Networks:** Foster collaborations between cooperatives, tech firms, and financial institutions to drive innovation and growth.

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Enhancing Resilience in Fashion Cooperatives through Blockchain Technology

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Abstract

Cooperatives operating in the fashion industry need to address the main challenges that jeopardise the sustainability of businesses due to the nature of this industry. This paper seeks to understand how blockchain technology can act as an enabler to increase the sustainability of fashion cooperatives. Supply chain management is another major area where blockchain offers the potential to enhance cooperative operations by adding decentralised, transparent, and secure features. The study explores the real-world of smart contracts in the fashion industry with regard to the use of this technology to highlight how real some of the risks are, how real some of the inefficiencies are, and how real some of the sources of sustainability are in the use the technology when implemented practically. Therefore, this study, utilizing a literature review and case analysis, focuses on best practices for blockchain integration, particularly in establishing strong cooperative systems that sustain vulnerable networks in the face of economic and environmental change. The research evidence indicates that the implementation of blockchain technology can enhance the organisational agility of fashion cooperatives and thus support their sustainable development and competitive performance. The research findings are used to provide policy and practical recommendations for policymakers and fashion cooperatives' industry stakeholders on the strategic use of blockchain technology.

Keywords: Blockchain Technology, Fashion Cooperatives, Supply Chain Resilience, Sustainability, Transparency, Ethical Sourcing.

1. Theoretical Framework

The theoretical foundation for the study proposal titled ―Enhancing Resilience in Fashion Cooperatives through Blockchain Technology‖ blends several prominent theories to research how the application of blockchain technology can strengthen the resilience of fashion cooperatives.

Technological Innovation Diffusion Theory (Rogers, 2003): Discusses blockchain adoption in organisations, including factors such as perceived benefits and implementation, to deal with efficiency improvements for fashion cooperatives.

Resilience Theory: Is concerned with ways in which organizations respond to disruption. Due to increased transparency, accountability, and traceability, blockchain provides excellent risk protection to fashion cooperatives.

Supply Chain Visibility Theory: more visibility in a particular supply chain means better decision-making. Blockchain compliments this by providing accurate and auditable transaction histories to enhance the North's supply chain with regard to tension and velocity.

Power Dynamics Theory: Looks at changes in stakeholder power relations. We see that blockchain

can decentralize and democratize interactions within fashion cooperatives, thus decreasing information asymmetry among the members.

Social Capital Theory: Stress on the relationship structure, particularly the trust element in cooperation. Blockchain enhances these social relations within cooperatives by providing an improved record of transaction databases, thereby increasing their stability.

Institutional Theory: Explains how organizations manage to work around both legal and market constraints. Blockchain helps cooperatives by following institutional practice, thereby increasing legitimacy and stability.

Supply Chain Management Theory: is targeted primarily at efficient transport and communication. The real-time data offered by blockchain optimizes the supply chain to give it less exposure to risks.

Diffusion of Innovation Theory: examines the ways in which new technologies are passed on. Based on this theory, it is possible to evaluate the enablers and inhibitors of blockchain in the context of cooperatives to improve resilience.

Ethical and Sustainable Fashion Theory: Concerns deal with sustainable fashion and ethics. Blockchain promotes these values by enhancing the role of transparency in sourcing and production to increase the sustainability of fashion cooperatives for long-term future development.

Suppose knowledge derived from these networked theories is incorporated into this proposed framework. In that case, this form of blockchain solution will offer a comprehensive understanding of how this technology can further strengthen the resiliency of fashion cooperatives.

Hypothesis

H1: Core applications of the blockchain advance value sustainability for fashion cooperatives by reducing risk and providing increased supply chain visibility.

H2: Blockchain implementation in fashion cooperatives increases efficiency in the mitigation of economic shocks and sustainability through efficiency in data and stakeholders.

H3: In fashion cooperatives, Blockchain technology brings efficiency to the power relations between buyers and suppliers, thus ensuring fair deals.

2. Literature review

Over the last few years, the fashion industry has witnessed disruptions to supply chain disruptions due to aspects like COVID-19 and other circumstances. Economic and social objectives are predominant within most fashion cooperatives, but these strategies present the organizations with specific dilemmas regarding stability and responsibility to the environment. Transparency, traceability, and secure attributes of blockchain technology mean it has the potential to improve the robustness of fashion supply chains for the cooperatives. This paper aims to present an existing literature review that concentrates on the use of blockchain technology as a supply chain improvement and as its application in fashion cooperatives.

The Impact of Blockchain on Enhancing Supply Chain Resilience

There is growing evidence of the potential of blockchain technology to create value through supply

chain transparency, better trust between stakeholders and better responses to disruptions. Min(2019) pointed out that the use of a blockchain supply chain can greatly improve reliability because all the products could be of high quality, and their sources could be traced. Since data stored in the block chain cannot be altered, they serve as original documents that can be used to authenticate and or monitor transactions and or track products from their producers right up to the consumer.

Pandey, Daultani, & Pratap (2024) highlight that blockchain is useful for enhancing the resilience and sustainability of the supply chains when occurring alongside IoT and AI. Despite that, such technologies can complement blockchain as they provide the means of developing end-to-end supply chain monitoring and predictive analytics, greatly boosting resilience levels.

Blockchain Technology in the Fashion Industry

In recent years, the fashion industry has started to think about how blockchain can be used to solve different problems concerning the fashion value chain, such as the challenges of transparency, sustainability and customer trust. Ribeiro and Brito (2022) describe how sustainability in the fashion supply chain can be improved by using blockchain for material certification. This capability is especially useful for fashion cooperatives, where the main focus is on correct behaviour during the manufacturing process and correct payments from consumers.

Concurrently, Singh et al. (2022) also mention how the use of the block chain was applicable to the fashion industry, saying that blockchain has the potential of strengthening the bond between companies and consumers through offering quality information on production. Such openness may give fashion cooperatives a competitive advantage based on their sustainable and ethical practices in a; _renderer: saturated, congested market environment.

Apart from sustainability, blockchain can also solve the problems set in with fashion that can negatively impact the environment due to its fast kind. Caro and Martínez-de-Albéniz (2021) also described how sustainable business models can be strengthened by using this kind of technology to help effectively manage inventories and prevent overstocking. In this case, for instance, fashion cooperatives can turn this into a positive thing by having more efficient production processes as well as less waste generation, which is music to their ears when it comes to sustainability.

Enhancing Resilience in Fashion Cooperatives

The challenges in constructing sustainable supply chains are more complicated for fashion cooperatives than for large-scale fashion brands and companies; fashion cooperatives are usually smaller and give much more focus to social purposes. Some of these challenges include limited access to capital, lesser negotiating power with the suppliers and high dependence on word of mouth. In the following paragraphs, several potential advantages of using blockchain technology are described with regard to increasing the robustness of these cooperatives.

A clear advantage is the enhanced opportunity offered to cooperatives to monitor and control their supply chain risks to their advantage. Caldarelli, Zardini, and Rossignoli (2021) state that blockchain has the potential to create a sustainable supply chain because it can eliminate issues related to information asymmetry and distrust between parties. In the case of fashion cooperatives, these are often organised in a decentralised and fragmented manner, which means that blockchain can create reliable means of tracking and guaranteeing materials and thus mitigating the risks of disruptions of supply chains.

Another important aspect is the use of the concept of blockchain to determine the degree of improvement in cooperation and mutual trust between the members of the cooperative, examining the characteristics of fashion cooperatives, which are halfway between economic and socially

oriented. Blockchain can assist in this balance by ensuring equal access to necessary information for efficient peer-to-peer transactions with total control of fake reports. This can strengthen the positive relationships among the members within the cooperative, which is a foundational component of building cooperation and buffering.

Also, by having real-time data and automating fashion cooperatives' processes, blockchain can help fashion cooperatives react faster in cases of disruption. Analyzing the impact of blockchain technology adoption on the supply chain and how it is influenced by transformational supply chain leadership, Liu et al. (2023). They contend that the adoption of blockchain needs to be guided by strategic management as it is a technology that needs to be progressed with a long-term view.

Case Studies and Empirical Evidence

Some examples of case and empirical reviews on the use of the blockchain in supporting supply chain reliability have also been presented and discussed. According to Benstead et al.(2022), there are several specific applications of blockchain in the fashion business, and all of the are aimed at increasing the efficiency of the supply chain and promoting sustainable fashion values. They discuss fashion cooperatives' cases that integrate blockchain to trace materials' origin and guarantee compliance with ethical standards.

Likewise, Mubarik et al. (2023) also review steps towards repealing and reconstructing resilient supply chain networks with the help of blockchain technology with reference to small and socially motivated entities cooperatives. From their research, they conclude that blockchain has the potential to enhance the ability of these organisations to develop better supply chain networks that mitigate risks and foster more cooperation, as well as allow for quicker responses to disruption.

Tripathi et al. (2021) continue another research on the application of blockchain technology in the fashion industry for cooperatives: strengths and weaknesses. They point out several limitations, such as the prohibitive expenses of implementing technology and the need for skilled personnel. However, they also point out opportunities that can be effective for fashion cooperatives, like the supply chain and transparency of the system, to improve the flow and strengthen the fashion cooperative.

Challenges and Future Directions

However, the use of blockchain technology has numerous challenges which may inhibit the expansion of the system in fashion cooperatives. Some of these challenges include the high cost of implementation, Technical specialization, and Data security issues. In their 2023 paper, SadeghZadeh, Ansaripoor, and Oloruntoba delve into the ways that blockchain can be used to build supply chain resilience against disruptions. This move recognizes the technology's potential to be hampered by those barriers.

Therefore, future studies need to get involved with a view to tackling these problems and finding out how to introduce blockchain technology within fashion cooperatives more easily. This could include the design of block chain platforms that are easy to use, provision of education to the members in a cooperative society and seeking funds from other sources that fit within the cost structure rather than having to spend a lot of money on the technology.

Furthermore, more research is also required, focusing on the effectiveness of blockchain execution regarding the sustainability of fashion cooperatives. Despite several published case studies that illustrate the possibility of utilising benefits, further studies are required to determine the global effects of the matter and the most successful strategies for application.

Blockchain technology appears to hold a lot of promise for increasing the operational robustness of fashion cooperatives by improving supply chain transparency, engagement, and manageability of disruptions. Despite these drawbacks, blockchain also has even broader advantages where sustainability, transparency and trust, which are essential for fashion cooperatives, are concerned. In the subsequent research, particular subjects, such as the approaches to the implementation and the definition of the key success factors and risks of using blockchain technology in the field in question, should be given special attention.

3. Methodology

This research utilises a mixed research approach that involves highlighting the main literature and cases, meta-analysis and content analysis to understand how blockchain technology can foster vulnerability in fashion cooperatives.

4. Literature Review

The first stage of the research entails a literature review, which presents suitable work as a framework for examining the state of knowledge regarding the use of blockchain in the fashion Industry and, more specifically, for co-operatives. The current knowledge in the field is reviewed from existing peer-reviewed journals, other industry reports, and relevant books to identify the gaps in existing research. This current literature review looks at the possibility of applying blockchain in increasing supply chain transparency as well as in boosting trust within the cooperative structures, thereby helping to support fashion cooperatives sustainably.

5. Case Studies

The second part is based on the identification and research of some examples of fashion cooperatives that have already embedded blockchain technology in their business models. These cases will be selected randomly based on their geographical location, the size of the cooperative, and the degree of use of the blockchain. In the way of understanding the influence of applying block chain in enhancing the stability of the cooperatives mentioned above, this research study will channel its focus towards analyzing the experiences of the cooperatives in regard to the efficiency of operations, member participation and flexibility to market forces.

6. Meta-Analysis

In the third phase, only meta-analysis will be used to synthesise findings and quantify the utilization of blockchain technology in the improvement of resilience in fashion cooperatives. This meta-analysis will gather information from prior empirical research. It will pay particular attention to factors including supply chain disruption and financial performance, as well as cooperative member satisfaction levels. The idea, though, is to quantify and compare the general effects of blockchain on these cooperatives and gain insights into its effectiveness.

Content Analysis The third and last methodological approach used in this study is content analysis of both offline and online media materials, such as cooperative reports, documents pertaining to the application of blockchain, and periodicals in the industry. To do this, this analysis seeks to establish common trends, issues, and best practices regarding the implementation of blockchain in fashion cooperatives. A part of this, the content analysis will investigate how blockchain is described in cooperation narratives with regard to its benefits for resilience, ethical material sourcing, an sustainability.

This approach permits a versatile study of the research problem since the qualitative and quantitative characters of the problem are captured. In an effort to offer concrete conclusions, this study aims to employ the data triangulation technique across the different sources of information with a view to establishing the application of blockchain technology in increasing the capability of fashion cooperatives.

7. Case Studies of Blockchain Implementation in Fashion Cooperatives: Lessons Learned and Best Practices

The fashion industry has recently posted studies defining the possibilities of applying blockchain during the supply chain, especially in the sphere of fashion cooperatives (Moretto & Macchion, 2022). Blockchain enables secure, decentralised permanent record keeping for the exchange of material and information flows, which has made it ideal for use within supply chain systems.

Another successful application of blockchain is the fashion cooperative in India, which faced some problems with the supply chain of its organic cotton. It was also easier for the cooperative to monitor the flow of the raw material from the source through the different processing stages to the end consumers, hence enhancing consumers' knowledge of origin. These implementations have further made the cooperative gain more trust with the consumers; in addition, the internal operations of the organization have been made more efficient and more accountable.

Another example can be traced to the fashion cooperative in Peru, which employs technology to guarantee that artisan members receive fair wages and working conditions. The charitable cooperative has been documenting each phase of production on the blockchain, thus enhancing the cooperative's capability to oversee and authenticate fair portioning of the profits, enhancing the member's authority and enhancing the cooperative's status within the global fashion supply chain (Agrawal et al., 2018).

As the take up of blockchain technology within fashion cooperatives is still in its infancy, some questions need to be answered. (Badhwar et al., 2023) Challenges such as the absence of technical people to handle the development, the cost of implementing this technology, and the reluctance of the industry to change are other challenges that hamper its adoption.

In order to overcome the mentioned challenges, fashion cooperatives should place more importance on the establishment of partnerships with technology suppliers or providers. Further, they should fund efforts to train and educate their membership in the use of technology know-how to engage in the processes to support the blockchain framework. Last but not least, the fashion cooperatives must take an active stand and show the entire fashion industrial world all the profits of implementing blockchain technology, including, but not limited to, better control over product traceability, higher transparency, optimised processes, etc. Thus, these actions enable fashion cooperatives to advance the use of blockchain throughout the fashion system and deliver on its promise of revolutionizing the sector.

With the elaboration of the best practices and emergent issues of blockchain integration in the fashion cooperatives, this subtopic could potentially be helpful for cooperatives that are willing to use blockchain as an enabler technology. The detailed case studies given here could draw out the applied benefits and practices that are empowering fashion cooperatives to improve their solidity and performance in global markets.

In the case where the class discusses the success story of an Indian fashion cooperative, which I

opined needed expansion, the added content would explain in detail how the players in the cooperative have benefited from the adoption of the cooperative model, for instance, the increased consumer confidence, effectiveness in operations and efficiency and new accountability mechanisms within the supply chain. The discussion could also look at how the cooperative has interacted with blockchain technology supply, on the level of digital education of its members, and how it has dealt with resistance to change. (Park & Li, 2021) (Saberi et al., 2018)

Likewise, the case may be elaborated further to demonstrate how the Peruvian fashion cooperative has used blockchain technology for the benefit of its core constituency, the artisans, in terms of optimum wages for the products they produce. The additional information may describe how the improved profit share is being controlled and audited and how this has improved the member's quality of life and improved their welfare configuration. (Udensi et al., 2014) (Jesus & Cruz, 2021) (Daus-Taruc, 2019)

With these two case studies, the subtopic could benefit other fashion cooperatives and present practical step-by-step guidance on the right way to launch blockchain adoption in their companies, as well as demonstrate the perspective of the change in Blockchain and Power in Fashion.

8. Blockchain and Power Dynamics in Fashion Cooperatives: Reconfiguring Buyer-Supplier Relationships

The adoption of blockchain technology is disrupting the decision-making power in relation to some of the most significant elements of supply chain management in fashion cooperatives. Typically, supply chain power has resided in major users like large chain stores or suppliers, providing the cooperatives with limited power. Accounting, on the other hand, can be enhanced through the use of blockchain by providing a mutual ground for all parties who desire to share efficient and trustful relations.

Deposits, where fashion production cooperatives can benefit from blockchain, use the technology as a decentralized ledger that provides an immutable record of each transaction of information on sourcing production or labour standards. This transparency eradicates information asymmetry, a basic cause of power enormous power differences between buyers and suppliers in the past. Cooperative members are also better placed to get real-time information on the supply chain, which enhances their abilities to negotiate better and ensure that their partners in the chain adhere to the highest ethical standards.

Besides, due to the unchangeable nature of record-keeping, it facilitates trust and cooperation with other members of the cooperative and other third parties. Cooperative relations are built by buyers and suppliers on trust since the two are highly dependant on each other in order to operate. Due to the decentralized system used in recording the transaction, through the use of the blockchain, there is a decrease in the incidences of fraud and embezzlement, resulting in increased and enhanced trust and cooperation.
Blockchain reconfiguration of power dynamics further has implications for managing the operations resilience of fashion cooperatives. Since the control of a cooperative is decentralized, they are better placed to mitigate disruptions that affect the chain since their decisions can be arrived at in a short time. Group decision-making enables the cooperative to balance the risk factors to respond to market changes and ensure continuity.

9. Transparency and Traceability in Fashion Cooperatives: The Role of Blockchain in Navigating

Economic Disruptions

The challenges include how fashion cooperatives that mix economic and social objectives provide greater transparency and accountability for their supply chains, especially during moments of volatility. These cooperatives are not like any other formations founded on greed, as most of them want a fair share of the profit. Besides, they source their products and services from members by being environmentally sensitive. Nonetheless, the uncertain and unpredictable global supply chain networks, when combined with economic and technological disarray, are a profound threat to their stability. Based on the inherent features of blockchain technology in increasing the degrees of transparency and associated traceabilities, the above challenges can, therefore, be addressed by this technology.

Mechanisms of Blockchain-Enabled Transparency and Traceability

Blockchain technology is the unchangeable record-keeping system that forms the basis of the transactional framework of the supply chain. This database is distributed across the network, which makes every transaction completely clear and virtually impossible to modify without the network's approval. As it has been seen, this mechanism offers the most benefit to fashion cooperatives who otherwise are unable to gauge their supply chain efforts effectively. With the help of blockchain, these cooperatives are able to recognize the entire chain of raw materials, from origin to finished goods, and guarantee that all procedures are followed by their ethical and sustainable guidelines.

Transparency is one of the key features of blockchain because all current transactions are made available to all the parties. This visibility is important in fashion cooperatives since the success of a fashion cooperative is underpinned by trust from members, suppliers, and consumers alike. When all the people in a business have the same information at their disposal, then it becomes nearly impossible for fraud or unethical people to penetrate that business. In addition, this transparency can also increase the level of accountability of the participants within the cooperatives to all other participants to act responsibly and inbound to ethical and legal standards.

Conversely, traceability can be defined as the process of identifying the history, usage or location of an object using recorded identification. One of the ways used to maintain accountability in every process for fashion cooperatives is traceability, which covers every aspect of the supply chain process. One of the most valuable aspects of this capability is that it applies directly to cases of economic disruption and risk management. For example, if a cooperative experiences a problem such as a supplier failure or a market shock, the blockchain will immediately be able to identify the vulnerable parts of the supply chain so that relevant changes can be made as soon as possible.

Navigating Economic Disruptions through Blockchain

This paper also established that fashion cooperatives face fundamental economic risks, including market risks, foreign exchange risks, and purchasing risks. Such disruptions can cause delays, increase in cost and sometimes complete failure of a supply chain. Blockchain presents a strong anti-soul solution to these challenges where real-time information is available, processes are run on an automated basis, and decision-making possibilities are improved.

In this regard, one of the significant advantages of blockchain technology is the capability of offering the actual view of the chained supply. SCM in conventional supply chain management systems has always kept the delays and the disruptions hidden within a system until much harm is already underway. With blockchain, though all the transactions flow trough the blockchain, therefore it can

be easier for the cooperatives to track the supply chain in real-time. This real-time exposure enables cooperatives to identify these disruptions before they happen and prevent their effects from occurring.

In addition, blockchain offers the opportunity to automate most of the existing activities in supply chain management. For illustration, smart contracts are self-executing contracts that entitle the detailed terms of the contract as code and, as such, can help with payments and shipment, among other things. Such automation allows for higher effectiveness and efficiency by cutting through intermediaries, decreasing transaction costs and time, and increasing hyper-robustness that can counteract future economic collapse. About blockchain, a observe by means of Liu et al. (2023) observed that chains of provide that have embraced blockchain fared better when it comes to displaying resilience because of the manner in which these chains accessed automation and actual-time information about the economic surroundings around them that made it viable for them to adjust because the need arose.

Economic and Technological Challenges

This paper has perceived that fashion cooperatives bear certain forms of economic and technological threats because of their dual imperative of commercial viability and social responsibility. Common economic threats include instability of prices, uncertainty of demand and availability of tangible resources through supply lines. On the other hand, Technological threats are due to the process of embracing new technologies, such as blockchain, while struggling to bear the costs and denial of other related strains.

Blockchain technology assists fashion cooperatives in managing these issues due to the emergence of a stable and secure platform to deal with economic risks. For instance, the use of blockchain can enable cooperatives to advance in price risks by obtaining timely information regarding the conditions in the market in order to seal the price and the source of the good. In the same way, the technology can reduce the effects of unreliable sales patterns through its application in inventory control and estimation, according to Pattanayak et al. Attaining economic and technological disruptions is also facilitated by the dynamic capabilities that the blockchain provides, including real-time assistance with data analysis and even predictive modelling.

Hence, in terms of overall technological factors, the adoption of blockchain is a capital and human-intensive exercise. Some of these costs may be high, especially for fashion cooperatives, because they experience constrained resource endowment. However, the advantages of using the technology in the long run, such as enhanced supply chain management and elimination of risks, override the costs. On the other hand, the capability of guaranteeing the verifiability and audibility of the whole food chain can be seen as both coherent with the cooperative ethical commitment and as a competitive advantage in a market which tends to be more and more steered by consumers' demand for transparent, responsible and sustainable products and services. The article by Nagariya et al. (2023) points out that various positive impacts on cooperatives have embraced blockchain, such as the changes in operational costs and supply chain that affect their performance more than any economic turmoil.

Empowering Cooperatives through Blockchain

Details such as the fact that blockchain technology can enhance fashion cooperatives' influence on their supply chain. Specifically, through a sharp record of every transaction, blockchain enables cooperatives to check whether suppliers follow the cooperative's ethical requirements. This capability is especially useful in fashion as most of the supply chains tend to involve numerous layers of suppliers.

It also makes it easier for cooperatives to develop better rapport with their consumers through blockchain. As customer awareness rises in terms of ethics and environmental effects, for example, P3, they become more concerned with the transparency of their chosen brands. Blockchain can enable cooperatives to meet this demand by presenting consumers with transparency data on the supply chain. It shows people what kind of supply chains they are comprised of and avoids situations where some other cooperatives conceal certain information about their supply chain from the public. According to the study conducted by Saberi et al. (2022), blockchain technology for transparency will enable consumers to have more trust in the products and services because blockchain-based solutions are easily verified and secure, which means that businesses will increase customers' loyalty, especially businesses that operate in the clothing industry.

Last but not least, the application of the idea of improving traceability with the help of blockchain also contributes to the increased resilience of a cooperative. According to the information available and recorded on the blockchain, cooperatives are also able to easily find out any challenge that arises in the supply chain. This is important in that cooperatives are able to identify the root cause of an economic disruption and make corrections before the situation gets out of hand. Ref Al Ghizzawi et al. (2022): real-time tracking of disruption sources was indicated to provide a substantial boost in a cooperatives' robustness and capacity to restore from shocks to the economy by Pandey et al. (2024). Concisely, this paper has examined how the application of blockchain technology can help fashion cooperatives navigate economic disruptions due to the improvement of transparency and traceability. With the features of sharing real-time data, automating processes and facilitating better decision-making, blockchain assists cooperatives in managing supply chain risks and enhancing their relationship with consumers. As the fashion sector forges forward in its current position of economic and technological instability, the cooperative solution has the potential to embrace blockchain technology as a means of increasing operations flexibility as well as to preserve the cooperative's commitment to moral and sustainable business practices.

Table 1 - The Interaction between Blockchain and Cooperative Identity

Aspect	Blockchain Technology	Cooperative Identity	Interplay
Transparency	Provides immutable and transparent records of transactions.	Cooperative identity often emphasizes transparency to build trust among members.	Blockchain enhances cooperative identity by aligning with its transparency values and reinforcing trust within the cooperative.
Accountability	Ensures that all actions are recorded and traceable.	Cooperatives value accountability to members and stakeholders.	Blockchain supports cooperative identity by strengthening accountability through detailed and accessible records.

Power Dynamics	Distributes information and decision-making power.	Cooperatives often seek to balance power among members.	Blockchain can help achieve a more balanced power structure by providing equal access to information.
Trust Building	Builds trust through secure and verifiable transactions.	Trust is a core aspect of cooperative identity.	Blockchain reinforces trust within cooperatives by providing a secure and reliable system for transactions and records.
Collaboration	Facilitates collaborative processes through shared data.	Collaboration is essential to cooperative operations.	Blockchain fosters collaboration by enabling seamless and transparent sharing of information among cooperative members.
Ethical Practices	Can enforce ethical practices through transparent records.	Cooperatives often focus on ethical and sustainable practices.	Blockchain supports ethical practices by providing clear records of compliance with cooperative values.
Member Engagement	Provides real-time updates and engagement opportunities.	Cooperatives aim to engage members actively in decisionmaking.	Blockchain enhances member engagement by allowing real-time access to cooperative activities and decision processes.
Supply Chain Resilience	Improves traceability and resilience in supply chains.	Resilience is crucial for cooperative stability and growth.	Blockchain contributes to supply chain resilience by ensuring traceability and reliability, which supports cooperative stability.
Cultural Alignment	Can reflect and support the cultural values of cooperatives.	Cooperatives often have unique cultural and operational values.	Blockchain aligns with cooperative culture by reflecting and supporting its values through transparent and ethical practices.

10. Perceptions and Adoption of Blockchain in Fashion Cooperatives: Insights from Members, Experts, and Technology Providers

Blockchain technology has received widespread interest across different fields, mainly in industries that require transparency, traceability, and robustness. In the fashion industry, the use of the blockchain has been tested as a way of solving many of the challenges affecting cooperatives. This paper reveals that the current understanding and use of blockchain technology, as described by

members of fashion cooperatives, industry experts and technology providers involved in this study, indicate a constant development in the understanding of the applicability of this technology.

Cooperative Members' Perspectives on Blockchain Adoption

In particular, members of the fashion cooperatives still consider blockchain technology to be a form of trust and transparency. Through the collective or mutual ownership of the enterprise, cooperatives encounter certain difficulties in ensuring the transparency of their members in undertaking the necessary decisions. Blockchain's use of the incorruptible distributed ledger provides a solution by giving an opportunity to record each transaction and decision-making process in a manner that will be visible to all the cooperative members and ensure trust is built within the organization.

Nevertheless, the use of blockchain in the operations of a cooperative society has its drawbacks regarding cooperative members. One notable issue is the technical nature of blockchain systems; this is very problematic to members with low-tech literacy. Ribeiro and Brito (2022) have reported that the members of the cooperative highlighted concerns about the high technophobia relating to the use of the blockchain system, noting that their intention to continue using this system might discourage less technical members and interfere with the democratic process of the cooperative. In this regard, it becomes important to provide additional and ongoing education and training programmes that will form part of the cooperative's effort to mainstream the use of blockchain technology and foster mutual understanding and support to give the technology the best shot necessary to deliver value, without necessarily obverting the cooperative structure.

Another concern of the members of the cooperative is that the adoption of blockchain technology may be cost-effective. The cost associated with the implementation of blockchain technology, including the startup expenses, alongside the continuous expense of maintaining the structure, is a hindrance since it may be proven costly for small cooperatives (Liu et al., 2023). The members also have worries about the long-term sustainability of these costs, especially in scenarios where there are no tangible revenue benefits.

Industry Experts' Views on Blockchain's Role in Fashion Cooperatives

Prominent stakeholders are relatively more positive about applying blockchain technology to enrich the Robustness and Sustainability of fashion cooperatives. They focus on blockchain in making supply chain operations efficient because it gives real-time information and certification of products from the manufacturer to the buyer (Nagariya et al., 2023). Such transparency is most helpful in the fashion industry, where matters concerning sourcing and fair trade are becoming sensitive.

It also tackles how stakeholders use blockchain technology in the distribution of profits within the cooperatives. Blockchain can thus assist in mitigating issues of transaction and contract risks that are frontline with cooperative structures through automating transactions and implementing payments as per agreed conditions (Pattanayak et al., 2023). Also, the information collected in the block chain will give cooperatives an insight into consumer preference and other changes to help them market their products appropriately in an ever- liberalizing market.

At the same time, specialists also noted that it is equally important when adopting blockchain, emphasizing that its further successful implementation in fashion cooperatives can only be achieved while taking into account the relevant parameters of each cooperative. According to Singh et al., 2022, they stress the uniqueness of the blockchain since it has to suit the size, structure, and objectives of the cooperative. The authors also note that further cooperation and support between the cooperatives and technology suppliers are crucial to guarantee the continuous integration and application of blockchain systems.

Technology Providers' Approaches to Blockchain Adoption in Cooperatives

Technology vendors are instrumental in engaging fashion cooperatives with the use of blockchain by being the ones to furnish the tools for the uptake of blockchain. Such providers are usually pioneers in finding successful blockchain applications that meet the needs of cooperatives due to the nature of their operations. For example, more of them are shifting towards developing better design structures of block chain interface that make it easier for the cooperative members to adopt in their operations, thus lowering the tech barriers in accessing the system (Lou & Little, 2022).

In addition, the players in the technology field know only too well that integrated architectures should be scalable as well as flexible. They understand that fashion cooperatives come in different formats and with different capacities and resource endowments, and hence, need blockchain systems that are easy to scale for the needs of each of them (Chen, 2023). IT providers are, therefore, creating blockchain solutions which can be composed of layered components with options to allow cooperatives to implement only what suits them best and leave the rest.

However, providers are also more and more active in informing cooperative members about the concept of blockchain itself. Membership training and workshops focus on enhancing the knowledge and self-estimation of utilizing blockchain technology among the members of this organization. These initiatives are extremely important in coping with the major barrier stemming from unfamiliarity with the technology in question, thus leading to its rejection.

However, technology providers also have problems persuading cooperatives about the usefulness of blockchain. Most cooperatives are still weary of the technology and its ability to deliver real value, especially in the short run. To overcome such scepticism, providers are thus concentrating on how blockchain works and exemplify it through proof of concepts, which, for instance, illustrate the effectiveness of blockchain technology in enhancing the supply chain’s security and elasticity (Min, 2019).

11. Blockchain's Contribution to Social and Environmental Sustainability in Fashion Cooperatives

Blockchain technology has evolved as a powerful solution with high possibilities of improving the social and sustainable development of fashion cooperatives. Because many fashion cooperatives focus on ethical principles and sustainability, blockchain appears as a tool that can help strengthen these tendencies more actively with the help of its potential for increased transparency and accountability in supply chains.

In social sustainability, we find that blockchain plays a unique role in the provision of transparency in labour practices. The distributed nature of the resulting blockchain technology also supports creating fixed records that can be useful in proving material responsibility and fair labour practices. They opined that since all activities must be recorded through the different ledgers in the blockchain as a continuous trail, it will be possible for the cooperative to ensure compliance with ethical standards in the operation of the supply chain while protecting the rights of workers from exploitation. Firstly, the analysis of Ribeiro and Brito (2022) discusses an application of blockchain for labour conditions and fair trade compliance to enhance sustainable fashion cooperatives.

In terms of environmental sustainability, such a decentralized record-keeping mechanism provides a platform where they can track where the raw materials for the end products come from and where they have been. With blockchain, cooperatives can share sustainable data about the supply chain, from organic cotton sourcing to minimizing carbon footprints across the value chain. In Chen (2023),

the author looks at the ways in which adoption of the technology can be pro-environmentalism, as genuine information regarding the environment is needed for the cooperatives that deal with production processes is crucial.

However, raising blockchain in fashion cooperatives also has its difficulties. The technology does carry impressive potential, although the use of the system calls for considerable funds and professional knowledge, which may become unattainable for small cooperatives. However, as Hu and Ghadimi (2022) point out, the achievement of the benefits associated with the use of blockchain calls for adequate training of the cooperative members in this new technology. While the costs of implementing blockchain technology may be high initially, cooperatives need to determine the costs and benefits of the sustainable food system in the long run.

However, it can be stated that there are enormous opportunities for synergy between blockchain technology and the sustainable social and environmental objectives of fashion cooperatives. Through transparency and accountability, supply chain complications can be avoided through the application of blockchain, which works to the advantage of cooperatives with timely, ethically, and environmentally correct supply chains. The provision of actual data about the implementation of sustainability measures also brings more credibility to a particular cooperative among consumers, who expect more reliable information regarding the actions of the fashion industry. Based on the explanation of Cuc (2023), it can now be stated that blockchain could and should be utilized in the fashion industry as a tool for the creation of trust and improvement of responsible business practices and, therefore, it could be extremely useful for fashion cooperatives that are focused on sustainable development.

Table 2: Enhancing Buyer-Supplier Interactions through Blockchain

Aspect	Description	Impact on BuyerSupplier Interactions	Examples
Transformation of Buyer-Supplier Dynamics	Analyzes how blockchain technology changes the way buyers and suppliers interact within fashion cooperatives.	Enhances transparency, efficiency, and accountability in transactions.	Improved tracking of transactions and inventory in fashion supply chains.
Trust Building through Blockchain	Evaluates how blockchain fosters long-term relationships and trust between buyers and suppliers.	Creates a decentralized ledger that is immutable, increasing trust and reducing fraud.	Smart contracts that ensure automatic compliance with agreed terms.

Transparency and Traceability	The role of blockchain in providing transparent and traceable supply chain data.	Enhances visibility into the origin and journey of products, promoting ethical practices.	Real-time tracking of product origins and journey from production to delivery.
Efficient Dispute Resolution	Examines how blockchain can streamline the process of resolving disputes between buyers and suppliers.	Reduces the need for intermediaries, leading to faster and more fair dispute resolution.	Automated dispute resolution through smart contract mechanisms.
Data Security and Integrity	The impact of blockchain on the security and integrity of transactional data between buyers and suppliers.	Ensures that statistics is secure, tamper-proof, and on hand simplest to legal parties.	Secure sharing of confidential agreements and transaction details.

Cost Reduction	Investigates how blockchain technology can reduce costs related to buyer-supplier interactions.	Minimizes costs associated with intermediaries, fraud, inefficient processes.	Reduced administrative costs and transaction fees due to streamlined processes.
Long-Term Relationship Management	How blockchain supports ongoing relationship management between buyers and suppliers.	Facilitates consistent and reliable interactions, fostering stronger, long-term partnerships.	Continuous monitoring and compliance through blockchain-based relationship management systems.

12. Analysis

Blockchain innovation has become a revolutionary instrument promising a lot in advancing the sustainability context among fashion cooperatives, where its application is most likely to drive change in the supply chain. The application of blockchain matches well with the enhanced demand for more transparency, accountability, and sustainability in the fashion supply chains, as discussed in the green and sustainable supply chain management comparative literature review by Ahi and Searcy (2013).

Transparency and Traceability in Fashion Supply Chains

Transparency is paramount in fashion, especially now that the consumer is becoming more conscious of the kind of fashion that meets their standards of ethical and sustainability. The blockchain feature offers a clear record of every transaction that has occurred, hence creating a way to promote the supply chain. This capability also enables the tracking and increasing supply chain transparency of materials and products in a way that is paramount to guaranteeing sustainable compliance within fashion cooperatives. An example of this application is Hugo Boss, which used blockchain to track items within the company's supply chain, making all the actions undergoing the production process utterly transparent (Andrew, 2018).

Power Dynamics and Decentralized Trust

In addition, decentralization is crucial for changing power distribution in value chains through blockchain. Blockchain, which cuts out the intermediaries and permits P2P transactions, makes the process more decentralized and, therefore, lets smaller players, like fashion cooperatives, gain more oversight of their supply chain. This shift of power has important positive effects and with different questioning of the supply chain, especially in developing countries, for social balance between suppliers and buyers (Anisul Huq et al., 2014).

Sustainability and Ethical Practices

Blockchain implementation into supply chains of the fashion industry also assists the rest of the industry's commitment to sustainability and ethical practices. With traceability, blockchain can go a long way in ensuring that purchasers only got materials from sources that were procured fairly, workers were treated fairly, and impacts on the environment were limited. Such integration also complements the call for developing robust, sustainable criteria in supplier selection as proposed by researchers in the area of green supply chain management (Bai & Sarkis, 2009).

Collaboration and Strategic Alignment

Furthermore, through the use of a blockchain, the various parties of the fashion supply chain can be brought to the table, where they all have to be placed under one roof and have their objectives and strategies changed to sustainable ends. The prospects of supply chain collaboration have positive impacts on business opportunities, and there is evidence emerging now that the deployment of blockchain technology, which forms the basis of smart contracts, enhances the coordination of the supply chain by enabling a secure platform for communication and exchange of information (Banchuen, Sadler, & Shee, 2017).

In this way, entities of C2C production associated with fashion cooperatives, as well as stakeholder industries, can combine efforts to produce high-value-added and ethically sustainable fashion goods to meet the demanding and challenging market requirements for fashion blockchain. This paper provides a background of the need for more research and practical implementations of Blockchain in the fashion industry.

13. Discussion

Ethical Implications of Blockchain Technology in Fashion Cooperatives

Data Privacy and Security: Issues on data privacy and security can be solved using Improved security through the application of blockchain technology, which is vital for fashion cooperatives. The fact that blockchain is decentralized protects data, making it secure, unalterable, and easily trackable (Ahi & Searcy, 2013). However, this feature raises concerns over the level of transparency as opposed to the individual privacy of users. Fashion cooperatives face these hurdles to ensure that, while addressing supply chain disruptions, they do not undermine the protection of people's information.

Fair Labor Practices and Worker Rights: There is the probability of efficiency of the chain of supply to monitor fair labour practices due to the efficiency of the blockchain. Through documentation of each process in the production, the cooperatives achieve the objectives of respecting the rights of the workers and compensating them fairly (Huq et al., 2014). There is a danger, however, in which instead of exposing ethical misconduct, it will just be employed to hide the very same thing. Any implementation of this blockchain technology must feature strict auditing and conformance structures for the protection of workers.

Balancing Economic, Environmental, and Social Sustainability

Economic Benefits vs Environmental Impact: Brandenburg et al. (2014) indicated that blockchain has economic benefits in the cuts, specifically, reduced transaction cost and efficiency. However, the technology's eco-impact (whereby energy requirements for the working of block-chain is taken into consideration). In a research conducted by Benjaafar, Li, and Daskin (2013), it is realized that if the detrimental impact of blockchain is not controlled, it will erase a portion of its monetary profits. Nonetheless, energy-efficient blockchain solutions have to be implemented in fashion cooperatives, and the general sustainability of the processes has to be taken into account.

Addressing Social Issues: While the use of blockchain will help increase transparency and fairness to supply chains, the social problems with its implementation are much more severe when the approach is noninclusive (Carter & Liane Easton, 2011). The technology should be harnessed as something that can be used to redress social imbalances within cooperatives by ensuring that other players, especially the minorities in any respective community, have something to say about the utilization of this technology.

The Role of Blockchain in Advancing Transparency and Sustainability

Enhancing Transparency and Traceability: Increasing accountability Blockchain as an information system has high advantages for the supply chains of fashion through increasing the accountability of the recorded transactions. This increase helps the stakeholders in tracing back the source of the materials and approving their ethical qualities (Kashyap et al., 2017). These oils can help reduce fraud and also help in making sure that cooperatives work sustainably (Choi & Li, 2015).

Driving Sustainable Practices: Blockchain can also drive sustainability as it will generate definitive info on the effect of products and processes on the environment. Overall, inviting blockchain together with other sustainability programs makes it easier for cooperatives to trace risks connected to the environmental and social aspects (Fletcher, 2010). However, only the integration of blockchain into other sustainable technologies and practices will be able to contribute to the promotion of sustainability.

Implications for the Future of Fashion Cooperatives

Long-Term Effects on Resilience and Efficiency: In the long run, these enable blockchain to foster higher resilience and operative efficiency among fashion co-operatives in executing their functions without the possibility of interference (Jiang, 2009). The technology can also help in sustaining better coordination of partners, thereby building better and stronger supply chain systems.

Emerging Trends and Challenges: The head of these cooperatives should identify the trends and challenges which are constant in that field as they are in the constant process of development; thus, new topics might seem to be the main problem, and scalability involution, for instance, (Bauman et

al., 2016). Trying to influence these trends in advance will be important to reap the benefits of blockchain technology and reduce the negative impact.

14. Conclusions and Recommendations

Key Findings: Blockchain technology helps implement the transparency and traceability of supply chains in fashion cooperatives, as well as increase efficiency. However, it also entails some lapses, including data privacy, environmental concerns, and social justice concerns.

Recommendations

Implement Robust Data Security Measures: Working on blockchain systems must guarantee privacy and, at the same time, keep the users informed without exposing them.

Adopt Sustainable Blockchain Solutions: Select energy-wise blockchain solutions and incorporate them into over arching sustainability plans.

Engage Stakeholders Inclusively: The organizational and social/ethical implementation process should involve all the parties with an interest in implementation.

Contributions to Theory and Practice

Theoretical Contributions: Hence, this research is a tentative work in the world of knowledge regarding the blockchain in the supply chain by defining the ethical, environmental, and social contexts of this innovative technology. It also provides new knowledge with regard to the use of blockchain in improving sustainability and transparency in fashion cooperatives.

Practical Applications: Thus, the research provides practical recommendations on the use of blockchain technology for fashion cooperatives and decision-makers in each country regarding the best practices in raising ethical and sustainability issues. The research offers guidelines on how the adoption of blockchain can be managed in a way that is in line with the economic, environment and social dual bottom line.

Limitations and Future Research Directions

Limitations A common drawback of the research is that it is centrally devoted to thorough case studies and theoretical perspectives only. Thirdly, owing to the dynamics of blockchain technology, some of the provided recommendations may, therefore, be deemed irrelevant in the future when new developments occur.

Future Research Directions

Explore Broader Applications: Check how blockchain is applied to other segments of the fashion market and additional fields.

Assess Long-Term Impacts: The following are the research recommendations: Carry out longitudinal research to assess the impact of blockchain on the resilience and sustainability of supply chain operations.

Examine Technological Advances: Technological improvement Exploit fresh findings on technological advances in block chain and its relevance to fashion cooperatives.

Based on those areas, future research might extend the current study and contribute more to the understanding of the dynamic nature of the application of the blockchain in fashion cooperatives.

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Analysis of Critical Success Factors for Sustainable Palm Oil Growers Cooperatives (Spogc) in Malaysia

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Abstract

This study was undertaken to examines the critical success factors (CSFs) influencing the sustainability of Sustainable Palm Oil Growers Cooperatives (SPOGC) in Malaysia. The establishment of SPOGC in Malaysia reflects a dedicated effort to enhance the socioeconomic status of smallholder palm oil growers by encouraging them to become members of the cooperatives. Six SPOGCs were selected from three regions in Malaysia namely Sabah, Sarawak, and Peninsular Malaysia. One each for the highest and the lowest revenue for respective region. Three representatives from each SPOGC representing every unit in the SPOGC namely board of directors, management and members was selected as a participant. On top of that, a representative from each region from Malaysian Palm Oil Board (MPOB) and the Malaysia Co-operative Societies Commission (MCSC) were also included as study participants. A purposive sampling method through a qualitative interview was used to select the sample and a total of 24 respondents were interviewed face-to-face using a developed protocol. The data were analyzed using thematic analysis, which involved three stages of coding: open, axial, and selective coding. The subsequent data interpretation was analyze in which seven critical success factors for SPOGCs were identified namely commitment, management manner, competition management, financial management, operations management, facility management, and external environmental support. Based on these factors, a model was developed to illustrate the interdependence and importance of each factor in realizing the benefits of establishing SPOGC. The results of this study will inform future quantitative research aimed at a broader examination of the critical success factors for SPOGC. This study enhances academic knowledge and supports the growth of Malaysia's cooperative sector by offering valuable insights into the specific needs and success factors of palm oil cooperatives.

Keywords: Critical Success Factors (CSFs), Sustainable Palm Oil Growers Cooperatives (SPOGC), Commitment

1. Introduction

Oil palm cultivation in Malaysia was introduced by the government to eradicate poverty among rural populations. The development of the palm oil industry has been promising, with emphasis placed on research to create new methods for planting technology, producing quality seeds, and generating new palm oil-based products.

To support the goals of the Entrepreneurship Policy (DKN) 2030 and to achieve the National Cooperative Policy II (2010-2020), the Sustainable Palm Oil Growers Cooperative (SPOGC) was establish as part of a program under the Sustainable Palm Oil Cluster (SPOC) by the Malaysian Palm Oil Board (MPOB). This initiative is designed to help small farmers produce palm oil in a sustainable way that meets today's and future needs. By setting up SPOGC, Malaysia aims to assist small farmers by providing them with marketing options and better prices for their products. This program also seeks to improve the cooperative sector by focusing on the palm oil industry, which is highly

demanded in the market. Research by Sarmila and colleagues (2017) found that SPOGC has a positive economic impact on small farmers by increasing their income through better production of Fresh Fruit Bunches (FFB), helping them market their crops, and providing access to quality farming supplies for improved FFB.

The performance or contribution of SPOGC is critical because its members are smallholders, making up nearly 40% of the palm oil cultivation area in Malaysia, much of which is in rural areas. The government, through SPOGC, continues to strive to improve the living standards and socioeconomic status of rural residents by providing various assistance through MPOB, such as advisory services from Tunas officers and programs like New Planting for Smallholders (TBSPK), Replanting for Smallholders (TSSPK), and Integrating Livestock with Palm Oil (ITe). Recently, the government, through SPOGC, has also offered free Malaysian Sustainable Palm Oil (MSPO) certification incentives to smallholders. Furthermore, SPOGC aims to create a holistic and conducive entrepreneurial ecosystem to support the national economic development agenda that is inclusive, balanced, and sustainable. A better performance from SPOGC will further enhance the overall contribution of the cooperative sector to Malaysia, which only contributed around four percent to the national GDP in 2018.

Although hopes are high, SPOGC's overall performance achievements remain minimal, as only a few of the 57 SPOGC established across the country by the end of December 2018 showed commendable performance. Statistics reveal that only 11 SPOGCs nationwide recorded a net income exceeding RM10,000 during 2018, while six recorded losses. One SPOGC had a net profit below RM1,000, while the remaining are yet to be audited (MCSC, 2019).

This situation brings up important questions about what affects the performance of the Sustainable Palm Oil Growers Cooperative (SPOGC). Cooperatives need to follow guidelines set by the Malaysian Cooperative Commission (MCSC), which include having audits, holding general meetings, and being active in business. According to Atkinson and colleagues (1997), measuring performance helps businesses understand feedback from suppliers and employees, gather opinions from shareholders, and evaluate how well they are using their internal processes and resources. A cooperative that performs well can greatly benefit its members.

Sylvester Kadzola (2011), in his research on “The Importance of Cooperative Principles in The Financial Cooperative Model,” points out that the principles of cooperatives can strongly influence the economic growth of their members. While many studies have found important factors for business success, such as management, strategy, location, finance, customers, market experience, and environmental support, few have specifically looked at palm oil cooperatives. This research will identify the key success factors for SPOGC based on interviews and data analysis, which will help the government create better policies to support palm oil farming by cooperatives.

2. Research Objectives

The objectives of this study are to identify the critical success factors for SPOGC nationwide and to develop a suitable success model for SPOGC's business activities.

3. Literature Review

Section 4(1) defines a cooperative as “an organization made up of individual members aiming to improve their economic interests by following cooperative principles.” This means cooperatives are independent groups where members come together voluntarily to pursue shared economic, social,

and cultural goals, regardless of their gender, cultural background, or religion. They do this through an organization that is owned collectively and managed democratically (Salleh et al., 2008).

The success of a cooperative relies on certain key factors. Barth and Koch (2019) explain that these key factors are essential elements that contribute to an organization's success. Bullen and Rockart (1981) describe them as specific areas where good results matter for how well individuals, departments, or organizations perform compared to others. These factors are crucial for reaching goals.

One important factor for success is commitment. Stakeholders, including managers, members, and the Cooperative Board (BOD), need to show strong commitment to ensure the cooperative runs well. Garnevska, Liu, and Shadbolt (2011) found that cooperative members play a vital role in success; their knowledge, technological skills, and participation in meetings and training are essential for the growth of farming cooperatives. Additionally, Dejene and Regasa (2015) pointed out that trust among cooperative members and their readiness to invest are important for a cooperative's success.

Management style also plays a big role in an organization's success. Mwaura (2005) states that the actions of top management greatly affect an organization's performance. Kibera (2006) emphasizes that management is about guiding activities efficiently to reach organizational goals. Cole (2004) adds that management involves planning, organizing, directing, and controlling to achieve the cooperative's objectives while using resources effectively. The way a cooperative is managed is shaped by governance practices and democratic principles, which are essential for its long-term success.

Competition is another factor that can affect a business's success. Rivers and Glover (2008) explain that competition can influence how satisfied customers are with the services provided. Research by Wan Idris et al. (2013) found that competition can affect retail businesses; healthy competition pushes organizations to offer better services. Proper management of competition can improve a business's performance.

Operations management is also a key factor in an organization. According to Krajewski et al. (2013), operations management, which involves managing activities that turn raw materials into finished products, is crucial for decision-making and organizational growth (Masri Azrul et al., 2018). It is closely linked to supply chain management, logistics, marketing, finance, and delivery. Kenton (2019) states that operations management is vital for achieving success in business management.

In addition, financial management is important for an organization's success. It helps finance production costs and requires careful planning and workforce management (Zakaria, 2007). Manaf et al. (2012) found that a strong economy helps entrepreneurs reduce losses by increasing sales and expanding their market. Nadzri et al. (2014) emphasize that entrepreneurs need to have planning skills and knowledge in economics and finance to succeed. For instance, keeping good financial records can improve transparency and accountability, helping cooperatives manage funds effectively. Good facility management is important for providing services that support the core business of the organization (Atkin & Brooks, 2015). According to The International Facility Management Association (IFMA), facility management includes various disciplines to ensure that buildings operate well by connecting people, places, processes, and technology (Rondeau et al., 2012). Location is one key aspect of facility management. Research by Ibrahim, Yaacob, and Abdullah (2015) shows that choosing the right location is crucial for success, as seen in the Edible Bird's Nest (EBN) industry.

Environmental support often comes from agencies that provide assistance needed for success. Rosdi (2002) states that various forms of support, like business networks, are essential for entrepreneurs to compete and thrive. Ismail (2004) noted that school cooperatives succeeded due to ongoing help from school administrators, support from Parent and Teacher Associations (PIBG), and cooperation from the District Cooperative Development Department (JPK). This shows that support from both internal groups, like members, and external groups, such as agencies, is critical for a business's success. Other studies suggest that government support, including help through policies, finances, market access, technical assistance, and infrastructure, also greatly contributes to business success (Abrar-ul-Haq et al., 2015; Rantso, 2016; Barhatov, 2015).

4. Research Methodology

This study uses an exploratory qualitative approach to better understand participants' views and experiences from different perspectives. Stevens and Wrenn (2013) explain that this method looks for clues to uncover events or situations that are happening or have happened. It's a good fit for this study because the goal is to gain new insights about the critical success factors of the Sustainable Palm Oil Growers Cooperative (SPOGC) in Malaysia, an area that hasn't been studied much before. By using this approach, researchers can engage with participants and learn about their different viewpoints. This method not only gives researchers valuable information but also promotes critical thinking and encourages them to keep an open mind.

The following is a process diagram of the study.

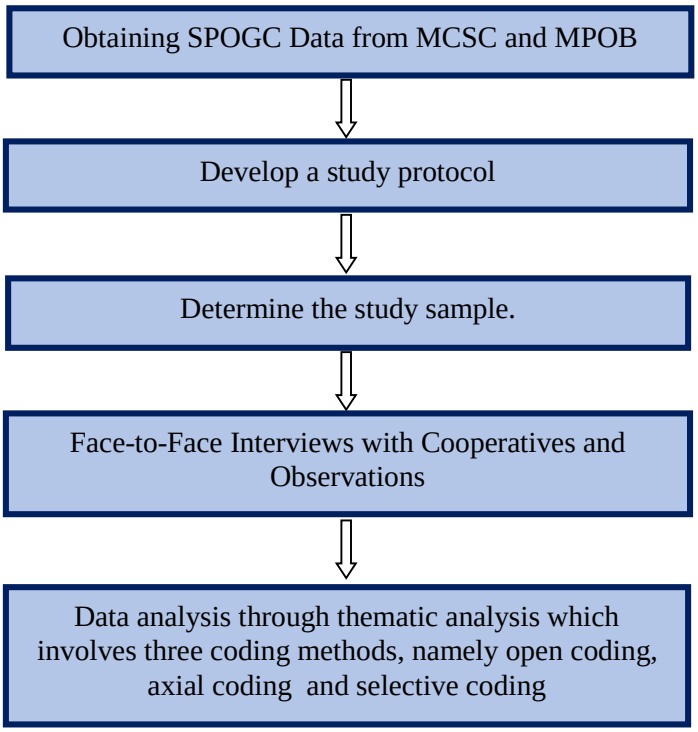

Figure 1: Data Collection and Analysis Process Diagram

Data on SPOGC in Malaysia were first obtained from the Malaysian Cooperative Commission (MCSC) and the Malaysian Palm Oil Board (MPOB) before sample selection. The sampling method for this study utilized purposeful sampling. Through this sampling, participants consisted of SPOGC showing both high and low performances from each region, namely Peninsular Malaysia, Sabah, and

Sarawak. SPOGC participants comprised three primary focus groups: Cooperative Board Members (BOD), Managers, and Staff. Additionally, SPOGC chose MCSC from all three regions and MPOB as research participants.

Data collection involved both primary and secondary data. Secondary data on SPOGC were first obtained from MCSC and MPOB. Primary data were collected from a predetermined population sample, amounting to 24 participants overall. This data was gathered through face-to-face interviews using a developed protocol questionnaire. Moreover, observation methods were also used in this study to understand the cooperative environment, supporting data gathered from interviews. A questionnaire was also used during the interviews to obtain specific data for analysis, such as participants' demographic profiles and cooperative backgrounds. This questionnaire consists of two sections: Section A concerning the cooperative's background and Section B for the profile of cooperative members.

The obtained data were analyzed using thematic analysis, developing suitable themes based on translated transcripts from audio recordings into text. The theme formation process went through three coding stages: open coding, axial coding, and selective coding. Open coding is the initial process to analyze the data translated from audio to text openly and freely without focusing efforts to identify ideas and phenomena. At the axial coding stage, general category data identified were connected into specific readable categories. The last stage, selective coding, involves the process of selecting and connecting categories established in axial coding into more detailed categories to identify the main themes (ultimate themes) that provide meaning and findings of the studied phenomenon.

5. Discussion and Analysis

Critical Success Factors for SPOGC in Malaysia

The data analysis from the study led to the development of key themes summarized to form critical success factors for SPOGC. Open coding from transcript analysis established eight themes in axial coding, which ultimately led to the development of seven main themes in selective coding. The selective coding that constitutes the critical success factors for SPOGC is divided into two dimensions: strategic orientation and environmental conditions. Both dimensions are explained according to the categorized critical success factor themes that have been analyzed. Based on the thematic analysis conducted, seven critical success factors for SPOGC's business have been developed. These factors include commitment, management style, competition management, operations management, financial management, facility management, and external environmental support.

In the strategic orientation dimension, the critical success factors analyzed are divided into two elements: internal elements and external elements. Internal elements include commitment and management style. This factor is categorized as an internal element because it involves the management level and the commitment demonstrated by internal parties, such as managers, Cooperative Board Members (BOD), and its members. In this study, commitment is viewed in terms of cooperative awareness among members, where awareness of responsibilities, goals, and objectives of joining the cooperative can lead to success in the management and business activities of the cooperative. As stated by the respondent:

"Thus, the success of a cooperative, if we observe, certainly comes from the members. Members who are aware of their responsibilities, their roles, members who understand their purpose, their objectives, and the advantages they gain from the cooperative, members who understand the impact

of that cooperative in a particular area..." (SPOGC 2, 2019).

Further, BOD with better understanding and knowledge about cooperatives can further help to strengthen cooperative business. Hence, the high commitment from the cooperative's main movers—members, managers, and BOD should establish solid cooperation among them to achieve the cooperative's goals.

Management style is viewed concerning compliance with laws and SOPs, good governance, and integrity leading to robust management practices. This study found that adherence to the cooperative's established by-laws contributes to its success. Furthermore, the management style of managers is seen to influence the success of SPOGC because they are responsible for ensuring that the management style implemented is suitable and acceptable to all cooperative members. One participant stated:

"Yes. They must know the laws, the cooperative regulations. That allows this cooperative to progress, especially for its members" (SPOGC 4, 2019).

The external element reflects management from an external perspective, which includes competition management, operations management, financial management, and facility management carried out by responsible individuals. Based on the findings, competition in terms of FFB pricing existing in SPOGC's business arises between SPOGC's weighing centers and external weighing centers and nearby mills. Most external weighing centers offer higher prices to palm oil smallholders than SPOGC. This competition poses challenges for SPOGC in gaining support for transporting FFB to its weighing centers. Consequently, SPOGC facing this challenge creates strategies, such as promoting the benefits of cooperative membership and providing transportation facilities through contractors for smallholders to deliver FFB to cooperative weighing centers. As stated:

""We do promote them about benefit of becoming the members especially to those that come to the weighing centre to sale their FFB. We invite them to become the member. We have some that apply to become members, and some just ignore."
(SPOGC 3, 2019).

Moreover, operations management is a crucial factor in cooperative business. In the context of this study, operations management covers aspects of existing infrastructure, sufficient workforce, and arising competition to facilitate the cooperative's operations. Infrastructure includes weighing centers and good forklifts to ease the collection and delivery of FFB. A sufficient workforce is needed to ensure that smallholders have enough staff to harvest so that the fruit collection process runs smoothly. As described by one participant:

"I feel if we can strengthen all existing infrastructure, complete with a good weighing system and functional forklifts at the FFB collection center, it would facilitate both incoming and outgoing processes for delivering and collecting palm fruit before sending it to the factory."
(SPOGC 5, 2019).

Financial management in this study considers working capital and cash purchases of FFB. Sufficient working capital enables SPOGC to purchase FFB from smallholders, most of whom need cash immediately for daily needs and school expenses for their children. Cash purchases help SPOGC reach its set FFB quantity target because most smallholders will send their FFB to SPOGC's weighing center. Therefore, SPOGC requires sufficient cash for increasing FFB quantities sent to the cooperative's weighing center. A participant in the study stated:

"It is clear that the most important factor is related to capital, specifically cash availability. When it comes to sustainable cooperatives, having enough cash is crucial for dealing with suppliers and meeting the needs of applicants."
(SPOGC 2, 2019).

Facility management relates to determining the positions of weighing centers, members' farm locations, and access roads to the weighing centers, all of which influence the cooperative's business operations. The positioning of weighing centers becomes less strategic when naturally the members' farms are scattered. This leads to some cooperative members being too far from the cooperative weighing centers to deliver their FFB to them. This scenario poses challenges for SPOGC in receiving support from its members to deliver the fruit to the cooperative's weighing centers. Therefore, the location of the weighing center affects member support and collaboration in the SPOGC business. Study participants stated:

"And another thing is that our members are scattered geographically" (SPOGC 4, 2019).

"Because they complain that our weighing stations are quite far now."(SPOGC 6, 2019).

The next dimension is the environmental state where this study examines external environmental support from stakeholders involved in policy formulation, financial assistance, training and education, advisory services, and support from non-cooperative members. This study views stakeholders as government agencies, non-cooperative members, mills, and logistics service providers.

"Other factors that I see are support or guidance provided by the government agencies involved" (SPOGC 2, 2019).

Support that can assist cooperative business includes formulating appropriate cooperative policies, providing working capital aid, training and education, advisory services, and non-member support for delivering FFB to cooperative weighing centers. These forms of support influence the business landscape of cooperatives. Altogether, good relationships among all involved parties are essential to ensure multifaceted support can be directed to each other's businesses.

Critical Success Factors Model for SPOGC
Based on the discussion of the critical success factors for SPOGC business, a model of critical success factors for SPOGC in Malaysia has been developed.

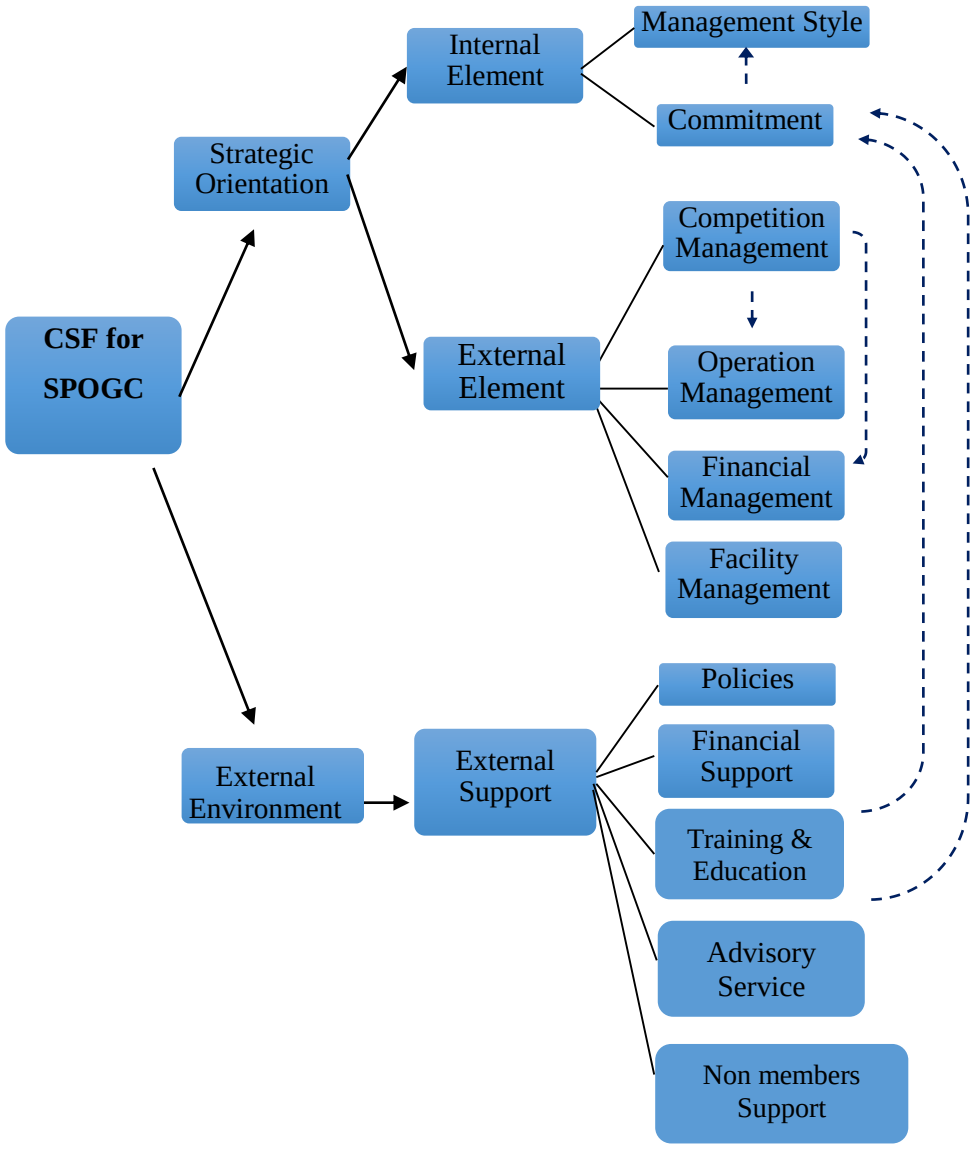

Figure 2: Critical Success Factors Model (CSF) for SPOGC in Malaysia

The development of the critical success factors (CSF) model for SPOGC in Malaysia will provide an overview and idea of how SPOGC management and business should be governed to achieve the primary objective of establishing the cooperative and allow every member to directly benefit from its establishment. Achieving the objectives of establishing the cooperative indirectly means that the cooperative has reached its peak level or apex in its establishment, successfully attaining its intended goals.

In summary, the SPOGC's CSF Model in Malaysia is categorized into two main dimensions: strategic orientation and environmental conditions. Both dimensions encompass critical success factors that lead to the successful business of a SPOGC. Each dimension and factor complement and relate to one another, where the level of dependency in each implementation process ensures that the establishment of the cooperative truly benefits palm oil smallholders from the ongoing business.

In the strategic orientation dimension, it is divided into two elements: intrinsic (internal) and extrinsic (external). These two elements relate to the strategic management orientation by the management. The internal element consists of commitment and management style. In this study, commitment reflects the awareness of those involved in SPOGC management, such as managers, BOD, and members regarding knowledge, principles, and philosophies of cooperatives. Essentially, high

cooperative awareness can further advance cooperative business. Cooperative awareness creates a managerial style that supports cooperative business. Thus, the managerial knowledge of SPOGC is crucial in facing emerging competition.

The external or extrinsic element includes competition management, operations management, financial management, and facility management factors. In this element, all four factors significantly affect one another. Competitive management ensures that smallholders, especially cooperative members, do not sell their FFB to external weighing centers other than cooperative weighing centers. Therefore, it is important for cooperatives to ensure strategic positioning of weighing centers and sufficient transportation facilities. The management of cooperative weighing centers is part of operations management. If this competitive management is properly executed, the cooperative's operations will also run smoothly.

As shown in the diagram, competitive management relates to financial management. The competition among these weighing centers influences the payment methods for FFB purchases from smallholders, whether cash purchases or other financial incentives aside from competitive pricing. To ensure effective competition management, successful business strategies have been implemented to gain support, cooperation, and sustained trust from members and other stakeholders involved in SPOGC's business activities. The effective strategies developed by SPOGC management positively impact SPOGC's finances through increased business transactions. All these processes involve the overall management aspects of the cooperative. Strategic weighing center positioning, cash purchases of FFB, and existing transportation facilities aid cooperatives in operating smoothly. This is summarized in the facility management aspect.

Location includes weighing center placements, the distance of members' farms from the weighing centers and mills, and access to main roads leading to the farms and weighing centers, which need to be well managed. The location factor ties closely to management style as the location of SPOGC's weighing centers determines whether members support the delivery of FFB to SPOGC's weighing centers or not. An appropriate management style will ensure a win-win business strategy between the cooperative and its members. All factors within this dimension are interconnected in forming a more efficient and effective strategic orientation.

The environmental condition dimension involves external environmental support factors. Stakeholders, such as government agencies, non-cooperative members, mills, and logistics service providers, are external supporters that can enhance SPOGC's competitive advantage. For instance, in this study, stakeholders play a role in determining suitable policies for SPOGC. Appropriate policies can shape efficient management for business implementation. Moreover, the support and assistance provided by others within the SPOGC environment in the form of financing, training and education, and advisory services contribute to SPOGC's growth. The training and advisory services provided will enhance member awareness, leading to greater commitment. Additionally, SPOGC receives support from non-cooperative members regarding FFB sales. Every support received helps in business implementation to achieve commercial benefits.

The successful implementation of all CSFs within SPOGC and accurate execution will ensure that all SPOGC members receive benefits from the cooperative's establishment. For example, a study participant stated that they have fulfilled their responsibilities by providing assistance and labor resources; however, the commitment or willingness of a member of the board is crucial for advancing the cooperative.

The benefits received by cooperative members can be viewed in two main contexts: financial and

non-financial benefits. Financial benefits include matters related to finances, such as dividend payments on shares, subscription bonuses for members, and other allowances like meeting attendance allowances and work allowances for BOD. According to a respondent, the establishment of the cooperative has somewhat increased smallholders' income, even though it has not yet been seen as the primary benefit of this establishment.

Non-financial benefits involve aspects such as member welfare regarding transparency, facilities, employment opportunities, unity, and integration as expressed in interviews. The transparency referred to is related to price suppression concerning the quality of palm oil sold by smallholders. According to one study participant, the establishment of this cooperative helps maintain quality and regulate the prices that smallholders should receive.

The establishment of this cooperative also provides convenience for smallholders. The facilities mentioned by participants include SPOGC weighing centers, which assist smallholders in selling their palm oil produce. Additionally, cooperative establishment creates job opportunities to increase income, especially for the surrounding population, as noted by one participant in the study. Unity and integration among smallholders arise from this cooperative's establishment, facilitating cooperation among them.

In conclusion, this model clearly illustrates that practicing the critical success factors in SPOGC's business implementation leads to various benefits, especially to the smallholders due to the cooperative's establishment.

6. Conclusion and Recommendations

This study aims to identify the critical success factors (CSF) for SPOGC business and to create a model of critical success factors for SPOGC in Malaysia. The overall findings from this study led to the development of a critical success factors model for SPOGC. The seven identified factors include commitment, management style, competition management, operations management, financial management, facility management, and external environmental support. In short, all these factors influence the performance and achievement level of SPOGC. The study also identified several recommendations for implementing agencies and for SPOGC itself, which are:

i) Enhance Cooperative Financial Capability: MPOB should prioritize financing facilities for eligible SPOGC and aim to become involved in high-potential business sectors.

ii) Improve Cooperation and Contract Terms with Mills: BOD should establish collaboration with manufacturers to allow mills to make payments within a specified timeframe while mills should provide cash advances to SPOGC for purchasing FFB from smallholders.

iii) Strengthen Training and Education: CIM should also play a role in strengthening training and education on cooperatives by guiding SPOGC to develop a more comprehensive training and education plan.

iv) Enhance Business Operations Management: SPOGC should develop arrangements for each cooperative activity, provide transportation services, create bins for collecting members' FFB, and possess a strategic business plan to monitor business progress.

v) Conduct Comprehensive Feasibility Studies Before Establishing SPOGC Weighing Centers and manage facilities effectively. MPOB should conduct detailed studies before developing future

weighing centers, including the feasibility of strategic weighing center locations.

vi) Collaboration Among Stakeholders in Policy Development: Stakeholders need to analyze or develop new policies to ensure smooth and efficient project operations.

vii) Establish an Affiliate Member Concept for Non-Member Customers: MCSC should formulate an affiliate member concept within the laws and legislation related to cooperatives in Malaysia to recognize the contributions of these groups.

The findings of this research also encourage further studies, including quantitative studies to determine the levels of these critical success factors, studies to identify correlations between participant demographics and CSF, as well as studies to investigate the potential contributions of SPOGC encompassing economic and social aspects to its members.

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Analyzing the impact of supply chain integration and blockchain technology adoption on social sustainability in farmer producer organizations: a mixed-method approach

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Abstract

Despite growing interest in Blockchain technology and circular supply chain practices within agriculture particularly, in developing economies a critical gap remains in understanding their combined impact on social sustainability within Farmer Producer Organizations (FPOs). Current literature lacks comprehensive studies on how Blockchain technology adoption (BTA) can effectively enhance supply chain integration (SCI) to foster social sustainability (SS) within this context. Therefore, this study address this gap by examining the moderating role of BTA in relationship between SCI and SS within FPOs. To achieve this, a mixed-method approach was employed integrating qualitative and quantitative analyses. Initially, as part of the qualitative analysis in-depth interviews and focus group discussions were conducted with experts in Maharashtra, India to identify challenges within FPO operations. Thereby, this qualitative analysis resulted in determination of 15 distinct challenges faced by FPOs. Based on these insights, a quantitative analysis was performed using a structured questionnaire and 480 responses are gathered from FPO members however, 355 valid responses subsequently analyzed using Structural Equation Modeling (SEM) to test the proposed hypothesis. The findings revealed that SCI dimensions – customer integration (CI), supplier integration (SI), and internal integration (II) positively enhance SS in a mediation relationship. However, CI demonstrated the strongest effect, highlighting the crucial role of customer alignment in promoting positive social outcomes. Furthermore, BTA was introduced as moderator between SCI (CI, SI, II) and SS. The results reveal that BTA diminishes the relationship between CI and SS. On contrary to the existing literature, BTA does not influence SI, II and SS relationships, suggesting that Blockchain's influence is more pronounced in customer-centric processes. This study emphasizes the need for strategic integration of Blockchain technology in customer operations, advising against over-reliance and a balanced approach that complements other customer integration efforts, ensuring strong, positive customer relationships while adopting Blockchain. The study primarily focused on social sustainability, neglecting environmental and economic aspects, suggesting future research should include these dimensions for a more comprehensive understanding.

Keywords: Circular Supply Chain Practices, Social Sustainability, Farmer Producer Organizations, Supply chain integration, Blockchain Technology.

1. Introduction

Over the past few decades, Indian agriculture has witnessed significant advancements, driven by technological progress, improved practices, and a supportive policy environment encompassing price support, input subsidies, enhanced market infrastructure, and greater access to credit (Ranjit Kumar, Sanjiv Kumar, R.S. Pundir, V. Surjit, 2022). Recognizing the agricultural sector's importance, the government has shifted its focus toward improving production quality and productivity to enhance food security and safety, while simultaneously improving the livelihoods of small and marginal farmers (Nandhini et al., 2023). Consideration of these initiatives are necessary steps towards

irradiating the various obstacles faced by small and marginal farmers which includes high production cost, very low income, lower productivity, difficulty in receiving guidance from experts in the field, access and training to new farming methods and latest technology, financial support and the quality inputs to the farms. Along with these, other challenges like soil health deterioration, non-availability of new crop variety, lack of information and transparency and lower support system for farm entrepreneurship also hinders their progress (RG Somkuwar, Ajay Kumar Sharma, NA Deshmukh, 2022).

Farmer Producer Organizations (FPOs) play a key role in supporting and helping farmers to overcome these challenges (Gautam & Mallaiah, 2024). FPOs are cooperative networks created by small farm landholders whose member contributes to initial capital which has resulted as new practices beneficial to famers and other stakeholders (Krishnan et al., 2021). Recently, in 2020, the Indian government has started a central supported scheme to create 10,000 new FPOs for lowering costs, increasing productivity and doubling farmer's income (PIB India, 2021). Adoption of circular economy practices which is trending globally plays a important role in achieving these goals. The major cause of loss of nutrients and economic value of food products is the lack of second-life value chain in existing agricultural supply chain (Shashi et al., 2021). Since last decade, many researchers have heighted the shift from traditional to circular practices in agriculture in order to increase output and reduce waste. This transition to circular economy requires a systematic approach considering entire supply chain and eco-system together as integrated approach give better result than working separately (Batista et al., 2018). One such method is supply chain integration (SCI) which strategically collaborates all value added activities together to foster growth and efficiency.

To efficiently address the needs of customers with a high SCI, internal and external procedures must be integrated seamlessly. Adoption of smart manufacturing technologies facilitates a supply chain integration, enhancing processes and products that align with the CE framework (Di Maria et al., 2022). One such technology is Blockchain, which, as a key aspect of digitalization, enhances resource efficiency in raw material procurement, processing, and transportation chains. A number of businesses have expressed an interest in deploying BT to improve supply chain sustainability, a concept that includes economic, social, and environmental elements, guaranteeing that current requirements are addressed without threatening future generations' ability to meet their own (Bai & Sarkis, 2020). Social sustainability (SS) is an ethical code of conduct for human existence and growth that mandates mutually inclusive and sensible supply chain behavior. It relates to issues that affect stakeholders and entails revamping supply networks in order to gain a sustainable competitive gain. Socially sustainable methods seek to improve stakeholder satisfaction and overall business performance (Chaudhuri et al., 2023).

The CE, which aims to prevent production by using resources before they run out, has the potential to promote sustainable development by reducing waste and boosting resource utilization. Sustainability, CE, and Blockchain technology (BT) are linked and mutually beneficial concepts. Businesses agree that adopting the circular economy is linked to digitalization, which allows for easier monitoring of product phases (Chauhan et al., 2022; Yontar, 2023). While there is rising interest in both BT and circular supply chain practices within agriculture, several critical research gaps remain unaddressed. Existing literature highlights the scarcity of studies exploring the application of Blockchain within agricultural supply chains, particularly in developing countries. Moreover, there is limited understanding of how Blockchain technology be effectively integrated to enhance supply chain integration and its subsequent impact on social sustainability within the specific context of FPOs (Albaaji & Chandra, 2024; Alobid et al., 2022; Friedman & Ormiston, 2022; Kamilaris et al., 2019; Nandhini et al., 2023; Sendros et al., 2022; Upadhyay et al., 2021).

This study investigates the intricate relationship amongst circular supply chain practices and social sustainability within the context of Farmer Producer Organizations. We consider the mediating role of SCI and the moderating role of Blockchain technology adoption (BTA) in this relationship. Specifically, we aim to answer the following research questions: 1. How effective is SCI in enhancing the impact of circular supply chain practices (CSCP) on SS? 2. Does the use of Blockchain technology have any influence in achieving this relationship? To answer our research questions, we take the following steps: (i) we undertake a comprehensive literature review of prior research related to Blockchain technology, circular supply chains, and social sustainability within FPOs. (ii) We adopt a mixed-method approach for data collection, utilizing focus group discussions and interviews to gather qualitative insights, and a questionnaire survey for quantitative data. (iii) Finally, we propose and empirically test research hypotheses for conceptualizing the relationships between our key variables using a structural equation modeling (SEM) approach. This robust methodology will provide a nuanced understanding of how circular supply chain practices, facilitated by supply chain integration and Blockchain technology, contribute to the social sustainability of FPOs.

This paper is structured into seven sections. Following the introductory Section 1, Section 2 delves into the existing literature surrounding Blockchain technology, circular supply chain practices, and social sustainability within the context of Farmer Producer Organizations. This section also outlines the hypotheses guiding the research. Section 3 details the mixed-method methodology employed, encompassing both qualitative and quantitative approaches. Section 4 presents the analysis of the collected data, including key findings from the interviews, focus groups, and survey responses. Section 5 discusses the results in detail, linking them back to the initial hypotheses and broader literature. Section 6 concludes the paper by summarizing the key findings and their implications. Finally, Section 7 acknowledges the limitations of the study and suggests opportunities for future research.

2. Study of the literature and developing the hypothesis

Circular supply chain practices (CSCP)

The concept of circular economy (CE) underlines the importance of reducing wastages, reusing, repurposing products, converting it into byproducts, recycling and encouraging efficient food pattern (Baratsas et al. 2021). Ultimately, this aims to incorporate circular thinking in existing supply chain by innovative business model and operations through the efforts of all stakeholders (Farooque et al., 2019). Studies have highlighted various drivers of CE adoption that include policies, economics, environment, health, society, innovation. However, inadequate knowledge, logistics, skill, infrastructure, operations and finance act as barriers to the adoption of circular practices (Mehmood et al., 2021). FPOs can leverage the use of these circular practices to achieve economy of scale by aggregating farm produce and resources. Additionally, FPOs act as knowledge hub where farmers can be trained and guided to foster collaborative growth. Small scale trials at various local and nation level provides a sustained opportunity for policy development during this transition (Jurgilevich et al., 2016).

Supply chain Integration

Piprani (2020) have defined supply chain integration (SCI) as a tool to improve organizations performance by incorporating coordination, enhancing responsiveness and flexibility throughout the supply chain. Various studies have highlighted the key role of SCI in implementing circular economy practices to achieve sustainability. SCI provides an opportunity for improving transparency, collaboration, digitization and partnership to achieve desired level of improvement in organizational improvement. Additionally, SCI influences practices like product return, recovery which are also part of CE. Hence higher level of SCI corresponds to more circular objectives in business activity

(Bimpizas-Pinis et al., 2022(). Therefore for FPOs considering SCI is supreme.

Blockchain Technology Adoption

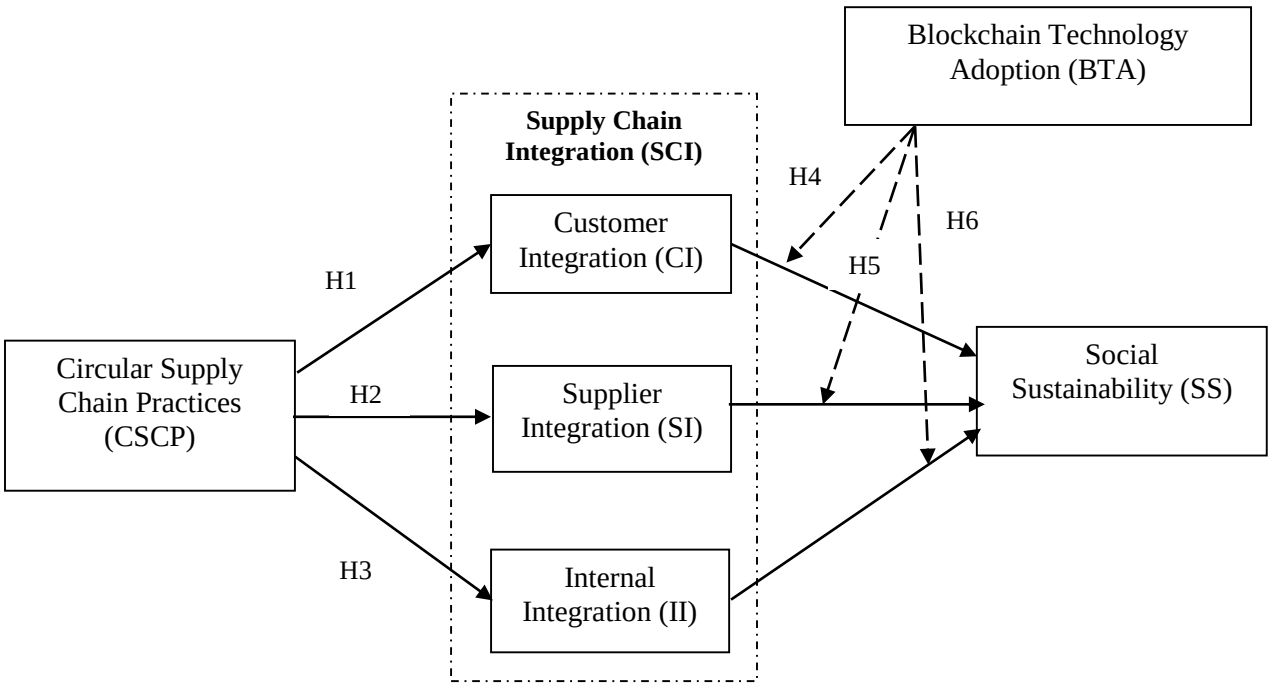
Rijanto (2020) defined Blockchain as a decentralized ledger which provides transparency, immutability, decentralization, security and efficieny. Takale (2024) highlights use of cryptographic methods to increase trust, data integrity, reduce fraud by validating the transactions. For agri-sector industries which generally lacks openness, traceability provokes more questions about origin and security, safety of food (Yadav et al., 2020). Although, e-solutions attempts to address these issues, they often suffers unsuitability and lessor confidence to consumers including exposure to bias and lack of robust security. This is where a Blockchain technology plays a significant role by creating a record of tamperproof data (Akella et al., 2023). However, Blockchain is not without its limitation such as technology vulnerability, standardization, data accessibility, infrastructure, interoperability (Feng et al., 2020).

Social Sustainability

De Pascale (2021) in their research highlight the fact that the social dimension of CE is often overlooked in literature in spite of its promising economic and environmental associations. It is particularly concerning given the lack of assessment method for evaluating the impact of CE practices. Walker (2021) and Wieland (2021) have underlined that though job creation is positive outcome of these practices, yet it is not suffiecient to capture the complexity of implementation of CE practices particularly businesses operating in inter-firm network. To foster truly inclusive economies, researchers recommend integrating social factors to access sustainability of CE projects (Moreau et al., 2017). Key social aspects commonly discussed includes employement, health, safety, community participation (Padilla-Rivera et al., 2020). The same has been highlighted by Miles & Gold (2021) emphasizing the active role local community and consumers play in CE transition. FPO play a significant role in development of rural communities by nurturing good governance, technical support. Their contribution extends to community involvement and building trust in system (Krishnan et al., 2021; Sultana et al., 2024). Hence there is pressing need for extended research to explore social sutainability aspect of CE within FPOs. We propose the below framework for our research and following are the hypothesis:

H1: Customer integration (CI) mediates the relationship between circular supply chain practices (CSCP) and social sustainability (SS).
H2: Supplier Integration (SI) mediates the relationship between CSCP and SS.
H3: Internal Integration (II) mediates the relationship between CSCP and SS.
H4: Blockchain Technology Adoption (BTA) moderates the relationship between CI and SS.
H5: BTA moderates the relationship between SI and SS.
H6: BTA moderates the relationship between II and SS.

Figure 1 represents research model showing relation between studies construct



3. Methodology

This study adopts a mixed-methods approach, integrating both qualitative and quantitative data to comprehensively analyze the impact of supply chain integration (SCI) and Blockchain technology adoption (BTA) on the social sustainability (SS) of FPOs.

Data Collection
The data collection process unfolded in two distinct phases:

Phase 1: Qualitative Data Collection
In order to gather deep insights and develop a thorough grasp of the difficulties faced by FPO within the framework of our study, we utilized a purposive sampling technique. Therefore, 63 in-depth interviews and 3 focus group discussions were conducted with experts actively involved in various aspects of FPO operations in Maharashtra, India. The data collection spanned from October 2023 to June 2024. Interviews and discussions were conducted face-to-face, lasting approximately 45 minutes each, based on participant availability. All participants confirmed possessing knowledge about this study's subject matter through their professional careers. Participants represented a diverse range of roles within the FPO ecosystem, as detailed in the Table 2. These discussions provided rich qualitative insights into the practical challenges hindering FPOs from achieving their objectives, highlighting key areas for further investigation in the quantitative phase.

Phase 2: Quantitative Data Collection
Building upon the insights from the qualitative phase, a quantitative analysis was performed using a structured questionnaire. We used purposive sampling method to gather the responses by distributing questionnaires to 480 respondents from FPO members in Maharashtra in the form of physical forms during field visit and Google forms via emails and LinkedIn messages. A total of 355 valid responses were finalized for analysis after removing biased responses and incomplete surveys. Structural equation modelling (SEM) was employed to evaluate the validity and reliability of sample collected

followed by testing the proposed hypotheses. The analysis was conducted using AMOS V24 software.

Instrument Development

A structured questionnaire was developed after thorough review of literature and questions were adopted and tailored to fit the context of our study. We used 5-pointb Likert scale ranging from "Strongly Disagree" to "Strongly Agree" as employed in most of research in this field. The CSCP construct has 6 scale items taken from Agyabeng-Mensah et al., (2023), BTA which has 9 items taken from Hassan et al., (2023) and Kamble (2023). 5-items each for CI & II and 4-items for SI related to SCI construct were adapted from studies by Hassan (2023), Kang (2018) and Piprani (2020). Lastly, 8-items for social sustainability were taken from Aljumah (2023) and Ferreira (2023) after brief discussion with experts from industry and academia.

4. Data analysis and results

Qualitative analysis

The responses received throw light on variety of challenges associated with farmer participation, supply chain operations and technology integration. These includes technology gap, trust deficit, inconsistent engagement of various stakeholders and operational inefficiency within FPOs. Table 1 & 2 summarizes key challenges and profile of experts who contributed to the study. Many expert have highlighted information and technology gap as significant challenge. Farmers, despite their willingness to engage with FPOs often lack proper guidance to make informed decisions. This is especially emphasized by those in FPO incubation role.

Table 5: Challenge Identified

S. No.	Challenge Identified
1	Lack of proper information
2	Lack of access to technology
3	Farmer willing but no guidance at various stages
4	Willing but farmer's fear of loss
5	Farmer not interested in investing
6	More attraction towards local market for immediate payment
7	Lack of trust between farmer and FPO due to previous history
8	Divergent farmer motivations
9	Farmer wants to be with FPO but not willing to give full produce – part is selling to local market
10	FPO network dependence
11	Delay in supply and distribution affecting relationship between farmer and FPO
12	Delay in payment
13	Price fluctuation
14	Lengthy process hampering relationship between farmer and FPO
15	Farmer unwilling to try new variety due to fear of loss

Another major highlighted by multiple experts is farmer's participation challenges which points to the reluctance of farmers for new information and adoption of technology due to fear of financial

loss. Additionally, divergent farmer motivation also one of the factor for inconsistent participation. Many farmers are preferring local market to sell their crop for immediate payment which is weakening their commitment for long term collaboration with FPO.

Table 6: Expert Profiles and Challenges Identified

S. No.	Expert Profile	N	Challenges Identified
1	Supply chain - Head	4	7, 11, 14, 6, 10, 12, 13
2	FPO Incubation & Trainer	7	1, 2, 3, 5, 14, 15
3	General Manager – SCM & OM	3	7, 14, 6, 12, 13, 9
4	Executive officer	11	1, 2, 4, 5, 7, 10, 12, 15
5	Domain expert - Trainer	7	2, 1, 7, 11, 14
6	Crop advisor	6	15, 6, 4, 1, 9
7	Business analyst	5	2, 4, 9, 13
8	Operations - Head	3	8, 7, 10, 11
9	Warehouse supervisor	4	11, 2, 4, 14
10	Head - R&D Farms	1	15, 4, 5, 8, 13
11	Executive – Quality assurance	9	3, 2, 8, 6, 10
12	Executive – R&D	3	4, 8, 15

Furthermore, operational and market challenges pose significant obstacles. Price fluctuations and dependence on FPO networks were particularly noted by supply chain managers and general managers. Delays in supply and distribution directly impact relationships, frustrating both farmers and FPOs, and creating operational bottlenecks. The qualitative analysis uncovers a complex array of challenges faced by FPOs in Maharashtra. These challenges include gaps in information and technology, trust deficits, inconsistent farmer participation, and various operational inefficiencies. While CSCP and BTA hold promise for improving social sustainability, addressing these foundational issues is crucial for successful integration.

Quantitative analysis

Descriptive analysis

Table 3 shows the demographics of the 355 respondents included in the quantitative phase. Regarding the gender distribution within the FPOs polled, the majority of respondents (74.6%) were men. The majority of respondents (53.8%) held senior-level jobs, which were followed by mid-level (35.5%) and executive-level (10.7%) employment. Over 250 people were employed by a larger percentage of participating FPOs (60.84%) and they had been in operation for more than ten years (74.36%). Concerning work experience, 54.1% of respondents had 6-10 years of experience, followed by those with 1-5 years (35.5%) and more than 10 years (10.4%).

Table 7: Demographic characteristics of participants N=355

Demographic	Category	Frequency	Percentage
Gender	Male	265	74.6
	Female	90	25.4
Level of Job	Executive Level	38	10.7
	Senior Level	191	53.8
	Mid-Level	126	35.5

Firm size	More than 250	216	60.84
	Less than 250	139	39.15
Firm Age	More than 10 years	264	74.36
	Less than 10 years	91	25.63
Employee's years of Work experience	More than 10 years	37	10.4
	6-10 years	192	54.1
	1-5 years	126	35.5

Exploratory Factor Analysis (EFA)

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy for this dataset is 0.753, indicating a middling level of adequacy. This suggests that the sample is sufficiently large and the data is likely suitable for factor analysis. The Bartlett's Test of Sphericity yields an approximate Chi-Square value of 10,153.565 with 300 degrees of freedom and a significance level (Sig.) of 0.000. The highly significant p-value (<0.001) indicates that the correlations between variables are significantly different from zero, further supporting the suitability of the data for factor analysis.

The Principal Component Analysis reveals six significant components with eigenvalues greater than 1, explaining a cumulative 77.072% of the variance. After rotation, these components explain variances ranging from 10.686% to 16.658%, making the data more interpretable. The analysis revealed that several measurement items demonstrated strong factor loadings, exceeding the established threshold value. The indicator items included under CSCP are CSCP1, CSCP2, CSCP4, CSCP5; BTA are BTA1, BTA2, BTA3, BTA4, BTA5, BTA6; SS are SS1, SS2, SS3, SS4, SS5, SS6; SI are SI1, SI2, SI3; II are II1, II2, II3; CI are CI1, CI2, CI3. Conversely, items CSCP3, CSCP6, BTA7, BTA8, BTA9, SS7, SS8, SI4, II4, II5, CI4 and CI5 fell below the threshold value and were subsequently dropped from further analysis to ensure model identification. Finally, 25 items were retained out of 37 items on the initial scale.

Confirmatory Factor Analysis (CFA)

The table 4 presents the inter-construct correlations and the Average Variance Extracted (AVE) for each construct on the diagonal. Customer Integration (CI) has an AVE of 0.973, indicating strong construct validity. Blockchain Technology Adoption (BTA) has an AVE of 0.794, Social Sustainability (SS) has an AVE of 0.740, Supplier Integration (SI) has an AVE of 0.990, Internal Integration (II) has an AVE of 0.985, and Circular Supply Chain Practices (CSCP) has an AVE of 0.790. These AVE values demonstrate good convergent validity, as they are all above the threshold of 0.50.

Table 8: Discriminant Validity

	CI	BTA	SS	SI	II	CSCP
Customer Integration	**0.973**					
Blockchain Technology Adoption	0.028	**0.794**				
Social Sustainability	0.246	0.099	**0.740**			
Supplier Integration	-0.084	0.039	0.282	**0.990**		
Internal Integration	0.032	0.072	0.184	0.028	**0.985**	
Circular Supply Chain Practices	0.072	0.063	0.160	0.107	0.070	**0.790**

The correlations between constructs are relatively low, indicating good discriminant validity. The highest correlation is between Social Sustainability and Supplier Integration (0.282), while other correlations are even lower. This suggests that the constructs are distinct from each other, providing

evidence of both convergent and discriminant validity within the model.

The analysis in table 5 presents standardized factor loadings, reliability measures, and model fit indices for various constructs. Blockchain Technology Adoption (BTA) shows high factor loadings (0.633 to 0.872) with strong reliability (Cronbach's Alpha = 0.910) and composite reliability (0.910). Social Sustainability (SS) has lower but acceptable factor loadings (0.593 to 0.956) and reliability (Cronbach's Alpha = 0.840, composite reliability = 0.875). Supplier Integration (SI), Internal Integration (II), and Customer Integration (CI) exhibit exceptionally high factor loadings (close to 1), indicating strong reliability and validity (Cronbach's Alpha > 0.980). Circular Supply Chain Practices (CSCP) also demonstrate good factor loadings (0.591 to 1.163) with moderate reliability (Cronbach's Alpha = 0.809).

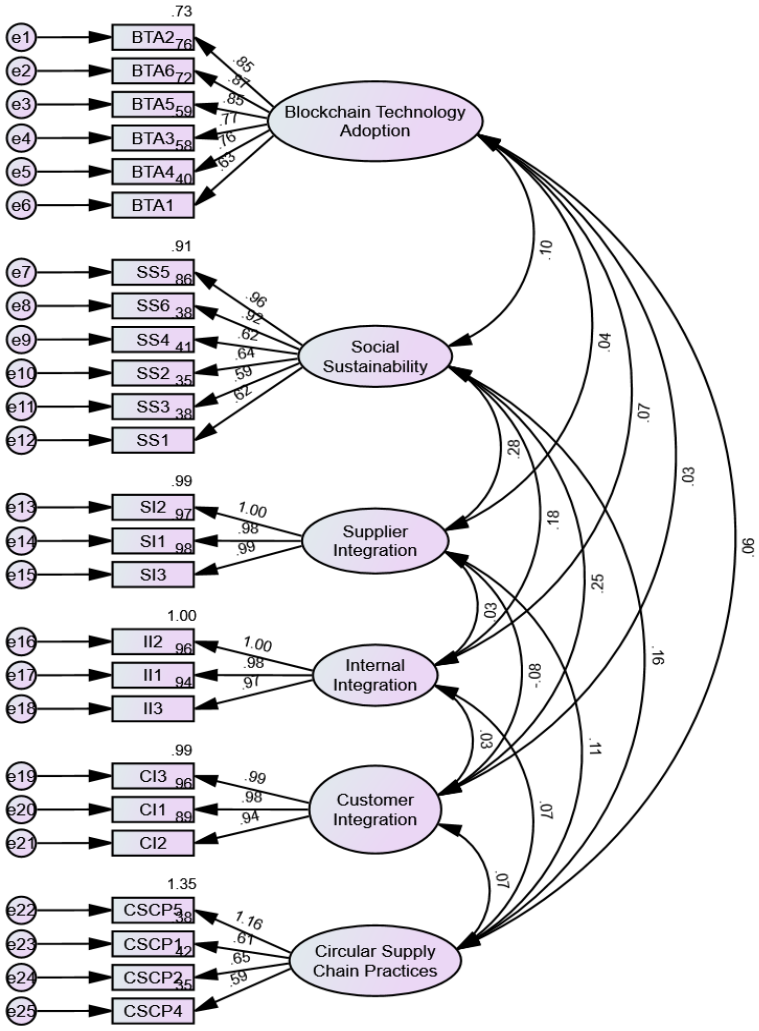


Figure 3 CFA Model

The model fit indices indicate an excellent fit: $\chi 2/df = 1.985$, RMSEA = 0.053, RMR = 0.041, GFI = 0.898, CFI = 0.975, NFI = 0.950, RFI = 0.943, IFI = 0.975, TLI = 0.975, and standardized RMR = 0.0494. This suggests that the proposed model fits the data well, with all fit indices within acceptable ranges. The final CFA model is shown in figure 2.

Table 9: Reliability and Convergent Validity

Variables/ Constructs	Items	Standardized Factor Loadings	Cronbach Alpha	Composite Reliability	Average Variance Extracted	Maximum Shared Variance
Blockchain Technology Adoption	BTA2	0.854	0.910	0.910	0.630	0.010
	BTA6	0.872				
	BTA5	0.848				
	BTA3	0.769				
	BTA4	0.762				
	BTA1	0.633				
Social Sustainability	SS5	0.956	0.840	0.875	0.548	0.080
	SS6	0.925				
	SS4	0.615				
	SS2	0.640				
	SS3	0.593				
	SS1	0.617				
Supplier Integration	SI2	0.996	0.993	0.993	0.979	0.080
	SI1	0.983				
	SI3	0.99				
Internal Integration	II2	1.001	0.990	0.990	0.970	0.034
	II1	0.982				
	II3	0.971				
Customer Integration	CI3	0.993	0.981	0.981	0.946	0.061
	CI1	0.98				
	CI2	0.944				
Circular Supply Chain Practices	CSCP5	1.163	0.809	0.858	0.624	0.026
	CSCP1	0.614				
	CSCP2	0.646				
	CSCP4	0.591				
Model Fitness: X2=516.104, df=260, X2/df= 1.985, RMSEA=.053, RMR=.041, GFI=.898, CFI=.975, NFI=0.950, RFI=0.943, IFI=0.975, TLI=0.975, Standardized RMR = .0494						

Hypothesis Testing

SEM was used to examine the hypothesized correlations between the latent variables, examining both direct and indirect effects to assess potential mediation. The analysis shown in table 6 examines the hypothesized paths and their effects, revealing that all three hypotheses (H1, H2, and H3) are supported due to statistically significant indirect effects. Specifically, CSCP significantly influence SS through CI, SI, and II, with total effects of 0.322 for each path. The indirect effects for CSCP>CI>SS, CSCP>SI>SS, and CSCP>II>SS are 0.029, 0.026, and 0.016, respectively. The model demonstrates excellent fit, as indicated by X2=3.400, df=3, X2/df=1.133, RMSEA=0.019, RMR=0.023, GFI=0.996, CFI=0.996, NFI=0.970, RFI=0.900, IFI=0.996, TLI=0.987, and Standardized RMR=0.0258. These results confirm the robustness and validity of the proposed model in explaining the relationships among the constructs.

Table 10: Hypotheses Testing: Mediation

H. No.	Path	Total Effects	Direct Effects	Indirect Effects	Remarks
H1	CSCP>CI>SS	0.322***	0.292***	0.029***	Hypothesis supported
H2	CSCP>SI>SS	0.322***	0.296***	0.026***	Hypothesis supported
H3	CSCP>II>SS	0.322***	0.306***	0.016***	Hypothesis supported
Model Fitness: X2=3.400, df=3, X2/df= 1.133, RMSEA=0.019, RMR=0.023, GFI=0.996, CFI=0.996, NFI=0.970, RFI=0.900, IFI=0.996, TLI=0.987, Standardized RMR = 0.0258					

*<.05, **<.01, ***<.001

The moderation analysis shown in table 7 explores the role of Blockchain Technology Adoption (BTA) as a moderator in the relationships between Customer Integration (CI), Supplier Integration (SI), Internal Integration (II), and Social Sustainability (SS). The results reveal that only the interaction between CI and BTA significantly impacts SS (H4), with a negative estimate of -0.895 (p = 0.001). Therefore, the results support this hypothesis. This suggests that as BTA increases, the positive effect of CI on SS weakens. Specifically, at low levels of BTA, CI has a strong positive influence on SS, but as BTA increases, this relationship becomes less pronounced, indicating a diminishing return on SS through CI when Blockchain technology is widely adopted (refer figure 3).

Table 11: Moderation Hypotheses and Interaction Effects

H. No.		Estimate	S.E.	C.R.	P	Remarks
H4	Interaction1- CI*BTA> SS	-0.895	0.088	-3.182	0.001	Supported
H5	Interaction2- SI*BTA> SS	0.148	0.057	0.740	0.459	Not supported
H6	Interaction3- II*BTA> SS	-0.113	0.059	-0.531	0.595	Not supported

In contrast, the interactions of SI and II with BTA are insignificant (H5 and H6). The analysis shows that the moderating effect of BTA on the SI-SS (p = 0.459) and II-SS (p = 0.595) relationships is negligible, as reflected by the relatively flat slopes for both high and low BTA conditions (refer figure 4 & 5). Therefore, the results support this hypothesis. This indicates that Blockchain adoption does not significantly influence the roles of supplier and internal integration in fostering social sustainability. Overall, BTA primarily moderates the impact of customer integration on social sustainability, while its effect on supplier and internal integration is minimal.

5. Result Discussion

Theoretical Implications

The findings from this study contribute to the growing body of literature on the integration of Blockchain Technology Adoption (BTA) within Circular Supply Chain Practices (CSCP) and its impact on Social Sustainability (SS). The exploratory factor analysis (EFA) confirmed the multidimensionality of the constructs, retaining 25 measurement items that loaded significantly across six components, validating the factor structure of the key constructs. The confirmatory factor analysis (CFA) further solidified the model's robustness, with the discriminant and convergent

validity metrics revealing distinct and reliable constructs. This provides new insights into the intricate relationships between Customer Integration (CI), Supplier Integration (SI), Internal Integration (II), and SS, particularly in light of emerging technologies like Blockchain.

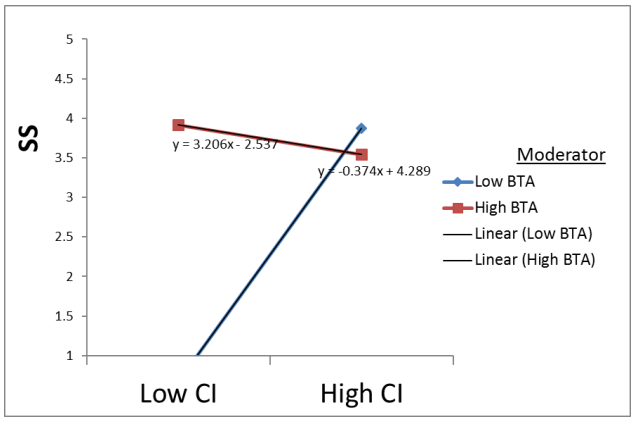


Figure 4: BTA dampens the positive relationship between CI and SS

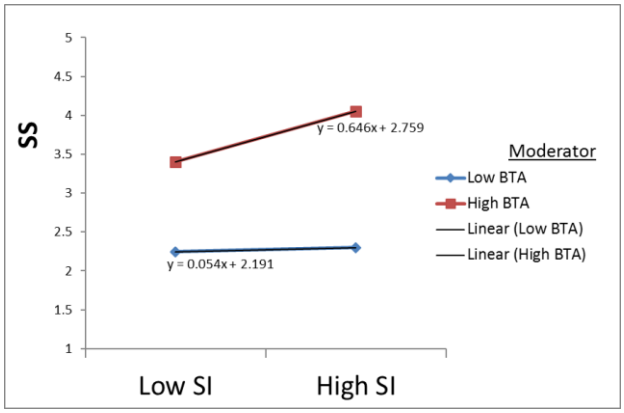


Figure 5: BTA strengths the positive relationship between SI and SS

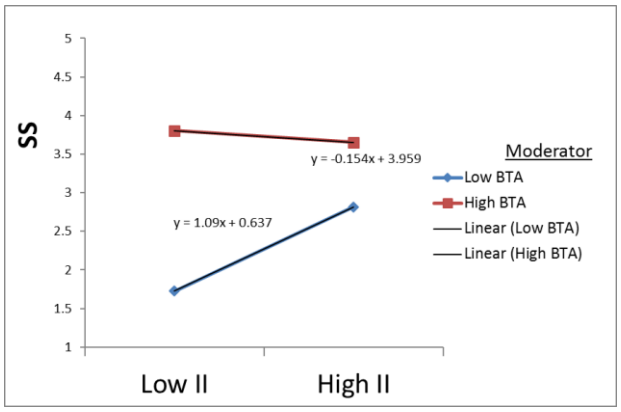


Figure 6: BTA dampens the positive relationship between II and SS

Furthermore, the significant moderation effect of BTA on the CI-SS relationship (H4) demonstrates the evolving role of digital innovations in enhancing customer interactions for sustainable outcomes.

Although Blockchain is typically hailed for enhancing transparency and trust in supply chains, the analysis here reveals an intriguing nuance: as BTA increases, the positive impact of CI on SS diminishes. This is particularly challenging to the assumption that more technology adoption leads to better outcome. This suggests that integration of technology require careful calibration to avoid diminishing returns. Lack of significant moderation effect for H5&6 further deepens our understanding of technologies selective utility.

Theoretically, this points to a more focused role for Blockchain in supply chain dynamics, where its efficacy is not uniformly distributed across all dimensions of integration. While Blockchain can streamline supplier and internal processes, its direct influence on the social sustainability outcomes of these integrations appears limited. This suggests that more nuanced factors may govern these relationships, requiring further theoretical investigation.

Lastly, the results affirm the mediating role of integration practices (CI, SI, II) in the relationship between CSCP and SS, reinforcing the view that effective integration is key to realizing sustainability in circular supply chains. This extends prior work by demonstrating that CSCP can positively influence SS through these mediators, particularly under the right conditions, such as when customer integration is bolstered by moderate levels of Blockchain adoption.

Managerial Implications

For practitioners, these results underscore the importance of strategic integration of Blockchain technology into customer-facing operations. The significant negative moderation of BTA on the CI-SS relationship indicates that managers should avoid over-reliance on Blockchain in customer interactions, as excessive use may inadvertently dampen the positive effects on social sustainability. The results highlights the need for balanced approach, where BTA complements customer integration efforts rather than overshadows. It is recommended that companies should ensure their digital transformation strategies must include human-centric approaches to maintain strong, positive relationships with customers while adopting Blockchain.

The analysis also gives insights into utility of SI and II for sustainability, even when Blockchain is involved. It is suggested that managers should not worry about moderating influence of Blockchain to leverage supplier and internal integration to drive social sustainability. Manager should recognize that SI and II's impact on social sustainability may be more indirect and context-specific. Additionally, the findings suggest that the CSCP model remains a robust framework for achieving social sustainability as evidenced by the strong mediating roles of CI, SI and II. CSCP, when combined with effective integration, ensures that resources are reused and processes are optimized for sustainability.

Finally, the superior model fit indices from the structural equation modeling (SEM) confirm that the relationships hypothesized in the study are robust, providing managers with confidence in the utility of these practices for driving sustainability. The excellent fit across various metrics (e.g., RMSEA = 0.053, CFI = 0.975, NFI = 0.950) suggests that the integration of Blockchain into circular supply chain operations is well supported by empirical data, offering a solid foundation for decision-making and future strategic planning. Managers should therefore consider these practices as part of a broader sustainability strategy that effectively integrates technological innovation with traditional supply chain management principles.

6. Conclusions

This study was carried out using mixed method approach wherein qualitative analysis revealed 15

challenges FPOs are facing. Quantitative analysis investigated the intricate relationship between SCI and BTA in fostering social sustainability within FPOs. The research confirmed that various dimensions of SCI, including CI, SI, and II, significantly influence SS. Notably, CI exhibited the strongest positive association with SS, underscoring the crucial role of aligning customer needs and feedback within supply chain operations to bolster social outcomes. While SI and II also contributed positively to SS, their impact was comparatively weaker, suggesting that external coordination with suppliers and streamlined internal processes alone may not be sufficient to drive comprehensive social benefits without a customer-centric approach.

Furthermore, the study revealed the moderating role of BTA, emphasizing the importance of technological alignment within supply chains. Specifically, BTA was found to enhance the positive effect of CI on SS, but this relationship weakens at higher levels of Blockchain adoption. This suggests that while Blockchain technology can optimize customer-related processes, over-reliance on it may lead to diminishing returns, potentially creating overly mechanized and less personal customer interactions. Interestingly, BTA did not significantly moderate the relationship between SI and SS, nor between II and SS, indicating that Blockchain's influence may be more pronounced in customer-centric processes rather than universally beneficial across all supply chain functions.

From a broader perspective, the findings highlight CSCP as a key mechanism through which SCI influences SS. The study demonstrated that effectively integrating CSCP with customer, supplier, and internal processes can lead to improved social outcomes, including better labor practices, more equitable benefit distribution, and stronger community relations. The significant indirect effects of SCI on SS through CSCP underscore the importance of adopting circular principles within supply chains to promote sustainability in a socially responsible manner.

In conclusion, this study provides key insights into the evolving landscape of supply chain management and sustainability, confirming the importance of examining specific dimensions of integration and technological innovation in achieving sustainability goals. While Blockchain technology holds considerable promise, its value lies in strategic, rather than widespread, adoption within supply chains, particularly when it comes to fostering customer-centric sustainability practices.

7. Limitations and Future Research

This study has few limitations. Firstly, data was taken for analysis is from FPO which limit the generalizability of the findings to other industries. Future research should explore the applicability of finding to other sectors to check the robustness of proposed relationship. Additionally, study is focused on social sustainability which leaves the other dimensions such as economic and environmental to be validated with proposed relationship for future research. Also, study is more reliable on cross sectional data, which prevent the establishment of causality. Further research should be focused on finding factors for Blockchain adoption and examine emerging technology role in enhancing FPOs performance.

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Empowering Through Ownership: A Comparative Analysis of Worker Control and Cooperative Governance in Platform Cooperatives vs. Traditional Gig Economy Platforms

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Abstract

Comparing Transportation Platform Cooperatives (TPCs) to conventional ride-hailing platforms, this study investigates the possibility of TPCs empowering drivers. The study examines drivers' opinions of TPCs and finds notable variations in governance and technology use, concentrating on important issues including worker ownership, democratic governance, and technology utilization. According to the research, TPCs provide drivers greater authority over their working environment, improve their ability to participate in decision-making and provide better technology tools—all of which help to create a more empowered and participatory workplace. The impact on drivers' satisfaction and financial gains, however, is not as noticeable at the individual level, according to the statistics, and other factors might have an impact on these results. The paper emphasizes how TPCs could promote a more democratic and fair gig economy, although recognizes difficulties such as financial constraints, legal restrictions, and rivalry from established platforms. Future studies should concentrate on gathering information straight from TPC drivers and looking into ways to get around these obstacles so that the cooperative model can be used more widely.

Keywords: ride-hailing, technology, democratic government, worker empowerment, gig economy and transportation platform cooperatives.

1. Introduction

The nature of labor has changed as a result of the platform economy's explosive growth, especially in the gig economy where job prospects and employment connections are mediated by digital platforms. This paradigm change has brought forth a great deal of opportunity as well as difficulties for employees. Conventional, investor-owned networks frequently put financial gain first. Maximizing, which typically leads to unstable income, precarious employment, and a insufficiently strong worker protections. In order to address these challenges, Platform Cooperatives are regarded as the potential solution. Digital Platforms which are collectively owned and controlled by the employees or users are known as Platform Cooperatives. It emerged as a substitute for the present business hubs that dominate the digital economy's financial network. In addressing some of the problems associated with the digital economy, these cooperatives improve worker control in their decision-making process; stabilized income and equal workplace are some of the areas improved. The primary purpose for the Platform co-operatives is to achieve equal society through shared ownership as well as democratic control.

Experts have researched various elements of Platform Cooperatives. The study has been carried out with an intention to empower workers by easing their problems and in determining the effect of it on the development of local economy. The use of worker cooperativism of the platform has been studied by Bunders (2020)

Even though Platform cooperatives possess a lot more potential, they are being exposed to many challenges like financial constraints, more significant competitions from other players in the platform and even complex governance system. According to Scholz, 2016, laid out the foundation for the development of platform cooperativism by advocating.

Platform cooperatives must be democratically controlled and owned. Therefore, in 2021, Zychlinski and Christiaens et al. (2023) have explored the possibilities and obstacles that the Platform cooperatives face, particularly regarding the Local economy and worker autonomy policy recommendations of Rijpens et al. (2023) and Chevreau et al. (2023) points towards the need for Congressional back up and capacity building for scaling up cooperatives.

The present research analyses the dynamics in which TPCs can emerge as a significant alternative to the conventional ride-hailing services. In this context, analysis of the effect of employee ownership, democratic control, and the amalgamation of technology with TPCs is done so that one can understand how these cooperatives can benefit the working lives of drivers. The idea is to assess if TPCs can act as an equal and sustainable model of the gig economy, providing an overview about their effectiveness and opportunities for being adopted more broadly into the gig economy.

2. Review of Literature

Scholarly interest in evaluating the impact of platform economy on workers, particularly in gig economy has increased significantly. This analysis comprises the findings from current platform cooperative projects, investigating their potential to evolve as an alternative for conventional, platforms governed by investors and pressing the advantages and disadvantages of these frameworks.

Emergence and Potential of Platform Cooperatives

In his analysis of worker cooperativism in the platform economy, Bunders (2020) compare traditional and contemporary forms of collective action. The paper describes how certain types of governance on worker-owned platforms may assist in resolving attendant matters of collective action models. Even though Bunders (2020) defines the sustainability concept, it does state that practical research is needed on the self-governance practices, capital requirements, and the possibility of application among such cooperative organizations to truly understand the sustainability among the studied cooperatives. Benner (2020) looks into how COVID-19 has affected gig workers in California and finds financial difficulties made worse by the pandemic. The research indicates a rising interest in models of cooperative ownership as a way to increase income predictability and stability. But the study is geographically restricted, with a primary focus on Southern California. This might not adequately convey more general tendencies.

Bunders et al. (2021) investigate platform cooperative viability in further detail, focusing on industries like as professional employment and taxi services. The writers speculate about the difficulties cooperatives face, including financial limitations and worker diversity, and they recommend that. While some cooperatives are successful, others suffer major challenges. According to this theoretical paradigm, empirical support to back up its claims regarding the gig economy. In their research of delivery cooperatives in Barcelona, Cañada et al. (2022) highlight the importance of beneficial governance frameworks and employee expertise in their accomplishments. The study demonstrates how territorial and social embeddedness encourages cooperative development but is also restricted by its preference for cooperative representatives over a larger sample. In their analysis of the literature, Zhu and Bunders (2022) make the case for platform cooperatives as a more equitable substitute for platform capitalism. The review highlights the social advantages of cooperatives,

including better working conditions and more worker control while admitting that this field of study is still in its infancy.

Conceptualizing Platform Cooperativism

Scholz (2016) popularized platform cooperativism, to tackle unfair labour practices. Platform Cooperatives promotes shared ownership and democratic governance. This groundbreaking research highlights the importance of involving employees in decision-making procedures and has impacted later studies.

Challenges and Opportunities in the Gig Economy

The body of research regularly points out that gig economy workers face serious difficulties, such as inconsistent pay and a dearth of benefits. Zychlinski (2021) examines these problems in the transportation industry, emphasizing power disparities and unstable finances. Christiaens along with others. It provides a political-philosophical justification for platform cooperativism in 2023 by referencing G.D.H. Cole's guild socialism to support worker autonomy and provide instances of prosperous cooperatives, like Drivers Cooperative and Coop Cycle.

Local Economic Development and Policy Recommendations

According to Rijpens et al. (2023), platform cooperatives can promote grassroots cooperation and local development by integrating themselves into their communities. Chevreau et al. (2023) also emphasize how cooperatives can enhance the caliber of jobs and produce local notwithstanding the difficulties in scaling these models. Both research highlights the necessity of measures to increase capacity, tax breaks, public procurement, and legislation encourage the expansion of platform cooperatives.

Research Gaps and Future Directions

There are still a few holes in the literature. More research on emancipatory alternatives and the function of platform cooperativism in addressing inequities in the gig economy is called for by Christiaens et al. (2023). Zychlinski (2021) emphasises the need for additional research on cooperative scalability, whereas Rijpens et al. (2023).

Design Principles, Trust, and Worker Participation

Madonna et al. (2024) explore how factors such as employers' trust and how they assign and protect platform cooperative work, impact design principles such as training and job security. This research also reveals that although cooperatives are still not capable of directly competing against other existing platforms, these values improve trust and the likelihood to pay a premium. The fact is that in the investigation of the interactions between worker members in cooperatives, Mannan (2024) mentioned the issues like member-bore and unequal participation which encourage for more research on the democracy in these forms of organisations.

Economic Transformation and Community Wealth Building

In Hax (2024), using worker cooperatives, the prospects of the development of the post-capitalist economy are discussed, what conditions are necessary for the growth of cooperatives, and what impedes them from replacing capitalist relations. Mondon-Navazo (2024) studies the Smart network of freelance cooperatives, highlighting how it supports worker autonomy and innovative solidarity. Chalmers (2024) put forward more realistic models such as platform cooperatives and community wealth building to counterbalance the harms of the digital platforms and suggest establishment of the Digital Platform Labs and the municipal cooperative builders in Scotland.

Institutional Experimentation
Robison and Ketchen (2005) both scrutinize the democratic institutional innovation Belgian worker cooperative SMart and Charles (2024) analyze successfully. The report pays much attention to explaining that the cooperative has been eliminating the uncertainties for the independent contractors but it questions about the members' financial positions and their relations with other core labour organisations and government. The researchers found out that there is sufficient enough potential in platform cooperatives to offer more constant, fair and democratic model compared to that available in the gig economy. For these cooperatives to succeed they faced many hurdles such as limited funds, I elaborate on the complicated governance system and competition from well established giants. More studies should be made on practical verification of platform cooperatives, the extensions of the tactics, and assessment of the methods for enhancing the sustainability and impact of platform cooperatives in a gig economy.

As pointed out by Rijpens, Basso, Constantin and Van Dijck (2023) platform cooperatives can support local communities through the integration process with the local environment. Chevreau et al. (2023) follow the same idea of how cooperatives improve the quality of job and give more value locally but they also state that it is a challenge to scale such models. As the two discussed researches point out, one needs policy shifts, tax incentives, procurement policies, as well as capacity- building programs to support the growth of platform cooperatives.

3. Research Objectives

- Analyse the differences in the perceived benefits that was expressed by the TPCs and the existing traditional ride-hailing platforms as perceived by the drivers to the extent of the understanding of functionality of TPCs.
- To understand common drivers' perception of the governance systems including how they perceive TPC's decision-making from the perspective of their sense of organization ownership of the working environment.
- Examine the opinions of drivers regarding the application of technology in TPCs, especially in terms of improving efficiency and communication in contrast to conventional platforms.
- Evaluate the possible influence of TPCs on driver empowerment, taking into account the alleged advantages for adaptability, openness, and overall task management.

4. Research Methodology

Literature Review
A comprehensive literature review was conducted to establish a strong foundation for the research. Academic databases such as Google Scholar were utilized to identify relevant peer-reviewed articles, books, and reports on transportation platform cooperatives, gig economy, worker empowerment, and the role of technology in the gig economy. Key findings from the literature were analyzed to identify gaps in existing research and inform the research design.

Data Collection
A structured survey was administered to a sample of drivers and managers from traditional ride-hailing platforms. Due to the unavailability of actual TPC data, the participants were asked to respond based on their understanding of how TPCs could function. The survey included questions about perceived control over work conditions, governance structures, satisfaction with income, and the role of technology in enhancing work experiences. The survey team provided respondents with background information on TPCs to facilitate informed responses.

Data Analysis

The survey data were analyzed using statistical methods. Analysis of Variance (ANOVA) was conducted to test for significant differences between key variables (satisfaction benefits, comparison benefits, monetary benefits, governance, technology use, and impact on drivers) across different groups within the traditional ride-hailing platforms. Independent t-tests were used to compare drivers' perceptions across certain benefits, and regression analysis was applied to explore the influence of governance, technology, and other factors on perceived driver benefits.

Since actual TPC data was not available, the analysis relied on drivers' hypothetical perceptions of how TPCs would function in comparison to traditional ride-hailing platforms. The study focused on how drivers believed TPC governance, technology use, and benefit structures would compare to their experiences on traditional platforms.

5. Data Analysis

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
The Mean of Satisfaction benefits	Between Groups	2.252	3	.751	3.907	.011
	Within Groups	16.907	88	.192		
	Total	19.158	91			
The mean of comparison benefits	Between Groups	3.966	3	1.322	7.117	.000
	Within Groups	16.347	88	.186		
	Total	20.313	91			
The Mean of monetary benefits	Between Groups	2.566	3	.855	2.962	.037
	Within Groups	25.413	88	.289		
	Total	27.979	91			

The ANOVA results indicate significant differences between groups across all three variables analyzed: satisfaction benefits, comparison benefits, and monetary benefits, as all p-values are below the 0.05 threshold.

Satisfaction Benefits: The analysis yielded an F-value of 3.907 ($p = 0.011$), indicating statistically

significant differences in satisfaction benefits across the groups.

Comparison Benefits: With an F-value of 7.117 (p = 0.000), comparison benefits exhibit the strongest evidence of group differences, suggesting that drivers' perception of benefits in comparison to traditional platforms varies significantly.

Monetary Benefits: Although the F-value of 2.962 (p = 0.037) also points to significant differences, the variation in monetary benefits between the groups appears less pronounced compared to satisfaction and comparison benefits.

These findings suggest that driver experiences within platform cooperatives differ substantially, particularly in terms of how they perceive benefits in comparison to traditional ride-hailing platforms. Differences in satisfaction and monetary benefits are also evident, though to a lesser degree. These results underscore the importance of further investigating specific benefit areas to enhance the cooperative platform model for drivers.

		Sum of Squares	df	Mean Square	F	Sig.
The Mean of Governance	Between Groups	8.276	3	2.759	15.661	.000
	Within Groups	15.501	88	.176		
	Total	23.777	91			
The Mean of Technology	Between Groups	2.515	3	.838	6.661	.000
	Within Groups	11.078	88	.126		
	Total	13.593	91			
The Mean of Impact on Driver	Between Groups	3.629	3	1.210	2.578	.059
	Within Groups	41.289	88	.469		
	Total	44.918	91			

Governance:
The ANOVA results show a significant difference in governance between the groups (F = 15.661, p < 0.001). The highly significant p-value indicates that the governance structures across platforms vary substantially. Additionally, the large F-value suggests that the variance between the groups is much greater than the variance within each group, further emphasizing the distinctions in governance practices.

Technology:
There is also a statistically significant difference in the use of technology across the platforms (F =

6.661, $p < 0.001$). The p-value indicates that the differences between the groups are notable, and the moderately high F-value implies that while some variability exists within groups, the differences between the groups are clear.

Impact on Drivers:
For the variable measuring the impact on drivers, the p-value (0.059) slightly exceeds the conventional 0.05 threshold, indicating that the differences between the groups are not statistically significant at the 5% level. While this result suggests no strong evidence of group differences, it is close to being significant, warranting further exploration.

Independent t-test

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Satisfaction Benefits	Equal variances assumed	-1.001	90	.320	-.12632	.12621	-.37705	.12441
	Equal variances not assumed	-1.085	23.829	.289	-.12632	.11637	-.36658	.11395
Comparison Benefits	Equal variances assumed	-.081	90	.936	-.01053	.13067	-.27013	.24907
	Equal variances not assumed	-.058	17.286	.954	-.01053	.18149	-.39296	.37190
Monetary Benefits	Equal variances assumed	.705	90	.482	.10789	.15294	-.19595	.41174
	Equal variances not assumed	.945	33.327	.351	.10789	.11412	-.12420	.33999

The independent t-tests were conducted to assess potential differences between groups across three key variables: Satisfaction Benefits, Comparison Benefits, and Monetary Benefits. Both equal and unequal variances were considered for each variable.

Satisfaction Benefits:
With p-values of 0.320 (equal variances assumed) and 0.289 (unequal variances assumed), there is no statistically significant difference between the groups in terms of satisfaction benefits. The

confidence interval for the mean difference crosses zero, further confirming the absence of significant variation between the groups.

Comparison Benefits:
Both the p-values (0.936 for equal variances assumed, 0.954 for unequal variances assumed) are well above the conventional significance threshold of 0.05. This suggests that there is no significant difference between the groups with respect to comparison benefits. Additionally, the confidence interval includes zero, reinforcing this conclusion.

Monetary Benefits:
The p-values for monetary benefits are 0.482 (equal variances assumed) and 0.351 (unequal variances assumed), both of which are greater than 0.05. This indicates that no significant difference exists between the groups regarding monetary benefits, and the confidence intervals crossing zero confirm this lack of significant effect.

In conclusion, none of the variables — Satisfaction Benefits, Comparison Benefits, or Monetary Benefits — show statistically significant differences between the groups, based on the independent t-test results. Consequently, we cannot infer that the group means differ for any of these variables.

Regression analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.200[a]	.040	.007	.40326

a. Predictors: (Constant), Mean_I, Mean_G, Mean_T

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.598	3	.199	1.227	.305[b]
	Residual	14.310	88	.163		
	Total	14.909	91			

a. Dependent Variable: Mean of S, C and M

b. Predictors: (Constant), Mean_I, Mean_G, Mean_T

Interpretation:
The regression analysis aimed to determine if the predictors—Mean of Impact, Mean of Governance, and Mean of Technology—significantly explain the variance in the combined Mean of Satisfaction, Comparison, and Monetary Benefits. The model yielded an *R*2R2 of 0.040, indicating that only 4% of the variance in the dependent variable is accounted for by the predictors.

The ANOVA results reveal an F-value of 1.227 with a p-value of 0.305, which exceeds the conventional alpha level of 0.05. This indicates that the model does not significantly predict the

dependent variable. Thus, the combination of Mean_I, Mean_G, and Mean_T does not explain a substantial amount of the variance in the Mean of Satisfaction, Comparison, and Monetary Benefits. Consequently, the regression model is not statistically significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.582	.596		7.687	.000
	Mean_G	.077	.116	.097	.659	.511
	Mean_T	-.397	.218	-.379	-1.824	.072
	Mean_I	.156	.132	.271	1.185	.239

a. Dependent Variable: Mean of S, C and M

Constant (Intercept):

- **Unstandardized Coefficient (B):** 4.582
- **t-value:** 7.687
- **p-value (Sig.):** 0.000 The intercept is highly significant ($p < 0.001$), indicating that when all predictors (Mean_G, Mean_T, and Mean_I) are zero, the expected value of the Mean of Satisfaction, Comparison, and Monetary Benefits is 4.582.

Mean_G:

- **Unstandardized Coefficient (B):** 0.077
- **Standardized Beta:** 0.097
- **t-value:** 0.659
- **p-value (Sig.):** 0.511 The coefficient for Mean_G is not statistically significant ($p = 0.511$), suggesting that Mean_G does not significantly influence the Mean of Satisfaction, Comparison, and Monetary Benefits. The small Beta value (0.097) indicates a minimal impact on the dependent variable.

Mean_T:

- **Unstandardized Coefficient (B):** -0.397
- **Standardized Beta:** -0.379
- **t-value:** -1.824
- **p-value (Sig.):** 0.072 The coefficient for Mean_T approaches significance with a p-value of 0.072, though it does not reach the conventional alpha level of 0.05. The negative coefficient suggests a potential inverse relationship between Mean_T and the Mean of Satisfaction, Comparison, and Monetary Benefits, but this relationship is not statistically significant at the 5% level.

Mean_I:

- **Unstandardized Coefficient (B):** 0.156
- **Standardized Beta:** 0.271
- **t-value:** 1.185
- **p-value (Sig.):** 0.239 The coefficient for Mean_I is not statistically significant ($p = 0.239$), indicating that Mean_I does not significantly predict the Mean of Satisfaction,

Comparison, and Monetary Benefits. The Beta value (0.271) suggests a moderate positive relationship, but this effect is not statistically significant.

In conclusion, none of the predictors (Mean_G, Mean_T, or Mean_I) significantly predict the Mean of Satisfaction, Comparison, and Monetary Benefits at the 5% significance level. Although Mean_T is closest to significance, it does not achieve statistical significance. The constant term is significant, but the predictors do not account for substantial variance in the dependent variable.

6. Findings

The analysis revealed significant differences across several variables related to driver experiences and perceptions of platform cooperatives (TPCs) compared to traditional ride-hailing platforms. Specifically, the ANOVA results indicated that satisfaction benefits, comparison benefits, and monetary benefits all showed statistically significant differences between groups. This suggests that drivers perceive notable differences in the benefits they might experience within TPCs, particularly when comparing satisfaction and monetary outcomes to traditional platforms.

In terms of governance, the results also indicated a significant variance between the groups, further reinforcing the notion that drivers in TPCs might benefit from more participatory and democratic decision-making processes. Similarly, technology use demonstrated a statistically significant difference across platforms, indicating that TPCs may offer more advanced or flexible technological tools for drivers compared to traditional ride-hailing platforms.

However, the variable measuring the impact on drivers did not show a statistically significant difference at the 5% level, though the result was close to significance, warranting further investigation into whether TPCs genuinely empower drivers or whether this empowerment is largely dependent on governance and technology factors.

Interestingly, the independent t-tests did not show significant differences between the groups regarding satisfaction benefits, comparison benefits, and monetary benefits, suggesting that while group-level differences exist, individual-level variations may not be as pronounced. Furthermore, the regression analysis showed that the combination of governance, technology, and impact variables does not significantly explain the variance in satisfaction, comparison, and monetary benefits. While technology showed a potential inverse relationship, none of the predictors reached statistical significance, indicating that additional factors might need to be considered.

7. Suggestions

The strong group-level differences in governance suggest that participatory decision-making within TPCs is a key area for improvement. Cooperative platforms should continue to emphasize and refine democratic governance structures to enhance driver satisfaction and engagement.

As technology showed significant differences between platforms, TPCs should focus on improving their technological infrastructure to increase driver flexibility, transparency, and access to information. This would improve the overall driver experience and enhance empowerment.

Since comparison benefits exhibited the strongest evidence of group differences, TPCs should focus on clearly communicating their comparative advantages over traditional platforms, particularly in terms of monetary and satisfaction benefits.

As the impact on drivers was not statistically significant but nearly so, future research should explore

more granular measures of driver empowerment, autonomy, and overall well-being to better understand the nuanced impacts of cooperative models.

8. Limitations

Several limitations exist in this study that should be addressed in future research. Firstly, data collection relied on responses from drivers and managers in traditional platforms, with participants providing their perceptions of TPCs based on information conveyed by the survey team. This introduces a potential bias as respondents may not have direct experience with TPCs, limiting the accuracy of their comparisons.

Additionally, the study did not include actual TPC driver data, which limits the ability to draw definitive conclusions about the real-world functioning and benefits of TPCs. Subsequent research should be done by gathering research data from the drivers and managers who are encouraged to participate directly in TPCs to enhance the firmness and credibility of the conclusion drawn.
This work largely draws on a few factors such as governance, technology and impact factors. Among these there are other factors that have not been incorporated into this study but may have an impact on the driver experiences and perceptions to include; job security, organisation and market conditions.

9. Future Scope

Further research should be conducted using the primary data collection method in getting data from TPCs to avoid the influence of hypothetical responses. Other factors can be also included into the list, for instance, job security, income stability, and competitiveness of the market, and all this not only gives a clear understanding of the TPC versus traditional platform paradigm. Future studies must follow up with drivers to understand change in satisfaction, perceived autonomy and empowerment over time in TPCs as well as conventional platform, which offers clearer understanding of long term implications of cooperative structures. To further explore sophisticated details of driver experiences, specific quantitative research approaches as interviews or focus groups with drivers mostly reveal deeper and more detailed findings.

10. Conclusion

This paper seeks to carry out a comparative analysis of TPCs and conventional transport hailing applications, with more focus on self-governance of drivers, drivers' satisfaction and their control over the systems. The findings hold in relation to governance structure and technology that show that Platform cooperatives and traditional platforms are unique. These differences imply that TPCs can help drivers by offering more participative and democratic circumstances, combined with superior technologies.

However, differences in satisfaction, comparison, and monetary benefits at the individual-level were not as pronounced, and the overall impact on drivers, while nearly significant, requires further exploration. The regression analysis also revealed that governance, technology, and impact factors, while important, do not fully explain driver perceptions of benefits, highlighting the need for additional research into other contributing factors.

Ultimately, the study suggests that while TPCs offer promising advantages over traditional platforms, especially in governance and technology use, their full potential for driver empowerment may not yet be fully realized. Future research should focus on collecting data directly from TPC drivers and

expanding the range of factors considered to provide a more complete picture of how cooperative models can best serve their workforce.

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PACS as Multi-Ser vice Centers with a Special Focus on Health Care Services: A Study in Tamil Nadu

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1. Introduction

There are 7,96,344 Cooperative Societies registered in the country with a total membership of 29,13,09,827 and 4,454 Primary Agricultural Co-operative Credit Societies (National Cooperative Database, 2023) [4]. Primary Agricultural Credit Societies (PACS) have traditionally been vital in supporting rural communities across India by providing credit and financial assistance. These societies primarily offer short-term agricultural loans, helping farmers acquire essential inputs like seeds, fertilizers, and farm equipment. Shroff (2023) examines the challenges faced by Primary Agricultural Cooperative Societies (PACS), noting that only 46% are profitable and that a significant portion of members do not borrow. Despite these issues, PACS remain influential in rural areas. The paper discusses recent government initiatives, led by the Ministry of Cooperation, aimed at revitalizing PACS and enhancing their economic viability (Shroff, 2023) [5] PACS serve as a financial lifeline for small and marginal farmers, enabling them to enhance their agricultural productivity. Over time, PACS have expanded their role, offering a variety of non-credit services that cater to the broader needs of rural communities. Recently, PACS have transformed into **multi-service centers**, providing services such as agricultural inputs, storage, marketing assistance, and consumer goods. This diversification allows PACS to address the economic and social challenges faced by rural populations, making them central to rural development.

R.M. Devasoorya (2016) highlights the challenges in providing effective healthcare in India, where both public and private systems are insufficient to meet the growing demands, especially in rural areas. The article advocates for healthcare cooperatives as a necessary "third realm" to address these gaps. (R.M Devasoorya, 2016) [6]

A key opportunity to further expand PACS' impact is through **integrating health care services**. PACS can collaborate with healthcare cooperatives in Tamil Nadu and other rural regions to offer essential medical services in underserved areas. Leveraging the existing infrastructure and reach of PACS, healthcare services like primary care, maternal and child health, disease prevention, and health education can be more accessible to rural communities.

This partnership can greatly enhance healthcare access in regions lacking adequate medical facilities. PACS can serve as both economic and health hubs by working with health cooperatives, government programs, and NGOs to improve health outcomes. By blending credit, non-credit, and health services, PACS can support a more sustainable and inclusive development model for rural Tamil Nadu.

In this paper, we will discuss how Primary Agricultural Credit Societies (PACS) can transform into multi-service centers, with a key emphasis on incorporating healthcare services. This paper explores the advantages of this shift, highlights successful examples, and examines the challenges and opportunities it presents. The goal is to enhance healthcare delivery while promoting the overall development of rural communities.
By utilizing the trust, widespread network, and infrastructure of PACS, healthcare cooperatives are

expected to provide a viable solution for tackling rural healthcare issues. These cooperatives can deliver essential medical services directly to underserved rural populations, improving both accessibility and the quality of care.

2. Health Status of Tamilnadu

Co-operatives are where people of common socio-economic backgrounds voluntarily come together and participate democratically to fulfill their personal and mutual economic growth objectives. On that basis, various types of Rural and Urban Co-operatives are contributing to the economic development in Tamil Nadu to a greater extent.

PACS are institutional bodies that cater to the socio-economic needs of members residing within a specific and defined area of operation of that Cooperative society. 4,454 PACS with 151 branches function in 12,525 village panchayats to provide credit to people for agricultural and non-agricultural activities in Tamil Nadu. meeting the various credit needs of the weaker sections particularly small and marginal farmers and farmers of scheduled caste / scheduled tribes; these societies also provide non-credit services like fair price shops, Pharmacies, petrol retail outlets, Agro service centers, Agri Clinics, etc (Policy Note Tamilnadu Government 2024, 2024) [7]

Chaudhari (2023) discusses Gujarat's initiative to transform Primary Agricultural Credit Societies (PACS) into multipurpose centers with support from NABARD. The scheme, which has provided Rs. 32.16 crore in loans to 98 PACS, aims to enhance their services by including credit and non-credit functions, such as storage, processing, and marketing. This transformation is intended to strengthen PACS, reduce post-harvest losses, and position them as comprehensive support centers for farmers (Chaudhari, 2023) [8]

Primary Agricultural Co-operative Credit Societies are being transformed into Multi-Service Centers (MSCs) to increase income and offer diverse services to rural communities. These services include: renting agricultural machinery, providing grain storage and farm transport, operating processing facilities and retail outlets, and offering G2C (Government to Citizen) services through Common Service Societies (Policy Note TN 2024, 2024) [9]

In Tamil Nadu, 45 Consumer Co-operative Wholesale Stores operate across 38 districts. These stores manage 24 Super Markets, 209 Mini Super Markets, 13 Retail Stores, 51 Self-Service Units, **136 Co-operative Medical Shops**, 38 Farm Fresh Consumer Outlets, 26 Petrol Stations, 26 LPG Supply Units, 3406 Fair Price Shops, and 80 Kerosene Bunks throughout the state (Policy Note TN 2024, 2024) [10]

Table1.1 Details of Cooperative Medical Shops in Tamilnadu

SNO	TYPE OF COOPERATIVE INSTITUTION	NO OF COOPERATIVE MEDICAL SHOPS
1	Co-operative Wholesale Stores	136

2	Co-operative Marketing Societies	110
3	Primary Co-operative Stores	51
4	Primary Agricultural Co-operative Credit Societies	62
5	Urban Co-operative Credit Society	16
6	Farmers Service Co-operative Society	1
7	Large-sized Multipurpose Societies (LAMPS)	2
8	PARD Bank	1
9	A.S.Palanisamy Nadar Health Cooperative Society, Virudhunagar	1
10	Primary Agricultural Co-operative Credit Societies as MSC (*Jan Aushadi Kendra*)	1
	Total	381

Source is taken from Policy Note TamilNadu 2023

In the year 2023-24, medicines worth Rs. 163 crore were sold through these cooperative medical shops. Customers received discounts of up to 20%. Approximately Rs. 25 crores in discounts was provided to around 30 lakh customers during this period (Policy Note TN 2024, 2024) [11]

In a meeting on June 6, 2023, chaired by the Cooperation Minister Shri Amit Shah, the decision was taken to establish ***Jan Aushadhi Kendras*** at PACS to provide affordable generic medicines at the village and block levels. The plan is to open 1,000 *Kendras* by August 2023 and 2,000 by December 2023. This initiative will not only make cheaper medicines accessible but also create additional employment opportunities. As of now, 3,806 PACS have applied for these *kendras*, with preliminary approval granted to 2,000 of them (Ministry of Cooperation 2023, 2023) [12]

PDS is ensuring food security for the poor, vulnerable, and impoverished populations, while also supporting the sustainable development of weaker sections of society. Among the 17 Sustainable Development Goals (SDGs), Tamil Nadu is effectively addressing three key goals: Goal No. 1 (No Poverty), Goal No. 2 (Zero Hunger), and Goal No. 3 (Good Health and Well-being) through the implementation of its UPDS. Co-operative societies operate 34,567 Fair Price Shops across the state, distributing PDS commodities to 2,11,34,697 family cardholders (Policy Note TN 2024, 2024) [13]

Largest Government Tertiary Care Medical System: These facilities serve on an average of 109,000 outpatients and admit 8,648 patients daily (Policy Note TN 2024, 2024) [14]

Table1.2 Doctor Population ratio in 11 countries

SNO	NAME OF THE COUNTRY	RATIO
1	Australia	41.2
2	Brazil	21.6
3	China	19.8
4	Canada	26.1
5	France	32.7
6	Japan	24.1
7	India	8.6
8	Spain	45.7
9	Switzerland	43.0
10	UK	26.1
11	USA	26.1

Source is taken from Policy Note TamilNadu 2023

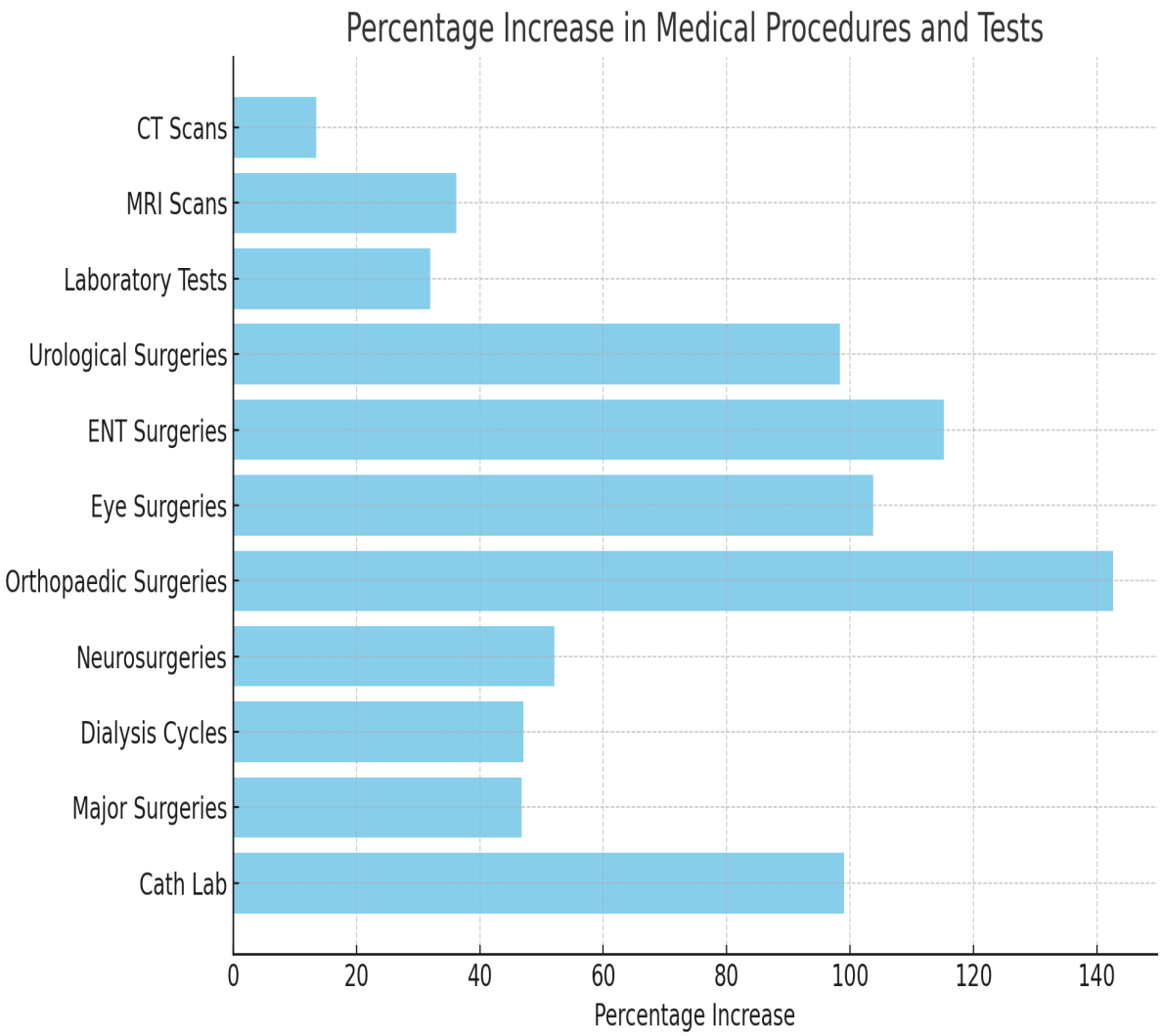
The WHO recommends at least 10 doctors per 10,000 people. Tamil Nadu excels in this ratio, reflecting the government's commitment to top-tier healthcare with internationally comparable standards, ensuring the state remains among the best in India's health services (Policy Note TN 2024, 2024) [15]

Table1.3: Doctor Population ratio in 8 states

SNO	**NAME OF STATES**	**DOCTORS DENSITY PER 10,000 PEOPLE**
1	Kerala	20.37
2	Andhra Pradesh	19.88
3	Karnataka	19.46
4	TamilNadu	19.27
5	Maharastra	14.88
6	Gujarat	10.08
7	Rajasthan	5.93
8	Uttar Pradesh	3.74

Source is taken from Policy Note TamilNadu 2023

Percentage Increase in Medical Procedures and Tests in 2024 over 2023



This bar graph displays the percentage growth in various medical procedures and tests, highlighting the rise in services like Cath Lab procedures, major surgeries, dialysis cycles, and others. It provides a clear visual representation of the increases across these areas (Policy Note TN, 2024) [16]

3. Medical and Rural Health Services

The rate of High Order Births (HOB) in Tamil Nadu has dropped significantly from 24.2% in 2000 to 6.7% in 2022. Additionally, Tamil Nadu has one of the lowest Total Fertility Rates (TFR) in the country (Policy Note TN, 2024) [17]

Mobile Medical Unit – Tamil Nadu operates the highest number of Mobile Medical Units in India, with 405 units delivering healthcare services directly to local communities. These units offer clinics, of these, 395 serve rural areas. From April 2023 to March 2024, these units held 220,000 camps, benefiting 18.7 million people (Policy Note TN, 2024) [18]

Table 1.4 Health Manpower Distribution in Tamilnadu and India

SNO	HEALTH MANPOWER	TAMIL NADU	INDIA
1	Doctors	2722	30640
2	Specialist	249	4485
3	Surgeon	166	920
4	Pharmacists	1582	27135
5	Lab technicians	1570	22772
6	Nursing staff	7911	79933
7	Auxiliary nurse Midwife (ANM)	10991	207587
8	AYUSH	224	8473
9	Radiologists	220	2448
10	Health worker male	2247	52696
11	Health worker female	2475	26818

Source taken from National Rural Health Mission Data 2023 (National Rural Health Mission 2023, 2023) [19]

Table 1.5 Total Number of Health Centers in Tamilnadu 2023-2024

SNO	LIST OF HEALTH CENTERS	TAMIL NADU
1	Primary Health Center	1886
2	Sub Center	8713
3	Community Health Center	400
4	District Hospitals	20
5	SDH	282

Source taken from National Rural Health Mission Data 2023

Need For Extension of Health Care Activities through Cooperatives

Surya and Tamilmani's (2023) study evaluates patient satisfaction at the Cooperative Hospital in Kattappana, Idukki, Kerala, focusing on healthcare services, treatments, equipment, and patient-staff relationships. The findings show that most patients are satisfied, but the study recommends adopting community-based strategies and preventive practices to further enhance satisfaction and better serve both rural and urban populations (S.M. Surya, 2023) [20]

People in cities commonly suffer from non-communicable diseases like heart disease and diabetes

due to unhealthy lifestyles, including poor diet and high stress. Additionally, socioeconomic inequalities can limit access to quality health care for some urban residents. Diseases can spread quickly in crowded areas, and mental health problems are often heightened by the stress of city life.

Table 1.6 Top 10 causes of Disability Adjusted Life Years (DALYs) lost due to NCDs

S.NO	Global	India	TamilNadu
1	Neonatal conditions	Neonatal conditions	Cardiovascular Diseases
2	Ischaemic heart Diseases	Lower Respiratory infections	Respiratory Infection & TB
3	Stroke	Diarrhoeal diseases	Diabetes & CKD
4	Lower Respiratory infections	Measles	Mental disorders
5	Diarrhoeal diseases	Tetanus	Musculoskeletal disorders
6	Road injury	Collective violence with legal implications	Neoplasms
7	Chronic Obstructive Pulmonary Disease	Ischaemic heart Diseases	Unintentional Injuries
8	Diabetes mellitus	Tuberculosis	Other Communicable
9	Tuberculosis	Maternal conditions	Self-harm & Violence
10	Congenital anomalies	Meningitis	Chronic Respiratory Diseases

Source: Global Burden of Diseases Report – 2020

Rural Health care faces major challenges compared to urban areas. Many rural regions have few medical facilities, poor infrastructure, and a shortage of trained health workers. This can lead to delays in diagnosis and treatment and worsening health conditions. Rural communities often experience higher rates of preventable diseases like malnutrition and infectious diseases because of lower health literacy and limited access to preventive care. The general health issues in the rural areas are reported mainly among the elderly, children, antenatal women, and counseling services to youth. Some of the infectious diseases that are most prevalent among rural people are malaria, cholera, diarrhea, malnutrition, and tuberculosis. Apart from these NCDs there exists diabetes, hypertension, mobility-related issues, cancer, and cardiac problems. In the case of the elderly, the main concern is their assisted care and restricted mobility, which complicates transportation to far-off places for treatment. Child care and support start from the care of antenatal women and continue for new mothers and their babies. Several nutritional disorders of the newborn, care on the antenatal checkup of women, adequate supply of weaning food, appropriate awareness regarding vaccinations, safe delivery, and abortions, are major challenges in rural areas. Also, youth in rural areas face problems

like unemployment, drug addiction, and low literacy rates, and they require counseling services Geographic isolation also makes it hard to get emergency and specialized care, leading to higher mortality rates. Socioeconomic issues, such as poverty and low education levels, make these health problems worse.
In Tamil Nadu, health issues are shaped by both urban and rural challenges. Urban areas experience high rates (NCDs) like diabetes, heart disease, and respiratory problems, often due to unhealthy lifestyles such as poor diet and lack of exercise. Conversely, rural areas face difficulties such as limited healthcare facilities, insufficient infrastructure, and higher rates of preventable diseases like malnutrition. The state is also confronted with public health problems like vector-borne diseases, including dengue and malaria, which are worsened by seasonal changes and inadequate sanitation. Socioeconomic disparities further create uneven access to quality health care across the state.

In Tamil Nadu, the lack of medical services and supplies creates significant problems in rural and urban areas. In rural areas, the few medical facilities available often require residents to travel great distances for basic health care, causing delays in treatment and higher rates of preventable diseases. The shortage of essential medical supplies, including vaccines, medications, and diagnostic equipment, worsens these problems, leading to poor management of health conditions and increased mortality. Although there are more health facilities in urban areas, they are often stretched thin by high population density and growing demand, resulting in long wait times and limited access to specialized care. Disparities are further exacerbated by the uneven distribution of medical resources and supplies, leaving marginalized communities with less access to quality health care and essential products. Both rural and urban areas struggle with outdated medical equipment and inconsistent drug supplies, which impairs effective treatment and preventive care. Addressing these issues requires significant improvements in health infrastructure, better management of medical supplies, and equitable distribution of resources

4. Scope of Health through Cooperatives-Globally

Pillai, Kadam, Damle, and Pathak (2023) examine the role of healthcare cooperatives in enhancing access to quality healthcare, focusing on India's Ayushman Sahakar scheme and Sri Lanka's Gampaha cooperative. They stress the importance of healthcare for overall well-being and highlight the rural-urban disparity in India. The authors also discuss the positive impact of digital transformation during the COVID-19 pandemic and advocate for healthcare cooperatives as a means to support healthcare systems, emphasizing the need for time and reforms for their growth (Samaya Pillai, 2023) [21]

Healthcare cooperatives worldwide play an essential role in delivering affordable and accessible health services, particularly in regions where public healthcare is inadequate or private care is costly. These member-based organizations provide a variety of services, from primary care to specialized treatments. For instance, Brazil's Sistema Unimed, the largest health cooperative, holds a significant presence. Likewise, countries like Spain and Canada benefit from community-based healthcare provided by cooperatives. Although they face challenges in terms of sustainability and competition from private and public healthcare systems, cooperatives continue to enhance healthcare access and quality globally. In 2020, prominent health cooperatives included Sistema Unimed, a worker cooperative ranked 4th globally with a turnover of 2,182,186. Other significant health cooperatives were Grupo Empresarial Cooperativo CooMev (67th, turnover 198,730), Coosalud SA (104th, turnover 134,123), Asmet Salud SA (144th, turnover 99,384.93), and Fundacion Espiru (179th, turnover 73,106.2). AMBUQARS, another health cooperative, ranked 244th with a turnover of 45,110.96.

Table 1.7 Top 300 largest cooperative and mutual organizations by turnover and by turnover GDP per capita

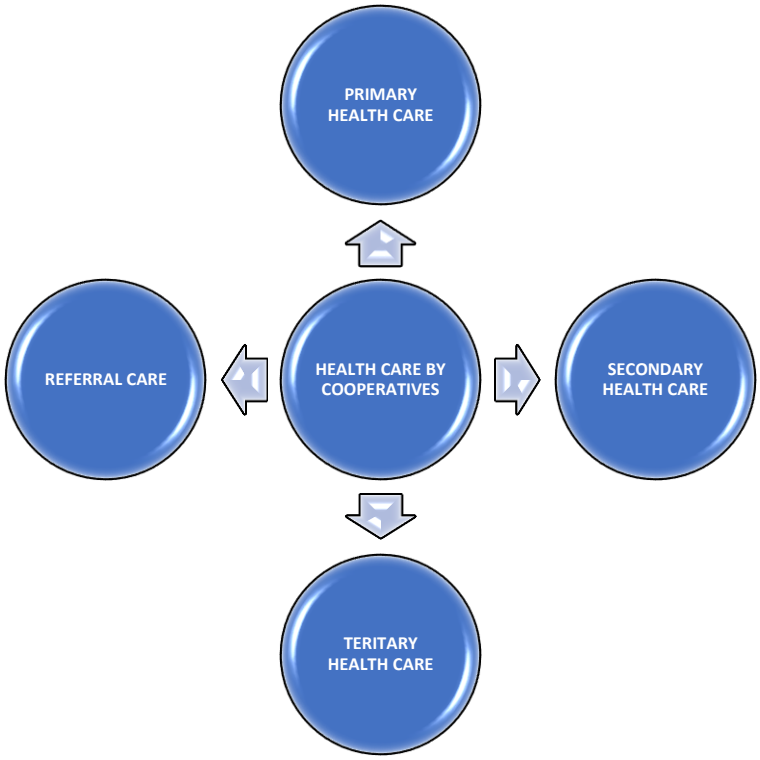
Rank 2020	Organization Country	Type	Turnover/GDP/Capita	Economic activity
4	SistemaUnimed Brazil	Worker	2,182,186	Health
67	Grupo Empresarial Cooperativo CooMev Columbia	Consumer/User	198.730	health
104	Coosalud Sa Coloumbia	Consumer/User	134,123	health
144	Asmet Salud Sa Columbia	Consumer/User	99,384,93	Health
168	Compare Columbia	Consumer/User	81,783,06	Education —
179	Fundacion Espiru Spain	Worker	73,106,2	Health
244	AMBUQARS Columbia		45,110,96	health

Source is taken from World Cooperative Monitor-2020

5. Future of Health through Cooperatives

Sudhir and Velayudhan (2023) emphasize the rising interest in healthcare cooperatives as a key approach for promoting equitable and inclusive development. They argue that cooperatives can bridge the gap between the market, state, and community to deliver sustainable healthcare. The authors highlight the need for supportive conditions for healthcare cooperatives in India and advocate for adopting successful international models to enhance their effectiveness in creating a balanced healthcare system. (Research Gate, 2023) [2]

Health care delivery model by cooperatives at all levels of care



Primary Healthcare (Community Hub)

Community Clinics ⇄ Mobile Medical Units ⇄ Health Education Programs

Minor treatments, preventive care, education, health data collection

Secondary Healthcare (Responsive Network)

Patient Referrals (via cooperative apps) ⇄ Health Savings Accounts ⇄ Group Insurance Schemes

Hospitalizations, specialized treatments, financial coverage

Tertiary Healthcare (Collaborative Care)

Partnership with Tertiary Hospitals ⇄ Telemedicine Centers

Advanced diagnostics, remote consultations.

Referral and Coordination System

Real-Time Referral System ⇄ Emergency and Critical Care Services ⇄ Ambulance Services

Seamless referrals, emergency care management.

Community Engagement and Technology Integration

Wearable Health Devices ⇄ Blockchain-Based Health Records ⇄ Telemedicine Hubs ⇄ Community Health Volunteers

Health monitoring, preventive care, secure data management

Continuous Feedback and Adaptive Services

Health Committees ⇄ Youth Engagement Programs

Adaptation of services, community-driven healthcare.

Enhanced Care Access: Cooperatives can set up and run local health centers in rural and underserved urban areas, minimizing travel and improving access to primary care, preventive services, and basic diagnostics. For Example, The Aravind Eye Care System in Tamil Nadu has created a network of eye hospitals and clinics providing affordable eye care in both urban and rural areas. Establishing multiple primary and secondary care centers minimizes patients' need to travel long distances for treatment.

Effective Resource Management: By pooling resources and working with government health programs and NGOs, cooperatives can better distribute medical supplies like vaccines, medications, and diagnostic tools. This approach helps tackle shortages and ensures essential health products are more readily available.

Health Education for Communities: Cooperatives can offer health education programs to inform people about preventive care, nutrition, and healthy living. Well-informed communities can better manage health issues and prevent diseases, reducing the strain on the healthcare system. For example, The Tamil Nadu Health Systems Project organizes community health education programs that emphasize preventive care, nutrition, and healthy living. They hold workshops and awareness campaigns in both rural and urban areas to inform people about managing health conditions and preventing diseases.

Mobile Health Units: In remote and rural areas, cooperatives can use mobile health units to deliver routine medical services and screenings. These units can reach people who struggle to access fixed

health facilities, providing essential services like immunizations, maternal care, and management of chronic conditions.

Partnership and Networking: Cooperatives can collaborate with local governments, private companies, and international health agencies to improve the availability of medical supplies and support. These collaborations can provide funding, training, and resources to strengthen local healthcare services. Examples The National Rural Health Mission (NRHM) collaborates with international organizations such as WHO and local NGOs to improve the distribution of medical supplies and healthcare services. These partnerships provide funding, training, and resources, enhancing health services in underserved areas.

Comprehensive Health Services: By integrating primary care with maternal and child health, mental health support, and chronic disease management, cooperatives can provide a well-rounded healthcare approach. This holistic model addresses various health needs within the community.

Advocacy and Policy Impact: Healthcare cooperatives can push for policy reforms and better resource distribution to aid underserved areas. They can work to shape health policies to ensure that rural and disadvantaged urban communities receive the necessary support.

Capacity Building: Cooperatives can focus on training local health workers, providing them with the skills required for high-quality care. Strengthening local capacity ensures that health services are sustainable and that communities can independently manage their health needs.

6. Challenges Faced By Cooperatives in Rendering Healthcare

Infrastructure Limitations: Many rural regions lack essential infrastructure, such as adequate facilities, equipment, and technology, making it difficult for cooperatives to effectively partner with government health institutions.

Financial Constraints: Cooperatives often face budget limitations, making it challenging to finance new health services or form partnerships with PHCs, HSCs, and government health institutions.

Shortage of Skilled Healthcare Personnel: A lack of trained medical professionals, including doctors, nurses, and technicians, is common in rural areas, hindering cooperatives' ability to deliver quality health care.

Bureaucratic and Regulatory Hurdles: Working with government health institutions can involve navigating complex regulations and bureaucracy, leading to delays or difficulties in establishing cooperative health services.

Awareness and Acceptance: Rural populations may lack awareness or trust in the idea of cooperatives providing health services, leading to low engagement and participation.

Coordination with Government Health Systems: Integrating cooperative health initiatives with government programs can be difficult due to differing priorities, communication issues, and challenges in coordination.

Sustainability and Resource Management: Ensuring that cooperative health services remain sustainable over time, especially with limited resources and varying funding, is a significant challenge.

Logistical Challenges: Delivering health care to remote areas is complicated by poor road networks, difficulty transporting medical supplies, and limited access to emergency services.

Cultural and Social Barriers: Traditional health beliefs and practices in rural communities may conflict with modern healthcare approaches, impacting the acceptance of services provided by cooperatives.

Monitoring and Accountability: Maintaining transparency, accountability, and effective monitoring of cooperative health services is challenging in rural settings, where oversight may be limited

7. Implications

To tackle the common infectious diseases in rural areas, healthcare institutions should adopt a multi-faceted approach. This includes conducting health surveys and collaborating with local health centers for data analysis. Prevention strategies should focus on health education, vaccination drives, and nutritional facilities, improving water and sanitation facilities. The recent initiatives of MoC, provide scope and opportunities for the cooperatives at all levels to engage themselves actively in policy advocacy and also in partnering with local organizations like PHCs, private hospitals, and IMPCOPS to extend health care services in rural areas. Setting up of first aid centers, and mobile health units, and arranging for frequent visits of specialists can enhance the quality of healthcare services. For elderly care, cooperatives can establish nearby assisted living facilities and offer physiotherapy. Nutritional centers and early childhood programs, after-school programs, and services for people children with special needs. Youth services should include counseling, job training, and education support. promoting overall community health and contributing to the achievement of Sustainable Development Goal 3. During events like Cooperative Week, health check-up camps can be held, involving local youth, promoting overall community health contributing to the achievement of SDG 3, and encouraging community participation. This will ultimately increase the membership in cooperatives.

8. Conclusion

In conclusion, integrating healthcare services through cooperatives, especially in partnership with PACS, offers a valuable strategy for tackling health challenges in rural areas, though it comes with certain difficulties. Key issues such as health services at an affordable charge, proximity, infrastructure shortages, and financial limitations, could be resolved. Furthermore, it may also help gain community trust, overcome regulatory complexities, and ensure long-term resource sustainability is crucial to success. Despite these challenges, with effective collaboration among cooperatives, government agencies, and local communities, this model has great potential to enhance healthcare access and outcomes in rural areas, contributing to a more equitable and robust healthcare system.

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Platform Cooperatives – A Device to Inclusive Growth

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Abstarct

Objective/Background: With the growth of technology, the digital platform has secured a significant role in facilitating interactions, transactions and services between different user groups. This dominance of few corporate platforms has degraded the lifestyle of gig workers. The Gig economy has been criticized for its lack of worker protection and benefits, leading to precarity and economic dependence. In order to address these issues, platform cooperatives have emerged in the market. It is a digital platform which is cooperatively owned by the members to facilitate sale of goods and services. It provides a viable model which prioritizes workers. This paper aims to explore Platform Cooperatives as a device to inclusive growth and its sustainability in Gig economy.

Method: In order to get a better understanding about Platform Cooperatives and its impact on economy, social and labour lifestyle, various research papers were reviewed and interviews were taken with Gig workers. Various case studies were studied to understand the problems faced by Gig workers. In an effort to raise awareness about the challenges faced by Gig workers, a questionnaire will be circulated.

Conclusions: Platform Cooperatives has the potential to transform the gig economy by empowering the workers and providing better protection and fostering a sustainable model. It not only improves the working conditions of workers but it also improves their financial position which reduces the income inequality prevailing in the economy.

Keywords: Platform Cooperatives, Platform Capitalist, Gig Economy, Gig workers, Income Stability, Job Security

1. Introduction

Sharing Economy is an economic model which facilitates sharing of goods and services among individuals and groups. With the advancement in Big Data and Online platforms, sharing economy has become more accessible to people around the world. This mechanism is also known as collective economy, peer economy or shared economy. The digital platform makes it easier for the buyers and sellers to meet and match their demand and supply. Besides these advantages, sharing economy has various negative and harmful impacts. Sharing economy gives rise to Gig Economy where temporary positions are common and firms hire independent workers for a shorter period of time. Workers in Gig economy is also known as Gig workers.

Gig workers are considered as independent contractors instead of employees. They do not receive the benefits and protections given to employees. They do not have job security and other perks. In the gig economy the surplus is not distributed among the gig workers and they are not involved in the decision-making process. Due to imbalance between demand and supply, labor work is treated as

commodity that can be bought and sold. Since gig workers work at different places, they feel lonely and isolated while doing tedious work which in turn degrades their mental health. The gig economy provides a poor working condition to the workers. In order to protect workers from the platform capitalist, platform cooperatives emerged in the sharing economy.

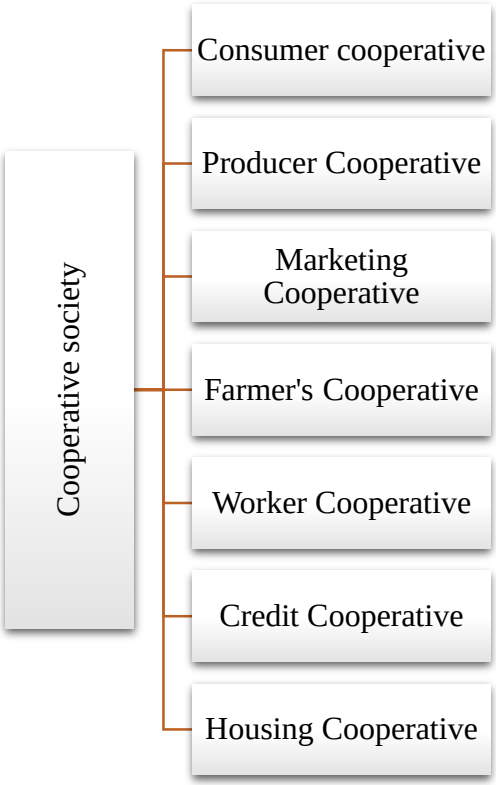
Cooperatives are associations of persons who join voluntarily to satisfy their economic, social and cultural common needs. Cooperatives are formed to avoid exploitation from middlemen who are obsessed with greater profits. These societies must compulsorily register under the Cooperatives Societies Act 1912 which gives them a unique legal identity. In a cooperative society, the liabilities of the members are limited. Cooperative model facilitates involvement of workers in decision making process. The profits earned by the cooperative society are distributed among its members.

Cooperatives exist in various sectors such as housing, marketing, banking, agriculture, etc. Some of the popular cooperatives in India are Amul, Indian Farmers Fertiliser Cooperative, and Shree Mahila Gruha Udyog.

There are various types of cooperatives present in India.

Types of Cooperatives

(Fig.1)



International Cooperative Alliance (ICA) have defined the values of cooperatives as self-help, democracy, equity, solidarity and self-responsibility. It has framed seven principles for Cooperatives

to achieve their values.
The principles are:

- Voluntary and Open Membership
- Democratic Member Control
- Member Economic Participation
- Autonomy and Independence
- Education, Training and Information
- Cooperation among Cooperatives
- Concern for Community

Platform Cooperative is a digital platform which is owned collectively by the members to facilitate the sale of goods and services. Cooperatives in the digital platform are known as platform cooperatives. Platform cooperatives differ from platform capitalism as they involve workers in decision making process and distribute the surplus to their members.

2. Review of Literature

Aditi Madan & Arjun Dubey (2024) "Heatwave vulnerability: The plight of gig workers in India" states that with the growth of e-commerce, the gig economy is growing faster than ever before, and the workers are taking on more risks in the high temperatures. Gig workers face increased health hazards and decreased productivity due to long hours and harsh conditions, for which they receive minimal acknowledgment under the labor rules. Due to their prolonged exposure to the high temperatures when riding motorcycles, gig workers are particularly vulnerable during heatwaves and lengthy work hours. This highlights the need for developing creative solutions and incorporating climate concerns into occupational health norms are necessary at the policy level to guarantee the long-term viability and security of the gig economy.

Morshed Mannan, Simon Pek (2023) "Platform Cooperatives and the dilemmas of platform worker - member participation" highlights the challenges faced by the Platform Cooperatives. The three categories of challenges related to platform worker-member participation are member apathy, unequal levels of participation and constrained participation on some issues. Member apathy refers to the lack of interest among the workers. They did not take advantage of the participation opportunities available to them. Unequal levels of participation refer to the variability in the extent to which various groups of platform worker-members use the participation opportunities. The difference can be due to a lack of digital literacy and limited access to technology. Constrained participation on some issues refers to the lack of participation of platform worker-members in decision-making about some issues related to their cooperatives. This paper also highlights the features that differentiate Platform Worker Cooperatives and Traditional Worker Cooperatives. The first feature is the facilitation of multihoming by which members can register for and use multiple platforms or multiple modes of working. This leaves the workers with limited time to participate in decision-making. The second feature is workers are untethered from a fixed, physical workplace. Platform cooperatives use virtual platforms which makes it easier for members to participate in decision-making. However, this serves as a barrier for workers who do not have adequate resources. Since the workers are working at distant places, they lack mutual trust and a feeling of group belonging. The third feature is the relatively high importance that PWCs place scale as a strategic imperative. The fourth feature is the low importance on initial platform worker-member investment. In traditional cooperatives, fees collected from the members are used to meet the financial requirements of the cooperative. Lower investment of the workers can reduce their interest in participating in decision-making.

Ria Kasliwal (2023) "Gender and the Gig Economy: A Quantitative Study of Gig Platforms for Women Workers" states that despite the remarkable expansion of India's Gig Economy and the potential advantages for female service providers, the obstacles encountered by women seeking gig labor have received scant attention. The gender gap in gig work is, in fact, just as pronounced as it is in traditional jobs and it hasn't directly increased India's female labor force participation rate (FLPR). This synopsis explores the body of research on the issues encountered by female gig workers and evaluates the terms of service and privacy policies of several Indian platforms serving this demographic. This brief addresses the barriers that prevent women from participating in gig work by examining the platforms from a gender perspective and offers practical suggestions.

Damion Jonathan Bunders, et.al (2022) "The Feasibility of Platform Cooperatives in the Gig Economy" states that in the midst of accusations that the platforms used by the gig economy today exploit vulnerable labor groups, and the platform cooperatives have become a desirable solution. Though platform cooperatives can be feasible for taxi drivers and professionals, and might be challenging for other sectoral contexts. It is evident that the gig economy is growing rapidly. Venture capital is primarily responsible for the present wave of capitalistic platforms, which aim to increase their market share by providing services at a lower cost than sales. The majority of market participants continue to be in deficit.

Sebastian Hermes, Markus Bohm, Maximilian Schreieck (2021) "Challenges and Success Potentials of Platform Cooperatives: Insights from a Multiple Case Study" uses Business Model Canvas to structure its results. The major challenges faced by the Platform Cooperatives are complex democratic governance, lack of public awareness on social value propositions, lack of funding as the investors are not interested in investing in a not-for-profit organization and poorly informed members can affect the decision-making process. Even with all these challenges Platform Cooperatives have the potential to reduce the exploitation of the workers in Platform Capitalist.

Jiang Zhu, Olivera Marjanovic (2021) "A Different Kind of Sharing Economy: A Literature Review of Platform Cooperatives" states that the implementation of workers cooperatives serves as a solution to improve working conditions and provide democratic control to the worker members. Education and training should be provided to the workers which results in career development and enhances living standards. This paper also highlights the negative impacts of Platform capitalism such as the exploitation of digital labor, degrading worker conditions, lack of worker insurance, worker protection and stagnating wages. These negative impacts are addressed by the Platform cooperatives by improving transparency, reducing racial or gender discrimination, job creation, economic development and decreasing poverty levels.

Sabrina Korreck (2021) "Changing Geographies of Work: India's Online Gig Workers in a Digitalized Labor Market" examines platforms aimed at online gig workers, also known as freelancers, who utilize them to locate digital job opportunities within or outside of their services from a distance. The synopsis describes the fundamental economic and technological forces at work as well as how the COVID-19 epidemic has intensified already-existing patterns. It looks at India's situation, assesses the advantages and disadvantages and makes suggestions for policy objectives.
Jiang Zhu, Olivera Marjanovic (2020) "How do Platform Cooperatives contribute to Sustainable Development Goals?" highlights the contribution of platform cooperatives towards sustainable development goals. Majority of the Platform Cooperatives contribute to "No Poverty", "Gender Equality", "Decent Work and Economic Growth", "Industries, Innovation and Infrastructure", "Reduced Inequalities" and "Partnership for the Goals"

Sabrina Korreck (2020) "COVID-19 and India's Gig Economy: The Case of Ride-Hailing

Companies" states that the gig economy is the component of a significant shift in India's labor market, and ride-hailing services are only a couple of the sites where "gigs" can be found. Up to 2023, it was anticipated that the Indian ride-hailing market will expand by 15.5%. However, the COVID-19 epidemic has changed the course of this growth. There are about 4 million drivers employed by these organizations, but they are not entitled to fundamental; social rights because they are categorized as independent contractors. Currently, their livelihood is at the danger due to the health crisis.

Sangeet Jain (2020) "The coronavirus has left gig economy workers out in the cold" states that life on earth has come to a grinding halt due to the coronavirus epidemic. As limited social contact has been hailed by the scientific community to prevent the spread, the society was reliant on a vast fleet of gig economy workers operating at the front lines, ferrying people around, and providing essential services door-to-door to endure the isolation peacefully. This is a sizeable population, particularly in India. Approximately 80% of workers in India are employed in the informal sector, with the gig economy in particular expected to rise to an astounding $455 billion by 2023. The majority of gig workers in India are young, frequently rely only on these engagements for their income and lack access to social security or health insurance. As a result, they hardly ever think about taking time off for anything. Due to the crowd being young, even if they do get the disease, they are likely to show mild symptoms. Additionally, because of their financial instability, they are more likely to ignore their symptoms and continue working, endangering the lives of everyone they come into contact with. Therefore, in addition to providing them with a safety net to allow them to take time from work if they feel symptomatic or support them in the event of a complete lockdown, employers need to equip frontline workers appropriately to increase their resilience.

Raymond Saner, Lichia Yiu, Melanie Nguyen (2018) "Platform Cooperatives: The Social and Solidarity Economy and the Future of Work" compares the business models of Platform Capitalist and Platform Cooperatives. It compares TaskRabbit a Platform Capitalist and Loconomics a Platform Cooperative. In order to evaluate the business models, the paper uses "Herzberg's Two-Factor Theory" also known as the "Hygiene-Motivation Theory". It concludes that both Platform Capitalist and Platform Cooperatives have significant differences in their mechanisms of worker engagement. Platform Cooperatives enhance the social well-being of the workers by establishing a joint-ownership model, inclusive decision-making process, fair distribution of surplus and strong support for interpersonal relationship development. It creates human-centered organizations and increases worker satisfaction.

Simel Esim, Waltteri Katajamaki (2017) "Rediscovering Worker Cooperatives in a Changing World of Work" states that the regulatory environment for worker cooperatives are inadequate in many countries. The framework should be sensitive to the rights and protection of workers, members and users of cooperatives. The workers should have access to both advisory services and financial tools.

3. Objectives

1. To understand the difference between platform cooperatives and platform capitalism.
2. To identify the ways in which platform cooperatives address the challenges faced in traditional gig economy.
3. To know the impact of platform co-ops in economy, social and labor.
4. To identify the role of government and non-governmental organizations in fostering platform co-ops.

4. Methodology

In order to get a better understanding, this study utilizes a two-fold approach to explore the impact of platform cooperatives on India's gig economy is examined in this study using a mixed-method approach, with an emphasis on job satisfaction, worker protection and financial stability. In order to evaluate the present working circumstances of Gig workers as well as their awareness and views about platform cooperatives as a viable substitute for corporately controlled gig platforms, the technique combines qualitative and quantitative analysis.

Research Design:
The research used a two-stage methodology. Through a review of the body of research on the gig economy, worker exploitation, platform cooperatives and their potential to enhance working conditions, secondary data was acquired in the first phase. To offer perspectives and suggestions tailored to the Indian context, case studies from nations that have effectively instituted platform cooperatives were also examined. This made it easier to formulate the research questions and find pertinent themes for gathering primary data.

In the subsequent stage, primary data was gathered by the administration of a structure questionnaire was to collect data on the demographics, experience, job satisfaction, income stability and platform cooperation awareness of gig workers. It investigated if they might switch to a platform cooperative in exchange for increased income, benefits and working conditions. The purpose of gathering this data was to do statistical analysis, such as regression analysis to find correlations between important variables including interest in platform cooperatives, job security and income levels.

Sampling and Target Population:
Gig workers operating in a variety of industries such as ride-hailing and food delivery made up the study's target population. Due to the challenges of reaching gig workers in a highly unorganized industry, the convenience sampling approach was used to choose the study's sample size of (50) respondents. The primary focus on the gig workers in Chennai, a metropolitan city with a diversified gig economy.

Individuals with a range of educational backgrounds, economic brackets and gig economy employment experiences were also included in the target population. Efforts were made to ensure that the gig workers from part-time to full-time were included.

Data Collection Methods:
The data was collected through primary and secondary sources:

- Primary Data: To collect both quantitative and qualitative data, an online survey using Google Forms was created and disseminated. The poll addressed a range of topics related to the lives of gig workers, such as their salary, level of job satisfaction, availability of employment, platform assistance and knowledge of platform cooperatives. In addition to sharing their opinions on the state of the gig economy, respondents were asked if they would be open to joining a platform cooperative in exchange for better working circumstances.
- Secondary Data: A thorough analysis of all published research papers, articles, and case studies on platform cooperatives and the gig economy was done. These resources give light on the difficulties faced by platform cooperatives around the world and how they have been implemented in different nations. A comparison study between international practices and Indian settings was made possible by the secondary data, which also served to frame the primary data's conclusions.

Data Analysis Techniques:
IBM SPSS was used to evaluate the quantitative data obtained from the questionnaire. The finding was summarized using descriptive statistic, which offered information on the respondents' income, job satisfaction and demographic distribution. To investigate the correlations between important variables like income, job stability and readiness to switch to platform cooperatives, regression analysis was carried out. The purpose of this research was to determine the ways in which various factors affected the perceptions of platform cooperatives and the financial stability of gig workers.

The results of the analysis of the quantitative and qualitative data were then combined to present a thorough picture of the gig economy's existing situation in India as well as the potential for platform cooperatives to promote inclusive growth.

SAMPLE SIZE	**50**
SAMPLING TECHNIQUE	Convenience sampling
STUDY AREA	Chennai
PERIOD	2 weeks
DATA COLLECTION	Primary data – Questionnaire Secondary data – Several Sources
TARGET POPULATION	Gig workers working in Swiggy, Ola, Uber

Table.1

5. Secondary Data

Case Studies

Yatri – Kerala
Yatri is a Platform Cooperative for the Taxi Drivers. It was implemented on February 2021 in Kerala by Kochi Metropolitan Transport Authority. The major objective for launching the mobile app Yatri was to protect the rights of the drivers. The taxi drivers should also receive all the employee benefits and job security. The private platforms in this industry such as Uber and Ola charges heavy commission up to 25% and share a minimal portion of their profits with the members. The attractive offers and discounts provided by these private owners influence the customers to use these apps which make the traditional taxi drivers unemployed. Since the taxi drivers lack the ability or luxury to provide discounts to their customers, they struggle to attract business on their own. As a result, they are forced to join the Platform Capitalist.

In order to address these issues Platform cooperative Yatri was introduced. The taxi drivers who join the cooperative society will have access to the digital platforms. Yatri provides various benefits to its members. In Kerala most of the taxis are owned by their drivers. These drivers will receive double benefit by joining the platform. Drivers being the members of the society will share the profits earned by the cooperative. Each vehicle will be provided with three shifts; drivers can work for one shift and receive rent for providing their vehicle to other drivers. This model helps the driver to use the vehicle

to its full potential. Customers will make their payment directly to the cooperative society fund. Drivers receive their salary from this fund with a fixed minimum wage. During the six days of work per week, each driver will receive one day off. Like employees, drivers also receive perk and benefits such as provident fund. Even other people who do not own taxis can work in evening shifts by using other member's vehicle. Yatri does not charge any commission from the drivers. The drivers can procure fuel at the fuel stations by showing their identity card as the member of cooperative society. Cooperative society will make the payment directly to the fuel station.

In order to join the cooperative, it is mandatory for each driver to obtain police clearance certificate. They must sign the agreement to follow the rules and regulations of the society. Any violation of the rules will lead to cancellation of membership.

Rezoy – Kerala

Rezoy is a cooperative food delivery app which is owned by Kerala Hotel and Restaurants Association (KHRA). KHRA is a statewide organization of hotel and restaurant owners. The idea to develop a food delivery app was initiated by Muhammed Mustafa, who is a hotel owner and member of KHRA in 2020. With the experience of working in the IT sector in Dubai, he returned to Kerala to become a successful business man. With his savings from Dubai, he decided to set up a hotel. His personal experience in the market where the platform capitalist was exploiting the hotel business community fueled him to introduce Rezoy.

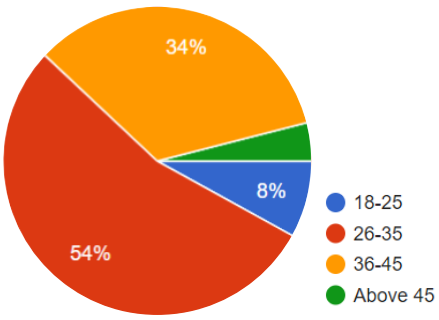
Platform capitalist in food delivery such as Swiggy and Zomato are very popular in Kerala. Initial offers provided by these capitalist to the hotel owners was very favorable to them. As a result the hotel owners made agreements with the private apps which promised commission free transactions. With the growth in demand for door-step delivery, the private apps started demanding 10% commission, which was feasible for the hotel owners. As the business expanded and hotels became dependent on the apps, they increased their commission to 30% which led to losses for the hotels.
It was at this point of time, Rezoy came to the rescue of the hotel owners. It was a platform cooperative formed with the objective to protect the hotel owners from the platform capitalists. The digital platform was collectively owned by the members of KHRA. It was first implemented in the Ernakulum town. It charges only 10% as commission, which is returned to the association. The food price quoted is the Maximum Retail Price (MRP) as required by law. Compared to the platform capitalist, Rezoy's prices are lower.

Even with all these advantages provided by the Rezoy, the hotel owners hesitate to abandon their relationship with Swiggy and Zomato. Hotel owners believe that Rezoy lacks professionalism, sales volume, reach and service delivery. The advantage of higher volume of sales provided by the capitalist compensates the higher commission charged. Rezoy must invest in advertising without which it could be difficult to reach customers and compete with capitalist. Rezoy, being a cooperative model lacks the spirit of cooperation. It is believed that in the future the hotel owners will deliver their food exclusively using Rezoy. The future goal of Rezoy is to expand its members from 3000 to 35,000.

Primary Data:

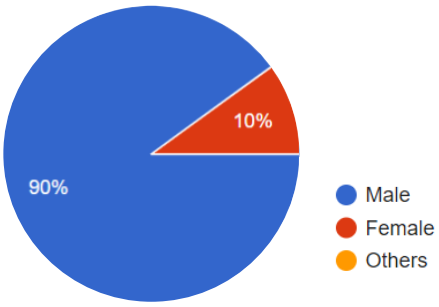
Analysis & Interpretation:

Age
(Chart.1)



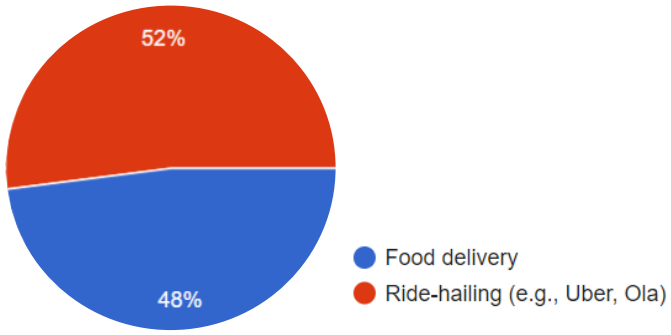
The pie chart shows that age range of 26-25 accounts for a substantial 54% of the responses, suggesting that this group makes up the majority of the gig workforce or population under the study and is quite active in the gig economy. This could be due to the fact that they are in the process of developing their careers, seek flexibility or want to become financially independent. 34% of the respondents of age group 36-45 indicates that a sizable percentage of the middle-aged people also work in gigs. The desire to earn more income can be the reason. Conversely, the younger age group (18-25) makes up only 8% of the population. Suggesting that fewer young adults work in this field, maybe as a result of early career inclination or commitments to their studies. Lastly, individuals above 45 constitute a minimal percentage.

Gender
(Chart.2)



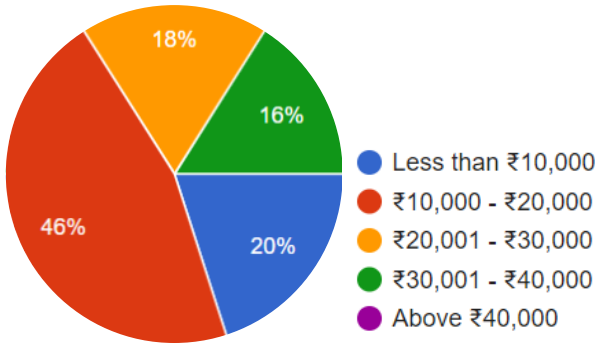
Notably, men make up the 90% of the respondents, suggesting that men predominate in the population studied. This may be the reflection of the gender disparities frequently seen in the gig economy, where males are more likely to work in jobs required physical labor and flexibility such as delivery services, ride-sharing and technical services. In addition, cultural or societal factors, particularly in nation where gender roles are conventionally defined, may contribute to the high participation rate of men in the gig economy. On the other hand, a notable gender disparity is evident as just 10% of the participants are female. There are a number of reasons for this underrepresentation, including the possibility that women encounter obstacles when trying to enter or engage in the gig economy.

What type of Gig work do you primarily do?
(Chart.3)



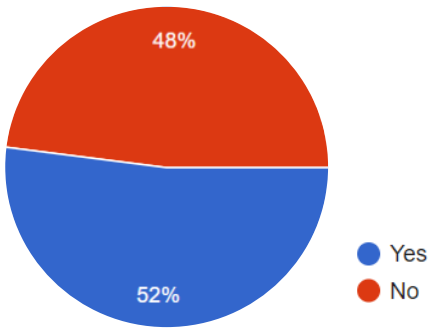
The chart shows that 52% work for ride-hailing services and 48% are employed by food delivery businesses. Due of their high prevalence and ease of access, these two types of gig work were the focus of the study on the gig economy.

Monthly income
(Chart.4)



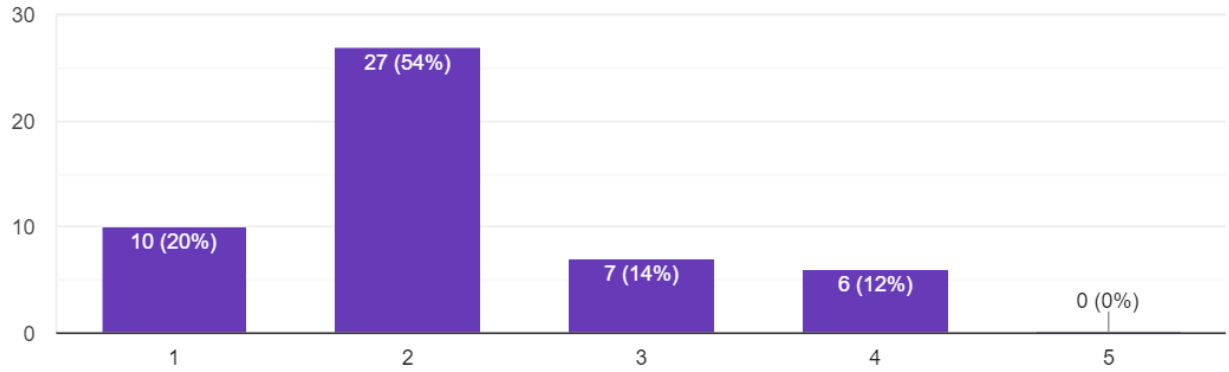
46% of the respondents earn between Rs.10,000 and Rs.20,000 which means that almost half of them are in this wage range. 20% of the respondents make less that Rs.10,000 per month, followed by 18% of them make between Rs.20,001 to Rs.30,000. Just 16% of workers earn between Rs.30,001 – Rs. 40,000. Based on the distribution of responses, it appears that most gig workers make relatively modest salaries. This indicates the lack of access to premium job platforms or fewer prospects for high-paying gigs. There are a number of issues, including the overabundance of gig workers, the nature of the work, or the unwillingness of the companies to pay competitive salaries for gig labor.

Do you rely solely on gig work as your primary source of income?
(Chart.5)



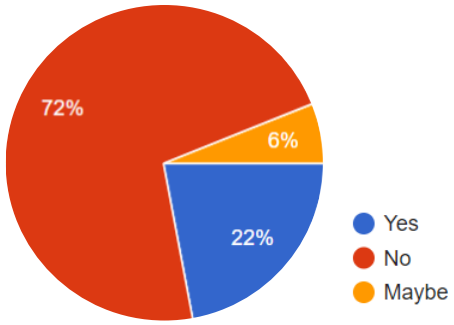
52% of the respondents they entirely depend on the income from gig work, while 48% don't. This nearly equal distribution indicates that although a sizeable percentage of workers reply only on gig labor, nearly half seek it out as a second source of income. There could be several reasons for this distribution. Gig workers are drawn to gig employment because it allows them flexibility and autonomy over their working hours. If someone is only dependent on gig income, it may be their only source of income because they don't have access to regular job prospects or because they can make more money on gig platforms than they can in official employment. However, 48% of those who do not rely only on gig work may consider it as a means of augmenting their principal source of income. Since gig labor is erratic, many people who currently have traditional jobs may use it to supplement their income. This may be because they are reluctant to rely only on them because gigs don't provide the same advantages as regular jobs like healthcare, job security, etc.

How satisfied are you with your income from gig work?
(Chart.6)



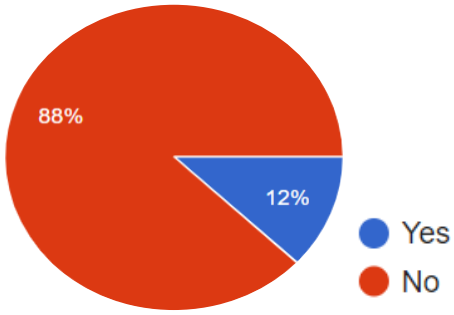
A typically low level of satisfaction was indicated by the majority of the respondents (54%). 20% provided the lowest grade of 1, emphasizing the discontent among employees even further. Only 12% gave their satisfaction a rating of 4, compared to a lesser percentage of 14% who gave it a rating of 3. No respondent rated 5, indicating that none of them was content with their pay. These poor satisfaction levels could be the fact that their pay does not correspond to the time and effort they put in. Furthermore, as a large number of workers make less than Rs.20, 000 per month, this might be insufficient.

Do you feel that gig work provides you with job security?
(Chart.7)



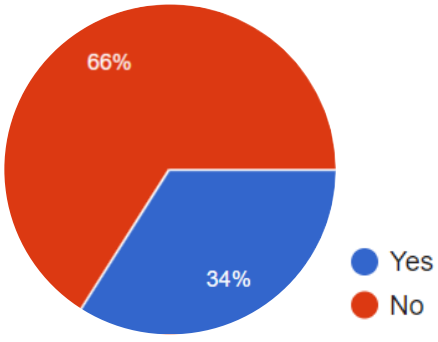
72% of the respondents feel that the gig work does not provide them job security which reflects the uncertainty associated with gig work, such as fluctuating income, limited benefits, contracts etc. 22% of the respondents believes that gig worker offers job security due to the flexibility it provides, enabling them to manage multiple jobs. Lastly 6% of the respondents are uncertain about the job security provide by gig work as they may recognize both the risks and benefits, finding that they can be stable under certain conditions and not in some circumstances.

Do you receive any benefits such as health insurance, pension, or paid leave through the platform?
(Chart.8)



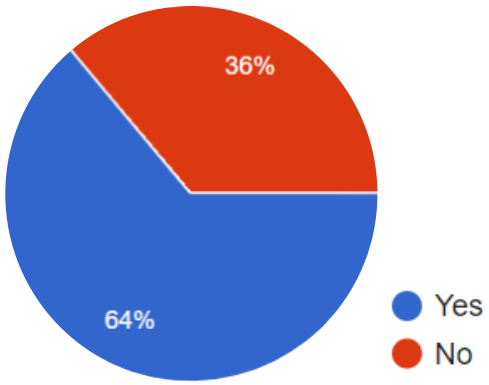
These 88% highlights that most workers do not have access to employment benefits. Only 12% of the respondents receive the benefits. The lack of benefits in the gig work raises concern about long-term security and well-being for workers.

Are traveling allowances given?
(Chart.9)



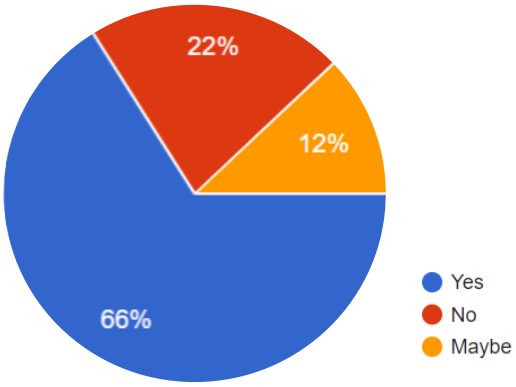
This pie chart suggests that 66% of the respondents do not receive travelling allowances which highlights the common issue in many gig-based jobs. This lack of financial support can further minimize their take-home earning. Only 34% of the respondents receive travelling allowance.

Have you heard of platform cooperatives (platforms owned and managed by workers)?
(Chart.10)



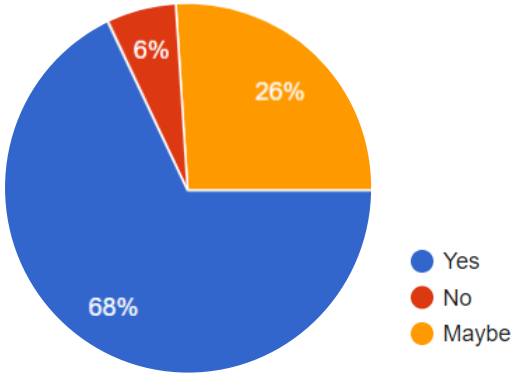
Around 64% of the respondents have mentioned that they have awareness on what Platform cooperatives are. 36% of them have mentioned that they do not have knowledge on platform cooperatives. This suggests that awareness of worker-owned platform is still growing and it needs more awareness that emphasis collective ownership and management by worker

Would you be interested in joining a platform cooperative if it provided better pay, benefits, and job security?
(Chart.11)



The 66% represent the strong interest of the respondents who seek for an alternative to the traditional gig economy structure. This is due to the fact that they are paid low, limited benefits and job insecurity. The 22% of respondents indicate that they would not be interested reflect their preference for flexibility and independence associated with the traditional gig platform. This is because they have more control over their work choice and schedule. 12% of the respondents are unsure because they might be curious but cautious, waiting to see few such platforms work.

Do you think platform cooperatives could improve your working conditions? (Chart.12)



The majority of the respondents (68%) suggests that gig workers believe that platform cooperatives could significantly improve their working conditions. 6% of the respondents may be skeptical of the platform cooperative's ability to provide the same level of flexibility. A significant percentage of the respondents recognize both potential benefits and possible challenges of platform cooperatives and may be waiting for more information before fully committing to the idea.

6. Income level and Willingness to join Platform Cooperatives

Chi-Square test was used to find whether there is relationship between Income level and Willingness to join Platform Cooperatives.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.729[a]	4	.000
Likelihood Ratio	48.364	4	.000
Linear-by-Linear Association	13.560	1	.000
N of Valid Cases	50		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .30.

(Table.2)

The p value derived from the table is 0.000 which is less than 0.05. This represents a significant relationship between Income level and Willingness to join Platform Cooperatives.

Linear Regression Analysis was used to identify the relationship between Income level and Willingness to join Platform Cooperatives. In this analysis, Willingness to join Platform Cooperatives is taken as the dependent variables. Income level is considered as the independent variable.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2	Sig. F Change
1	.691[a]	.477	.466	.48943	.477	43.841	1	48	.000

a. Predictors: (Constant), Income_level

b. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.3)

The R value, 0.691 indicates a positive relationship between two variables, which means a lower income level in gig economy leads to increase in the willingness to join platform cooperatives.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.502	1	10.502	43.841	.000[b]
	Residual	11.498	48	.240		
	Total	22.000	49			

a. Dependent Variable: Willingness_to_join_platform_cooperative

b. Predictors: (Constant), Income_level

(Table.4)

The p value is 0.000 which is less than 0.05, so the result is significant. The value of F is 43.841 which is greater than 1, so the model is efficient.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.210	.193		1.093	.280	-.177	.598
	Income_level	.536	.081	.691	6.621	.000	.373	.699

a. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.5)

The Sig.value is 0.000 which is less than 0.05. This represents a significant relationship between Income level and Willingness to join Platform Cooperatives.

Lower the income derived by the workers in the platform capitalist, higher their willingness to join the platform cooperatives.

7. Job Security and Willingness to join Platform Cooperatives

Chi-Square test was used to find whether there is relationship between Income level and Willingness to join Platform Cooperatives.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.729[a]	4	.000
Likelihood Ratio	48.364	4	.000
Linear-by-Linear Association	13.560	1	.000
N of Valid Cases	50		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .30.

(Table.6)

The p value derived from the table is 0.000 which is less than 0.05. This represents a significant relationship between Job Security and Willingness to join Platform Cooperatives.

Linear Regression Analysis was used to identify the relationship between Job Security and Willingness to join Platform Cooperatives. In this analysis, Willingness to join Platform Cooperatives is taken as the dependent variables. Job Security is considered as the independent variable.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.526[a]	.277	.262	.57576	.277	18.365	1	48	.000

a. Predictors: (Constant), Job_security

b. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.7)

The R value, 0.526 indicates a positive relationship between two variables, which means a lack of job security in gig economy leads to increase in the willingness to join platform cooperatives.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.088	1	6.088	18.365	.000[b]
	Residual	15.912	48	.331		
	Total	22.000	49			

a. Dependent Variable: Willingness_to_join_platform_cooperative

b. Predictors: (Constant), Job_security

(Table.8)

The p value is 0.000 which is less than 0.05, so the result is significant. The value of F is 18.365 which is greater than 1, so the model is efficient.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.673	.308		8.678	.000	2.054	3.292
	Job_security	-.692	.161	-.526	-4.285	.000	-1.016	-.367

a. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.9)

The Sig.value is 0.000 which is less than 0.05. This represents a significant relationship between Job Security and Willingness to join Platform Cooperatives. Lack of Job Security for the workers in the platform capitalist, higher their willingness to join the platform cooperatives.

8. Awareness and Willingness to join Platform Cooperatives

Chi-Square test was used to find whether there is relationship between Awareness and Willingness to join Platform Cooperatives.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.729[a]	4	.000
Likelihood Ratio	48.364	4	.000
Linear-by-Linear Association	13.560	1	.000
N of Valid Cases	50		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .30.

(Table.10)

The p value derived from the table is 0.000 which is less than 0.05. This represents a significant relationship between Awareness about Platform Cooperatives_and Willingness to join Platform Cooperatives.

Linear Regression Analysis was used to identify the relationship between Awareness_and Willingness to join Platform Cooperatives. In this analysis, Willingness to join Platform Cooperatives is taken as the dependent variables. Awareness is considered as the independent variable.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.709[a]	.502	.492	.47768	.502	48.417	1	48	.000

a. Predictors: (Constant), Awareness_on_platform_cooperatives

b. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.11)

The R value, 0.709 indicates a positive relationship between two variables, which means higher the awareness about platform cooperatives, higher the willingness to join platform cooperatives.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.048	1	11.048	48.417	.000[b]
	Residual	10.952	48	.228		
	Total	22.000	49			

a. Dependent Variable: Willingness_to_join_platform_cooperative

b. Predictors: (Constant), Awareness_on_platform_cooperatives

(Table.12)

The p value is 0.000 which is less than 0.05, so the result is significant. The value of F is 47.417 which is greater than 1, so the model is efficient.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.048	.206		.231	.818	-.366	.461
	Awareness_on_platform_cooperatives	.952	.137	.709	6.958	.000	.677	1.228

a. Dependent Variable: Willingness_to_join_platform_cooperative

(Table.13)

The Sig.value is 0.000 which is less than 0.05. This represents a significant relationship between Awareness about Platform Cooperatives_and Willingness to join Platform Cooperatives. Higher the

awareness about platform cooperatives, higher will be the willingness to join platform cooperatives.

9. Suggestions

- Platform Cooperatives must invest in promotional activities to create awareness among public.
- It should provide education and training to its members to utilize the digital platforms and deliver good quality services to the customers.
- Platform cooperatives should offer legal assistance to worker in case of disputes with the customers. Workers should be fairly represented and protected in legal matters.
- Government should financially support Platform Cooperatives to meet their funding requirements.

10. Further Research

- Extensive research in various states and countries can be conducted
- In-depth qualitative research methods such as one to one interviews, questionnaires can be used to collect data from platform cooperatives.
- Research can be conducted to identify the factors which influence the success of Platform Cooperatives.

11. Conclusion

The current sharing economy is favorable for the consumers as they get various benefits, but it has given rise to Gig economy. In this economy, Platform capitalist, privately owned enterprises are exploiting the human resources. Employees are being deprived of their rights and benefits. They do not get adequate income to meet their needs. They do not have job security as the gig workers do not have long term employment. Rigid and longer working hours degrades both mental and physical health of the workers.

Platform cooperatives emerged to protect workers from exploitation by the platform capitalist. Platform cooperative place people at the center whereas platform capitalist priorities profit. Platform cooperatives are formed and owned by the members. The workers who are members of the society derive various advantages from platform cooperatives. They get adequate income and surplus if any earned by the cooperative. This helps the workers to meet their needs and improve their standard of living. This model involves workers in the decision making process which motivates the workers. Workers being the owners develop a sense of responsibility which encourages them to be more productive.

Even with all these advantages platform cooperatives find it difficult to compete with platform capitalist. Platform cooperatives must invest in promotional activities in order to reach the public. Members do not trust platform cooperatives to the full extent, to abandon platform capitalist and rely solely on cooperatives. Platform cooperatives to be successful should take measures to improve public awareness.

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APPENDIX (QUESTIONAIRE):

1. Age:
    - 18-25
    - 26-35
    - 36-45
    - Above 45
2. Gender
    - Male
    - Female
    - Others
3. How long have you been working in the gig economy?
    - Less than 6 months
    - 6 months to 1 year
    - 1 to 3 years
    - More than 3 years
4. What type of gig work do you primarily do?
    - Food delivery
    - Ride-hailing (e.g., Uber, Ola)
5. How many hours per week do you typically work as a gig worker?
    - Less than 10 hours
    - 10-20 hours
    - 21-30 hours

- 31-40 hours
- More than 40 hours

6. What is your average monthly income from gig work?
    - Less than ₹10,000
    - ₹10,000 - ₹20,000
    - ₹20,001 - ₹30,000
    - ₹30,001 - ₹40,000
    - Above ₹40,000
7. Do you rely solely on gig work as your primary source of income?
    - Yes
    - No
8. How satisfied are you with your income from gig work? (scale 1 to 5 - 1 = Very Dissatisfied, 5 = Very Satisfied)
9. On a scale of 1 to 5, how satisfied are you with the flexibility of your work hours? (1 = Very Dissatisfied, 5 = Very Satisfied)
10. Do you feel that gig work provides you with job security?
    - Yes
    - No
    - Maybe
11. Do you receive any benefits such as health insurance, pension, or paid leave through the platform?
    - Yes
    - No
12. Have you heard of platform cooperatives (platforms owned and managed by workers)?
    - Yes
    - No
13. Would you be interested in joining a platform cooperative if it provided better pay, benefits, and job security?
    - Yes
    - No
    - Maybe
14. Do you think platform cooperatives could improve your working conditions?
    - Yes
    - No
    - Maybe
15. Are travelling allowances given?
    - Yes
    - No

Revisiting Chendamangalam: Analysing the Resilience and Recovery of Handloom Cooperatives post the 2018-19 floods

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Abstract

Chendamangalam is a village located in the Paravur Taluk of Ernakulam district in Kerala. Located around 30 km away from Kochi, the village is well known for its Geographical Indication (GI) certified handloom products. As of 2018, the village consisted of 5 cooperative societies which together accounted for more than 600 weavers. The 2018 floods in Kerala had badly affected the handloom industry in the village with most of their looms, yarns and raw material destroyed. The objective of this paper is to understand the manner of recovery of the handloom sector in the village and the state of Kerala in general in the years that followed. Therefore, the stated objectives of the paper are as follows: (i) To assess the impact of the 2018/19 floods and review the damage caused to the handloom sector , (ii) Analyse the steps taken at Chendamangalam to reinvigorate the handloom sector in the aftermath of the floods, highlighting the role played by the co-operative societies, and (iii) Identify a practical recovery action plan in line with the steps taken at Chendamangalam to help handicrafts industries in the future recover from similar events.

This paper will be based on a conceptual methodology and aims to provide insight based on a case study on how co-operatives can help in disaster recovery. The study uses both primary and secondary data to substantiate its findings. The authors had previously conducted field surveys during the time of the floods and its findings will be used to analyse the results of objective (i). Furthermore, the study also uses secondary data access information regarding handloom production quantities, employment generated and income of the households involved. Such information is retrieved from the reports of the Directorate of Handloom and textiles as well as the Kerala state planning board's annual economic reviews. Moreover, relevant research papers on the role of co-operatives in disaster recovery as well as past studies in this field have also been collected, especially those from international organisations. Lastly, articles and newspaper reports regarding the recovery of the Chendamangalam handloom sector have also been used for the study.

1. Introduction

Climate change is one of the greatest crises of the age. Global warming induced climate change has led to a significant increase in natural disasters such as cyclones, droughts, and the specific focus of this case study: Floods. The greatly renowned handloom sector in the village of Chendamangalam have braved through back-to-back years of floods back in 2018-19, quickly followed by the COVID-19 pandemic. This paper aims to analyse the damage done to the handloom sector in the village and track its recovery from the above-mentioned series of events. The relevance of the study stems from two reasons, (a) it is a case study of an important 'traditional industry', which operates under the institutional framework of cooperative societies, which evolved historically and provides livelihood to local workers and (b) micro field work- based studies provides us evidence on the impact of catastrophes on traditional industries and offers us inputs for building resilience.

The specific research questions of the study are the following: What are the socio economic back ground of the owners and workers of the units chosen for study at Chendamangalam Handloom

industry? What is the alternative source of income of the stakeholders of these units? How do these units are placed as compared to their counterparts in the handloom industry in Kerala in terms of size of output, capital and labor? How is this industry mobilizing capital, labour and raw materials to run the units and who were their customers? What is the financial implication of flood on the production and livelihood of stakeholders/workers of this industry and state response? What is the future of this industry and check whether this industry could be rejuvenated through any modern innovative strategies? An attempt is being made in this paper to answer some of the questions based on primary and secondary sources. The paper is divided in to six section including introduction and conclusion. The second section tries to understand the historical root of this industry while analysing the nature, production and organisation structure of this industry. An effort is being made in the third section to highlight the significance of Chendamangalam society as compared to other handloom units in Kerala. The role of the state and the growth of handloom industry before flood are being discussed in section 4. The scenario of Chendamangalam industry after flood, its financial loss and role of the state is discussed in detail in section 5. The last section sum up the major findings and policy suggestions.

This study is used both primary and secondary source of data. The secondary source of data is mainly collected from the directorate of Handloom and Textiles and Economic Review of 2017 and 2018. Primary data is collected from the Chendamangalam handloom industry by using a structured questionnaire.

2. Literature Survey

Keeping in mind the uniqueness and exploratory nature of this study, a wide variety of academic literature was referred to and consulted for the making of purposes of this paper. This ranged from research papers previously made on the topic of disaster resilience as well as case studies on other handicrafts units as well as those done about the town of Chendamangalam itself.

To begin, studies focusing on the relevance and importance of cooperative societies were consulted. These studies listed out examples of when cooperative societies have proved helpful and pointed out how cooperatives have been crucial in ensuring economic prosperity to low income communities (Dogarawa, 2010). The highlighted paper especially came useful as it was a descriptive paper which exemplified the importance of cooperatives in different sectors for the past 150 years. The paper summarizes the key functions of cooperative societies and how they have served different communities in Nigeria and elsewhere.

Furthermore, multiple studies have taken place which place co-operatives at the forefront when it comes to post disaster recovery in varied scenarios (Langi Osumba & Oboka, 2022; Parnell, 2001). The first among these focused on building resilience among co-operative societies especially among the backdrop of the COVID-19 pandemic. The paper highlighted that “economic recovery models that seek to recover, restore, and revive a collapsed capitalist system are mostly ‘cooperative’ in nature, and are critical in stabilizing fragile economic systems.” The second one was a report submitted to the International Labour Organisation. It was a concept paper on how co-operative societies could be more involved in recovery from extreme events. Along with other solutions, that paper identified the ways in which cooperatives can be better incorporated in combating different types of disasters- including climate change induced ones. These studies, even if conducted with respect of non-handloom cooperatives, have shown light on how critical their role is when it comes to disaster recovery.

Moving on, the authors went through the articles and other academic work which was done regarding

Indian cooperatives. This was done to ensure parity with the case study they are currently conducting and add any scenario specific variables into the study (Carrasco et al., 2023; Datta & Agrawal, 2018; Uzramma, 2019). Carrasco et al., 2019 went into detail about the different types of contributions by different stakeholders during a natural disaster, the paper focusing primarily on the 2015 Nepal earthquake. It covered various stakeholders such as the government organisations, NGOs, community organisations (where co-operative societies come in) and individuals. The paper analysed the different aims and approaches of each of them while analysing their weaknesses. Datta and Agrawal (2018) argued that cooperatives have contributed significantly to improve the economic conditions of the weavers in West Bengal. Uzramma (2019) focuses on a specific handloom co-operative operation called the Malkha enterprise. The Hyderabad based Malkha enterprise refers to a decentralized, sustainable, field-to-fabric cotton textile chain that is collectively owned by the primary producers (the farmers, spinners, dyers, and weavers). It prioritizes small scale specialised handloom weaving focusing on producing high quality products with co-operative society members in control of the entire chain of production.

Literature regarding the state of the handloom sector before and after the floods as well as the extent of the damage suffered by the handloom sector during the 2018-19 (Harish, 2019; Debnath, 2021; Kumar et al., 2022; Varghese, 2019) has thrown significant insights. Harish (2019) analysed the efficacy of the Project Chekutty (an innovative programme which aimed to resell soiled handloom cloth as dolls to avoid loss). The paper comes to the conclusion that the project, while initially off to a great start, quickly saw loss in sales and revenue dwindled. The paper points out a lack of marketing and outlets for sale as primary reasons for that. Debnath (2021) in his paper discusses about sustainability and environmental impacts of handloom production in the Indian subcontinent at length. It covers the analysis on different handloom cooperatives in different parts of the country-including Chendamangalam. Kumar (2022) undertakes a very descriptive analysis of the history of the Indian handloom sector. It mostly analyses its history before independence but also has sections covering current handloom clusters. Lastly, Varghese (2019), covers how marketing can be improved to enhance sales in the Indian handloom sector as well as the handloom units in Kerala, including the one at Chendamangalam. The study analyses the reasons affecting sales of Handloom products in Kerala. Given this context, the present paper is set to analyse the impact of flood in 2018 on the handloom cluster which consists of five cooperative societies with more than 600 weavers. It tries to understand the functioning of the units run by handloom industry located in this cluster which was badly hit by the flood. This is extremely important as these units were providing livelihood to many households.

3. Chendamangalam handloom Industry and its historical roots

The history of the Chendamangalam handloom industry is closely linked to the Paliam family, from which the eldest male members served as Chief Ministers for the Rajas of Cochin. For generations, the village has been home to Paliyath Achan, the hereditary minister to the Raja of Cochin. The handloom weavers in the village were supported by successive Paliyath Valiyachans, who were the heads of the royal family. In the early days of handloom weaving in Chendamangalam, the handloom cloth was primarily woven for the Paliam family. The women of this family showcased their dignity through their attire, wearing Puliyilokkara Neriyatu, Kasavu Sarees, Kasavu Dhotis, and various other Chendamangalam handloom products. This was made possible due to the high level of skill exhibited by the local weavers.

In the 1930s, a large handloom weaving production unit was established at Kottoyil Kovilakom as a private limited company by entrepreneur Mr. K.V. Krishnankutty Menon. This industrial unit played a significant role in popularizing Chendamangalam handloom clothes in southern India. Thanks to

his efforts, a market was created for Chendamangalam Dhoties and other its sister products across the state and in other South Indian cities. However, this industrial unit wound up operations in 1948 for various reasons.

In the same year, another corporate handloom unit called the Pioneer Company commenced the production of handloom products in the heart of Chendamangalam village. Besides organizing the handloom weavers under its helm, the Pioneer Company supplied the necessary cotton yarn to the weavers at discounted rates, allowing them to weave cloth in their homes. The finished products were then procured by the company and sold in bulk under their trademark. Unfortunately, the Pioneer Company also ceased its operations in 1950.

The co-operative movement that began in the country as part of the National Movement for freedom of the nation had its waves in the erstwhile Cochin region of the present day Kerala. This movement had brought the handloom weavers into the co-operative fold. As a result, several handloom cooperative societies were formed in this region immediately after the independence. As a result of the increased demand for Chendamangalam handloom products within and outside the state, there was a rapid development of the industry in Paravoor taluk (where Chendamangalam was located). Now all the weavers in the cluster are organised under the co-operative umbrealla. They work under seven primary handloom co-operative societies in and around Paravur producing various textiles items commonly called Chendamangalam handlooms. One apex body Chendamangalam yarn bank also works, which provides quality raw materials viz yarn, dyes and chemicals to these societies and also to other societies of Thrissur, Kottayam and Alappuzha districts (See Table 1).

Table 1: Primary Handloom Co-operative Societies in Chendamangalam

No.	Name of the Society
1	Chendamanagalam Handloom Weavers Co-operative Society (HWCS) Ltd. No. H-47
2	Chendamangalam-Karimpadam HWCS Ltd No. H-191
3	Kuriappilly HWCS Ltd No. H-3476
4	Paravur HWCS Ltd No. H-3428
5	Paravur Town HWCS Ltd No. H (E) 1
6	Cherai HWCS Ltd No. H-648
7	Pallipuram-Kuzhuppil HWCS Ltd No. H-128
8	Chendamangalam Yarn Bank No. H-115

Source: Directorate of Handloom and Textiles

Chendamanagalam handloom is famous for its texture, fine craft, softness and durability. Chendamangalam double dhothi and neriyathu received the GI tag in 2012. The main handloom products of Chendamangalam are Dhothi, Kerala Saree, Thorthu, Set Mundu and Kavi Mundu. As common throughout in the state, 80% of the sales of these societies take place during the Onam

festival. The production and sales of the Chendamangalam handloom co-operative societies during the 3 years preceding the floods are given below (See Table 2).

Table 2: Production and Sale of Chendamangalam Handloom Societies			
	2015-16	2016-17	2017-18
Production (Rs Lakh)	381.18	331.18	393.01
Sales (Rs Lakh)	301.35	302.46	434.03

Source: Directorate of Handloom and Textiles

When we look in to the society-wise production and sales, we can observe that, both production and sales are highest in H-3428 (Figure 1). The number of active weavers is highest in H-3428 (145). Also, we can observe that female labourers are more than male workers. The number of workers is lowest in H-128 (See Table 3).

Figure 1: Pattern of Production Structure of Chendamangalam Society

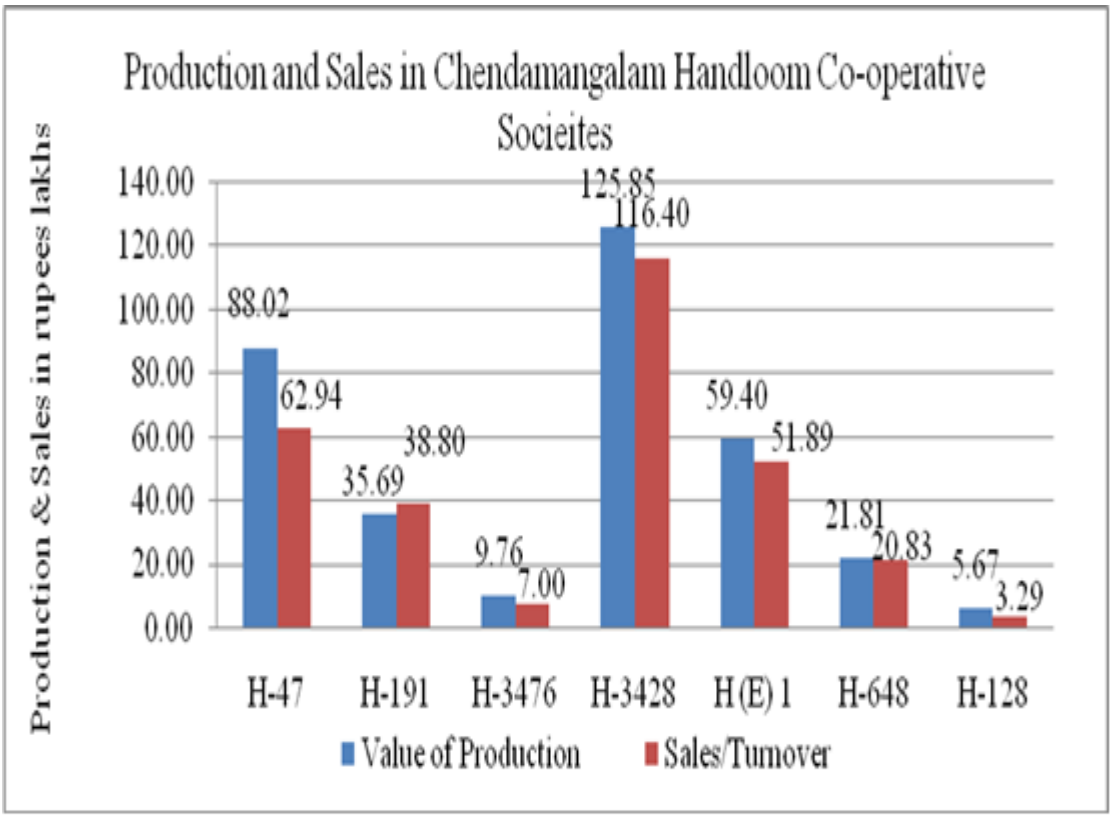


Table 3: Number of Weavers in Chendamangalam Handloom Co-operative Societies (2017-18)							
No.	Name	No. of Active Weavers			No. of Supporting Workers		
		Female	Male	Total	Female	Male	Total
1	H-47	84	21	105	4	1	5
2	H-191	50	3	53	7	1	8
3	H-3476	22	0	22	6	0	6
4	H-3428	128	17	145	17	0	17
5	H (E) 1	87	21	108	8	6	14
6	H-648	29	0	29	0	12	12
7	H-128	11	2	13	2	0	2

Source: Directorate of Handloom and Textiles

4. Stages of Production process in Chendamangalam Handloom Industry

RawMaterials

The cluster's primary source of raw materials is cotton yarn hanks, which cooperative societies and weavers purchase from spinning mills, yarn banks, or state-level entities such as HANTEX (The Kerala State Handloom Weavers Cooperative Society Ltd.).) and HANVEEV, the Kerala State Handloom Development Corporation. Golden zari, or pure zari, is used for borders and cross-borders in addition to cotton yarn. Weavers frequently use half-fine zari as a substitute for pure zari due to its high cost. Colored or dyed yarn for borders and cross-borders in Dhoties and Neriyathu is another material used in this cluster. Typically, this cluster uses cotton combed yarns with counts of 120s, 100s, 80s, and 40s

Curing and Washing

The yarn that will be used for the warp is first treated by washing it twice a day for a week in regular water to get rid of impurities. This step is taken to facilitate the winding, warping, and sizing procedures that follow. After that, the yarn is cleaned with regular water, allowed to dry in the sun, and then processed further.

Dyeing

Dyed yarn is typically used for Dhoti and Neriyathu borders and cross-borders in Chendamangalam. Dyeing is the process of using pigments or dyes to give gray or bleached yarn the desired color. The yarn is bleached for light shades and dyed straight after curing and washing for dark shades. The yarn is first soaked in a mixture of soap, soda ash, and caustic soda before being boiled for a full day. This is done in order to rid the yarn of impurities. It is then rinsed two or three times with regular water. Bleaching involves soaking yarn in a mixture of bleaching powder, water, tinopal, and blue. The yarn is then thoroughly cleaned to get rid of the bleaching powder and allowed to dry in the sun.

Winding

Winding refers to a process involving the transfer of yarn from one type of package to another, say from hank to bobbin or pirn. Both warp and weft yarns are prepared separately during the winding operation. Usually, the yarn is received by the weavers in hanks, which they then transfer by winding onto bobbins. Cooperative societies have initiated some motorized winding machines to replace manual winding so far as warp yarns are concerned. The yarn, after winding on these bobbins, is prepared for further processing.

Warping

Warping is the process of creating a warp sheet of the desired length and width by combining multiple smaller bobbins or spools. Various methods of warping exist, but the one commonly used here is called vertical sectional warping. This process is conducted on a wooden drum using a wooden peg creel or bobbin creel. The bobbin creel is a specially designed frame that holds the required number of bobbins, ensuring that the yarns can be drawn separately without touching each other. The yarn from the bobbins is drawn through a comb and wound onto the wooden drum. The warped yarn is then prepared for the next step, which is sizing.

Sizing

Sizing involves coating the warp yarns with starch which aims to provide strength, reduce abrasion, and enhance flexibility, allowing the yarns to withstand the stresses of the weaving process. In Chendamangalam, traditional methods of street warping and brush sizing are still practised. Natural materials such as rice powder are key ingredients in the traditional sizing process. A unique feature of the Chendamangalam cluster is that sizing is done in two consecutive steps. First, starch is applied to the yarn, which is then squeezed by hand and combed with a special brush made of coir fibers. After the yarn dries, a second layer of sizing material is applied, followed by brushing with coconut oil.

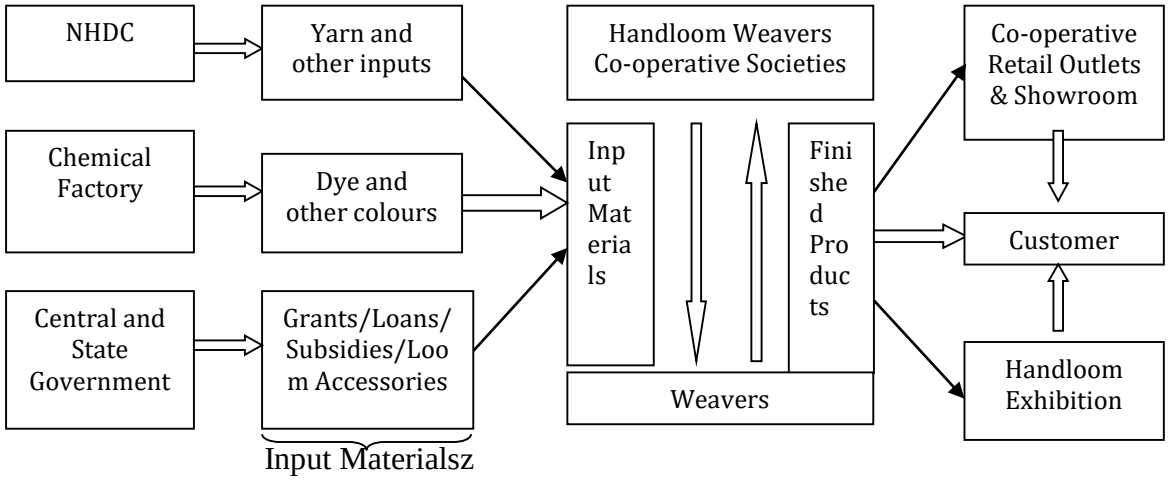
Beaming and Loom Preparation

Beaming involves transferring the warp sheet onto a weaver's beam, which is then mounted on the loom. In Chendamangalam, beaming is typically done in the streets after sizing. Once the beam is ready, it proceeds to weaving. The preparation of the loom involves two main steps: drafting and denting. Drafting is the process of passing the warp yarn through the loom's healds to keep the threads parallel and to facilitate the identification of broken threads during weaving. In denting, the warp yarns are passed through reeds. Finally, the warp threads are joined to the existing threads using a local hand-twisting technique.

Weaving

Weaving is the process of interlacing two sets of threads, the warp and the weft, to create fabric. The warp threads are stretched lengthwise on the loom, while the weft threads run across them to form the cloth. In Chendamangalam, handlooms operated manually by human effort are predominantly used. Frame looms are especially common for producing traditional fabric varieties.

Structure and Functioning of Primary Handloom Weavers Co-operative Societies



The National Handloom Development Corporation (NHDC) provides the necessary yarn counts to the Handloom Weavers' Co-operative Societies. The chemical factory provides the necessary dyes to the societies. Additionally, the federal and state governments are providing them with grants, loans, and subsidies. The societies then provide the weavers with yarn, gather the completed handloom products from the weavers, and either sell them directly to consumers or send them to cooperative retail stores or showrooms for retail sales, or sell them to consumers through handloom exhibitions hosted by the government. Additionally, the concerned Handloom Weavers' Co-operative Societies should have the weavers as registered members. The weavers have their own looms at their home, where the weaving is done.

5. Structure and Production of Handloom Co-operative Societies in Kerala

There are two types of cooperative societies: factory-type and cottage-type. As of 2017–18, there were 611 Primary Handloom Weavers Co-operative Societies in the state, compared to 705 in 2013–14. Of these, 439 are cottage-type societies and 172 are factory-type societies. As of 2017–18, 406 of these 611 societies are operational.

Additionally, it is noted that the percentage of cottages is decreasing over time, going from 76.96 percent in 2012–13 to 71.85 percent in 2017–18. Conversely, the factory type share has been trending upward from 23. Between 04 in 2012–13 and 28.15 in 2017–18. This suggests that the cottage style is becoming less popular among weavers.

However the working status of factory type of handloom co-operative societies in Kerala has shown a declining trend. Over the years the percenatge share of working factory type HCS has declined from 102 (66.67%) in 2012-13 to 98 (56.97%) in 2017-18 while the share of Dorment has increased correspondingly.

While analysing the working status of cottage type we can see a different picture. The percentage share of working cottage type is increasing over the years from 64.38% in 2012-13 to 70.16% in 2017-18.
Although the total number of looms in handloom industry has declined from 31141 in 2012-13 to

17070 looms in 2017-18, the total production of handloom sector in the co-operative sector has shown a marginal increase from 28.37 million meter in 2012-13 to 34.19 million meter in 2018-19. The improvement on the production is also experienced by the corporate/private/unorganised sector of handloom industry.

The overall number of weavers working in the handloom industry decreased from 52171 in 2012–13 to 14171 in 2017–18. The majority of weavers are employed in the cooperative sector. From 21434 in 2012–13 to 11553 in 2017–18, fewer women worked in the handloom industry. From 20854 in 2012–13 to 10630 in 2017–18, the number of women working in the handloom industry's cooperative sector has also been on the decline.

From 105.86 lakh man days in 2012–13 to 55.46 lakh man days in 2017–18, the total number of jobs created in this sector has also declined. In 2016–17, the handloom industry's total revenue, including labor, material, and financial expenses, was 78.94 crore.

Handloom Cooperative sector in Kerala

Sl.No.	Item	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
1	Co-operative Sector						
a	Number of looms	15971	16052	15851	15405	13715	13502
b	Production of Handloom cloth (Million Meter)	34.19	28.63	30.23	14.03	5.41	29.4
c	Value of Production (Rs.in crores)	119.94	94.05	89.9	40.66	95.42	91.81
d	Total Turn over (Rs.in crore)	89.79	79.96	208.35	156.94	107.91	98.79
e	Productivity (M/L/A)	2140.76	1783.58	1907.14	952.26	394.45	2177.46
f	Total no.of weavers	13105	12545	12666	12458	11857	11559

6. Development Assistance and Role of the State

The central government has provided rebate for marketing their products. Similarly raw material subsidies were also given by the central government. It is the role of the central government to order the required yarn for the National Handloom Development Corporation through the concerned spinning mills. Correspondingly state government has also playing a vital role for the development

of handloom industry. The type of assistance given by the state is the following:

1. Provided different subsidies
2. Grant for loom accessories
3. Grant for yarn
4. Grant for design and technology
5. Grant for the construction of work shed
6. Conducting exhibition for the sale of handloom products

Government assistance extended for the development of handloom industry was 23.26 lakh as loan and 1805.15 lakh as grant in 2017-18. In 2016-17, out of total loan, 50 percent of the loan was taken from NCDC, NABARD NAD HUDCO but in 2017-18, only state government has provided loan assistance for the development of the handloom industry in Kerala. 44.13 per cent from central government and only 5.86 percent was taken from state government. While analysing the grants provided for the development of handloom industry, we can see a different trend. Out of the total grants, 98 percent of them are from state government.

Marketing is one of the crucial problems faced by the handloom industry in Kerala. Effective marketing is vital for the survival of this industry. In order to promote marketing of handloom products, government introduced Marketing and Export Promotion Scheme to provide assistance to the handloom co-operative societies, Hantex ad Hanveev to deelop market of handloom products and promotes handloom products.

Apart from the traditional handloom products, the weavers of these societies are also engaged in the Handloom School Uniform Programme, a prestigious programme of Government. Through this programme, Government ensures continuous employment to the handloom weavers with better wages and at the same time provides handloom uniform to school children free of cost. Under the project, workers who were earlier getting only Rs 150 started getting Rs 600 as daily wage. As pay and orders increased, the handloom units too took interest in the project, and the government supported them by providing raw material and purchasing their products. This programme turned out to be a boon to the handloom weavers/allied workers. Many weavers/allied workers who had left this field for better opportunities slowly returned to weaving and joined the school uniform project. This programme also attracted new people to this sector. 110 weavers are engaged in the school uniform programme.

However, there is another interesting angle that needs to be looked at too. While it is true school uniform project did help in increasing sales in Chendamangalam, the project cannot be viewed as a long term success. The project practically reduced highly skilled and specialised artisans into weaving plain school uniform cloth. The project was leading to potential wastage of skill that could've been used to produce much more intricate and expensive sarees which could've been sold at a higher price.

7. Scenario of Chendamangalam Handloom Industry after Flood and State response

Although the recent flood has affected most of the handloom units in Ernakulam district, the most affected looms are located in the Chendamangalam panjayat under Paravoor Taluk. The chendemangalam products are different from Balaramapuram and Kannur as they use different kinds of production process as well as threads. While Balaramapuram handloom products are made by thread ranging from '40's to '80's, the kannur products are made by threads ranging from '2's to '120's. The entire designing such as flower work, thread work, checks etc are done by the units based at Balaramapuram and Kannur while Chendemangalam units outsource such kind of designing activities.

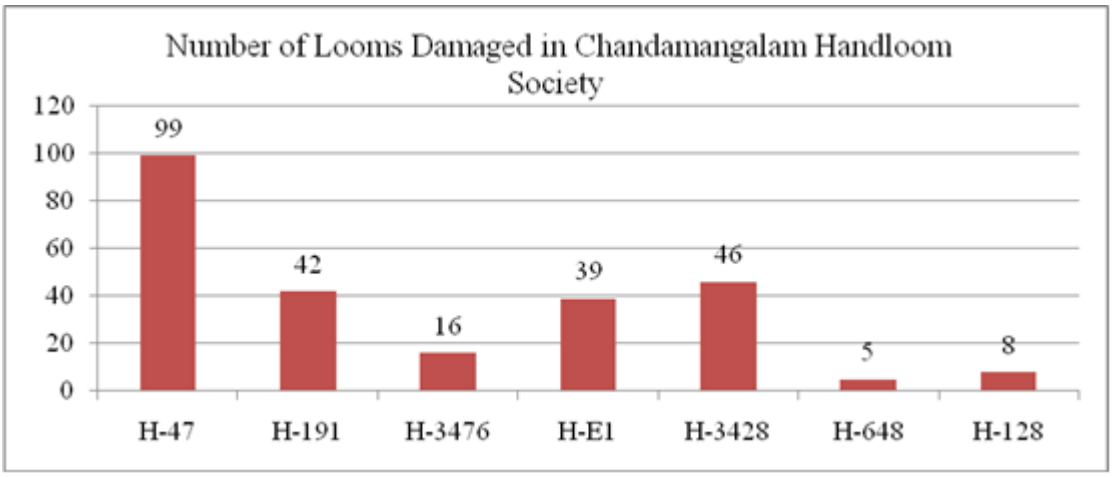


Table 4: Percentage Share of Damaged Looms in Chendamangalam Handloom Industry

Name	No. of Working Looms	Damaged Looms	Percentage Share
H-47	100	99	99.00
H-191	53	42	79.25
H-3476	22	16	72.73
H-E1	145	39	26.90
H-3428	108	46	42.59
H-648	29	5	17.24
H-128	17	8	47.06
Total	474	255	53.80

Source: Directorate of Handloom and Textiles

Out of 474 working looms, 53.80 per cent of looms are damaged in flood. H-47 is the most affected handloom co-operative society, 99 per cent of the looms are severely damaged in the flood. H-648 is the least affected Co-operative society, only 17.24 per cent of looms are damaged.

Out of 255 looms, 80 looms are housed in the factory worksheds and 175 in individual household worksheds. 53 looms are severely damaged and 202 looms partially damaged. Factory buildings, office buildings, dye houses, furniture and fittings, raw materials and handloom products made for the Onam festival were damaged. In these 7 societies, about 280 weaver/allied workers and 661 dependents were affected due to the floods. The table below showed the details on losses incurred by the societies due to flood. It is estimated that approximately Rs 3 crores worth loss has been incurred in the fixed assets and inventory, while another Rs 2 crores is estimated to be opportunity loss.

Table 5: Details on Losses incurred by the Chendamangalam Handloom Societies due to Flood		
No.	Item	Amount (Lakhs Rupees)
1	Looms and Accessories, other equipments	76.64
2	Dye house	3.96
3	Workshed	0.40
4	Building	24.16
5	Furniture and Fitting	32.83
6	Raw materials (yarn, dyes and chemicals)	66.66
7	Handloom products	79.99
	Total	**284.64**

Source: Directorate of Handloom and Textiles

It is observed that an amount of Rs 284.64 lakhs loss occurred due to flood. Out of this total loss, more than 50 percent of losses are occurred for handloom product, looms and accessories and raw materials.

Table 6: Number of Looms repaired/renovated by Different Organisations								
Organisation	No. of looms	H-47	H-191	H-3476	H-E1	H-3428	H-648	H-128
Radha Electronics	10		2	2	2	2	1	1
Rajagiri HS & PTA	28	28						
Rotary Club of Cochin	21		21					
Chamber of Indian Industry	3			3				
Microland Banglore (Paravur Rotary Club) Partially assisted 33 looms viability gap will be met by Rotary Club, Kochi Rotary Club of Cochin	24				24			
Gati	8			8				
Indasda	11					4		7
Save the loom & others	40					40		
Bajaj Electricals	71	71						
NIPM	19		19					

Govt Scheme	17			3	13		1	
Total	252	99	42	16	39	46	2	7

Source: Directorate of Handloom and Textiles

Out of total 252 of damaged looms, 71 of them were repaired/renovated by Bajaj Electricals (mostly the looms of H47) and 40 of them were repaired by the 'Save the Loom&others'. Another one third is repaired by Rajagiri HS&PTA and Rotary Clubs. We were informed by many of the respondents of weaving community of H47 that most of the finished goods and raw materials were sent to other places such as Erode and such effort had helped them to minimize the loss due to flood as far as the raw materials and finished goods are concerned. It is understood that the immediate initiatives were launched by cooperative society itself regarding the revival of both factory and cottage units. Cooperative society has received a large proportion of fund from Bajaj Electricals (20 lakhs has already been released), while Rajagiri School and Alumini association of Kendriya Vidyalay have sponsored to repair accessories of plant and machinery. Cooperative society has also received other kinds of help for selling their finished goods from other individuals such as Shalini James and E-business firm such as Myntra. However the study observed that this unit (H 47) did not participate in any initiatives adopted by the Chekutty project.

The other monetary benefits received by the handloom weavers in this unit were from the trade union CITU; (Rs 1000 from each member) and Government; (Rs. 10,000 for each members). The handloom weavers who have been registered with this cooperative society have been provided "KIT" which includes all necessary items including food and cloth. However the other allied handloom workers who have not been recognized as society members were not received any such benefits and such grievances were expressed by the respondents of our primary survey.

8. Revival Packages

Based on the need assessment of reviving the handloom societies and to regain the pre flood scenario or even bettering that, a revival package has been mooted. The major components are given below.

Table 7: Revival Package for Chendamangalam Handloom Industry

No.	Item	Amount (in Lakh Rupees)
1	New loom (@ Rs. 50000/-for 53 nos)	26.50
2	Repair of looms (@ Rs. 10000/-for 202 nos)	20.20
3	Purchase of accessories (@ Rs. 10000/-for 255 nos)	25.50
4	Repair & maintenance of dye house (2 nos)	3.96
5	Repair & maintenance of workshed (2 nos)	0.40
6	Setting up of new common facility centre	50
7	Repair and maintenance of building (3 nos)	24.16
8	Production expenses for 6 months	382.51
	Total	**533.23**

Source: Directorate of Handloom and Textiles

9. A Three-phase Repair & Recovery strategy

As we can see from the above tables, a total of 53 handloom units were totally destroyed beyond repair and a further 200+ units were in various stages of damage and disrepair as a result of the floods. This is without even taking into account the secondary damages caused to the entire handloom

production process through damage on the surrounding infrastructure. Any pragmatic recovery plan for the handloom sector in Chendamangalam would have required a quick and well-planned strategy to get the handloom units up and running again.

This led to the government, in collaboration with the local cooperative societies to roll out a three-phase recovery scheme in Chendandamangalam to resume production as soon as possible:

1) In the first 15 days after the floods (the second half of August 2018), the recovery effort focused on cleaning the areas around the looms and other handloom infrastructure. This meant entire sheds, warehouses and even houses had to be thoroughly cleaned and disinfected to enable production to resume. The least damaged looms were also repaired in this phase.
2) In the subsequent phase, the funds allocated for the repair of looms from both the government and private partners was made available to the cooperatives. The funds were directly provided to the cooperatives rather than individual weavers/households to ensure effective and efficient utilisation of resources. The production of fresh yarn also started in this phase to ensure its availability during the handloom production process
3) In the third and final phase, the most severely damaged looms were repaired and the making of new looms to replace the completely destroyed ones was undertaken. Raw material was provided and production of cloth was restarted. Production was back up to full capacity by end of December/early January.

The first sale after the floods took place on the 7th of November (less than 3 months after the floods ended). This impressive recovery effort owes much praise to the Cooperative societies in the village who took up the leadership in streamlining of repair efforts. Another key point of note is that the repair efforts in the village was taken up artisan cooperatives who worked under the purview of KADCO (Kerala Artisans Development Corporation)

Common facility centre

Seven primary handloom co-operative societies in Chendamangalam of Paravur falls under the common brand “Chandamangalam handlooms”. Their main product “Dhothi” has acquired Geographical Indication tag. A yarn bank registered under the co-operative fold assists them in the procurement of quality raw materials.

In the flood, the entire looms, infrastructure facilities, fabric and raw materials of all these 7 societies and yarn bank were severely damaged. The pre loom weaving equipments/facilities of all the societies were damaged beyond repair. Further, the earlier facilities viz. Prin/bobbin winding machines, boiler, kier, hydroextractor, drying, dyeing, warping, sizing facilities/equipments were time consuming and of obsolete technology. In this context, it is necessary that new state of the art, high speed and cost effective facilities could be provided to the weavers in this area. The common facility centre with all the above said facilities is expected to be installed by the government of Kerala in the premises of any of the societies. Apart from such packages, the state has also taken initiative to ensure the accountability of CSR fund allotted for the revival of looms by some firms as well as NGOs and this responsibility was given to the district collector.

Design intervention by fashion industry professionals

The 2018 floods in Chendamangalam had a rather intresting effect when it came to the popularity of its handloom products. As a result of the devastation caused, a large amount of global attention was brought towards the handloom cooperatives in the village. This led to a large number of fashion design experts being made aware about the conditions faced by the cooperatives and they decided to help aid in its recovery.

Through initiatives such as Save the Loom, fashion designers were able to collaborate directly with the weavers to create elaborate and intricate designs which can be sold online for a much higher price compared to the usual prices that the weavers are used to.

Enhanced marketing techniques

In the years preceding the floods at Chendamangalam, the handloom cooperatives mostly targeted the clothing markets in the local area and nearby districts. They used the local popularity of the Chendamangalam handwoven cloth to sell their products in these markets. However, inability to compete with synthetic machine made cloth and a lack of involvement of the younger generation in this field led to a gradual decline in production and sales. It was in this scenario where in the aftermath of the floods, global attention was brought upon the village and its weavers. Owing to this increased demand after the floods, the handloom cooperatives had to adapt to accommodate this increased demand. This led to the cooperatives societies starting to sell their products online for the first time. The cooperatives launched their own facebook pages to sell their products directly to the consumers. In addition to this, several clothing brands stepped up to help provide a platform for the Chendamangalam weavers to sell their products online. This greatly increased product outreach and sales in the immediate years that followed the floods. It inadvertently also saved the cooperatives during the COVID-19 Pandemic as their online sales and commerce was not greatly affected by the pandemic based lockdowns.

10. Chekutty Project: A strategy to revive Chendamangalam handloom products from flood

At the flood devastated Chendamangalam unit (specifically H-191), the only option for the weavers were to burn their severely damaged and soiled stock which could not be fixed even by dry cleaning. In this particular time, two social entrepreneurs Lekshmi Menon and Gopinath Parayil has given a new life to the weavers in the form of Chekutty[4] (a small handmade cloth doll made from flood stained fabric of Chendamangalam Handloom) and help them to raise funds greater than the original stock and also help these units to revive their unique art. Initially they collected the waste cloths from H-191 and later they also started to collect salvaged cloths from H-3476, women managed cooperative society. Chekutty was conceived as a three pronged strategy in the post flood scenario.

1) Create an immediate livelihood options for the affected weavers on Chendamangalam.
2) Celebrate the resilience and solidarity of Malayalees who overcome the flood.
3) Explore a community based, crowd sourced model to transform Kerala from a charity mode to an enterprise mode in the rehabilitation phase.

It has to be noted that while Project Chekutty got off to a great start and saved unsold stock of about 21 lakhs from being wasted, it ended up losing momentum after a few months and the project stopped active promotion and marketing around mid-2019, effectively ending it.

[4] Chekutty, the term means 'Girl who survived the flood'.

Above: Pictures taken by the authors during field survey in 2018

11. Major findings and Policy suggestions

Chendamangalam has been a widely touted success story of how cooperatives can help rejuvenate and help a traditional industry to recover after natural disasters. The key features of Chendamangalam's recovery process can be identified below:

1) Streamlining repair funds through cooperative societies to improve efficiency and quick distribution of resources
2) Carefully crafted and sustained marketing strategy to attract global attention towards the ill-fated town thereby increasing marketability and sales
3) Creative ways to reuse damaged products for a temporary boost in income: Project Chekutty has been a novel idea and its adoption helped prevent the weavers to run into huge losses

4) Government procurement and sale of products in the immediate aftermath. HANTEX proved crucial in ensuring free and effective distribution of finished goods.
5) Collaboration with design sector experts for better products and outreach. The Weavers were now able to produce more elaborate and more expensive sarees which could be sold for a higher profit.

Based on the interactions with different stakeholders such as president and secretary of Handloom Cooperative societies, Government officials, NGOs, Weavers and other individuals, it was observed that this sector could be preserved only with the support of the state by procuring the finished handloom products. Growth dynamics can be brought in to the sector only through product diversification and online marketing. However, the viability of the implementation of such initiatives are under question with the present organisation set up as 90 per cent of the handloom weavers were above sixty years old and they were not ready to accept any change. And therefore, government needs to take a special effort to attract more young employees to this sector including professionals.

In Chendamangalam, a large sum of over Rs 500 crores was spent by the government alone to help the handloom sector to help repair broken equipment and recover from the losses suffered.

The success story of Chendamangalam school uniform project suggest that many more such projects could be initiated by targeting the other government hospitals in order to supply their requirements. Such packages can only help for generating livelihood for the marginalised section.

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Role of Cooperatives in the Financial Inclusiveness of Rural Kerala

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Abstract

For the last few years, financial inclusion has been the major policy agenda, particularly for developing economies like India. The global financial sector is shifting towards an inclusive model, providing sustainable access to financial services for all, including the poor and weaker sections, to benefit from development. With 98% coverage in rural India, cooperatives are the mainstay of rural economy ensuring sustainable and inclusive growth. Financial institutions under the cooperative sector hold a significant share of total banking activity in rural areas of Kerala. The research article uses descriptive method to provide an overview of financial inclusion in Kerala and reviews the role of cooperatives in contributing to inclusive growth and economic development through improved access to formal financial services. The study finds that despite the widening gap in the GSDP growth rate and per capita NSDP growth rate indicating the existence of income inequality, the state has achieved notable progress in its financial inclusion initiatives. The research also discusses some of the challenges to achieve greater financial inclusion and directions for future research.

Keywords: Economic development, inclusive growth, cooperative banks, financial inclusiveness, rural households, Kerala

1. Introduction

India stands at a pivotal moment in its history, with the government's ambitious vision to elevate the nation to a developed country (Viksit Bharat) by 2047, marking a century since its independence, where development benefits are accessible to all regions and citizens. India's inclusive and sustainable growth mission aligns closely with the SDG framework's fundamental principle, "Leaving No One Behind" (LNOB). Thus, for India, the Sustainable Development Goals (SDGs) are crucial not just for tracking progress toward the global objectives up to 2030, but also serve as a vital gauge for measuring advancements toward realizing the vision of Viksit Bharat by 2047. The Sustainable Development Goals 2024 report reveals that, at the global level, merely 17 per cent of the Sustainable Development Goal (SDG) targets are on course for achievement by 2030. Almost half of the targets exhibit little to moderate advancement, while over a third are either at a standstill or declining. Meanwhile, India's progress on the Sustainable Development Goals Index highlights the country's exceptional performance in becoming a developed nation by achieving sustainable growth despite global challenges. Despite progress in various areas, SDG 10, which targets the reduction of inequalities within and among countries, is the only goal that has yet to see a decline in its index over the last five years. This underscores the need for India to effectively address the growing problem of inequality, a crucial challenge accompanying economic development in any progressive economy.

The development of the financial sector and enhanced access to financial services are expected to spur economic growth, mitigate income disparity, and alleviate poverty (Demirguc-Kunt et al., 2007). The widely accepted principle is that inclusive development necessitates inclusive financial systems, guaranteeing the entire population's access to, availability, and use of formal financial services (Fanta & Makina, 2019). Without inclusive financial systems, impoverished individuals depend on their limited savings to fund their education or entrepreneurial ventures, and small businesses must utilize

their modest profits to capitalize on potential growth opportunities (Demirguc-Kunt & Klapper, 2012). In light of all of this, the development strategy should be centred on financial sector reforms that encourage greater access to financial services. Financial inclusion may be defined as simply as families and businesses being able to access and use formal financial services (Sun, 2018). By reducing income inequality through financial inclusion, the typical negative correlation between income inequality and economic growth shifts to a positive one (Kim, 2015). While none of the UN's 17 new Sustainable Development Goals (SDGs) explicitly targets financial inclusion as an independent goal, SDG 10, which aims to promote economic inclusion, implicitly supports financial inclusion. Moreover, SDG 8, dedicated to fostering inclusive economic growth, encompasses sub-goal 8.10, which sets a clear target for financial inclusion. This sub-goal articulates the need to enhance the capacity of domestic financial institutions to encourage and broaden access to banking, insurance, and financial services for everyone.

Regarding financial inclusion, the primary concern is for the rural communities in developing countries due to the vast social inequality between them and their urban counterparts, with the urban population being, on average, four times more affluent than those in rural areas (Cooke et al., 2016; Twumasi et al., 2022). Chithra and Selvam (2013) noted significant inter-state differences in the degree of financial inclusion across India. Although many Indian states have made progress in enhancing financial inclusion, these initiatives have failed to attract the rural poor to use basic banking services (Nam & Chaudhry, 2016; Barik & Sharma, 2019). As financial inclusion varies across regions, it is essential to address these disparities by focusing on specific policies that aid in enhancing the financial inclusivity of different regions or states (Prasuna et al., 2024). NITI Aayog, the apex body of the Government of India for long-term policy formulation, acknowledges that in a diverse nation like India, where states and some districts are equivalent to mid-sized countries, it is crucial to focus more on regional-level planning and assessments over strictly national-level ones to attain the Sustainable Development Goals (SDGs) successfully. According to the 2021 Global Findex survey, unbanked individuals and those with inactive accounts in India cited distance to financial institutions and distrust in them as the primary reasons for their lack of engagement with financial services. Cooperative banks in India hold a distinctive position in the country's financial system, characterized by their core principles and operational practices. Cooperative banks in the country excel over other banks regarding relational and physical proximity to customers, owing to their local roots and extensive engagement with the local community (Sumathy & Nabeel, 2022).

The literature reviews have indicated a gap, with most studies focusing on the macro level rather than the micro level. To our knowledge, there have been only few studies conducted on the status of financial inclusion in the rural areas of Kerala. In this context, this research provides an overview of financial inclusion in Kerala and reviews the role of cooperatives in contributing to inclusive growth and economic development through improved access to formal financial services. The study examines various parameters impacting financial inclusion in the state, such as branch penetration, deposit and credit expansion, advances availed by the priority sector, and progress in financial inclusion initiatives.

2. Research Methodology

The study employs a descriptive methodology to examine financial inclusion in Kerala's rural areas, emphasizing the contribution of cooperatives on improving financial access. Most of the data collected for the study spans from 2014 to 2024. However, the limitations of data accessibility and availability necessitate the researchers to focus on short data periods when analysing particular indicators. The research looks at some variables that affect the state's financial inclusion, including the penetration of branches, the growth of deposits and credit, the advances the priority sector gets,

and the developments in financial inclusion programs. The research draws upon secondary data primarily sourced from the State Level Bankers Committee reports, the Department of Economics and Statistics of Government of Kerala, publications detailing the trends and progress of financial inclusion in Kerala, as well as newspapers, research articles, journals, e-journals, books, and magazines. The research focused on describing a range of financial inclusion indicators, and as such, it did not involve complex statistical analyses or the use of advanced analytical tools. Most of the data was presented in its original form, and the study employed compounded annual growth rates to examine the trends in growth indicators.

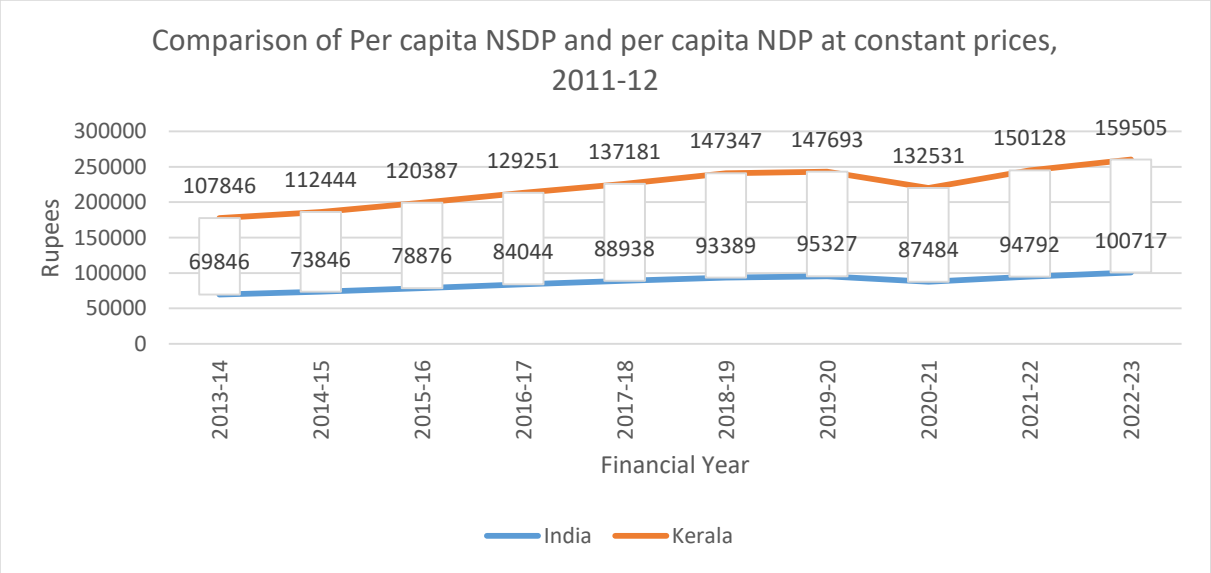
3. Results and Discussions

Table 1: Income Indicators

Financial Year	NSDP at constant prices (in lakhs)	Growth (Per Cent)	Per capita SDP (Rs)	Growth (Per Cent)
2013-14	36470677	4.62	107846	4.15
2014-15	38213426	4.78	112444	4.26
2015-16	41115015	7.59	120387	7.06
2016-17	44361530	7.9	129251	7.36
2017-18	47318179	6.66	137181	6.14
2018-19	51078693	7.95	147347	7.41
2019-20	51455269	0.74	147693	0.23
2020-21	46405239	-9.81	132531	-10.27
2021-22	52832267	13.85	150128	13.28
2022-23	56416375	6.78	159505	6.25

Source: Department of Economics and Statistics, Government of Kerala

Figure 1: Comparison of Per capita NSDP and per capita NDP at constant prices, 2011-12



Source: Central Statistics Office and Department of Economics and Statistics, GoK

It is generally accepted that increasing financial inclusion necessitates a higher income level. The Net State Domestic Product (NSDP) serves as an income metric that aggregates the total income of state residents, including wages, profits, and rents while accounting for depreciation and excluding taxes

and subsidies related to production. Table 1 presents the Net State Domestic Product (NSDP) at constant prices and the per capita State Domestic Product (SDP) from 2013-14 to 2022-23, detailing the annual growth rates for these indicators. Over the past ten years, the Net State Domestic Product (NSDP) has substantially increased by approximately 54.69%, rising from 36,470,677 lakhs to 56,416,375 lakhs. Concurrently, the per capita State Domestic Product (SDP) has risen by 47.9%, from ₹107,846 to ₹159,505. However, relatively lesser rise in per capita SDP as compared to growth in NSDP indicate there exists income inequality. Prasuna et al. (2024) demonstrated that a substantial rise in per capita NSDP positively affects financial inclusion. The per capita NSDP of Kerala has been consistently higher than the per capita NDP at the all-India level for all the years compared. During the fiscal year 2022-23, Kerala's per-capita Net State Domestic Product (NSDP) stood at ₹1,59,505, which was 1.5 times the national average of ₹1,00,717 (See figure 1).

Table 2: Bank Branch Network in Kerala

Year	Total Cooperative Sector (DCB, KSCARDB, KSCB)				Total Banking Sector			
	Rural	Semi urban	Urban	Total	Rural	Semi urban	Urban	Total
2013-14	112	45	745	902	545	4001	2044	6590
2014-15	115	45	773	933	577	4191	2150	6917
2015-16	136	43	794	973	576	4339	2271	7186
2016-17	135	26	819	980	512	4532	2268	7312
2017-18	117	28	839	984	475	4576	2281	7332
2018-19	117	38	840	995	482	4627	2312	7421
2019-20	457	276	259	992	885	4933	1758	7576
2020-21	449	411	139	999	932	5055	1623	7610
2021-22	456	404	138	998	925	5059	1638	7622
2022-23	456	404	138	998	936	5187	1663	7786
2023-24	478	254	246	978	850	5281	1790	7921
CAGR	71.02	62.53	-275.91	48.25	68.21	91.63	-265.43	92.32
10 Year Growth	326.79	464.44	-66.98	8.43	55.96	31.99	-12.43	20.20

Source: State Level Bankers' Committee Report, Kerala

Paramasivan and Ganeshkumar (2013) found that the density of bank branches significantly impacts financial inclusion in India, as it measures the opportunity for access to financial services. Table 2 provides data on the number of branches within the cooperative sector and the banking industry from 2014 to 2024. It details the distribution of branches in rural areas and the total number of branches

each year, highlighting trends in branch distribution over time. Over the last decade, cooperative banks have increased their presence in rural areas and semi urban areas by gradually limiting the number of branches in urban areas without significantly increasing the total number of branches. Out of total 850 branches in rural areas, 478 are of cooperative banks (56.24%). Due to the extensive network in rural regions, cooperative banks are in a solid position to offer financial services to the people there more than any other bank. Despite rural areas housing over half of the state's households (NFHS 19-21), they represent only 10.73 percent of total bank branches as of March 2024. Other banks, holding most of the banking network in Kerala, need to catch up and extend their services to rural regions.

Table 3: Distribution of Deposits and Credit

Year	Deposits (lakhs)				Advances (lakhs)			
	Cooperative Sector		Total Banking Sector		Cooperative Sector		Total Banking Sector	
	Rural	Total	Rural	Total	Rural	Total	Rural	Total
2013-14	11119	4022886	1094703	31988372	283684	2895423	1194914	22096442
2014-15	32115	4614085	1256772	36603075	374312	3351413	1339210	25222020
2015-16	697283	6753443	2050055	43794637	717622	4500440	1615643	28255568
2016-17	712185	6413425	1834962	47462588	872165	4201769	1564076	29809239
2017-18	35636	6971789	1188691	51695298	464390	4777670	1139756	33456017
2018-19	24300	7013979	1244873	56370200	473165	5071908	1256862	38061905
2019-20	1861395	6468731	3229625	60905913	1769502	5033391	2675445	40960766
2020-21	2290128	7121311	3855614	67712711	2306320	5088517	3291532	44355433
2021-22	2382208	7490225	4155714	74112212	2241319	5403139	3371284	47865712
2022-23	2610731	7469960	4580757	79407638	2208122	5483090	3498297	54798792
2023-24	1807865	6431273	3946401	86129502	2188256	5346679	3537364	63055913
CAGR	58.86%	4.36%	12.36%	9.42%	20.41%	5.73%	10.37%	10.00%

Source: State Level Bankers' Committee Report, Kerala

Financial inclusion has evolved beyond merely opening a bank account; it now emphasizes using these accounts for savings and credit purposes as the primary objective of financial inclusion (Barik & Sharma, 2019). Researchers argue that the fundamental activity of the banking sector, the delivery of credit, is essential to boost economic activity and enable the generation of capabilities (Sen, 2000). Table 3 presents data on deposits and advances for both the cooperative and the overall banking sectors from 2014 to 2024, including figures for rural areas and the entire state. Over the past decade, Kerala's entire banking sector, encompassing both advances and deposits, has experienced a Compound Annual Growth Rate (CAGR) of 9.66%. This growth indicates the state's banking industry's consistent expansion in credit distribution and financial resource mobilization. Although

the cooperative sector can claim absolute supremacy in credit disbursement in rural areas, cooperative banks handle only 10 per cent of the total credit disbursement in the state. The proportion of deposits in cooperative banks at the rural (46%) and state levels (7.5%) is marginally lower compared to their loan share in the total banking sector (62% share in total rural advances & 8.5% share in entire loans across the state). The tendency of people not to choose cooperative banks for deposits as much as for credit calls for detailed investigation.

Table 4: Details of advances outstanding under Priority Sector (Rs. in lakhs)

Year	Cooperative Sector (DCB, KSCARDB, KSCB)								Total Banking Sector							
	Agriculture		MSME		Other Priority		Total Priority		Agriculture		MSME		Other Priority		Total Priority	
	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance	Amt	% to total advance
2014	443276	15.31%	94125	3.25%	1177542	40.67%	1714943	59.23%	5324469	24.10%	3301019	14.94%	4444962	20.12%	13070450	59.15%
2015	619294	18.48%	111833	3.34%	1456067	43.45%	2187194	65.26%	6384884	25.31%	3684788	14.61%	4983053	19.76%	15052725	59.68%
2016	589328	13.09%	99984	2.22%	1622235	36.05%	2311547	51.36%	6183686	21.88%	4160295	14.72%	5556413	19.66%	15900393	56.27%
2017	733006	17.45%	96336	2.29%	1807305	43.01%	2636646	62.75%	6878686	23.08%	4037145	13.54%	5391045	19.90%	16846876	56.52%
2018	728252	15.24%	126933	2.66%	2109425	44.15%	2964610	62.05%	7662644	22.90%	4847070	14.49%	7141988	21.35%	19651703	58.74%
2019	857972	16.92%	147445	2.91%	2372385	46.77%	3377802	66.6%	8938261	23.48%	5592063	14.69%	6141431	16.14%	20671754	54.31%
2020	727972	14%	450280	9%	2269336	45%	3447589	68%	8950028	22%	6139662	15%	6311872	15%	21401562	52%
2021	858505	17%	217030	4%	1902376	37%	2977911	59%	9567607	22%	6214100	14%	6239473	14%	22021181	50%
2022	1009393	19%	300440	6%	2160610	40%	3470442	64%	10484194	22%	6796131	14%	6509467	14%	23789792	50%
2023	1142013	20.83%	258300	4.71%	1803050	32.88%	3203364	58.42%	12203065	22.27%	7103391	12.96%	6512896	11.89%	25819352	47.12%
2024	1480436	27.69%	593158	11.09%	1083283	20.26%	3156876	59.04%	14618346	23.18%	86141861	13.66%	5667029	8.99%	28899561	45.83%

Source: State Level Bankers' Committee Report, Kerala

Historically, cooperatives have been more successful in extending credit to vulnerable groups, small and marginal farmers, compared to the outreach by commercial and regional rural banks before implementing the financial inclusion program. Table 4 provides data on advances to the priority sector by cooperative banks and the overall banking sector from 2014 to 2024, covering agriculture, MSMEs, and other priority areas. It can be seen that between 2014 and 2024, the state's banking sector has reduced its loan allocation to priority sectors from 59.15% to 45.83%, while cooperative sector financial institutions have earmarked at least three-fifths of their total advances to priority sectors every year. On the other hand, cooperative banks account for only 3.64 per cent of the total credit disbursed to the state's MSME sector. Hence, cooperative banks should prioritize enhancing credit allocation to MSMEs, as such lending practices improve financial inclusion by integrating a more significant number of businesses into the formal financial system.

Table 5: Outstanding enrolment under Pradhan Mantri Jan Suraksha Yojana Schemes

Year	Cooperative Sector				Total Banking Sector			
	PMJJBY	PMSBY	APY	Total	PMJBY	PMSBY	APY	Total
2017	1285	2181	186	3652	674557	2730828	120326	3525711
2018	729	3594	185	4508	614147	3181190	205078	4000415
2019	1418	6211	198	7827	709196	3341128	326414	4376738
2020	40091	173666	3204	216961	852776	3979550	434117	5266443
2021	76993	269481	3850	350324	885762	4198357	549125	5633244
2022	56483	222076	4712	283271	968296	4799619	647214	6415129
2023	34899	258721	7441	301061	1939116	8338147	900833	11178096
2024	77242	639566	7429	721237	2002831	9763051	1052818	12818700

Source: State Level Bankers' Committee Report, Kerala

Eight years ago, acknowledging the necessity to protect human life against unexpected risks, losses, and financial uncertainties, the Government of India introduced three Jan Suraksha schemes- Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), and Atal Pension Yojana (APY) aimed at securing the financial future of the unorganized sector in the country. The PMJJBY and PMSBY schemes offer affordable life and accidental insurance coverage, while the APY allows individuals to save for a steady pension in their older years. Table 5 compares enrolments under the Pradhan Mantri Jan Suraksha Yojana schemes between the cooperative sector

and the total banking sector from 2017 to 2024. In the state, enrolment in the two insurance schemes has doubled, while participation in the pension scheme has surged sevenfold over the last seven years. Access to financial security, previously exclusive to a select few, is now expanding to broader population segments. While the cooperative sector has made substantial progress in recent years to increase the coverage of social security programs, it still only makes up 5% of the state's overall social security program participation.

4. Conclusion

Kerala stands out as a leading state in India by maintaining a per capita income that surpasses the national average for several decades (Economic Review, 2023, Government of Kerala). On the other hand, the lesser increase in SDP per capita compared to the growth of NSDP over the last ten years indicates that economic growth has not been uniformly distributed among the population. Despite securing first place in NITI Aayog's SDG index four consecutive times, Kerala has yet to rank among the top ten in SDG 8, which focuses on promoting inclusive and sustainable economic growth for everyone. The study focuses on inclusiveness in Kerala's financial sector since inclusive development requires a financial sector that promotes broader access to and utilization of financial services. Kerala has been experiencing a consistent expansion in the banking industry's credit distribution and financial resource mobilization. In Kerala, the cooperative sector's financial institutions hold a substantial portion of the state's overall banking activities. Due to its strong banking network, the cooperative sector is dominant in mobilizing deposits and disbursing loans in rural areas of the state. Cooperative banks guarantee sufficient credit to vital segments of the economy by allocating a significant portion of their overall credit to priority sectors. Kerala contributes relatively less (3.84%) to the national GDP than other states because of its small size and consumption-driven economy. In a state with relatively low GSDP, even if financial access has improved, the overall economic environment limits the state's ability to capitalize on these gains. The prevailing economic conditions limit the amount of savings that can be accumulated and the extent to which credit can be used for productive activities. As a result, despite better financial access, the state's financial health remains weak, posing significant challenges to achieving deeper financial inclusion. Therefore, future researchers can consider studies that can provide suggestions for strengthening the state's economic health while examining how much financial access has improved.

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Women Weavers and Silk Co-Operative Societies: A Study on Arni Silk Cluster

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Abstract

India's handloom sector, a significant unorganized economic activity, boasts 2.8 million looms—the largest cottage industry in the country. It is the second-largest source of employment in rural areas, directly and indirectly supporting around 3.52 million individuals, as noted by IBEF (2024). Notably, 72% of the 26.73 lakh weavers employed directly and indirectly are women, according to the Handloom Census 2019-20. The study aims to study the socio-economic status of the women weavers who are members of co-operative societies working in Arni silk cluster. It also focuses on investigating the influence of socio-economic factors on women empowerment. The research was carried out at Arni Silk cluster located in the state of Tamil Nādu. The data was collected using a questionnaire from weavers of three co-operative societies namely, Arni Silk Handloom Weavers Cooperative Societies Limited, Arni Annai Anjugam Silk Handloom Weaver's Cooperative Societies Limited and Athimalaipattu silk handloom weavers cooperative society. The sample size for the study included 40 women weavers and for data analysis binary logistic regression in SPSS is used. The results of this study found that socio-economic factors have no significant direct impact on women's empowerment. The findings of the study revealed that socio-economic factors do not have a significant t influence on women's empowerment. The study findings illustrate that women weavers play an important role in improving household income.

Keywords: Arni Sil Cluster, Silk Co-Operative Societies, Women empowerment; Women Weavers,

1. Introduction

The Reservation of Articles for Production Act, 1985, defines 'handloom' as any loom that is not powered by electricity, specifically referring to manually operated looms. Hand weaving has been a vital part of Indian culture for over 5,800 years (Rao, 1973). Due to its unique qualities and low environmental impact, handloom products are becoming increasingly popular in the global fabric market and are expected to be highly profitable soon (Khatoon and Iffat, 2022). India's handloom sector, a major unorganized economic activity, hosts 2.8 million looms, making it the largest cottage industry in the country. It ranks as the second-largest employer in rural areas, providing support to approximately 3.52 million people through both direct and associated activities (IBEF, 2024). According to the Handloom Census 2019-20, 72% of the 26.73 lakh weavers employed directly and indirectly are women, underscoring the sector's significant role in empowering women and rural India.

The United Nations (UN) introduced seventeen Sustainable Development Goals to promote a sustainable future, with gender equality as the 5th goal, which has recently gained considerable attention. Providing women with dignified work opportunities can lead to their advancement, increased economic benefits, and community development (IMF, 2018). Goswami (2005) highlighted that empowering women in the handloom sector can significantly improve livelihood development and financial management through employment opportunities. Traditionally, the handloom industry relies heavily on family labor, with women constituting a large part of the workforce in India.
This study explores the social and economic conditions of women weavers who are members of

cooperative societies in the Arni Silk cluster. The second objective of this paper is to measure women empowerment status of women weavers and also to investigate the impact of socio-economic factors (education, age, monthly income, bank account) on women empowerment.

2. Background Literature

Women weavers in India

Rao (2022) highlights that women workers face greater disadvantages compared to their male counterparts due to social barriers and inequality in accessing markets and welfare schemes. Many female weavers express a desire to enhance their skills, provided they receive support such as subsidized credit, entrepreneurial training, new designs, and proper market assistance. However, due to male dominance and prevailing social norms, women often experience discrimination, particularly in obtaining loans from banks. Jeyakodi (2022) study on handloom cooperative weavers in Madurai district reveals that male weavers slightly benefit more from welfare schemes than female weavers.

Co-operative Society and Handloom Sector

A cooperative is essentially a business entity that benefits its members through marketing transactions and profit distribution. In Tamil Nadu, there are currently 1,114 Handloom Weavers' Co-operative Societies registered under the Tamil Nadu Co-operative Societies Act, 1983, with 2.59 lakh members, primarily in rural and semi-urban areas. The handloom sector in Tamil Nadu is unique, with the majority of handloom weavers operating within the cooperative framework (Rathinamoorthy R, Prathiba Devi, 2020). Tamil Nadu has currently 1,134 handloom weavers' cooperative societies.

Research has shown that cooperatives positively impact livelihood promotion, poverty alleviation, and women's empowerment, contributing to sustainable development (Bouhazzama and Guenaoui, 2020). By organizing women into groups and providing financial independence, cooperatives play a crucial role in empowering women (Bharti, 2021). Cooperatives are seen as powerful organizations for promoting women's empowerment. As democratic bodies, they enable members to engage in decision-making processes to serve their shared interests (Dash et al., 2020). The goal of cooperatives is to offer the greatest value for goods and services to both their members and the community (Peng, 2007; Kurimoto, 2006).

Handloom sector in Tamil Nadu

According to the 4th All India Handloom Census (2019-2020), Tamil Nadu ranks prominently in the handloom sector, following Assam and West Bengal in the number of handlooms. The state has 1.91 lakh handlooms and employs 2.44 lakh handloom weavers and allied workers. Nationally, there are about 27.01 lakh handlooms with 35.22 lakh weavers and affiliated workers. Tamil Nadu's handloom industry accounts for 8% of the country's handlooms and 7% of its workers, with 1.18 lakh weavers in cooperatives, 60% of whom are women. As of April 2024, Tamil Nadu boasts 58 Geographical Indication (GI) tags, making it the second state in India with the most GI-tagged products, after Uttar Pradesh. Arani Silk is among the products that have received a GI tag.

Women Economic Empowerment

An empowered individual is someone who has control over decisions that affect their life (Kabeer, 2005; Bharti, 2021). Women empowerment has been defined in various ways by different researchers and organizations (Malhotra et al., 2002). According to Kabeer (1999), empowerment consists of agency, resources, and achievements. Empowerment is fueled by resources, which serve as the foundational factors for change. Agency involves making important decisions, achieving autonomy, and controlling resources and actions that affect significant life outcomes. Achievements are the positive life changes that women gain due to their access to resources and agency. Biswas (1999)

identified eleven elements crucial for women's empowerment: economic security, mobility, decision-making authority, political engagement, greater access to information, autonomy, reduced family control, involvement in development initiatives, awareness of political and legal rights, income contribution to the family and reproductive rights. Alkire et al. (2013) built on this framework, introducing five dimensions for measuring women's empowerment in agriculture: production, income control, time management; leadership, and decision-making authority.

The focus of women's empowerment is not only on removing barriers to resources like education, income, and information while also advancing women's ability to make decisions, achieve economic independence, move freely, and secure legal rights to equality, inheritance, and freedom from discrimination (Germain and Kyte, 1995). Individual capabilities such as education, employment, income, and skills increase access to economic development benefits and thus affect empowerment (Duflo, 2012; Akter & Chindarkar, 2019).

3. Research Methodology

Research Design

Data were collected from 40 weavers across three co-operative societies: Arni Silk Handloom Weavers Cooperative Societies Limited, Arni Annai Anjugam Silk Handloom Weaver's Cooperative Societies Limited, and Arni Annai Anjugam Silk Handloom Weaver's Cooperative Societies Limited. A purposive sampling technique was used, selecting participants based on their willingness to join the study. The research relied on primary data gathered through direct questionnaires, which were initially prepared in English and then translated into Tamil. The first section of the questionnaire included questions on income, educational qualifications, marital status, and monthly income to assess the socio-economic status of the women weavers. The second section focused on measuring women's economic empowerment, using questions adapted from Alkire et al. (2013), which evaluates empowerment across five dimensions: production, decision-making power, control over income use, leadership, and time allocation.

The Study Area

This study was conducted in Arani, a vibrant town in Tamil Nadu's Tiruvannamalai district, proudly carries the title of "The Silk City" due to its flourishing silk weaving and spinning mill industries Located 59 km from the district headquarters, Arani had a population of 63,671 across 33 wards according to the 2011 census. The town thrives on its handloom industry, with a close-knit community of skilled silk weavers crafting elegant silk sarees. Despite its limited recognition outside Tamil Nadu, Arani contributes substantially to India's silk apparel production (Basile, 2013).

Statistical analysis

The data were analyzed using SPSS version 24. To delve into the socio-economic realities of female weavers in the region, a descriptive analysis was carried out. Additionally, a logistic regression model was employed to examine how demographic factors influence women's empowerment. Given the binary nature of the dependent variable, a linear probability model (logistic regression) was applied, indicating the likelihood of an event occurring (value 1) or not (value 0). Results, with 95% confidence intervals, were presented as odds ratios (ORs) and confidence intervals (CIs). The value of composite women empowerment index ranged from 0 to 25. Where 0 indicates no empowerment and 25 indicated highest empowerment. Women scoring 15 or above were considered empowered, while those scoring below 15 were deemed less empowered.

4. Data Analysis and Interpretation

Respondents' socio-economic characteristics

Socio-economic characteristics significantly influence women's empowerment through their participation in income-generating activities in the handloom industry. Table 1 illustrates the socio-economic status of female weavers. Education is a crucial factor impacting women's empowerment, with 50% of the women weavers having studied up to high school and 42.5% having intermediate qualifications. The age distribution shows that 42.5% of the weavers are aged 35-45, 37.5% are 25-35, and 20% are under 25. Regarding marital status, 60% of the female weavers are married, 27.5% are unmarried, 2.5% are divorced, and 10% are widowed. In terms of experience, 35% of the women weavers have 10-15 years of weaving experience, 27.5% have 5-10 years, and 15% have more than 15 years. About 42.5% of the women in the Arni silk cluster spend 8-9 hours a day weaving sarees, 25% spend 7-8 hours, and 35% spend 3-4 hours on household work, while another 35% spend 4-5 hours on household chores. Regarding income, 80% of the women weavers earn between Rs. 10,000 and Rs. 20,000 monthly, and 15% earn more than Rs. 20,000. Additionally, 90% of the women weavers have bank accounts, but the majority (90%) receive their wages in cash or cheques. Most of the women weavers (57.5%) learned their weaving skills from family members, while 17.5% received professional training.

Characteristics	**Frequency**	**Per cent**
Education qualification		
below 5th	3	7.5
10th	20	50.0
12th	17	42.5
Age (in years)		
Less than 25	8	20.0
25-35	15	37.5
35-45	17	42.5
Marital status		
Married	24	60.0
Unmarried	11	27.5
Divorced	1	2.5
Widow	4	10.0
Experience in weaving (in Years)		
Below 5	9	22.5
5-10	11	27.5

10-15	14	35.0
More then 15	6	15.0
Bank Account		
Yes	36	90.0
No	4	10.0
Mode of payment		
Cash	17	42.5
Cheque	17	42.5
Bank transfer	6	15.0
Daily working hours		
7-8	10	25.0
8-9	17	42.5
More then 9	13	32.5
Female total hours spend on household chores		
Less than 2	1	2.5
2-3	11	27.5
3-4	14	35.0
4-5	14	35.0
Monthly income of the female weavers		
5000-10000	2	5.0
10001-20000	32	80.0
More then 20000	6	15.0
Source of Weaving skill		
Family	23	57.5
Professional Training	7	17.5

Table 1: Socio-Economic Status of women weavers

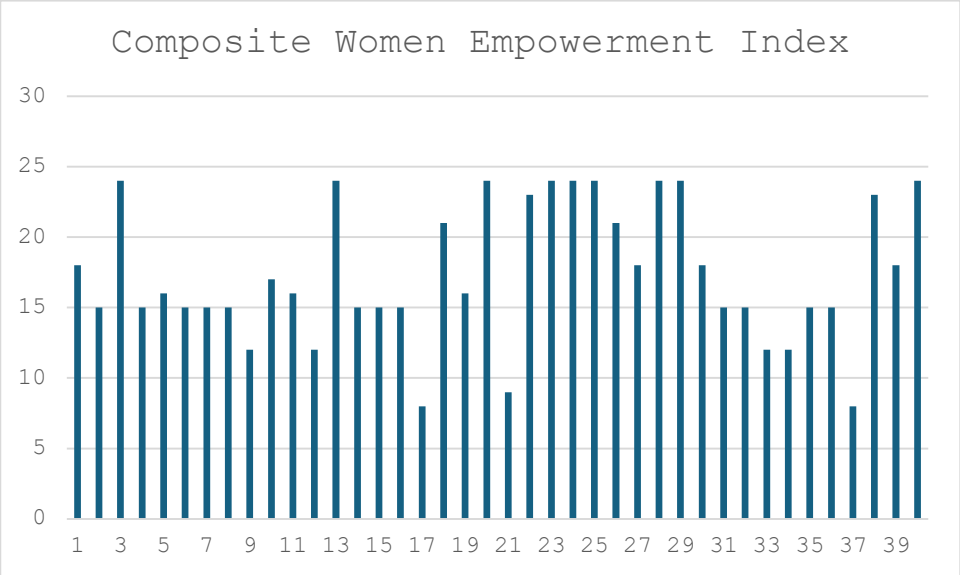

Figure: 1 distribution of Composite Women Empowerment Index

Figure 1 shows that 52.5 %of women's Women empowerment index is more than 15 and hence we can conclude that 52.5 % women were highly empowered and 47.5 % women were less empowered, as their women empowerment index was 15 or less than 15. Logistic regression was conducted to assess the impact of socio economic factors on women empowerment. There was no significant relationship between women's empowerment with socio-economic factors.

5. Conclusion

The handloom sector in Tamil Nadu stands out due to the predominance of weavers working within cooperative societies. In Arani, the women empowerment index is particularly high, with the state's female workforce participation surpassing the national average. Women in Tamil Nadu are empowered and less reliant on their husbands or families. As a result, the handloom sector is vital in empowering women with limited access to other livelihood options. This study examines how women's involvement in home-based economic activities can drive their empowerment.

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Empowering Communities: The Role of Childcare Cooperatives in Advancing Economic Democracy and Social Justice in India

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Abstract

As per Universal Declaration of Human Rights by United Nations, children are entitled to childcare as a matter of basic human right. This makes childcare not only necessary for sustainable development and economic growth but for social justice as well.

In India, where economic disparities are so evident that the top 10% of the population controls more than 77% of the nation's wealth. This economic divide is further reflected in alarming statistics from the POSHAN report, which reveals that 35% of Indian children are stunted and 17% are underweight. Therefore, innovative and affordable childcare solutions become really crucial in India for sustained economic growth as well as for social justice.

This paper proposes a community based models such as childcare cooperatives as a powerful solution in India making childcare accessible to all sections of the society by improving the quality of childcare delivery while making it affordable for underprivileged sections of the society. These cooperatives are locally based and run by parents, caregivers and workers to make them affordable, quality and accessible to everyone.

Despite the policy assurances, millions of Indian children are deprived of their basic rights to nutrition, health care and education. Other vulnerable children, for example, those with disabilities, are even more likely to be excluded. The costs of such are huge, and lack of childcare has consequences not only for children's development but also for economic development of the country. Research also reveals the importance of childcare in easing inequalities, opening up women's labour market participation, and accumulating human capital. For instance, a community-based daycare centre programme in Rajasthan enhanced women's potential for paid work by relieving them of childcare responsibilities. Childcare cooperatives are a manifestation of the rights-based approach and lead to democratic decision-making and equitable allocation of resources.

One of the impactful model under childcare cooperative in India is operated by Self-Employed Women's Association's (SEWA), popularly known as Sangini Centres benefitting over 30,000 families. Other collaborative models, such as Mobile Crèches in Delhi, show how partnerships with government and NGOs can provide care for children of migrant workers, but also show an opportunity for childcare cooperatives to bring larger community engagement and ensuring long-term sustainability.

It also studies working of SEWA Sangini and Mobile Crèches along with other cooperatives from UK, New Zealand, Canada and Sweden.

Keywords: Childcare Cooperatives, Inclusive Growth, Cooperative Governance, Systemic Inequalities, etc

1. Introduction

Childcare represents a cornerstone for human development that has been recognized universally as a fundamental right. Article 25 of the Universal Declaration of Human Rights articulates the entitlement of mothers and children to seek and receive special care and assistance to ensure their health and well-being. The emphasis on nurturing mothers and children is reconfirmed by Article 26, which observes that parents have the right to decide what kind of education their children should have and should contribute towards ensuring that education institutions facilitate the development of their child's physical, cognitive, and emotional well-being (United Nations, 1948). Crowning these principles is the universal mandate for affordable and accessible childcare, which is crucial not only for the preservation of individual rights but also to ensure equality and effective development for all. However, the picture in India is not consistent with the philosophy and the universal principles just outlined. Inequality in childcare provision is vast and oppressive. Such inequity is the norm in the economic sphere, with the richest 10% holding 77% of the nation's wealth in their hands (Oxfam India, 2021). Children are victims of such equity race.

The Ministry of Women and Child Development has reported that as per the data of Poshan Tracker for the month of June 2024, around 8.57 crore children under the age of six years were measured, out of whom nearly 35% were found to be stunted, 17% were found to be underweight and 6% children under 5 years were found to be wasted. Uttar Pradesh, the most populated state of India with population over twenty crores, has the highest stunting rate at 46.36%, closely followed by Lakshadweep at 46.31%.

These daunting figures show towering deprivation and deprivation of access to childcare services towards their weaker and most deprived counterparts. Particularly, children with disabilities, migrant children, and those in working on the fringes of the formal economy constitute the marginalized categories for whom inclusive childcare models should be discovered.

The world around us is transforming rapidly on the social, economic, and technological fronts, in scope and sweep so far unprecedented, with individuals as well as organisations and whole industries fundamentally restructured at every level for survival. The Third Industrial Revolution connected the world, allowing for strides in communication; however, the world is undergoing extraordinary and rapid changes with developments in fourth industrial revolution technologies such as augmented reality, robotics, blockchain, and 3D printing. Not only is the use of these tools altering the how of source-, relay-, and transacting of goods and services. But also how we exchange knowledge and values.

Yet, instead of opening doors for everyone, these changes often deepen existing divides. Wealthier, more educated individuals gain disproportionate advantages, while marginalized communities and many developing countries struggle to keep up. For those without access to these resources, the barriers to progress remain high. They often find themselves locked into systems that reinforce existing inequalities, making it harder to access opportunities, services, and the benefits these advancements can offer.

These socio-economic inequalities exacerbate social challenges faced by these marginalized people impacting their access to basic services like healthcare, education, and childcare. The problem is even more serious for women belonging to informal sector with just one percent of these women having access to childcare services (UN Women, 2015). The recent long queues to purchase the latest Apple phone model and quick selling of residential flats worth 100s of crores shows that while one class of society is enjoying these technological advancements and its monetary benefits, eighty crore Indians

are still dependent and standing in lines for free rations provided by the Government for their survival. Therefore, in this era of social inequality, the cooperative models of governance are gaining attention as viable alternatives to traditional capitalist enterprises. It emphasizes democratic participation, shared ownership and most importantly inclusive economic growth. Among these, childcare cooperatives not only address a social need of affordable and accessible childcare, but also fosters economic democracy, especially in developing third world nation like India.

While the affluent section of society can afford private childcare services, most working families in India, particularly those in informal or low-wage employment, remain without access to affordable and quality childcare centres. This gap is particularly evident in semi urban areas and among marginalized communities, where economic vulnerabilities are compounded by limited access to social services. These problems are also creating challenges due to which gender disparity at workplace is increasing.

This paper discusses community-based childcare cooperatives as a pathbreaking solution to meet child-care-related problems and challenges in India. Managed and run in a decentralized way by community members, they are reflective models of high-quality and low-cost childcare. They are also participatory in terms of decision-making, reflected in resource allocative justice, and so they make an important contribution in filling the daycare gap in those sections of society that are underprivileged.

Childcare cooperatives, rather than being just an exercise in fairness and justice concerning the redistribution of resources, become the settings within which immediate needs of children take on extraordinarily far-reaching dimensions in the direction of social transformation. It includes combatting inequalities, empowering the most marginalized sections of the populace and strengthening economic democracy. The model of the self-employed women workers' Sangini Centres operated by SEWA is a perfect example of it. It caters for more than 30,000 families. Similarly, the Mobile Crèche program in Delhi exemplified the success that might be achieved by collaborations between the government, NGOs and communities in bringing solutions to the childcare needs of migrant workers.

At the societal level, the concept of a sustainable childcare system holds immense economic value. Research indicates that these programs have effectively reduced gender disparities, increased the participation of women in the workforce, and have contributed to household income and human capital accumulation (World Bank, 1999). Daycare centers in Rajasthan have demonstrated that by providing such services, the paid workforce did liberate women from caring for their children (Duflo, 2012).

By examining Indian and global examples, this paper seeks to highlight how childcare cooperatives can be scaled and adapted to address India’s unique challenges, contributing to inclusive growth and equitable development in the face of technological, economic, and social transformations.

2. The Problem Statement

The problem exists because of the economic disparities which existing in India, like malnutrition, and systemic issues like caste hierarchy blocks availability of many critical services to a large section of people. Addressing these problems would lead toward building inclusive growth and seeing to the well-being of generations to come. This section touches on the bound and consequences of these challenges with some support from data and literature.

Economic Disparities in India

In the global sense, Indian economic inequality is rather high. While the wealthiest 10% have 77% of the national wealth, the extremely minute 1% have a remarkable 51% (Oxfam India, 2021). This is arising from the concentration of wealth falling on few hands, limiting the access to resources for the majority. In fact, the World Inequality Report (2022) mentions that the income distribution is highly skewed in India, with the bottom 50% of the population having no more than 13% of the total national income.

Inequality greatly affects access to basic services like childcare. Low-income and marginalized families often end up not being able to provide quality daycare, which is so crucial for laying a good foundation for the life of a child. The informal sector holds an ugly truth where women are most affected as they have no facility for employer-provided childcare or state sponsorship. "Just approximately 1% of working women in the informal economy in India have access to childcare services," says UN Women report (2015), a stark comparison to their counterparts engaged in formal employment around whom structured maternity and childcare arrangements are provided.

Malnutrition and Health Challenges in children

Several studies conducted in diverse population settings, either at the household level or at the community level, have indicated that economic disparities within the Indian population directly reflect on the nutritional status and health status of children. The year 2022 disclosed figures of 35% stunted (usually due to chronic malnutrition) and 17% under-weight children in India below the age of five, clearly indicating widespread under-nutrition on our children. This health and nutritional picture make India a key target of child malnutrition in the world (Global Nutrition Report, 2022).

Nutrition and health care receive low priority in programs for people with disabilities compared with the national programs for healthcare for the mainstream population, and systemic barriers make it difficult for children with disabilities to access proper health care, adequate nutrition, and the requisite services. A report published by UNICEF (2021) reports that these children are left out from interventions for public health or childcare as well, adding to the problem. Children of migrant workers are seen as another disadvantaged group, as their children are hampered by inadequate childcare and health services, supported in a study by Mobile Crèches, which works with migrant communities in India.

The consequences of malnutrition are disastrous. Affected children are more likely to suffer from infections and perform poorly in school. This limits their proper development and immediate economic opportunities. Once the poor and existent dynamic of poverty is set in motion, it then carries on from generation to generation, counteracting any development effort being pursued into the national efforts of a developing economy.

Broader Implications

The conundrum of the lack of childcare services in India have broader consequences affecting the social, economic, and socio-cultural development levels.

Social Costs: Families belonging to marginalized communities cannot afford to provide enough resources needed for the healthy development of their children, thus consigning disparities in the level of education and wealth almost permanently, consequently the poverty cycle continues indefinitely (World Bank, 2020). This also inversely impacts other poverty alleviation programs of the Government. Access to affordable, high-quality childcare is crucial for social mobility, particularly for women (Esping-Andersen, 2002).

Economic Costs: In reference to a report made by the McKinsey Global Institute (2020), if more Indian women would enter the labour force, the country's GDP would eventually go up by $770 billion by 2025. However, if childcare is not provided, this opportunity will not be realized. The International Labour Organization (2018) further elaborates that countries with stronger childcare systems have higher rates of female workforce participation, shining light on an argument that investment in childcare has its associated short-term.

Developmental Costs: The early years are the most vulnerable time when it comes to human brain development. According to a Lancet (Lake, 2011) study, children not being socially engaged during early years face many developmental delays, which is a disadvantage in competitive future education and productivity. Therefore, the developmental neglect of children in the early years can have a long lasting impact on the total human capital building of the country.

Regional disparities further compound these challenges. Rural and underdeveloped areas face acute shortages of childcare facilities and trained caregivers, widening the gap between urban and rural communities. These disparities undermine national efforts to achieve equitable development and inclusive growth.

Childcare cooperatives address this issue promptly and reasonably. While being profit oriented, the private childcare compromise in child and family, the cooperatives prioritize the interest of children and families as the number one priority. Their aim is empowerment and not profitability, resulting in not only proper care but also holistic social development.

Currently many of the childcare cooperatives enable parents and carers to work closely with each other. Their childcare workers share control and management of their childcare with parents and parents help in day to day operations of childcare. By promoting economic participation and decision-making, these cooperatives foster economic democracy, giving marginalized groups a voice in shaping the services that affect their lives.

One of the successful initiatives that show the potential of cooperatives in promoting social justice in childcare is the Self-Employed Women's Association (SEWA) Childcare Cooperative, located in Gujarat. SEWA is a trade union for poor, self-employed women workers, which created several childcare cooperatives in Gujarat, called Sangini Seva. The majority of the workers, women, have never had access to affordable childcare before. These units work the way to economically empower the poor families and improve their economic and social well-being.

The potential of such childcare cooperatives in India is still underutilized. While cooperatives have a long history in the country, particularly in the traditional sectors such as animal husbandry, agriculture and housing, their role in providing social services sector like childcare is still in the nascent stage. Given the scale of India’s childcare crisis and the rising demand for equitable, community-based solutions, there is an urgent need to explore and expand the cooperative model in this sector.

The paper will analyse the role these cooperatives play in fostering economic democracy and wealth distribution. The case studies of successful initiatives like that of Sangini Seva in Gujarat and Mobile Creches in Delhi will be discussed to understand how such models can be implemented elsewhere. Successful models of childcare cooperatives from New Zealand, Sweden, Canada and United Kingdom will also be discussed in brief.

3. Theoretical Framework

A solid theoretical framework is key to understanding how childcare cooperatives tackle structural inequalities, advance gender equality, and drive inclusive growth. This section focuses on a rights-based approach to childcare and its role in narrowing gender disparities, supported by relevant studies and references.

Childcare cooperatives, like other cooperative models, are based on cooperative principles with carrying out different activities. The operating model of these institutions can vary as per the need of the members and activities taken leading to various forms, such as preschools, kindergartens, and daycare centres, and may function as either non-profit or for-profit entities. Membership usually includes parents, caregivers, and childcare professionals who work together to manage operations and make decisions. Some are even affiliated with larger cooperative organizations.

The range of models demonstrates how childcare cooperatives can adapt to meet diverse community needs while encouraging fair participation and resource-sharing among members.

Rights-Based Approach to Childcare
Childcare is a superior human right from the universal perspective. The UDHR (Article 25) recognizes the necessity for mothers and children to receive special care and assistance, while the Convention on the Rights of the Child (1989) requires that states secure the necessary facilities children. These frameworks constitute what we take to be childcare in the light of social equality and justice.

The Cooperative Theory Approach
In a cooperative, every individual has an ownership stake in a manner and is actively involved in its management. The International Cooperative Alliance, through its seven basic principles and commonly held values of voluntary and open membership, democratic control, economic participation, all without any discrimination among members within the association, has tied all cooperatives together. Thus, the principles are followed by childcare co-ops by having more cooperation, management, and shared responsibility in the care between parents and caregivers.

Some scientific shows that the rights-based approach of childcare co-operatives champion's inclusive, locally driven solutions. Unlike market-based childcare systems, which tend to exclude lower-income families because of the cost, co-operatives insist on low cost, access and participatory governance. Democratic decision-making is thus promoted in these cooperatives, empowering members—typically the anything-worn parents, care-givers, and care workers—to exercise collective control over resources and their equitable utilization.

The Social Capital theory Approach
The whole movement of cooperatives is based on social trust and cooperation with each other in the society. The childcare coops are also founded on these principles where trust among the members and care givers acts as the foundation for its establishment and functioning. The cooperation among the members is not limited to finance but also time, expertise, or material contributions, benefiting all cooperative members. Time-swapping is also an innovative concept used some childcare centres especially in Sweden, where each parents invest some time in running and managing the childcare centres.

The Psychological Development Theory Approach
While economic reasons are primary when it comes to unaffordability of childcare services by

majority of people, the lack of trust on private childcare centres is also an important reason. Since early childhood development is really crucial, parents are sceptical in sending their child to private profit oriented childcare centres. The cooperative childcare provides an excellent solution to this problem. Since the workforce of these cooperatives also come from within the community, they are better equipped to handle small children and teach them community ethics and traditions ensuring their best physical and psychological development.

The parents are also confident in sending their children to these centres as they are part of its governance and running. They are deeply rooted within the communities they serve. They prioritize local needs and contribute to broader community development goals by fostering a sense of solidarity among members. This interconnectedness makes childcare cooperatives particularly effective in rural or underserved areas.

The Feminist Theory Approach

The gender disparity in the workforce has been a central concern from several decades across the world. The recruiters are often reluctant to recruit women considering the gendered social role women play. Whether it is household chores or child care, they are given primary responsibility often resulting in their absence from workspace. In informal sector, women form majority of workforce and receive very low and inconsistent income, resulting in unaffordability of not only childcare centres but also proper healthcare for their children (Vanek, 2014). The cooperative model of childcare centres provides them an opportunity to grow in their professional space without worrying about their children. The affordability and trust of these cooperatives make it easier from these women send their children there. It solves the problem of income inequality and systemic exclusion of women from the workforce.

The Social Justice Theory Approach

The Constitution of India under Article 21A and Article 39(f) ensures that children are provided early education and proper healthcare facilities to grow and develop in proper manner. Through Article 39(c), Article 43 and Article 43A, the Constitution ensures that economic equity is maintained, worker participation and cooperatives flourish in the country. Therefore, it is not only social but also constitutional responsibility to ensure that each child in the country receives quality childcare services. The cooperative childcare model is most suitable to achieve this goal. It is affordable, involves work participation and maintains social equity by providing each child an opportunity to develop in conducive environment. The childcare cooperatives can help a developing economy like India by their potential to promote economic democracy and social equity through empowering the marginalized communities particularly women.

4. Methodology

This study was conducted through a mixed method research approach which involved studying reports of various organizations including International Labour Organization and International Cooperative Alliance. Along with desktop research, people working in the field of cooperatives were contacted to understand the functioning of these cooperatives and the problems they face in their daily work.

For SEWA, the analysis is based on annual reports, financial data, and case studies, which provide insights into its governance structure, economic sustainability, and social impact on women's empowerment. These reports highlight how SEWA's cooperative model fosters democratic decision-making and improves the livelihoods of women by providing affordable childcare services.

The objective of the study was to understand how can these cooperatives can be financial viable and expand their services to a larger audience. The functioning of several cooperatives working in this

area in UK, Sweden, Canada and New Zealand was also studied to observe the best practices worldwide.

5. Case Studies

Childcare cooperatives, as already discussed, offer valuable lessons in promoting economic democracy, social justice, and community development. This section presents two case studies, one is SEWA Sangini Childcare Cooperative working in Gujarat and another is the Mobile Crèches Initiative working in National Capital Territory. These case studies demonstrate how childcare cooperatives can address systemic inequalities and empower women to join workforce for their economic independence.

SEWA Sangini Childcare Cooperative, Gujarat

The Self Employed Women Association (SEWA) is a one of the largest registered trade union in India. It has more than two crores female members across eighteen states of India working in informal sector. They have started Sangini Cooperative that plays a crucial role in improving the lives of informal women workers and their families by providing accessible childcare services. The cooperative currently manages 12 centers across Gujarat, offering full-day care to children below 6 years of age. These centers address not only basic childcare needs but also focus on nutrition, education, and healthcare, ensuring holistic development for children from low-income families. They have care givers, called **Balsevikas,** who look after children and even ensure their timely vaccinations and health concerns.

The Sangini cooperative focuses on two main objectives:

- Providing holistic care for children under six, including nutrition, healthcare, education, hygiene, and safe spaces.
- Supporting women in the informal sector with full-day childcare to boost their economic independence and improve working conditions.

Management and Financing

The cooperative is owned and run by mothers and childcare workers (balsevikas), who are also its shareholders. This democratic structure allows them to participate in decision-making. It charges a nominal fee (about ₹300 per child), which covers only one-third of their total running cost. The remaining expenses are subsidized through community contributions, donor grants, and government subsidies. SEWA also runs profit oriented daycare centres for organizations like the Reserve Bank of India, using the income generated to help cross-subsidize the childcare services for informal workers. But the financial viability remains the biggest challenge in functioning of SEWA Sangini. During Covid i.e. 2020-22, the private donors could not support it and revenue through fees also stopped resulting in financial crisis. Then they partnered with an organisation named Milaap Foundation which helped them to raise funds for daily sustenance.

Employment

The centres mostly employ local women, providing them with training as caregivers and supervisors. The teacher to child ratio is maintained at 1:15, ensuring that each child receives quality attention. By employing local women, SEWA also supports job creation and economic empowerment within the community. These Balsevikas also coordinate and collaborate with ASHA and Anganwadi workers for proper vaccination of the children and maintaining their health records.

Impact on Families

The Sangini cooperative have a reflective impact on the lives of informal women workers and their

families. According to reports, mothers who enroll their children in SEWA's childcare centers experience a significant increase in income, as much as 104% annually. Since they are able to work without being burdened by caregiving responsibilities (SEWA, 2023). Even the psychological benefits are immense as stress levels among these mothers have reduced by 94%, improving their overall well-being.

For children, the centers provide nutritious meals, regular health check-ups, and early education, leading to better health outcomes and early learning milestones. For example, 97% of mothers reported no pending immunizations for their children, and 92% observed improvements in their children's nutrition habits.

Despite its success, the Sangini Cooperative faces a funding gap of approximately ₹700 per child, as the nominal fees and community contributions are not enough to cover the operational costs. External funding is crucial for the cooperative's sustainability. SEWA's Sangini Cooperative offers a model for how childcare can empower women economically while fostering the healthy development of children from underserved communities.

Mobile Crèches Initiative, Delhi

The Mobile Crèches initiative in National Capital Territory, and later in Mumbai, is another example of a successful childcare model that provides daycare facility to the children of migrant labourers at the construction site. It is not registered as Cooperative but as an NGO. It was established in 1969, and since then has played a critical role in providing childcare services for the children of migrant workers at construction sites across India. Its impact is significant with more than 1,000 daycare centers having been established which has helped in reaching approximately 8,67,000 children till now. It has also provided training to more than 6,500 women as childcare workers since its establishment.

The organization focuses on four core pillars which includes health and hygiene, nutrition, early learning, and responsive caregiving. It provides children with essential services such as vaccinations, nutritious meals, and early childhood education. This holistic method supports children's overall development and allows parents, especially mothers, to engage in paid work, improving household incomes and reducing gender inequalities.

The most interesting aspect of its functioning is its mobile nature. Since, construction workers move from one place to another in search of work, these creches also change place accordingly. It collaborates with construction companies, real estate developers and local governments to set up creches at construction sites, ensuring that vulnerable children have a safe and nurturing environment, despite the transitory nature of their parents' work. The initiative specifically targets children of migrant labourers, who are among the most vulnerable and marginalized populations in urban India. By providing them with stable childcare and educational opportunities, Mobile Crèches helps to break the cycle of poverty and inequality.

The Mobile Creches, apart from providing Childcare services, also lobby for policy advocacy in child rights, influencing policy through its involvement in initiatives like the Building and Other Construction Workers Act (1996) and the National Early Childhood Care and Education (ECCE) Policy (2013). By providing quality childcare at construction sites and advocating for systemic change, Mobile Creches has improved the lives of countless children and families, making it a pioneering force in addressing the needs of marginalized communities in India.

Global Practices and Comparative Insights:
Cooperative childcare models worldwide exemplify varied approaches to community-driven early childhood care and education. These models, ranging from the United Kingdom's Co-operative Childcare to Sweden's föräldrakooperativ, underscore the efficacy of collective governance and participatory decision-making in addressing childcare needs. A comparative analysis of these practices provides critical insights into their capacity to enhance accessibility, foster community engagement, and ensure sustainable operations within diverse socio-economic and cultural contexts.

United Kingdom: The Co-operative Childcare
The Co-operative Childcare serves as an entity within The Midcounties Co-operative, one of the largest consumers cooperatives, in the UK. In 2023, the cooperative was working with 45 nurseries throughout the UK, offering childcare to countless families. The cooperative is heavily centered on ethical business practices, member participation, and investment in community development. The governance structure was structured to motivate intense participation from parents and staff in order to entail a sense of ownership and accountability. In The Midcounties Co-operative, the £65 million proceeds (around $83 million in U.S. dollars) from its childcare services were rechannelled for strategic reinvestment. It covers programs of improvement, personnel training, and scholarships for the children of underprivileged families (Midcounties Co-operative, 2023).

Sweden: Parent Co-operatives (Föräldrakooperativ)
In Sweden, parent-led childcare cooperatives, called föräldrakooperativ, have come to be a crucial model in the social welfare delivery system. Cooperatives provided room for parents to be active in the administration and recruitment of preschools in a cooperative ethos. Governmental subsidies were covering up to 75% of the running costs and making it affordable for the families. By 2022, it was recorded that around 1,200 parent cooperatives were thriving, taking care of more than 40,000 children. The turnover of this sector was almost $48 million USD, depending of course on the currency exchange rate. Parents pay a monthly fee from SEK 1,000 to SEK 2,000 (approx. $96 to $192 USD) per child. Despite their strengths of flexibility of routine care and responsiveness to individual needs, NGOs almost regularly articulate challenges concerning the extent to maintain professional standards because they involve a substantial amount of volunteer work (Skolverket, 2022).

Canada: Centres de la Petite Enfance (CPEs)
Community-based and cooperative in structure, Centres de la Petite Enfance (CPE) in Quebec, Canada provide a social model for child care. CPEs are charged at $8.50 per day, approximately $6.70, supported by the government to an extent of up to 80% of operational expenses. As of 2023, over 2,000 CPEs were taking care of more than 150,000 children a year. Cumulatively, revenues from these centers were about CAD 2 billion ($1.6 billion USD). Despite these stars, however, CPEs face challenges like long waiting lists and service disparities in rural and urban areas. A system of cooperative governance ensures that CPE puts strong emphasis on being transparent and accountable, so equity and swift and efficient decision-making are high priorities (Government of Quebec, 2023).

New Zealand: Playcentre Cooperatives
In New Zealand, kindergartens, or Playcentres, are cooperative-based early childhood education centers managed by parents. In these centers are operated based on play-oriented methodologies, where parents have responsibilities in education and the center's administration. Funds through subsidies enable these centers to be accessed by the all families irrespective of their economic standing. According to records covering 2023, there are over 420 playcentres with almost 12,000 children. The annual budget may range anywhere from NZD 50,000 to NZD 150,000 (approx.

$30,000 to $90,000 USD). This budget is mostly from governmental aid and with less amount coming in from the pocket of parents. Playcentres are, by nature, very strong in building up the sense of a close-knit community with good parental involvement. The challenge perplexing these playcentres is the achievement of consistent quality and the management of workloads of parent helpers.

Aspect	**SEWA (India)**	**UK: Co-operative Childcare**	**Sweden: Parent Co-operatives**	**Canada: CPEs**	**New Zealand: Playcentres**
Governance	Community-driven; joint ownership by caregivers and mothers.	Parent and employee participation in governance (2023).	Parent-managed and staffed; volunteer-driven (2022).	Cooperative model with provincial oversight (2023).	Parent-led governance and staffing (2023).
Affordability	Low fees; partially funded through grants and contributions.	Subsidized for low-income families; reinvests profits (2023).	Subsidized (75%); nominal fees of SEK 1,000–2,000/month (2022).	CAD 8.50/day; 80% of costs covered by government (2023).	Government grants; minimal parental contributions (2023).
Scale	11 centers; ~400 children (2022).	45 nurseries; ~4,000 children (2023).	1,200 cooperatives; ~40,000 children (2022).	2,000 CPEs; ~150,000 children (2023).	420 centers; ~12,000 children (2023).
Annual Revenue	Data not specified.	£65 million ($83 million USD) (2023).	SEK 500 million ($48 million USD) (2022).	CAD 2 billion ($1.6 billion USD) (2023).	NZD 50k–150k/center ($30k–$90k USD) (2023).
Key Challenges	Limited funding, scalability issues (2022).	Rising operational costs, staff shortages (2023).	Volunteer burnout, maintaining professional standards (2022).	Long waitlists, regional service disparities (2023).	Heavy parent workload, quality inconsistencies (2023).

Table 1

6. Impact of Childcare Cooperatives

These childcare cooperatives have a unique capacity to effectively address present-day social and financial challenges. Going beyond the provision of child care and early child development services, they instead translate into economic empowerment, social integration, and community development. The cooperative structure that works on the model of joint ownership and gives collective governance to these establishments, can provide new sources of empowerment to families, particularly mothers,

who wish to support their children and their better financial well-being. It therefore would be important to discuss widely the economic, social, and policy implications of childcare cooperatives, with special attention to the aspect of how such institutions may help in building economic democracy, gender equality, and community resilience.

Economic Impact: Empowering Families and Reducing Inequality

Childcare cooperatives pave the way to empowerment for the economically challenged families with young children. High fees cripple the lower and middle-class households' affordability capacity in the face of private childcare institutions. Childcare cooperatives, generally operating on a nonprofit basis, aggregate the resources necessary for affording quality child-minding facilities available to every stratum of society and family without discriminating against income.

Childcare cooperatives also lead to improved participation in earning opportunities throughout the formal and informal sectors. The women member, in mid and lower income families, are largely responsible for unremunerated care and household obligations. This takes away some of their sway to work or earn higher qualifications. Labor force participation by women has slackened in recent years, at least in the formal sector of India, such cooperatives are increasingly seen as a response to empower women while ensuring that their children remain in qualified care as the women proceed to work. As a result, the cooperative strengthens household economics to build the overall economy.

The economic impact of the Self-Employed Women's Association (SEWA) Childcare Cooperative is a good example for illustrating how such cooperatives can generate cash for those women and open segments which were otherwise closed for them. By SEWA's statistics, the cooperative has worked for more than 30,000 families through its low-cost childcare services, resulting in up to 104 percent rise in household income and reduction of financial as well as psychological stress.

These cooperatives generate employment opportunities for women. This economic empowerment strengthens their social standing and prestige. As one does not require formal education or high technical skill for this job, a less educated woman could also work in these centres and help in economic advancement of the nation.

Social Impact: Advancing Gender Equality and Social Justice

India is currently facing disproportionate and unprecedented economic inequality (Piketty, et al, 2024). The social factors described above and the reasons which are attributable to global economic structure is resulting in decreasing middle class and growth in poverty. Today, economic and social crisis of unprecedented nature. The people already on the margins in social and economic terms, and are now facing the question of survivability. The Child-care cooperatives epitomize a valuable resource for these people, who are living under the shroud of economic inequality and the effects of caste-based discrimination that effectively shuts them out from any quality services in the sphere of social services.

Another significant social phenomenon currently developing in the country is the erasing of the traditional joint family system where the elders managed the children. Economic compulsions have driven the migration to urban centers and the growth of the nuclear family system. The concentration of industry around urban areas combined with the decline of the agricultural economy and the swelling of the industrial economy is a major reason for this shift.

Pooled together, all these things create anxiety among people where parenting is becoming an increasingly onerous job. This is where the social implications of child-care cooperatives are profound, mainly in the context of promoting gender equality and social justice. Child-care cooperatives are instrumental in redistributing care-giving responsibilities and supporting women in

juggling work and family lives. By offering affordable childcare, in response, women are given the chance to enter or stay in the workforce, thereby facilitating their economic empowerment.

Policy Advocacy and Systemic Change

Where the single voice usually does not make any difference and result in a systematic change, this is possible through the pressures groups like cooperatives. These child care cooperatives can therefore, like any other pressure group, yield immense pressure and influence to the policy-making body, possibly initiating the systemic changes in terms of child rights. Several cooperative actors work with local governments, as well as non-profits and other cooperatives to lobby the authorities for supportive policy intended to round off the development of cooperatives and improve access to childcare services.

Additional would be their network and information about the specific problems with the implementation of a host of government schemes and policies for rural areas which cooperatives serve. Their most genuine first-hand reviews also assist the administration to improve those services to either reach other new areas or widen their services to population-groups across the country.

Community Development and Resilience

The cooperative systems foster the participation of their communities and their mutual dependence on each other. By joining their forces, they have encouraged the properties of resilience among the communities, setting up local networks of help, through which families contribute and share resources, knowledge, and duties regarding childcare. Also, that strengthens social solidarity and makes the community more amply equipped to address its own economic and social challenges. A deep sense of ownership is created in the hearts of its members, fuelling the enthusiasm for continuing their cooperatives.

The cooperative services are also the major actors in filling gaps concerning rural childcare services. In many rural areas and marginalized communities where no other services have been in place as they run for profit, cooperatives are created to meet the needs of local settings. The community-service approach improves the social and environmental soundness of family pockets and social landscapes.

7. Challenges Faced by Childcare Cooperatives

While the childcare cooperative is an excellent channel to ensure economic democracy, social justice, and community development, it is also confronted with many challenges to its growth, sustainability, and effectiveness. Problems such as lack of financing, scarce resources, and policy constraints result in closure and discontinuation of these initiatives (Kabeer, 2008). Such issues must therefore be understood if actions are to be taken against them to strengthen the cooperative childcare model and help it to succeed in solving the childcare crisis in India.

1. **Systemic Barriers: Inadequate Institutional and Policy Support**

   Most crucial in childcare cooperatives is the near to nil level of any substantial institutional and policy backing in India. Here, the cooperative system is not widely known or suitably propagated into the arena of social services be it childcare or old-age care. Everyone seems to think that raising children is the job of family members, especially women, so there isn't much to need to invest in this sector.

   This ever-present set of rules and regulations around the operation and registration of cooperatives makes it very complicated, making small, community-based childcare co-ops

flounder in compliance with the statutory demands. From licensing their existence to attaining model standards, they always face bureaucratic red tapes. In the absence of a favourable policy milieu many childcare cooperatives find sticking around and scaling up their services particularly difficult when competing against private ventures.

Cooperation with the government body and cooperatives is very low. An essential problem thus arises due to the lack of linkage between the cooperative care services and the broader social welfare programs. Some projects are run by provincial governments, while some are run by the local or the Central government. There is hardly a trace of a consolidated policy agenda promoting childcare cooperatives. This policy vacuum has often meant that such initiatives are taken up half-heartedly or merely as a formality.

2. **Financial Constraints and Resource Scarcity**

The question of financial sustainability is another big stumbling block for childcare cooperatives. Unlike private childcare enterprises, which are for profit and can charge prices that are often higher, cooperatives wish to make sure that member costs are kept affordable, restricting the revenue that they can earn. Many cooperatives rely on offerings from members and minor fees, which most times cannot cover operating costs—like caregiver salaries, facility maintenance, and learning materials.

Availability of outside funding is also a problem with many cooperatives because of not having the security to get a loan from any formal institution. Sponsorship, charity, and government backing programs have operated to keep these cooperatives going on a daily basis. Such lack of capital is handicapping these cooperatives from improving their service quality or scaling the business for more families.

Remunerations paid to child caregivers and resources available are generally inadequate due to which many cooperatives cannot attract qualified staff. Consequently, the cooperatives struggle to provide quality care, thus countering the very promise of top-quality care.

3. **Societal Perceptions and Cultural Barriers**

Yet another significant challenge for childcare cooperatives that has been understood is the societal perception of cooperatives and childcare in India. Institutionalized childcare is looked down on in most parts of the country, and the guardians who opt for childcare services are judged for this. The stereotype is that they are inferior parents and there is a bias against them. Therefore, the work of care providers is couched in an environment wherein it is seen as secondary to the more "formal" education for very small children. This has led to a lack of recognition or respect for a person working in childcare.

This negative judgment about cooperatives is also extended to the cooperative sector itself as to how cooperatives may be perceived in terms of being less business-like, not as efficient, or not even half as professional as private employers. Such a negative set-up hampers those families from upper-income or urban settings or otherwise who can bear down and finance private childcare from showing interest in, joining, and providing financial or intellectual support for the operations of a cooperative childcare service.

4. Operational and Governance Challenges

The governance of any cooperative organization thrives when all its members actively participate and decisions are made without wasting any time. For it to happen, members must be well-acquainted with the cultural practices of the surrounding area and take an active

interest in the day-to-day functioning of the cooperatives. Additionally, basic training in financial management is essential for effective governance.

But in many cases members lack the necessary knowledge and skills to undertake management functions effectively, often due to insufficient training. There is also lack of coordination among them to take quick decisions. The members may come from diverse cultural and societal backgrounds due to which their idea about childcare may differ, which can sometimes also lead to misunderstandings and conflicts. Such issues may result in challenges in decision-making, inefficiencies, poor financial management, and diminished service quality.

5. **Scaling and Replication Challenges**
   While there are several small scale cooperative model childcare centres running across the country, the real challenge is scaling them up. Their long-term solvency and independence, to some extent depend on the number of workers or members and the level of sales turnover. Unfortunately, smaller coops often fail under market pressure to remain operational. They are unable to compete with the private sector or generate new demands. Successful models such as Sewa Sangini and examples from UK and New Zealand have shown that it is very much possible to scale these initiatives with proper financial planning and management.

8. Future of Childcare Cooperatives in the Next Industrial Revolution

As the Fourth Industrial Revolution advances with rapid technological changes, childcare cooperatives are at a crucial point, facing the challenge of adapting or leveraging innovation to enhance their services. As the demand for labour workforce grows and gender equality takes the centre stage, the childcare cooperatives will pay a crucial role. All the past industrial revolution has shown as that it results in concentration of population at industrial centres. Such urban conglomerations will require will early childhood care centres where childcare coops will play crucial role.

Although the digital divide does poses a risk of creating new inequalities, especially in marginalized areas and for economically weaker section of society, cooperatives can expand access by adopting online or hybrid childcare models, offering flexible services to underserved communities, including rural and migrant families. E-learning platforms can also improve caregiver training, keeping them up to date on best practices. Cooperatives can improve governance, efficiency, and service quality by integrating technology, such as AI, digital platforms, and blockchain. Live video transmission of care centres can build trust and confidence of parents to send their children to these cooperatives.

To address these challenges, childcare cooperatives must collaborate with governments, technology firms, and NGOs to access resources and expertise. They should also engage in global policy advocacy, pushing for supportive frameworks to promote equitable childcare solutions. As part of this global movement, childcare cooperatives can contribute to economic democracy and social justice in the digital age.

9. Conclusion

India's growing childcare crises and structural injustices demands a unique solution. The childcare cooperatives offer a distinctive and revolutionary concept that tackles important social and economic concerns. It provides accessible, reasonably priced, and high-quality childcare services while empowering vulnerable families and communities through an emphasis on democratic governance,

collective ownership, and community-driven solutions. By facilitating women's employment, encouraging economic independence, and more fairly allocating resources among various socioeconomic groups, these cooperatives are essential to the advancement of economic democracy. The case studies of successful cooperatives such as the SEWA Sangini Childcare Cooperative in Gujarat and the Mobile Crèches initiative in NCR Delhi, illustrate the tangible impact of childcare cooperatives on improving the economic and social well-being of families. These examples show that cooperative models can bridge the gap between urban and rural childcare needs, support marginalized communities, offer scalable solutions for equitable access to early childhood education and most importantly independence to women to work and contribute in nation building.

The journey of childcare cooperatives is not without its challenges. Financial constraints, lack of policy support, societal perceptions about cooperatives as well as institutional childcare and operational difficulties often hinder their growth and sustainability. Addressing these challenges requires targeted interventions from government and policy makers, including financial incentives, policy reforms, and investments in infrastructure and technology. Moreover, societal recognition of the importance of early childhood education and the professionalization of caregiving roles is very essential to elevate the status and effectiveness of childcare cooperatives.

Looking ahead to the next industrial revolution, childcare cooperatives have the opportunity to integrate technological innovations, such as AI, digital platforms, and blockchain, to streamline governance, improve service delivery, and scale their impact. By embracing these technologies and forming strategic partnerships, cooperatives can expand their reach, offer more flexible childcare solutions, and better serve the needs of families in both urban and rural settings. However, care must be taken to ensure equitable access to these technologies, particularly in marginalized and underserved communities, to avoid further widening the digital divide.

Childcare cooperatives have the potential to become powerful advocates for policy change and systemic reforms in the field of child rights and gender justice. By working together with governments, NGOs, and other stakeholders, cooperatives can push for policies that support the cooperative model and improve access to quality childcare services.

As India continues to navigate the complexities of the next industrial revolution, childcare cooperatives stand as a beacon of sustainable development, with providing each children of India an opportunity to fully attain their capabilities. By harnessing the potential of cooperatives, India can ensure that its youngest citizens receive the care and education they need to thrive, while also promoting a more just and democratic society.

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Need for Legislative Reform in the Indian Co-operative Sector: An Exploratory Study

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Abstract

The paper examines the governance and disclosure approach present in the present Indian cooperative sector legislation. The lack of effective governance standards for the accountability of leadership position holders could be identified as a significant gap in the present legal framework. The disclosure standard and reporting requirement of the cooperative sector legislations are also scant and ineffective in the Indian context. The historical evolution of the cooperative law favours significant government intervention to meet the regulatory end of cooperatives being aligned with the societal and governmental agenda. The present phase of the cooperative legal framework, especially the multi-state cooperative sector legislative model, attempts to provide a more progressive model for cooperatives but fails to address the accountability and disclosure framework. Moreover, the fragmented manner in which the various state-level legislations on cooperative societies operate leaves significant room for legislative reform.

In this context, the paper attempts to attempt an exploratory study that would draw an analogy regarding the regulatory evolution of corporate governance, accountability, and disclosure standards in company law and explore the feasibility of regulatory transplant to the cooperative sector legislations. Certain of the reforms, such as the board of directors' accountability, independent directors and auditor rotation, are being explored in this context.

Keywords: Cooperative law, legal reform, accountability, disclosure, India, corporate law

1. Introduction

The purpose for which cooperatives are formed is of paramount importance of social relevance, as they play a crucial role in protecting and empowering collective members in the context of work and economic functioning. Labour cooperatives, farmer/ agribusiness cooperatives, financial sector cooperatives like cooperative banks, and healthcare cooperatives such as cooperative hospitals all serve the public interest by undertaking commercial activities relevant to the common good (Torgerson et.al. 1998). However, the cooperative model, which organises business and collective existence for a bottom-up approach, is facing the challenge of being considered as regulatorily obsolete for the present market economy model.

It is crucial to note that the present model of law is outdated. The pressing question is, how can the law be made more relevant for today's world? This paper aims to examine the urgent need for a progressive approach to revamp the present legal framework, based on various scenarios of cooperative functioning in India. Cooperatives are vital for community building and collective functioning for economic development, which could be achieved through a bottom-up approach (Solomon, 2023). The fact that cooperative legal frameworks have almost become redundant in today's world directly results from the lack of effective revamping and a progressive approach to the law (Munkner 2015).

Can we look at the company legislation as we see it today in the context of operating law to draw an

analogy to make the cooperative law better? This needs to be studied with the help of how corporate law, especially the Companies Act 1956, has been revamped multiple times as per the requirement of society from time to time. We have seen that the director's responsibility is to ensure shareholder protection through operation and mismanagement mechanisms, and the dispute resolution process is well protected. All of these are examples of how corporate law is primarily protected and thought for

In the Indian context, this also needs to be studied from the perspective of how the cooperatives are primarily found to be within their realm of state governments. The power to make law is vested with the state government. This is also the reason for the bottleneck of revamping cooperative laws in the Indian scenario.

The history of cooperative law in India points to a significant issue of the prevalence of government intervention and political interference. It is crucial to explore how to reduce the possibility of political interference and governmental intervention in the functioning of the cooperative forms. This is a major point that needs to be addressed to ensure the effective functioning of cooperatives.

In this direction, this paper tries to look at how the cooperatives have been primarily been affected by various scenarios that have occurred in the state or the country, and it has led to political interference where the shareholder or the management did not have the power to look at cooperative functioning. The present model of market economy has challenged the structure of cooperatives. The legal framework is also considered obsolete in the present neo-liberal economic order. Finding the relevance for cooperatives would require a clear path for making the regulations also contemporary in nature.

A legal reform approach to the black letter of the law is envisaged. In this regard, a doctrinal legal analysis of existing legislation and regulatory transplants from the company law is explored. The conceptual basis for the work is the corporate governance reform in the context of company law and how the same could be incorporated into the cooperative sector legislation. The practical level problems would be highlighted regarding how the existing regulatory governance frameworks must be changed.

2. Present legal framework

Cooperative forms part of the state list under the Indian constitutional law (Constitution of India, 1950). This brings more control into the hands of state governments for the purpose of cooperative regulation. There is no separate cooperative law for various sectors (such as agriculture or the financial sector) in the Indian context. A single legislative mechanism governs all forms of cooperative organisations (Sharma 1997). A characteristic feature of the legal structure for cooperatives in India is the predominant state interference in the governance process. It has been commented that the cooperative law is instead a curse for independence and a hurdle in adopting a new path for the cooperative sector (Goel 2006). As highlighted, it is understood that governments have created major bureaucratic hurdles for cooperatives to operate.

By bringing in the 97th Constitutional amendment in 2011, cooperative formation has become a fundamental right or right that can be considered part of the constitutional scheme (Dandekar 2013). But has it changed the ease of operation for a cooperative organisation in India? That remains a significant question. The manner in which the state government still could actually appoint board members to the cooperatives forms an example of state interference. Scenarios in which government features are deputed to the cooperatives are also examples of how the legal regime creates primary state interference. As per the literature, apart from states such as “Gujarat and Maharashtra, the liberal

regime of autonomy and operational cooperatives is lacking across the country"(Herath 2021). Even though the legislation of the multi-state cooperative societies in 1984 was considered to be a remarkable shift towards an autonomous cooperative sector, the story remains almost the same. This is because restrictive approaches in the state laws are still evident in the Multistate Cooperative Societies Act case (Herath 2021).

3. History of the Cooperative Movement and Law in India

The history of the cooperative movement in India can be traced back to the British period in 1904, when the first step towards the legislative framework was made. The Cooperative Credit Societies Act 1904 was passed, and this law aimed to ensure self-help and cooperation amongst agriculturists, artisans and persons of limited means (Pranjothi 2008). Later, in 1912, the Cooperative Act was passed. This law forms the basis for the present legal framework of cooperatives in India. After British rule, when the cooperative sector was mentioned in the state subject list as per the Constitution of India, 1950, the Cooperative Act of 1912 became the basis for forming cooperative legislation at the state level.

Cooperatives are identified as a means to balance market values and human values (Pranjothi 2008). The concept of cooperative activities was seen mainly in India even before 1904. It was due to this fact that at least a framework was considered required. The legislation was supposed to provide a corporate status to the cooperatives. Thus, providing separate legal entity status and allied benefits. Notably, the cooperatives were essential focus areas in most of the five-year plans. From a policy perspective, even though there was a significant push for cooperatives to be considered as an essential area for social and economic development, the legal frameworks haven't changed much in India. The promotion of cooperatives did not move much in reality, as the fragmented approach towards the legal design of cooperatives was adopted.

A facilitative regulatory and legal framework has not been achieved, even after significant emphasis on the five-year plans and a separate cooperative policy at the national level. The primary characteristic feature of cooperative law is the emphasis on inclusive participation through an equal voting mechanism. The cooperative history also points to the fact that no discrimination membership and protection from exploitation have been cardinal principles of cooperative laws in India. Thus, while the cooperative sector has built its edifice on laudable principles of promoting human value and enterprise, efficiency and transparency in functioning could not be achieved.

Based on the history of the cooperative movement in India, the present framework needs to be revamped to reflect a democratic and economically viable cooperative regulatory model. The new model regulatory framework needs to have the spirit of self-help collectively visible in the regulatory framework, emphasizing operational autonomy, transparency and restriction for political interference. This would require legal provisions requiring the cooperative to uphold the spirit of a democratic, participative, collective model of decision-making organisation. Economic relevance based on the member's benefit also needs to be brought into the picture. In this regard, the following sections will try to look at the hurdle for the cooperative sector in India from a legal perspective. Based on the hurdles they face in India and how other similar corporate formats of doing business in India function is looked into. For this purpose, the Indian company law framework is looked into for drawing a comparative perspective to imbibe the relevant concepts into the cooperative law.

4. Legal and Regulatory Hurdles for Cooperatives

The main challenge and hurdle for the cooperative sector regulation could be classified into three

categories. The first category is the problem due to the lack of a comprehensive framework law at the national level. Even though we have the Multi-State Cooperative Society Act of 2002, there is a lack of adoption of this legislation as a framework law, which would ensure that a single standard law would be enacted throughout the country (Goel 2006).. Thus, the lack of a uniform approach at the national level leaves open a major void, leading to a fragmented approach in the case of cooperative laws. This failure in the regulatory approach would require a major rehaul and revamp of the present mechanism. This would also require a framework not to be adopted at the national level. Moreover, an additional challenge, which does come into the picture in the context of the lack of a national standard framework from a regulatory perspective, is the lack of a uniform institutional mechanism for compliance and enforcement of cooperative law. This institutional mechanism problem also requires a pertinent solution. At present, the institution mechanism followed is a state government-controlled register of cooperatives. However, the register of the cooperative sector is having major regulatory capacity problems, with lack of

The second issue regarding the huddle could be understood from the point of view of how the bylaws of cooperatives are being formed. The bye-laws that are being formed in a manner where there is no uniform standard is developed could also be considered as a problem. Without a proper guideline for how the bylaws have to be created, there are enough loopholes for exportation and no compliance with cooperative principles of inclusive and special sharing of the benefits. How the law looks at the mismanagement of cooperatives is also important to look into in this context. There is no body of law like mismanaging repression in the context of company law, which has emerged in this scenario. How can the entire process of decision-making in the law be dedicated in a flexible manner? This is a crucial question that cooperative law has not yet answered.

The third main huddle that could be seen in cooperative law is the lack of transparency in action and the possibility of interference by political forces. The political interference has led to multiple scenarios of mismanagement and lack of proper specials possible for the cooperative members. Financial sector cooperatives in Kerala are an example of political interference and, many times, mismanagement (Prasannan et.al. 2016). There have been multiple instances, such as to understand the interference possibility in the cooperative sector. The law in its present form has limitations for ensuring political interference is reduced. The fact that the state has taken the role of protecting the cooperative sector has, in practice, led to the lack of autonomy and erosion of sectoral competence.

5. Recommendations from Academic Literature and Government Committees

Academic literature has already pointed out the need for re-imagining the present situation (Kaushik 2022; Dandekar 2013). Reports from private sector reports of think tanks on cooperatives, as well as law, have noted the requirement of a separate law. Multiple studies, especially exploring journals, such as EPW and even other reputed journals, have pointed to the fact that there is an immense need for revamping the cooperatives.

Various reports from expert committees appointed by the government also point to the need for urgent and pertinent reforms in the cooperative sector. For example, the 1987 committee asked for a facilitative intervention from the government rather than a regulatory approach to intervene in the operational part of the cooperative sector. (Kaushik 2022; Dandekar 2013). 1991 report also asked for reducing the role of the Registrar of Cooperatives. Rather than providing power to intervene. As per the report, there is a need for more autonomy in the organisation. The report also pointed out to the need for government intervention to be reduced. In the 2009 report, we could see that the progressive and enabling legislation factor was highlighted again, and this report pointed out the requirement that no rule-making power should be vested with the government regarding the

cooperative's internal functioning (Patil 2009).

Moreover, the committee also recommended the fact that the board of cooperative society is not made accountable in the proper manner. There is no specific provision which talks about fiduciary responsibility or proper accountability that needs to be looked at. Retirement of board members by rotation, related party, transaction regulation or also recommended in this particular report. Enabling provisions and mechanisms for the formation of joint ventures, partnerships, subsidies, and other measures for the growth of cooperatives have also been emphasized as per the report. Kaushik 2022 has noted the fact that cooperatives have immense potential for catering to the social enterprise requirement. This is due to the bottom-up approach and sense of ownership, which could be developed in the cooperative mechanism. This article points out the need to enable these measures through law and policy and ensure that state interventions are minimised. Dandekar 2013 talks about the significant requirement for autonomy in the functioning of cooperatives. Ensuring that political interference is minimised and disincentivised. Management skills developed for the cooperative functionaries are significantly highlighted.

6. Learnings from the Company Law Framework for the Cooperatives

The Companies Act of 2013 emphasis upon critical corporate governance practices (Prasad 2018). The company law, over time, has evolved essential practices such as disclosure requirements in case of conflict of interest, informing stakeholders of the key changes in the company, Clarifying the responsibility of directors and board, disclosure, and abstaining from decision-making in case of related party transactions. The Ministry of Corporate Affairs and the Securities Exchange Board of India have furthered this emphasis on corporate governance. The government have also keenly amended the company law from time to time with a straightforward approach to meeting international standards (Prasad et.al 2023).

In this direction, we can see how constant amendment has happened in the case of company law right from the Companies Act 1956, and it has culminated in a major revamp, which led to the Companies Act of 2013 being brought into the picture. Even after the 2013 Companies Act came into the picture, we have seen multiple amendments which have improved the corporate governance practice. The company law also ensures that the board of directors are made accountable. The board of directors is made accountable by clarifying that for the decisions. They have to keep the best interests of the company and shareholders in mind (Prasad et.al 2023).

The responsibility has been framed to be equivalent to the fiduciary responsibility concept. Hence, the duty of care, the duty to act loyally, the duty to act with due diligence, and the duty to ensure conflict of interest is in green in the company concept. Along with the concept of fiduciary responsibility concept, clear responsibility has been cast upon directors in case of their personal conflict of interest and vested interest actions by the directors (Prasad et.al 2023).

The regulatory transplant of these principles into cooperative law would be highly beneficial. Moreover, in case of operation and mismanagement actions, the national company law tribunal could also look into the issues of minority shareholder oppression.

Such streamlined action for the protection of the shareholders and ensuring corporate governance practices are transparent is lacking in the case of cooperative laws. There is a need to revamp cooperative laws with adequate measures for corporate governance transparency in a manner similar to the Companies Act. The relevance provided to the article of association and memorandum of association helps in ensuring statutory and public documents, which allow for regulatory and

stakeholder clarity regarding the objectives and activities of the company. The extent of power the company have to deal with the internal governance issues is also reflected in the article of association; lack of adherence to these documents would result in legal action under the company law.

In the context of cooperative laws, the lack of clarity regarding the bye-law formation and extent of legal accountability upon the corporate organization leads to clear loopholes for mismanagement. This has been identified as a problem even in various expert committee reports mentioned earlier. The company law also ensures that there is minimal interference, even in the case of public sector unit companies. The fact that autonomy and specific responsibility upon the board of directors, autonomy of functioning based on Article of Association document and shareholder protection provisions ensure that political interference is not possible in case of operation of companies. Comparing this with cooperative laws, we can observe that the extent of political interference and lack of autonomy for the functioning of cooperatives is evident. This causes unnecessary deference and a lack of autonomy for the functioning of cooperative sector organizations.

The legal and regulatory framework for cooperative laws requires rework to provide clear checks and balance mechanisms such as independent director positions. The bold step of independent director reform in Indian corporate law, with the help of the Companies Act of 2013 and SEBI regulations, has led to an impact on corporate governance standards. How similar measures could be incorporated into the cooperative laws remains a significant question that needs to be asked and enquired. The independent director position has been useful for the strengthening of corporate governance through multiple changes in the regulation by SEBI in the case of listed public companies. This also points out to the fact that there is need for constant evaluation and reform of the regulatory system. Taking a cue from the company law regulatory process in India, we can state that there is significant room for exploring transparent corporate governance practices in cooperative laws.

Another vital reform which is helpful in the Indian corporate law scenario is the auditor rotations. Post Satyam account fudging scam Indian corporate law wanted to ensure that the audit practices done by large audit firms are well regulated. The regulatory process for the audit firms was prescribed by way of ensuring that there is proper auditor rotation from time to time and shareholder permission for the same needs to be obtained (Prasad 2018). This measure marks the critical area of concern in the case of corporate regulations. Auditors as gatekeepers of important stakeholder information need to be regulated, and enough attention needs to be paid to ensure a transparent audit process. In this direction, there is no emphasis on proper auditing, rotation, or auditing practices in the case of cooperative sector laws. Rather than emphasizing only the aspect of autonomy, it is essential to look at how the corporate law, especially relating to company regulation, has evolved in a proper manner in India. Drawing an analogy with company law, the need for change in cooperative legislation could be deliberated and understood.

7. Institutional Mechanism Reform Requirement for Cooperatives

The need for institutional reform in the case of cooperative laws could be again studied from a comparative perspective with company law. Under company law, we can see that the registration of companies forms a major compliance-oriented institution that allows for proper registration, compliance on a regular basis, and record-keeping of organizations. The Registrar of Companies, along with another institutional mechanism such as the national company law tribunal, form a major reason for the enforcement of company law in the Indian context. while we look at cooperative laws, we see that the register of the cooperative sector at the state level lacks a regulatory capacity. The need to reform the Registrar of Cooperative's administration mechanism in the cooperative sector could be addressed by using an analogy drawn from the Register of Companies mechanism.

Moreover, the lack of a dedicated dispute resolution mechanism like the National Company Law Tribunal (Thakkar et.al. 2023) is also evident in the context of cooperative laws. Solving the problem in the context of cooperative laws requires a dedicated tribunal, which functions at the central level, like NCLT, to be formed.

8. Conclusion

This exploratory study has helped in identifying the major problems in the cooperative legal framework in India. The problems such as higher political inference, lack of autonomy for the members of the cooperative and lack of effective corporate governance practices in the law need to be fixed. This gap in the law could be fixed with the help of identifying the best practises in other corporate legal formats, which function effectively. It is in this direction that the developments in Company law in the Indian context have been looked into. Based on comparative analysis with company law, we could largely draw the following factors as essential requirements to reform cooperative laws in India. First, there is a need for a separate framework lock at the central level, which could be used as a model and a format to be adopted at the state level. There is a need for a comprehensive institutional mechanism for compliance purposes in a manner similar to that of the company registrar. While institutional mechanisms could be at the state level. There is a need for a national-level database regarding compliance, and any failure to meet the regular complaints procedures needs to be identified. Third, there are clear provisions to have an effective board for the cooperative societies and also have professional members to be appointed to the board. The law should also prescribe for independent members, similar to independent directors in the case of cooperative regulations. Significant measures for transparency, such as auditor rotation and related party transaction regulation, are required to be imbibed into the law.

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Deepening Collective Action for enhancing the Well-being of Smallholder farmers, Maharashtra, India

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Abstract

Using evidence of the impact of FPOs found in literature, their role, and challenges faced by smallholders and FPOs, an exploratory study was conducted in Maharashtra, India, to understand the ground realities. Based on the findings, this study aims to conceptualize a framework that will further deepen the effect of collectivization. The questionnaire instruments used in the exploratory study were validated by an expert engaged in implementing the FPO scheme. While conceptualizing, special emphasis was given to the Fourth Industrial Revolution wherein the agriculture sector faces demographic challenges (aging) and emerging technologies can address some critical issues. The study identified the key areas that need institutional support to facilitate the drive to empower FPOs and their members in the areas of trust building, skilling, technology, access to finance, and availability of timely information. The study recommends a two to three-tier hub and spoke system depending on the local needs, decentralized market access for input and output requirements, distributed storage systems, first loss default guarantee by FPO to work as collateral for working capital to land poor smallholders, trade credit product for FPOs, and supply of certified/impanelled human resources by attracting and skilling the educated rural youth to participate in the management of FPOs.

Keywords: Cooperatives, FPO, Smallholders, Industrial Revolution, Credit Linkages, Digital, skilling.

1. Introduction

Agriculture in India remains an important sector of its economy. It employs almost two-thirds of its population and provides food security to its entire population. Smallholders dominate Indian agriculture; around 85% of cultivators are smallholders[5] (GOI, 2021). The small size of operations exposes smallholders to production risk, market risk, and financial risk (Gulati et al, 2019). Smallholders face many challenges such as low economies of scale and value addition; lack of adequate knowledge, information, credit, and market access; less bargaining power; high transaction costs involved in sourcing inputs and selling output; and inadequate infrastructure facility (Barret 2008, Barham and Chitemi, 2009, Bernard et al 2009, Fischer and Qaim, 2012, Nikam et al 2019). The major factors responsible for the poor state of the farming workforce are, therefore, smallholders individually cannot undertake various post-harvest value-additions involved in the farm-to-fork model. As a result, a major portion of the gains from value addition is appropriated by other players in the agriculture value chain (Chand et al, 2011).

Currently, India is experiencing the third wave of supermarket expansion (Reardon and Minten, 2011). As these modern retail chains proliferate, the smallholders face the challenges of exclusion, inadequacy, and deprival as the modern retail chain, supermarkets, and agribusiness firms prefer to deal with large farmers who can meet their quantity and quality standards (Reardon, et al 2012). Generally, they face greater challenges during such transformations because, in the supply chain, they

[5] Smallholders include small and marginal farmers with less than 2ha landholding, tenant farmers, and sharecroppers.

are in unfavorable bargaining positions compared to supermarkets (Trebbin, 2014). To ensure the best bargaining powers for smallholders, it is important to enable them to establish linkage with modern retail chains so that they can retain a major share of prices paid by consumers (Trebbin, 2014).

To address the challenges faced by smallholders, policymakers have been advocating for group approaches to farming. It has been argued that smallholders need support such as agriculture extension services, crop insurance, and cooperation among themselves to exploit scale through producer organizations (World Bank 2020). It is established by various studies worldwide that collectives of farmers that are producer's organizations have been instrumental in a reduction in transaction cost, improved economies of scale, and improved bargaining power through aggregating the supply of farm produce. In addition to the above, these organizations can address other issues such as the availability of extension services, information, and credit, and access to markets. It is established by many studies that collectivization has facilitated smallholders to directly participate in the modern value chain (Shiferaw et al 2011, Trebbin 2014). Empirical studies globally have found evidence of the overall positive impact of collective organizations on farmers. All these have enhanced the income and overall economic well-being of smallholders though with varied degrees due to social, economic, and cultural features of demography and geography under consideration. Therefore, farmer producer organizations/cooperative mechanisms are accepted to have the potential to minimize various risks and challenges being faced by smallholder farmers in India.

Considering the benefit of farmer collectives for smallholders and to the agricultural sector, the Indian government brought out an enabling framework about two decades back to promote the adoption of Farmer Producer Organizations (FPOs). FPO is a generic name of a collective of smallholders (also known as Farmer Producer Company (FPC), Cooperatives, etc.) owned, managed, and governed by themselves. As per the policy and process guidelines for FPOs, GoI (2013), Farmers Interest Group (FIG) is a group of 15-20 member farmers at the village level. Around 50-70 FIGs in an aggregated cluster together form FPOs. FPOs can be incorporated/registered as legal entities under the Companies Act, 2013, Cooperative Societies Act, or any other law for the time being in force permitted for their incorporation/registration (MoA & FW, GoI, 2024). FPOs are expected to work like rural enterprises. FPOs should be capable of organizing & mobilizing members, articulating demands, procuring & providing inputs needed for production activities, facilitating and arranging credit/finance, making available advisory & extension services, providing value addition services such as grading, processing, packaging, and linking farmers to value chains and food supply chains. Therefore, FPOs need to have sufficient capacity and capability in the form of resources and organizational & governance structure in place to efficiently & effectively fulfill the expectations of its stakeholders. Though the Government, and various donor organizations, have been extending support to FPOs in several forms, it is observed that many FPOs could not succeed due to various issues & constraints related to organizational structure, governance, professionalism of running an enterprise, divergent interests of stakeholders, knowledge-base, and availability of finance and infrastructure.

FPO promotional initiatives got impetus after the Ministry of Agriculture and Farmers' Welfare, Government of India formulated a National policy and process guidelines in 2013 with the Small Farmer Agribusiness Consortium (SFAC) as its central nodal agency. Since then, a large number of FPOs have been formed under different schemes through various government agencies. As per an estimate, around 31000 FPOs are formed including 5580 under the Central Sector Scheme of formation of 10000 FPOs in 5 years which was announced in 2019-20. Under this scheme, institutional support for FPO management costs up to ₹18 lahks (including Salary of employees, registration cost, office rent, office equipment cost, etc), an equity grant of ₹15 lahks, and a credit

guarantee facility is extended for 5 years from the formation. SFAC focuses on smallholders through the aggregation and development of agribusinesses. It helps establish an ecosystem for FPOs to make them sustainable and viable in the long run. It has also promoted the e-NAM platform to link smallholders through FPOs. However, there are inherent weaknesses in the functioning of the ecosystem. The details about the number of FPOs that are currently active or inactive are not available.

Currently, the fourth industrial revolution is underway. It is characterized by the convergence and complementarity of emerging technology in each sector. Technology can enable farmers to optimize the use of resources, reduce costs, and improve sustainability. This transformation not only enhances productivity and efficiency but also fosters innovation across the sectors. Embracing the fourth industrial revolution is essential for creating a smarter, more sustainable future for agriculture, ensuring food security, environmental conservation, and economic prosperity for generations to come. Industry 4.0 emphasizes extensive use of information technology to deepen the connectivity among stakeholders, and collectives must adapt it to thrive. It can be leveraged to effectively use the mobile phone, and internet to connect with various actors for linkages, the flow of knowledge contents, and information dissemination for decision-making to further enhance the impact of collectivization cost-effectively and efficiently. India in the middle of this revolution, faces a unique paradox: on one side there is significant youth unemployment and yet the country lacks adequately skilled and market-ready workers on the other side. Another challenge is of aging population in the agriculture sector due to the migration of youth into urban areas for better livelihood. These rural youth can be retained by adequately skilling and engaging them in the agriculture sector with the help of technology. For this transformation, necessary policy interventions are required to be taken to change their negative perception of agriculture and related work.

In this context, this study critically examines the current state of FPOs in India with a specific focus on Maharashtra State and aims to build on structural issues facing the FPO ecosystem to suggest a framework that will deepen the effect of collectivization in enhancing the benefits to smallholders in a sustained manner. The rest of the article is structured as follows. Section 2 describes the major findings of the literature review followed by a description of methodology in section 3. Analysis of the findings of the field study is presented in section 4. Section 5 presents the proposed framework which can be used to deepen the effect of collectivization. Section 6 presents the policy implications of the study. The conclusions of the study are provided in Section 7.

2. Systematic Literature Review

There are several studies conducted in India as well as in the global context covering various aspects of FPOs. We selected 41 articles published in the last two decades for this study. Through a holistic review of these selected articles, we restricted our study to finding out the evidence of the impact of FPOs on smallholders, and issues that are still being faced by smallholders.

Evidence of Impact of FPOs

FPOs benefitted the smallholder members by enhancing their economic viability significantly by linking them with market opportunities (Thorp R. et al, 2004). In a study in Senegal and Burkina Faso, Bernard et al, (2008), it was found that village organizations facilitate government to reach poor masses in rural areas. In another study in Ethiopia, cooperatives have successfully managed 7% higher prices for their members than that of non-members (Bernard et al, 2008). In the context of Uganda, Kaganzi et al, (2009) found that aggregation of the demand of farmers for inputs has helped Agriculture Cooperatives reduce the prices of inputs. This has helped cooperatives to mobilize more members. In a study on farmers collective in Kenya Fisher and Qaim (2011) found that over five

years, the plantation area of members of farmer collective has significantly increased over non-members. The supermarket share of value marginal product was observed to be growing proportionately with the size of the producer's organization in Europe by Camanzi et al (2011). Bitzer et al (2012), in the context of Peru, found that farm management practices improve among member farmers of the producer's organization due to skill and knowledge transfer. Fischer and Qaim (2012), found that Access to information, advisory & technical extension services have helped smallholders to extend plantations, enhance productivity, income, and use of fertilizers/pesticides significantly. In addition, prices realized are 23% higher for members. Abate et al (2014), found that the technical efficiency of cooperative members was 5.13% higher than that of non-members. Cooperatives were found to influence smallholders' uptake of technological adoption in agriculture in Southwest Nigeria by Kolade and Harpham (2014). In a study in Rwanda Verhofstadt and Maertens (2015) found that the income of members of cooperatives increased by 40% to 46%, while poverty reduced by 10% to 14%. An increase in gross farm revenue by 37% and net farm income by 27% were also observed. A study by Tafera et al (2016) in Ethiopia found that cooperative unions create a link between domestic/foreign buyers and smallholders. Abdulai, W.A (2016), in the context of China, found that due to membership in a cooperative, the yield of apple, net return, and household income increase by 5.36%, 6.06%, and 4.66% respectively as the cooperative is effective in facilitating access to credit and increasing farm size. Similarly, Mojo D. et al (2016) found a positive impact on non-financial assets and income of coffee farmers in Ethiopia. Bachke (2019) found that after joining FPO, smallholder farmers in Mozambique could enhance agriculture production by 18%, total income by 15%, and market surplus by 25%. Glover et al (2019) in a study on smallholders in Mexico observed that smallholders are involved in interaction to gain knowledge and become aware in an organizational and social setting.

A study by Desai and Joshi (2014) in Gujarat, India, found that FPOs have a stronger impact on members' awareness, utilization of financial services, and lowering of transaction costs, however, weakly increased member's non-farm income, and access to the output market. The impact of FPO varied depending on the socio-economic conditions of the members. Members who are residing in Kutcha houses, poorer, landless, and have less schooling benefited more. Nidhi et al (2017) in the context of Karnataka found that production per hectare and net income increased by 10% and 20% respectively for FPO members. In a dairy cooperative in Bihar, India, (Kumar et al (2018) found that milk yield and adoption of food safety measures were significantly higher for members of the cooperative. Manaswi et al (2019), in the context of Telangana state, India, found that FPOs are potential vehicles to enhance yield, gross return, more organic farm practices, market access, producer's shares in consumer's rupee, off-farm income, and adoption of cultivation technology for their members. Verma et al (2019) in the context of Bihar State in India, found that technology adoption is 1.5 times more by members of FPO than non-members. Only 20% of members felt that access to credit eased after joining the FPO and 4% believed that they stopped approaching money lenders to meet their working capital needs. A case study in Gujarat, India conducted by Singh and Vatta (2019), found that with participation in FPO, the smallholders could enhance their income, consumption expenditure, and investment and could reduce their loan outstanding significantly. Similar findings about the positive impact of FPO on smallholders are presented by many authors/researchers in the Indian context namely Mukherjee et al, 2020, Cherukuri & Reddy, 2014, Bikkina et al, 2014, Singh et al, 2018, Singh & Vatta, 2019, Verma et al, 2019, Baruah et al, 2022, Chintala & Mani 2022, Bagchi et al, 2022, and Singh, 2023.

Issues Faced by the Smallholders

The findings from the literature review reveal that FPOs are an enabler for the socio-economic well-being of smallholder members and have positively impacted income, yield, technology adoption, commercialization, etc. However, the following issues that smallholders face are yet to be addressed

effectively by FPOs.

(a) Inadequate extension and advisory services, technical know-how, and guidance on Good Agricultural Practices.
(b) Unavailability of custom hiring services, and adequate irrigation facilities.
(c) Inadequate access to finance/working capital
(d) Inadequate storage facilities in case prices are not lucrative for the produce. This also deprives the smallholders of finance against the warehouse receipt.
(e) Delayed realization of sale proceeds
(f) Unavailability of customized insurance products including lack of knowledge among smallholders.
(g) Inadequate market linkages and access.

This indicates that the impact of FPOs would have been much more, had the above issues been addressed.

3. Methodology

We adopted a mixed methodology research that combines the perspectives of both qualitative and quantitative studies and enables deeper understanding of the process (Stern et al, 2020). An exploratory study of eight FPOs located in the Nasik District of the State of Maharashtra, and one FPO located in the Kanpur- Dehaat District of Uttar Pradesh was undertaken in August 2022. The FPOs included in the exploratory study are Kisan Pragati FPC, Baramati Agrostar FPC Ltd, Krushi Sampada FPC, Janshanti FPC, Green Vision FPC, Jamnadi Valley FPC, Bandevi FPC, Navasanjeevani FPC Ltd (all located in Nasik District), and Ekta Nature Farming Company Ltd. In Kanpur-Dehat District, U.P. These FPOs were formed within 1 to 8 years, with 300 to 500 members and an annual turnover ranging from ₹70 lakh to ₹153 lakh. Most had 10 board members and an average capital base of ₹5.50 lakh. Only one has received a government grant and three have received working capital from NabKissan. Sixteen smallholder members of these FPOs were also contacted and their responses were collected. The questionnaire instrument was designed in three parts to understand, the issues faced by FPOs, member smallholders, and lenders, right from the formulation of the FPOs. An expert from the National Bank for Agriculture and Rural Development (NABARD), an implementing agency of GoI for FPOs, was consulted to validate the findings of the exploratory study.

The data and information collected from the literature review and exploratory study were analyzed to draw inferences/conclusions, that were used to design the proposed framework. During this phase, special emphasis was given to Industrial Revolution 4.0. The inferences drawn from the above analysis were compared with the findings from the study of FPO and its members conducted in Uttar Pradesh.

4. Findings of the Exploratory Study

From the exploratory study, numerous constraints facing FPOs were identified. They include the following:

Issues faced by FPOs

a. Governance & management issues:

1. Difficulties in convincing the member farmers to contribute to share capital at the initial phase.

2. Prospective Members are uncertain about the company's fate and exhibit a lack of confidence in the Company at the initial phase.
3. Members want instant benefits from the Company even during the cooling period.
4. Lack of taking up of collective ownership by the Governing Body/ members.
5. Competency, commitment & efficiency of the Board of Directors, CEO and other officials of FPOs.
6. Divergence in thought process at top level and bottom level.
7. Some Board of Directors/Members of the Governing body remain absent and as a result, decision-making is delayed.
8. Compliance with the stipulations of the Companies Act is difficult, such as appointing a Company Secretary and auditors, etc.

b. Operation related issues:

1. No clear business plan.
2. No rational analysis/ diagnostic study before undertaking the activities.
3. Inadequacy of capital funds.
4. Credit purchase/ Bank loans not available for purchasing inputs like fertilizers etc.
5. Higher rate of interest to raise capital from FI/ Banks etc.
6. The second installment of FPO management cost under the 10000 FPO scheme has not been released.
7. Turn Around Time from Govt. regarding the release of funds/ approvals is more.
8. Amounts blocked with debtors for a longer period.
9. Delay in getting input supply by members.
10. Skilled/experienced professionals are needed in the initial phase to handle the operations, but FPO can't afford higher salaries for such professionals.

c. Implementation related issues:

1. Lack of infrastructure in close vicinity such as grading sorting centers, processing units for onion, and cold storage facilities for grapes.
2. Funding issues like no creditors available to fund the trade.
3. Less grant amount for management cost.
4. Non-availability of timely & affordable bank credit.
5. Lack of knowledge/professionalism for proper accounting, bookkeeping, etc.
6. Difficulties in getting trading licenses.
7. No handholding at local level resource person and banks as well.
8. Non-availability of database & lack of information.
9. Multiplicity of government schemes.
10. Convergences between government schemes.
11. Lack of information among stakeholders/banks on Credit Guarantee Schemes for FPOs.
12. Unavailability of land/building space to develop infrastructure.

Issues faced by Member Farmers

Though specific issues are not indicated by member farmers, the following suggestions have been given by the member farmers for the better functioning of the FPO model:

1. Payment of supplies in a reasonable time.
2. Availability of digital App by FPO for better management
3. Training for high-tech farming may be arranged by FPO beyond just providing input & procurement of yields.
4. Working out linkages with corporate/urban buyers.

Issues faced by Bankers

1. Exhaustive guidelines are required regarding FPO financing.
2. The bank may formulate FPO-specific scheme/loan products.
3. Lack of knowledge on organization & functioning of FPOs and legal aspects as well.
4. Training in the processing of FPO proposals is required.

From the analysis, it is observed that findings of literature reviews about the issues that are faced by smallholders correlate with issues being faced by FPOs as observed during our exploratory study. Therefore, it can be inferred that enabling FPOs through policy intervention about issues they face, has the potential to address the constraints of smallholders and enhance the impact of FPO. For example, if the policy of discounting trade receivables of FPO is formulated, it will address the issue of delayed payment of supplies made by the smallholder. It is also observed that most of the factors are endogenous.

Best Practices

Some of the best practices observed during exploratory study at Ekta Nature Farming Company Ltd located at Sujawalpur in Kanpur Dehat District of Uttar Pradesh are:

1. Had input service outlet as well as output sale outlet.
2. Most of the members were also members of SHGs. The family members were engaged in other allied activities and FPO was able to provide market linkages for such non-farm produce.
3. Consumption requirements were met by selling the produce among themselves at market prices which was being disseminated by the FPO at regular intervals.
4. Metal containers were provided to the households by FPO free of cost.
5. For irrigation, FPO has installed solar pumps and smallholders were able to save 35% of the cost incurred earlier through diesel-based pumps.
6. The FPO CEO was an Agriculture graduate who was able to have guidance from Agriculture University and IIT Kanpur on various technical matters.
7. The CEO was also running a custom hiring center and was in the process of setting up solar-based cold storage with the support of district administration.
8. The CEO was able to credit link the smallholders with bank branches. Through the SHG channel, smallholders have been inculcating saving habits as well.
9. FPO was able to organize monthly health camps for the benefit of its members.
10. FPO was able to command the trust of its members.

5. Discussion on findings and Proposed Conceptual Framework

The analysis of issues of smallholders and FPOs indicates that if FPO's issues are addressed, the members' issues can be taken care of by FPOs. Therefore, addressing the issues of FPOs has the potential to improve the impact on their members. Leveraging technology to address some of the structural issues will further take the impact of the FPO to the next level of the trajectory. The major issues and challenges of FPOs found from the study and the proposed solutions are as follows:

Viability of FPO relies on the minimum number of members to achieve a reasonable turnover

The viability proposition of FPO demands the mobilization of at least a certain number of members to achieve a significant level of turnover. To sustain the operations and to progress, FPOs must generate a reasonable level of revenue. It can vary depending on the characteristics of the FPO including various other aspects. To meet the revenue requirements, FPO has to generate proportionate

business turnover that can be achieved only with a critical number of members. Therefore, the mobilization of members is the key area where FPOs need institutional support, particularly in their initial years of formation. Mobilization of members depends on many factors such as trust, social & political settings in addition to specific characteristics of smallholders (Thorp et al, 2004). Institutional support influences and provides confidence to smallholders and aligns components of such support in favor by using mass awareness, monitoring assurances, leveraging the strength of village-level organizations (VLO) such as SHGs/JLGs/PACs, roping in rural unemployed youth. For members mobilization, organizing study tours, showing films (as seeing is believing), using mass media such as TV and radio channels, can be leveraged using institutional support. Convergence of SHGs will increase the participation of women in FPO. This will help deepen the bond/trust of members, as the SHG model – the form of collectivization at the micro level has already proven its effectiveness in poverty eradication and economic empowerment of weaker especially the women in India as well as globally. Though they face time poverty (paucity of time in balancing the family affairs and other responsibilities – Lyon et al, 2016), they have been very effective in diversifying and expanding to other sources of income such as dairying, goatary, piggery, vegetable farming, sewing, papad making, etc. Women's participation in FPO will be a win-win proposition for families, SHGs, and FPOs in federating for better market linkages, promoting saving culture to more families, and strengthening FPOs (Rani and Divakar, 2018). During their free time when agricultural activities are not required to be carried out, smallholders can utilize their time and efforts in non-farm income-generating activities. FPOs can also identify a social champion personality who has better acceptance in the local community and rope in such persons as FPO-Genius at every Village Level Organization. Such actors can play the role of catalysts to communicate, convince, and promote the schemes of FPO. Every district in India is already equipped with R-SETI (Rural Self Employment Training Institute) established by the lead bank of the district with government support. These RSETIs can be utilized to spread the benefits of joining FPOs in addition to customized training on Good Agricultural Practices (GAP) and their other roles. Livelihood support that is extended by the governments, may be routed through FPOs with proper monitoring mechanisms. This will further expand the reach of the FPO to the poorest of the poor farmers and contribution of members to the FPO's business and capital base. This will enable FPO to start new services for the benefit of members. Therefore, public policy must reorient towards supporting FPOs to mobilize more and more members from smallholders and SHG members to generate more benefits for members. District administration must provide land to FPO or to interested entrepreneurs to establish offices and facilities required for the value chain.

Extension and Advisory Services

In India, the sanctioned post of agriculture extension workers is 1.42 lakh and currently, 70% of these are filled (Gulati et al, 2018). As per the field survey, it was observed that they are mostly busy with various work other than agriculture extension work. Farmers do not find them when they need them. Rather it was observed that agriculture extension services are much better delivered by input service providers. In the field study, we observed that one of the input service providers was not only providing various inputs but also was providing custom hiring services and had hired well-qualified expert extensionists to extend technical guidance to farmers free of cost. We found that the farmers were satisfied with the guidance as they benefited. Therefore, there is a need that VLOs/FPOs should have tie-ups with such input service providers and periodically sponsor their tours to villages to organize knowledge-imparting sessions for farmers on pre-determined dates. Now mobile phones and internet services are penetrated in villages, there is a need to leverage this ICT infrastructure to disseminate knowledge, advisory, and area-specific extension services in local languages directly from centralized servers to the smallholders. The government can rope in experts from various Agriculture Universities, Institutions, Corporates to develop the contents and establish the central infrastructure to host them. FPO-Genius with the help of educated youth in villages can create

awareness among smallholders on how to access the contents. Mobile phones and the internet have the potential to revolutionize the agriculture sector by linking smallholders with the rest of the world. Therefore, institutional support is needed to establish such a centralized infrastructure and regularly update it.

Risk Management using Insurance as a tool

India is traditionally an insurance-poor country. Due to a lack of understanding, low per capita income, complex schemes, unavailability of suitable products, etc, the majority of the vulnerable class of the population does not invest in insurance products. Although the Government had brought out PMJJBY (PM Jival Jyoty Bima Yojna – a life insurance scheme for bank account holders), PMSBY (PM Suraksha Bima Yojna – an Accident Insurance scheme for bank account holders), PMABY (PM Ayushman Bharat Yojna – A health insurance scheme), and PM Fasal Bima Yojna that are benefitting the general masses and farmers however there is a need to have customized insurance scheme in farming and related activities for smallholders and FPOs as well. They need to be easy to understand and have simple processes for claim settlement. Though a crop insurance scheme is available the penetration is very poor. Institutional support is needed to develop suitable schemes for the smallholders and FPOs and customize them in such a way that they should not perceive it as being forced on them. Some of the other institutional supports are to be linked with insurance subscriptions to enable derisking the smallholders.

Attracting, skilling, and Retaining youth to serve in the Rural Agriculture Sector

India is facing two major challenges related to its demography. One is the large proportion (more than 35%) of the population is youth that is in the age group of 15 to 29 years. If this is channelized gainfully, then it is a demographic dividend else a big challenge. Second, a large proportion of this youth population is migrating from rural areas to urban areas in search of better opportunities and livelihoods (Chander, 2018). This is a big challenge for agriculture as those who are engaged in it are aging and after a few years, a huge gap will be created. Therefore, there is a need to create mechanisms to attract rural youth and retain them after appropriate skilling in Agriculture. To attract rural youth, there is a need to work with them to change the negative perception of Agriculture, align their intent, and channel the youth energy towards Agriculture and Agribusinesses. There are large opportunities available in the agriculture value chain (AVC). The need is to create mechanisms to appropriately skill the rural youth for various activities involved in the AVC right from the pre-harvest stage, to market the produce such as Input services, custom hiring services, extension services, CEO, Manager, Accountant of FPO, setting up Agribusinesses such as processing sorting, grading, packaging, etc. Rural Youth need to be made market-ready. This can be done by developing certification courses for different requirements and delivering them to youth using ICT infrastructure. To make the scheme workable, government-promoted entrepreneurship schemes can be linked to be offered to these certified professionals. Going forward many of them will become an enterprise to create more jobs than job seekers. Government support for FPOs can be linked to the hiring of certified professionals to act as CEO, Managers, and accountants. Many studies (Singh and Vatta, 2019; Pandian et al, 2020; Das and Mandal, 2021; Kumari et al, 2021; Bagchi et al, 2022; Francesconi and Heerink, 2010; Ragasa and Golan, 2012; Kalogeras et al, 2013; Franken and Cook, 2013 and Cook, 2018) have concluded that FPOs are failing due to lack of professional CEO and other functionaries. To ensure that these professionals are keeping themselves fully updated, and developing them by learning, a system of renewal of their certification every three years be institutionalized through online courses and exams. This will have the potential to create huge employment opportunities in rural India and address many challenges of agriculture as well as demography.

Storage and Warehousing Infrastructure

Unavailability of adequate storage infrastructure, farmers are forced to distress sales. As estimated by CII, 2013, in the case of Fruits and vegetables, wastages are up to 40% due to inefficient or unavailability of proper storage infrastructure. For perishable items, there is a need to develop cold storage and processing infrastructure on similar lines to AMUL in Gujrat, India. The surplus produce can be converted to packaged food after processing and marketed even in the export market. The government needs to bring out supporting schemes and create an enabling environment. This area in particular has the potential to invite a lot of private investment. Concerning non-perishable items before the enactment of the WDRA Act, 2010 (Warehousing Development Regulatory Authority Act), the warehouses were mostly managed by the Food Corporation of India (FCI). Due to the huge gap in quantity produced and the facility to store them, a large amount of produce is stored in temporary shades or in the open. Due to non-disposal further, it gets destroyed during rain. However, after the enactment of WDRA, it is observed that modern storage facilities are being built. Further steps are needed to decentralize and liberate the development of modern storage and warehousing facilities with proper regulatory oversight. In the study area, we observed that a huge number of onions and fruits were either sold in distress or rotten due to the unavailability of proper processing and storage infrastructure. Even the producers of onion are required to buy at market rate for their consumption. This is another area where by creating an enabling environment, private investment can be roped in and employment can be generated. In Kanpur Dehat, we observed that FPO has provided metal/tin containers of large capacity to smallholders for storing their produce. Smallholders were able to fetch higher prices subsequently by selling the produce at the opportune time.

Customized Financial Products for FPOs and Smallholder Members

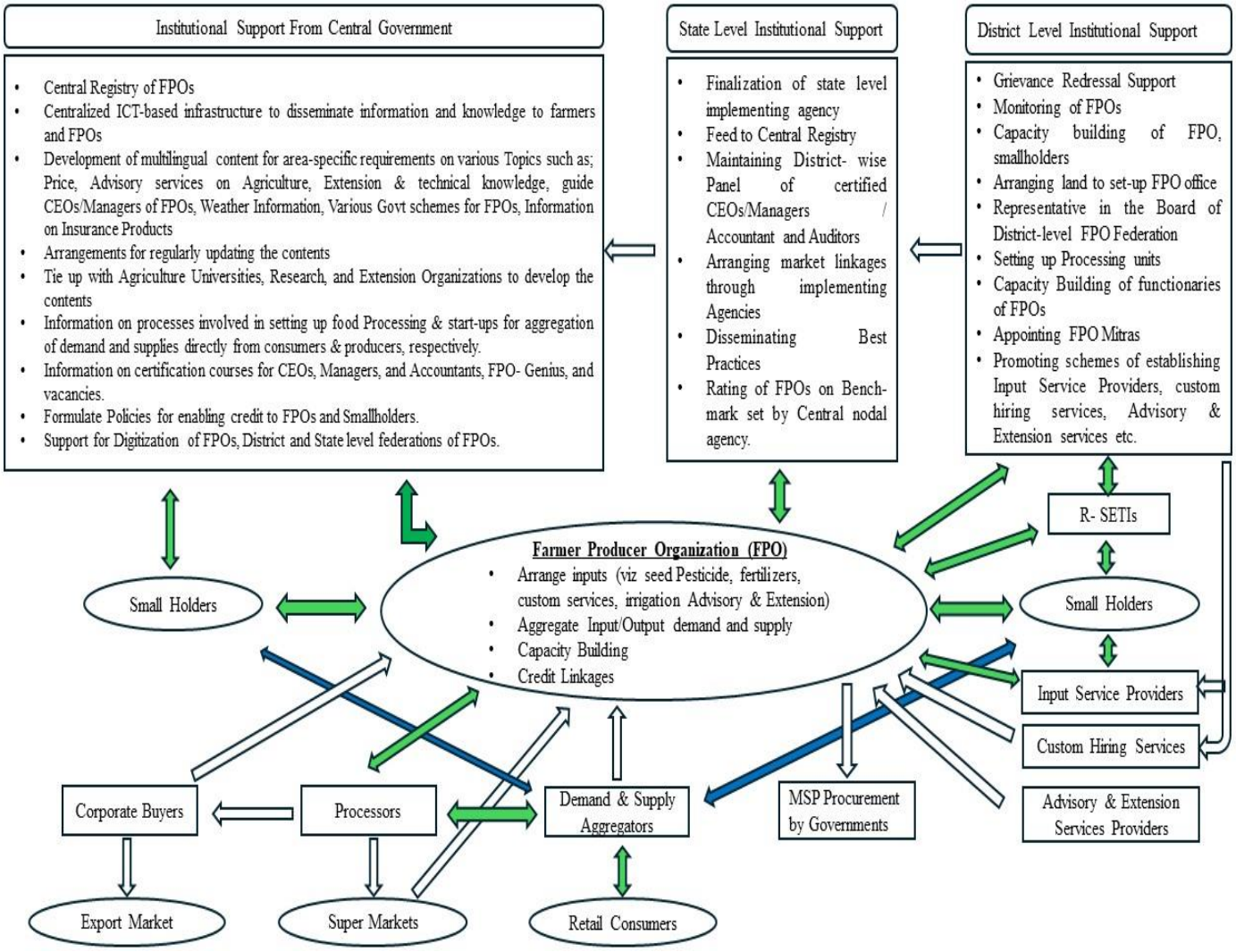
Capital is the main resource for smallholders to produce and FPOs to function and facilitate linkages for the benefit of smallholder members. Though financial institutes offer Kisan credit cards, a working capital finance to farmers, however, it is extended only to the land owners and not the actual cultivators. Due to the fragmentation of land on account of family division and migration of land owners to urban areas, most of such lands are being cultivated by sharecroppers or tenant farmers. No documentation of such arrangements between land owners and cultivators is created for obvious reasons and hence Kisan credit cards are not extended to such cultivators. To meet their requirement, they have to borrow from money lenders at usurious interest rates. To repay the loans they have to sell their produce many times at low prices. Likewise, financial institutes have schemes for FPOs as well up to Rs. 2.00 Crores loan but they demand collateral, and guarantees in addition to robust past performance which is difficult for the FPOs to arrange in the initial years of formation. Though the Government has credit guarantee schemes, we have observed during our field study that financial institutions are not very keen to extend loans. There are other reasons like lack of knowledge about the FPO ecosystem is also observed among functionaries of financial institutions. Therefore, there is a need to create customized loan products to serve the needs of both members as well as FPOs using their relationship as collateral. Mechanism can be created to extend loan facility to even members who are non-owners of land wherein FPO can stand as guarantor and sale proceed of smallholder produce can be routed through the loan account of smallholders by FPO. This will not only bring discipline, trust & transparency to the loan mechanism but also bring a lot of benefits to smallholders in terms of low rates of interest, government subsidy of interest subvention and crop insurance, etc. Moreover, members of FPOs through VLO and FIG will have peer pressure against deliberate default. This peer pressure can work as social collateral for financial institutions. Such mechanisms are already working successfully in the case of SHGs. FPO can also extend First Loss Default Guarantee (FLDG) up to a certain percent of the initial default and use peer pressure for correction in the behavior of such defaulters. Suitable trade credit products like bill discounting schemes may be designed for supplies made by FPOs to corporations and supermarkets.

Market Linkages

Traditionally, it was expected that FPOs would integrate smallholders into the Agriculture Value Chain (AVC) to meet the demand for the food supply chain (FSC). However, over two decades, the FSC has transformed across the globe and India is part of it. Indian Agriculture is required to cater to the demands of supermarket conglomerates as well as retail outlets spread across geography with varied quality standards and packaging and brandings. Urban consumers demand food items to be delivered to their doorstep, particularly after Covid-19. The emergence of start-ups to meet such demands has further deepened this expectation of more consumers. The number of such consumers is increasing exponentially. As per capita income continues to rise, the spread of urban lifestyles will continue among the Indian middle class in rural areas as well and more and more of them will adopt such modern retail supply methods. The digital public infrastructure and modern digital payment and settlement system developed in the country have enabled these start-ups to facilitate such innovation of modern retail FSC wherein demand, and supply are aggregated directly from consumers and producers respectively using user-friendly mobile Apps. FPOs facilitate collection from the farm gate and deliver the food items at collection centers of the platform. These platforms have also set up processing centers to meet the quality standards. Moreover, it increases the confidence of consumers by implementing an online grievance redressal mechanism for any short supply or deficient quality using chatbots. Payments from consumers are collected in advance and settled to producers almost in real time. Therefore, there is a need to promote many such start-up platforms as they benefit all the stakeholders and benefit is maximized for producers and enhance consumer satisfaction. Government support is needed to ease the entry of multinational actors in developing many such platforms by bringing needed investments in this sector. Similarly, supermarket and corporate buyers prefer contract farming. It becomes cumbersome for them to have such arrangements with many smallholders. Instead, they prefer to have such arrangements through FPOs. In turn, they extend a lot of support to smallholders through FPOs. For the smooth functioning of such contract farming arrangements, a suitable framework needs to be institutionalized by the government (Nair S.R., et al, 2022).

The above recommendations for deepening the effect of the FPO model based on the findings from the exploratory study can be conceptualized into a framework (Figure 1).

Figure- 1: conceptual framework of FPOs



6. Policy Implications

Analysis of findings and conceptualization has many policy implications such as reorienting policy focus to include SHGs and their members becoming members of FPO and having village-level organization (VLO) to manage members. VLOs undertake to organize welfare services for smallholders and their families with the help of FPOs. The government provides land to FPOs and other value chain actors (entrepreneurs) to set up the necessary infrastructure. VLO/FPOs to have tie-ups with expert agri-extensionists. Agri-extensionist services may be privatized and can be offered by input service providers or value chain actors. Streamlining of insurance can be made part of the government support package initially. Attracting rural youth, skilling and retaining in Agri-Businesses using tools like online Certification Courses, Online renewal of certification, and converging government schemes on promoting entrepreneurship to agribusinesses. Making Provision of distributed storage, solar-powered cold storage under the PPP model.

About Financial Resources to smallholders as well as FPOs, cultivator-ship without ownership of land can be institutionalized for securing lending from banks. Membership of FPO to act as collateral by customizing the loan product to have FPO stake as FLDG (First Loss Default Guarantee) to a

certain percentage of the loan. Introducing Agriproduct trade credit for FPOs for supplies to corporates and supermarkets.

For Market Linkages, aggregation of demand and supply using digital apps, online grievance redressal, near real-time payment settlements, and Contract farming promotion for corporate/supermarket buyers through FPOs. Buyers to be encouraged in turn to set up value-chain and meet some of the funding requirements of smallholders and FPOs.

7. Conclusion

This study thoroughly evaluated the challenges encountered by Farmer Producer Organizations (FPOs), their members, and other key players within the agricultural ecosystem, including the actual conditions and operational difficulties in policy execution. It highlights the most effective strategies used in other collective farming models and how institutional backing can enhance results. The study considered the possibilities presented by the Industrial Revolution and the potential of utilizing the demographic bonus. It introduced a theoretical model to elevate the influence of FPOs on smallholder farmers by integrating the strengths of each element discussed. The basis for this model is the reciprocal relationship between FPOs and smallholder farmers, where the prosperity of one supports the growth of the other, and vice versa. This model promises significant opportunities for creating jobs in rural regions, thereby reducing the rural-urban migration of young people. It aims to tackle the issue of an aging workforce in agriculture. The model is structured to encourage private investment in the establishment of businesses required in rural settings to better serve the interests of smallholder farmers. If implemented with appropriate policy changes, the model could fortify the food supply chain. It is feasible to apply within the current resource framework by shifting policy priorities and aligning institutional support for the FPO ecosystem to ensure its sustainability and success.

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A Study on the Impact of River Rejuvenation on Right to Sustainable Livelihood of Women

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Abstract

"A river is water in its loveliest form, rivers have life and sound and movement and infinity of variation, rivers are veins of the earth through which the lifeblood returns to the heart." – Roderick Haig-Brown

Rivers are the most important natural features on our planet earth. They are the source of water and living to many species including mankind. Due to the deteriorating climatic conditions and industrial development happening across the globe there are several reasons and causes for such Rivers to get polluted and even dry. A popular study by the World Wildlife Fund revealed the following

"Published in May 2019, the study, which focused on the location and extent of these rivers, revealed that only 37% of the planet's 246 long free-flowing rivers remain.

The numbers show that we, as human beings need to step up and rejuvenate our Rivers if we intend to safeguard the future generations from water scarcity. The UN government has consistently stressed on the need for a clean and sustainable environment. The government of India has taken serious measures in bringing the people together in order to restore our natural wealth, Rivers. The constitution speaks volumes of the basic fundamental rights and duties of every citizen to protect their environment (Article 47, article 48a, Article 51). There have been several scenarios across the country where people have joined hands to protect their rivers. One such case has been the rejuvenation of the river Naganadhi. Round 20000 women belonging to the villages on the banks of the river came together to help rejuvenate the river that dried up. This project not only made the people realize their fundamental duty of protecting their environment but also gave the women the confidence and a support system to lead a livelihood on their own. This article will depict the fierce trio of how environment had an integral part in the livelihood of women and give them the basic rights to live in a sustainable environment. The research is descriptive and an analysis of the effects of river rejuvenation on the basic human rights of the people associated with the river.

Keywords: Human rights; Environment; Gender; Women; River rejuvenation; Sustainable Livelihood; UN government; schemes; Naganadhi.

1. Introduction

Environment is the basis for all livelihood and well-being in our planet. It is the environment that creates a sense of belongingness and growth for the people of a certain habitat. India is vast country with a variety of landscapes and environmental features such as mountains, rivers, plains, plateaus, valleys, grasslands, marshlands, coastal areas encompassing different altitudes and also displays a variety of climatic conditions. This research article deals with the depletion of one of the major environmental features, which is the river system. Rivers in India are several with many tributaries.

One of the major reasons for the drying out of the rivers is the climatic conditions. The government of India has made several attempts to replenish these drying out rivers and save them. This article deals with the reasons and consequences of these conditions and also majorly talks about the role of women in this act of saving rivers. It is the duty of every citizen and the right of the citizen to protect Mother Nature and voice out opinions in case of injustice.

2. Objectives of the study

1. To identify the various reasons behind the degeneration of the river system in the country and the measures taken to resolve it.
2. To explain the need and role of women in the act of saving natural resources and why the gender plays an important role.
3. To identify the various sources of livelihood for women based on the river water.

3. Need for the study

1. To understand the several benefits of river rejuvenation projects and their contribution to livelihood
2. To identify and understand the hidden potential in the women of the nation so as to increase workforce and also enable the rights of every individual.
3. To connect the progress of a river as playing an integral part of exercising human rights.

4. Research Methodology

This research article is a descriptive study based on secondary sources of information such as books, articles, websites etc. The techniques used are observational and the research is a qualitative approach. The data collection methods used in this study is through observations, interviews, documents and records.

5. River Rejuvenation in India

Rivers are the most important natural features on our planet earth. They are the source of water and living to many species including mankind. Due to the deteriorating climatic conditions and industrial development happening across the globe there are several reasons and causes for such Rivers to get polluted and even dry. A popular study by the World Wildlife Fund revealed the following

“Published in May 2019, the study, which focused on the location and extent of these rivers, revealed that only 37% of the planet’s 246 long free-flowing rivers remain.”

Almost all the rivers are now drying out and the government of India has taken several measures to resolve this issue. The rivers include, Ravi, Beas, Sutlej, Yamuna, Brahmaputra, Narmada, Bhavani, Krishna and Cauvery.the reason for the rivers to deplete and dry out are several. The reasons are both manmade and natural. They are infrastructural developments such as constructions, soil erosion, climate change, deforestation and also the nature of the river.

In India, Rivers are a major contributor to the rich heritage of the nation as rivers are considered holy and of great practical use. With the development of modern-day technology and urbanization, the rivers are unable to take its course and hence dry out. This article speaks about the various measures taken to protect and preserve the river basins. The presence of rivers plays a vital role in the formation of civilizations from the ancient past across the globe. The water source from the rivers decided the

living of the people and the history of the people are closely connected with the rivers. The chief activity of Indians was, is and will always be agriculture which majorly depends on rivers as a source of irrigation. Rivers decide the geographical significance of that particular area, be it crop cultivation, occupation, religious sentiments, power plants, Thermal plants, livelihood, climatic conditions, soil quality and much more.

There are several provisions in the constitution of India that calls for protection and preservation of the environment. For instance the Directive Principles of State Policy states that it is the duty of every citizen to protect and conserve the environment they survive in be it lakes, rivers, forests, etc. The Water Act, 1974 talks about the restoration and preservation of water bodies in the country be it damage due to pollution or due to climatic conditions. The National Mission for Clean Ganga (2015-2016) was also a sincere attempt to restore the depleting resources of Water bodies. In 2016, India has pledged to create a carbon sink of 2.5 billion tonnes of Carbon Dioxide equivalent by 2030" This would be possible only if the rivers are rejuvenated and back to its original glory.

The benefits of a river being restored or rejuvenated are multiple such as

1. One of the major benefits of a river being restored is for its Agricultural and irrigation purposes that help in the prosperity of the villages around the river that are dependent on the river water.
2. River water is a source of income for many people. There are several small scale industries, cottage industries and handicraft workers who are dependent on river watter for their home-based businesses.
3. The need for water is one less thing to worry about for the people when there is a good water table that caters to the needs of the people dependent on river water. It helps to alleviate the mental stress of water scarcity.
4. The vegetation, flora and fauna is greatly dependent on the river water. There have been several flora and fauna that have been lost due to scarcity of water. The river water helps to prevent the degradation of the environment and not just be dependent on the rainy seasons of the year.
5. Enhancement of self-esteem in people
6. The better the river water, better the prospects of employment, whether self or the establishments of small-scale industries in that respective village. The people have better employment opportunities. This helps them to not migrate from villages to towns or cities for employment.
7. Sustainable living

6. River Naganadhi in Vellore

The river Naganadhi is a tributary of the Palar River that runs through the district of Vellore in Tamilnadu. The river basin covered several villages which were solely dependent on the river water however until 2014, the river faced a lot of water shortages and the dry climate ended up drying out the river. The people associated with the river and the villagers were frustrated and lost all hope in life. The Government of India along with the Art of Living foundation came together and initiated a river rejuvenation program. This time they wanted to call for the women in the villages and paid them to work for the project. The project involved building check-dams and recharge wells so as to preserve the ground water after the rains. The women of the villages willingly participated in the project. The women were paid daily wages for the physical effort and they worked religiously. The women of the Kammavaanpettai village not only proved their physical strength by building the wells and dams but also mental strength to face the challenges.

This project has helped the women to gain a life, a livelihood for themselves. A right to freedom and livelihood is a basic right which helps the individual grow and seek for betterment than stagnation. Due to the River rejuvenation project many women regained their dignity and basic human right to earn their living. The MGNREGA scheme provided for a daily wage to the women who participated. One of the women volunteers expressed:

"After we've brought this project to our village, not only do we have sufficient water, but we're also earning well through the 100 days scheme project (MGNREGA)," shares Shanthi from Salamanthanam. "Our people and our farmers are happy."

Amsaveni says, "Now I do not have to ask my husband and wait for him to give me money to buy basic goods for the household, myself or my children. I can buy them on my own."

Women in India are capable of running businesses and taking risks for a better world. This potential needs to be harnessed in the right manner. The Government of India has been taking sseveral measures in making its women self-reliant yet there needs to be acceptance from the citizens to let women stand in the front and lead the nation. Dr. Ishita Agarwar, co-founder of the Atal Innovation Mission, says that "women are already leading in the country in the senior management levels and when compared to the global situation of 31% of women in corporate leadership India has already surpassed it at 39%. This is a positive sign yet we must safeguard this and help this grow and not fall.".

Technology is a major source of empowerment for women and women should be able to access it in order to come out of the limitations one is in. Ms. Poonam Kaul, Apple CMO, says that "women should be given employment opportunities such as flexi timings, work from home and the like so that there are no more drop outs due to the work itself as women are already multitasking".

This particular study shows that women are currently in a better position from what they were few years back and this graph should be on the steady increase trend and not drop. So there needs to be more participation and more women need to enter the sphere to improve our GDP despite the after effects of the cruel pandemic situation.

The government of India strongly believes that the women population can definitely contribute to a significant growth in the GDP and economic development of the nation if they contribute to the workforce.

"…The rationality of the focus on youth and women is premised on the role this segment plays in pushing the country's agenda for sustainable development by 2030 and its ambition of a $5 trillion GDP by 2025.Women, in particular, have the potential to generate 150–170 million jobs by 2030 and add $700 billion to the GDP by 2025 through workforce participation."

The article states that women have the potential to substantially increase the economic performance of the nation by improving employment opportunities. Women-led small businesses help in generating more number of jobs that increase the numbers in the economy.

Mobilizing women from the nearby villages for this project, initially seemed like a herculean task as they weren't ready to step out of households and work. The Art of living organization, curated plans for the women by motivating them to join the spiritual programs which involved activities to resolve stress and engaging them with calming anger and communication. This program was called

Sudharshan Kriya which involved 50 women per village in one sitting. This program included how to get rid of mental health issues, laziness, physical problems and much more. This led to the spread of the news to other women in other villages and more people joined. What started of as a spiritual program, quickly transformed into a necessity where the instructors started to sensitize the women on the need of the hour, to rejuvenate the river water which is important to secure the future of their own children and that their contribution is key to the project. The women stood by the government and the Art of Living organization and promised to work for the betterment of the village and the future of their families.

Women are empathetic, multi-tasking and portray excellent leadership qualities, but they lack certain grooming and communication skills, which hold them back from performing. This skill must be used to the benefit of the country and hence the government, especially in the recent years has come up with several policies, reforms and measures to empower women and help them come out to do the needful. There are several programmes such as entrepreneurial loans that are given by banks to Self-help groups that lend a helping hand.

7. Impact of the rejuvenation program on the women

1. There has been a major drop in migration of people to cities and towns due to the availability of jobs in the village.
2. The 100days MGNREGA scheme has given the women better financial independence thereby helping them understand the need to contribute financially to the growth of the family and the nation.
3. The women have been able to enjoy the satisfaction of reaping the benefits of whatever they have sowed, water.
4. The Art of Living has helped them gain more ways to deal with their stress and become mentally balanced.

8. The co-dependent triad: Women, Environment and livelihood

The Naganadhi river project has tapped a very resourceful potential of our nation, women. The women of our nation need to be enlightened more about the need for them to step out of household chores and enter the workforce thereby enabling our nation's growth. Environment is significant when it comes to channelizing the livelihood of the people in the area. The Naganadhi river today provides for food, irrigation, agriculture, monetary needs of women, dignified living, equal partnership in a marriage, sustainability and much more. The efforts of the women involved in the project has not only helped them gain an insight to progressive living and create a sustainable livelihood but also provided an ever-lasting impression to the generations ahead that if mankind wills then there is no stop to nature or environment and that it can be rejuvenated for the better and for good.

9. Suggestions

This project was completed in 2018 and the river water stands to flow continuously since then and the water table has also risen considerably paving way for prosperity in the nearby villages. However, this employment has been only until the rejuvenation process and post that there has been very minimal activity of checking and maintenance of the boulder checks and dams and water table. This has been addressed to not let the women workforce potential to go in vain yet there are certain suggestions to make sustainability better and use the women workforce to its optimum.

1. The reach of Women Self-Help Groups must cover more women population and remote

villages such that women are aware that they can be of more benefit to the country's development and be of significant economic importance. Programmes like the Women Entrepreneurship programme should be popularized in more villages such that women understand the need to start small businesses in order to create awareness that the government of India supports such ideas of women, financially and mentally.

2. "Only 32 per cent of India's workforce is female and they earn 30 per cent less than men on average." This clearly suggests that the women workforce even when tapped and brought to the front, are experiencing inequality and injustice of unequal pay. The government of India must bring in strict measures of legally implementing equal pay for all genders be it in whatever class of work or labour.
3. A recent report by the International Finance Corporation said "… the estimated credit demand by women-owned very small businesses (WVSEs) in India was worth Rs 83,000 crore. The report noted about 15 million women-owned MSMEs facing challenges such as inadequate access to capital, technology and information, and infrastructure gaps…"

This clearly suggests the gaps in implementation of welfare measures that women are not provided with enough access to technology and infrastructure which serves as the basis for development in today's fast-moving world.

4. Adequate training programs need to be conducted as a part of government related schemes where women need to be trained as professionals on the grounds of communication, grooming, negotiation skills, costing, planning and the basic awareness about how other women of their caliner are successful and their means to success. Training women on a continuous basis improves their quality of work and they become more competent with other successful women. Women have the urge to make a difference yet donot know the path to do so. These training programmes should bring about curiosity and readiness to start up successfully.
5. More awareness and need for women employment- Women need to know that their service is required for the nation's prosperity. Especially at a time like the pandemic, women power is in need to perform like never before. Women from rural background need to be empowered and brought to their knowledge that women can make a difference with anything they are good at. Women should know that they are making a difference and hence even the men will also be equally supportive
6. Adequate use of technology- Technology is the best way to empowerment and liberation in today's world. The use of online education, tutorials and classes through video calls can make education available to the women at their own convenience. Women must be trained on technology and adequate tech supply must be provided to every woman who wishes to initiate. Making women self-reliant doesnot only meed a contribution to the nation but also making them individually courageous and self-reliant and independent. Liberated women perform way better than women who are forced into employment.
7. Accommodative employment- often, women drop out of jobs and businesses due to commitment requirements in the family. Jobs and opportunities to women must come at flexible timings and schedule such that they are able to juggle all their dreams and not just stay at home. In today's fast moving corporate world, there are many offices that have crèches, night schools, sabbaticals and maternity leaves. There needs to be more flexi timings and breaks so that women donot hesitate rather move up the ladder easily.

One of the most important and pressing issue even today is the gender bias. More men need to be educated on the need for women to work and be empowered such that they are not subjugated to domestic violence and suppression.

10. Conclusion

Environment and green cover in a nation is most important as it gives new life and hope to every living being. To protect and safeguard this environment is very important and the need of the hour for every citizen. There may be many reasons for the depletion and degeneration of environmental factors yet we as humans must get into action and claim our heritage. River systems play and major role in the continuation of a certain ecological system and it is important that this natural resource is preserved, optimally used, conserved, restored or rejuvenated whenever needed. The honorable prime minister has also mentioned in the recent times that women need to participate in the restoration of rivers as they seem to be more capable of investing time and effort in the project. This not only helps in the rejuvenation but also in the basic right of the women involved in the project-the right to sustainable living. It is only until women understand the need to financial independence and the importance of their contribution to the society and the nation's benefit. Once its done, their efforts and results are humungous and helps in the prosperity and development of the country as a whole.

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Australian Platform Co-operative Case Study: The Open Food Network

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Abstract

The Open Food Network (OFN) is an organisation whose purpose is to enable and encourage ethical, local and sustainable food production and consumption. Its primary activity is as a developer of an open-source software platform that, similar to a farmers' market, allows farmers and suppliers to list their produce online for sale directly to customers. Founded in Australia in 2012, OFN is today a global phenomenon, maintained in over fifteen jurisdictions around the world. This paper explores the history, governance and finances of two entities within the OFN enterprise. One is OFN's global body, the 'OFN Community', which is responsible for developing the platform's software. The second is OFN Australia, which maintains Australia's instance of the platform.

1. Introduction

The Open Food Network (OFN) is an organisation whose purpose is to enable and encourage ethical, local and sustainable food production and consumption. Founded in Australia in 2012, OFN's primary activity is as a developer of an open-source software platform that, similar to a farmers' market, allows farmers and suppliers to list their produce online for sale directly to customers (OFN About Us, n.d.). As well as allowing farmers and suppliers to list their produce, the platform also provides logistics services to its service users. This includes data collection services and the functionality to enable businesses to collaborate with other businesses to create a single shopfront (OFNA Software Platform, n.d.).

OFN functions at two levels. The first is the global level. This is the 'OFN Community', an unincorporated association that maintains and develops the software and makes decisions around licensing and branding. The operation of a platform that makes use of the software and branding is performed at the second level by an 'affiliate'. Affiliates must have their own legal identity and usually operate across a national jurisdiction (OFN Community Pledge, 2020). As of August 2024, there are fifteen active affiliates, of which ten are in Europe, three are in the Americas, and one each are in New Zealand and Australia (OFN Local, n.d.). Total global transactions on the platforms maintained by affiliates in 2022-23 were worth AU$17.6 million, with around AU$1.5 million of this occurring on the Australian platform (OFN Australia, 2023a).

This chapter explores two OFN entities. The first is the global body – the OFN Community; and the second is the Australian affiliate – OFN Australia. The chapter is divided into three sections. The first explores the history of OFN, including why it was established and how it came to spread internationally. The second considers the legal form and governance of the OFN Community and of OFN Australia respectively, examining, for each entity, whether it meets the definition of a co-operative. The third section details the activities and finances of each of the two entities, and includes comments on the role of government as an important provider of capital. The chapter finishes with a brief conclusion summarising the findings.

2. History

OFN was started in Australia in 2012 by two former Victorian state government employees – Kirsten Larsen and Serenity Hill. The idea for an online platform came about when Larsen and Hill, wanting to start a small-scale sustainable farm together, but concerned about its financial viability if appropriate food distribution networks were not in place, began experimenting with ways that farmers could be connected more directly with customers. It soon became obvious to them that software tools would need to be adopted, but they found that what software tools that were available at the time did not suit their needs. This led to Larsen and Hill to begin the project of developing a new software platform. They were, in so doing, committed to a number of principles – the software code had to be open-source, and the platform networked, decentralised, transparent, and facilitative of a diversity of business models. Further, control over the software platform had to be in the hands of those who produce the food. Their refusal to compromise on these principles galvanised support for the project:

Not compromising has brought a lot of people around us. We started paying a developer to make a few bricks, he then volunteered for a year [...] And gradually, we brought together a sort of collective around us… (Compain et al, 2021, p. 5).

Several peer-to-peer economy activist networks, such as Ouishare and the P2P Foundation, learned of the Open Food Network software and advertised it. This led to international interest in the project and soon a global community was contributing to the platform and spreading it internationally. A UK OFN affiliate was launched in 2014; a French affiliate in 2016; and a Catalonian affiliate in 2017. By the end of 2017 the model of a global body developing the software and more localised affiliates maintaining an instance of the platform was well established (Compain et al, 2021, p. 5). In 2022-23, across the fifteen national jurisdictions where an instance of the platform is maintained, total annual transactions on the platform were worth close to AU$18 million (up from AU$16 million the year before) (OFN Australia, 2023a). The largest affiliates, like OFN Australia, OFN UK and Open Food France, currently list around 2,000 producers and 15,000 customers each (OFNA, n.d.; OFNUK, n.d.; OFF, n.d.).

3. Legal Form and Governance

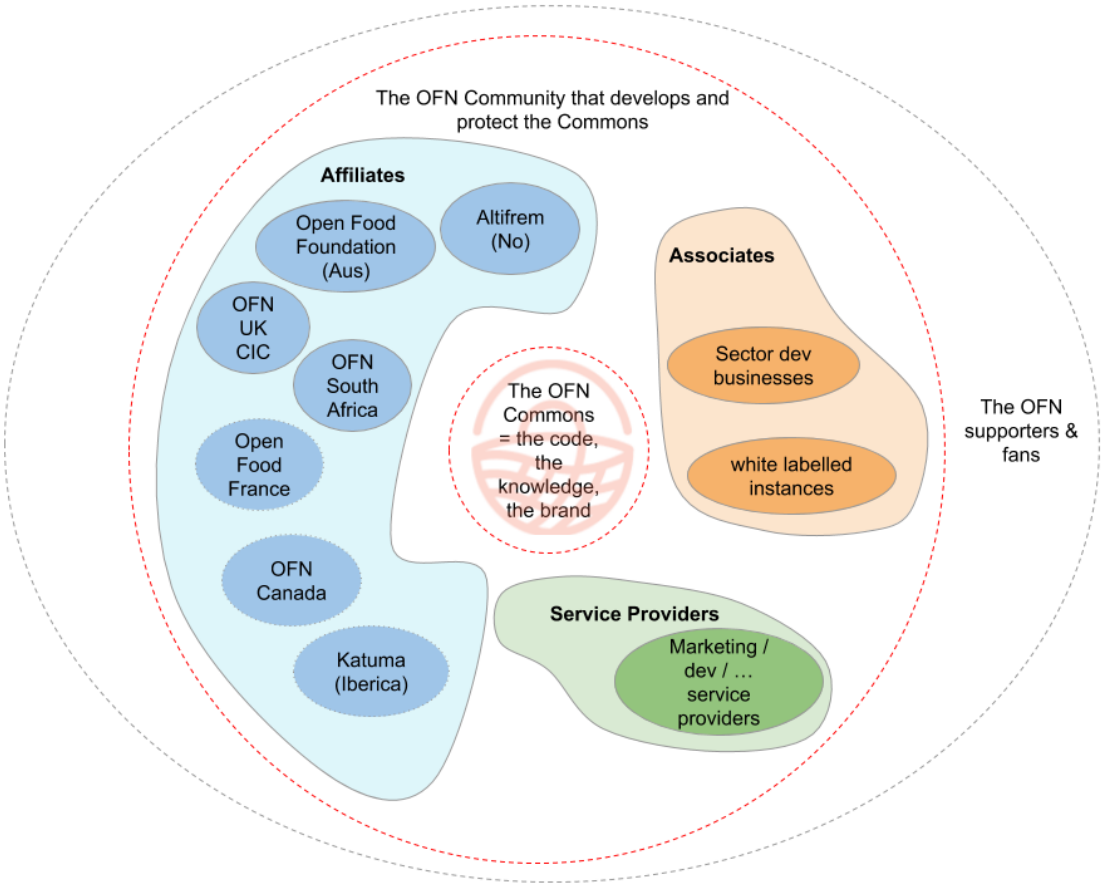
As has been said, OFN functions at two levels. At the higher level is a global body, called the OFN Community, and at the lower level are the various OFN affiliates, like OFN Australia, which operate within national jurisdictions. To discuss the legal form and governance of OFN, it is useful to consider the higher and lower levels separately given that they differ. The higher, global level will be considered first.

The global level: The OFN Community

The OFN Community – the global body – is an unincorporated association. The OFN Community describes itself as an ‘informal body’, but despite this self-ascription it nevertheless has a sophisticated constitution, called the ‘Community Pledge’. The Pledge ‘formalises the mutual engagement of the people and entities working together on the Open Food Network’ (OFN Community Pledge, 2020). It includes provisions on the global body’s purpose, the qualifications for membership, the active membership requirements and responsibilities, the licensing conditions, the decision-making mechanisms, and the conflict resolution processes. The Pledge closely resembles a federative constitution, with the global body functioning, in essence, as a federation of the affiliates. Under the Pledge affiliates are not the only member category, however. There are also associates (those that use the platform but without the Open Food Network branding) and service providers (such as individual software developers). Associates and service providers are involved in the global

body's decision-making processes through the body's deliberation and consent mechanisms, but if there is a vote (which appears to be rare), the Pledge provides that only the affiliates can participate.

Figure 7: A visualisation of the OFN Community's structure (OFN Community Pledge, 2020)



Is the OFN Community – the global body – a co-operative? There can be little doubt that it is – at least according to the International Co-operative Alliance (ICA) definition of a co-operative (ICA, n.d.). It is true that, being unincorporated, the OFN Community is not *incorporated* as a co-operative. But, under the ICA definition, that is of little importance to its co-operative status. Of much greater importance is that the OFN Community conforms closely with the ICA's seven co-operative principles. For instance, voluntary and open membership, member democratic control, and member economic participation through contribution to capital are all central to how the OFN Community functions (how the OFN Community's members contribute to its capital is discussed further below in the 'Activities and Finance' section). Indeed, in many ways, the OFN Community presents an ideal model for how a global platform co-operative can operate, able to achieve global scale while providing for diversity and control at the local level (Marjanovic and Zhu, 2024).

The local level: OFN Affiliates

The OFN Community is unincorporated, and so does not have a legal identity of its own. It is otherwise for affiliates, for whom, under the terms of the Community Pledge, a legal identity is a requirement. The Pledge does not prescribe a particular legal form for affiliates, though it is stipulated that, whatever the legal form, the affiliate must be committed to a number of principles, of which three are of primary importance. First, the profits of the affiliate must go towards the purpose of the

platform rather than as dividends to the affiliate's members; second, affiliates must be democratic; and third, due to the preference for only a single affiliate per national jurisdiction, affiliates are expected to be open. The requirement for openness is to make sure other values-aligned local actors are enabled to join and contribute to the affiliate (OFN Community Pledge, 2020; OFN Handbook, n.d.).

In terms of the Australian affiliate, this is a charitable public company limited by guarantee (ACNC, n.d.). Interestingly, the constitution of the incorporated Australian affiliate is far less sophisticated than the constitution of the global body. Though the Australian affiliate's constitution envisages a democracy of members, there is very little detail on the categorisation of members, qualifications for membership, or active membership requirements (OFN Australia, 2013). Though the Australian affiliate has a credible commitment to openness and democratic processes, this appears largely to be achieved through informal mechanisms than through the formal constitution.

In terms of whether OFN Australia can be understood as a co-operative, this is far less obviously the case than it is for the OFN Community. Although the OFN Community identifies its affiliates as platform co-operatives (OFN Handbook, n.d.), nevertheless the Australian affiliate does not closely conform with the ICA's definition of a co-operative. This is mainly because those the platform is designed to benefit – that is, small-scale, sustainable farmers – do not participate in the organisation economically by contributing to its capital. Indeed, that farmers do not contribute to the capital appears to be a conscious choice by OFN, the belief being that constraints on farmers, both in terms of resources and time, are, for the time being, too tight. Therefore, while OFN has sought to ensure that its affiliates, like OFN Australia, are farmer-controlled (at least informally), OFN has not sought to raise capital from farmers (Papadimitropoulos, 2023, p. 9). Instead, as will be detailed further in the next section, OFN has opted to finance platform development and maintenance through volunteer hours, donations, grants, and cross-subsidisation from software service income. Though OFN Australia has considered the possibility of converting from a charitable model to a co-operative model once the platform is better established (Larsen Interview, 2021), nevertheless farmers that use the platform currently remain (in formal terms at least) more as service users than as active members.

4. Activities and Finance

Under the Community Pledge, a division of labour is envisaged as between the global body and the affiliates. The global body, using the financial and in-kind contributions of its members, is responsible for developing the platform software; and the affiliates, meanwhile, are responsible for implementing and maintaining an instance of the platform.

The OFN Community

As indicated, the income of the OFN Community, as the global body, is principally derived from member contributions, with affiliates expected to contribute 20-40% of their annual income (OFN Community Pledge, 2020; OFN Handbook, n.d.). Expenditure by the global body is mainly on software development for the benefit of affiliates. Exact figures for the global body's income and expenditure are unclear, but it is estimated by the OFN Community that the minimum income to continue the project at a reasonable pace is in the region of AU$700k per year (OFN Handbook, n.d.; Papadimitropoulos, 2023, p. 9).

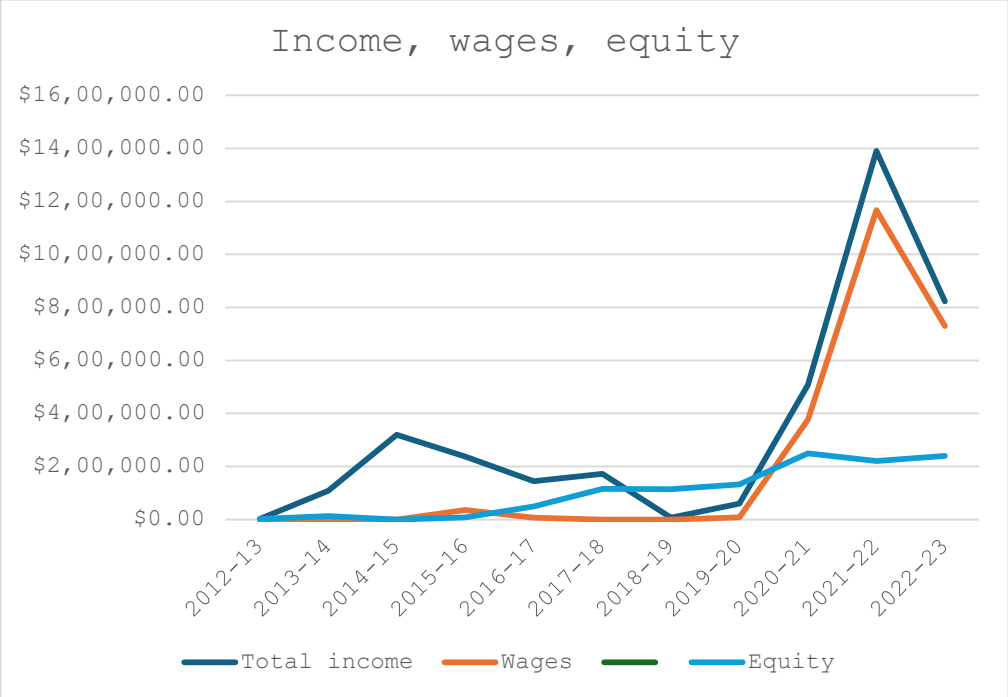
As was said above, part of what has galvanised support for the OFN project and enabled an international community to contribute to it is the fact that the OFN software code is open-source. But though the code is open-source, this does not mean that its use is unregulated. Rather, the code exists under an AGPL3 licence, which allows anyone to use the code so long as there is appropriate

attribution to the Open Food Network, and that any improvements to it are re-licensed under open-source (Schumilas, n.d., p.6). Given, however, that the OFN Community does not have a legal identity, the AGPL3 licence must be held by another entity on its behalf. This is done, currently, by the Australian affiliate – OFN Australia – which also holds the global body's other intellectual property, like its brand (Papadimitropoulos, 2023, p. 10). Further, the global body does not have a bank account of its own. Rather, its finances are managed through a virtual wallet system (OFN Handbook, n.d.).

OFN Australia

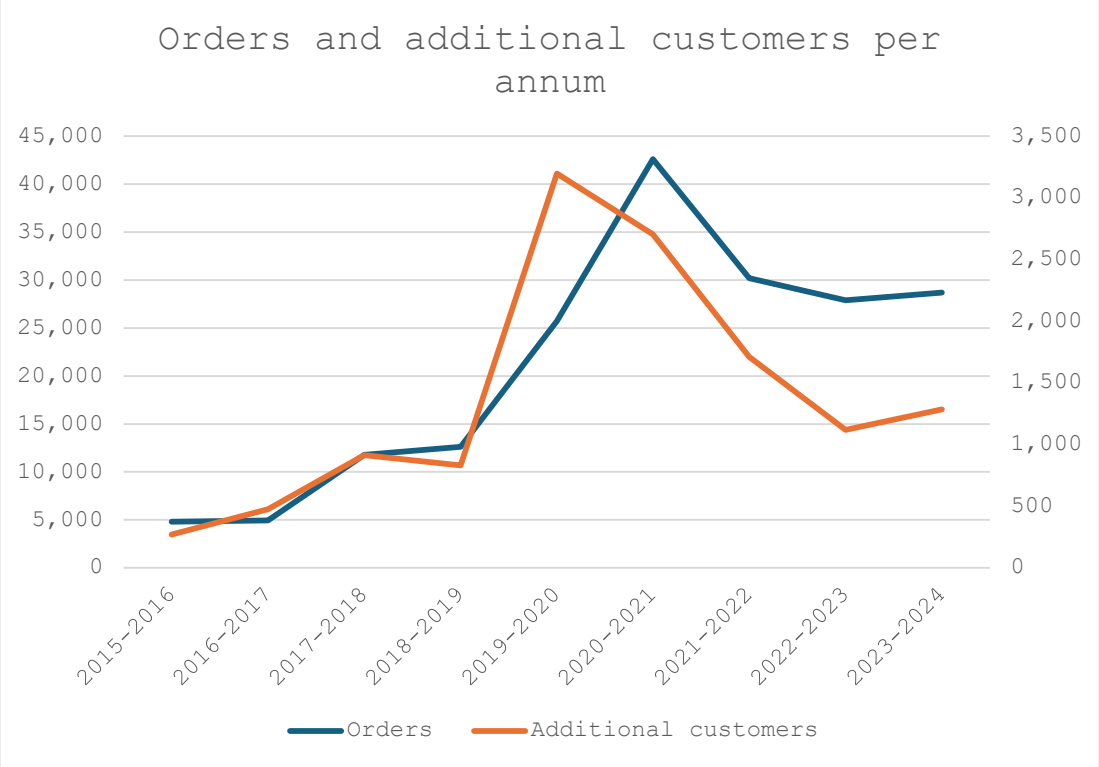
The Australian affiliate – OFN Australia – is responsible both for maintaining the Australian instance of the OFN platform as well as for conducting community development activities – for example, support for producers, suppliers and food hubs through knowledge creation and dissemination (OFN Australia, 2023a). In addition, OFN Australia has responsibilities towards the global body, such as financial and in-kind contributions, and, as stated above, acts on the global body's behalf in a number of ways, such as acting as the legal licensor of the global body's intellectual property.

The graph below shows OFN Australia's financial performance from its foundation until 2022-23 – the most recent year for which data is available (ACNC Financials & Documents, n.d.):

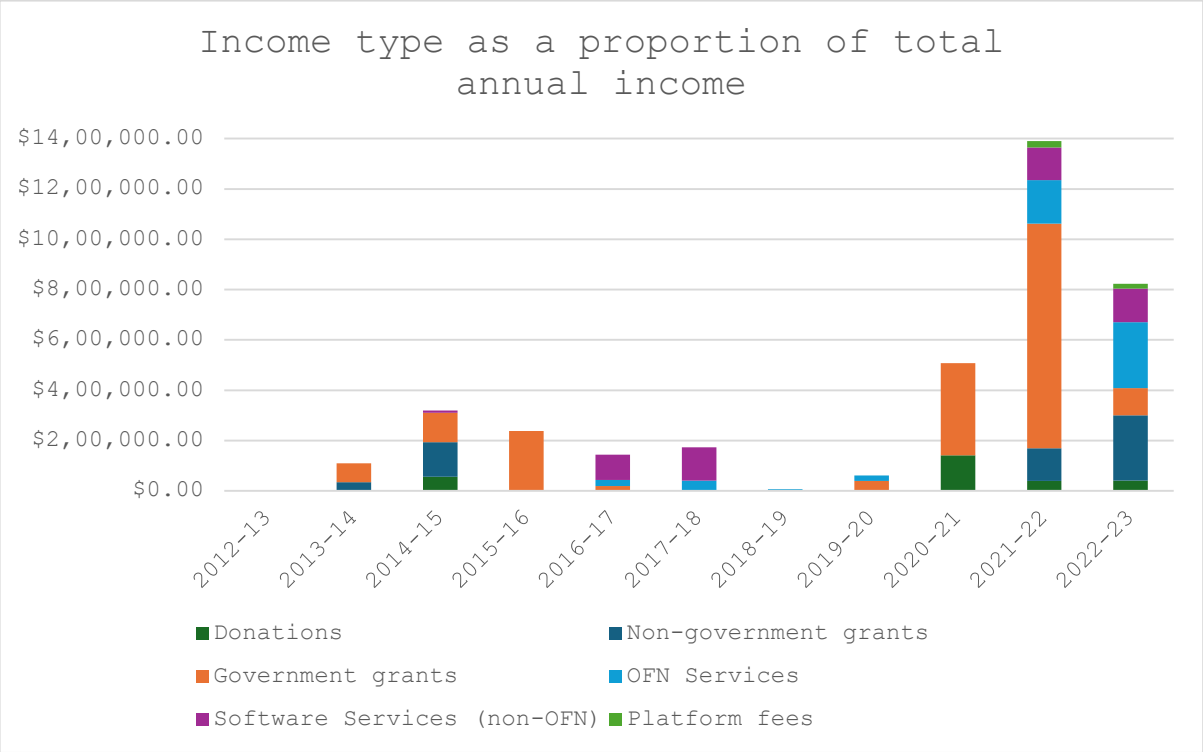


The first thing to emphasise is that OFN Australia's income from the OFN platform has been low. In the early years listing on the platform was free (OFN Australia, 2017), and, though there are now charges of 2% on the turnover of those whose turnover on the platform is over AU$500 a month (OFNA Software Pricing, n.d.), total income from the platform since its inception is nevertheless only a little more than AU$44 thousand, all made in the last two years (2021-22 and 2022-23). This compares with a total income over OFN Australia's lifetime of close to AU$3.8 million. Transaction volumes on the platform do have a good trajectory, however, particularly after the onset of the 2020 COVID pandemic catalysed high annual transaction growth, with total sales leaping from AU$400 thousand in 2019-20 to over AU$1.5 million in 2020-21 (Larsen Interview, 2021). Though, therefore,

the platform is not currently financially self-sustaining, it is possible that this will change. Currently, there are over 1,700 producers listed on the platform, close to 14,000 registered customers, and around 30,000 transactions on the platform per annum (OFNA, n.d.). The below graph shows the number of orders and the number of additional customers per annum since 2016 (the left axis for the number of orders, the right axis for the number of additional customers):



In lieu of income from the platform, OFN Australia has instead relied on volunteer time, donations, grants (especially grants from government), and income from software service provision. Interestingly, the COVID pandemic proved to be a catalyst not only for increased sales activity on the platform, but also, with government policy turning at this time towards increased support for online infrastructure, for more opportunities for income from government grants (Larsen Interview, 2021). OFN Australia's government grant income in the three years between 2020-23 totalled close to AU$1.4 million, compared to a total of just AU$40,000 in the three years preceding the pandemic. In terms of income from software service provision, this totals just over AU$1 million since 2012-13. Around half has been earned from non-OFN software services, and around half from services related to OFN, such as helping an affiliate establish an instance of the platform in a new national jurisdiction. Since 2019-20, the financial position of OFN Australia has been much improved, with the organisation moving from being largely volunteer run to now employing eight full-time equivalent workers (OFN Australia, 2023b). In 2022-23, the organisation managed to contribute 10% of its revenue to the global body (OFN Australia, 2023a). This is impressive, though it ought to be noted that this is short of the desired contribution level of between 20-40%.



As has been indicated (and is demonstrated in the above graph), OFN Australia has relied heavily on government grants for income. Of a total income over OFN's lifetime of close to AU$3.8 million, close to AU$1.9 million of this has come from government – 49% of the total. In terms of why government has extended grants to OFN, Larsen believes that this has been because, compared to a jurisdiction like France, where several online produce marketplaces exist as direct rivals to OFN's French affiliate (Open Food France), OFN Australia has had few if any direct competitors. This, says Larsen, has allowed OFN Australia to present itself to government as a unique means of supporting small-scale farming enterprises, so incentivising government support for it (Larsen Interview, 2021; Compain et al., 2021, 9).

Income from government has undoubtedly been enabling, particularly in terms of OFN being able to keep the code behind the OFN platform open-source. Feeling unable to raise capital from farmers, OFN's other potential source of capital would have been the private sector, but, given that extractive models dominate private financing, turning to the private sector would have militated against open-source coding, favouring, instead, a more proprietary approach. This, Larson suggests, is true not only of traditional private equity funding, but also of impact investor funding (Larsen Interview, 2021; and see Whitfield, 2015). If OFN had taken a more proprietary approach this would, by stymieing opportunities for international collaboration, likely have restrained OFN from attaining the global status it enjoys today.

If government funding has been enabling, it has, nevertheless, also been limiting. Government grants are often tied to specific purposes or goals, for example the production of research reports, and so it has not been possible for OFN Australia to use grant funding as it has seen fit. Further, if government funding has been limiting, it has also been limited. As said above, total government grant income over OFN Australia's lifetime has been close to AU$1.9 million. This, however, is far short of what is needed to optimise the platform, which Larsen and Hill estimate would require around AU$10 million (Larsen Interview, 2021).

5. Conclusion

Larsen and Hill established OFN in order to help make small-scale, sustainable farming practices financially viable. A platform, like OFN's, that directly connects producers with customers does indeed present a potentially highly attractive proposition for small-scale producers. This is because, under currently dominant food distribution systems, a farmers' income often accounts for only 10% of the final price consumers pay for their produce, with the other 90% claimed by various middle-people (Papadimitropoulos, 2023, p. 8). By directly connecting producers with consumers, OFN's platform makes it possible for producers to raise their returns by cutting such middle-people out.

The problem of middle-people driving down returns to farmers, at no benefit to consumers, is an old one. When farmers have the resources and the time, an appropriate solution has often been for them to establish producer co-operatives – for example, the first producer co-operatives in Australia arose in the 1870s under for this very reason (Lewis, 2006, pp. 3-5). OFN Australia, however, has felt that its intended beneficiaries – small-scale, sustainable farmers – are constrained from contributing economically to the OFN project, and so has not itself followed the co-operative route. Instead, incorporating as a charitable company limited by guarantee, it has sought capital from outside farming communities – particularly from government. But what is most remarkable about OFN is not its individual affiliates, like OFN Australia. Rather, what is most remarkable is the fact that OFN functions as a global community, with all involved in the enterprise contributing to a software platform that can be operationalised anywhere in the world. And while local affiliates, like OFN Australia, may not be co-operatives, the global body, in the form of the OFN Community, undoubtedly is. It has open and voluntary membership, members control the organisation democratically, and members contribute to it economically. As a developer of a globally available software platform that combines economies of scale with the ability to respond to diverse local conditions, the OFN Community represents an exciting model that other platform co-operatives can learn and take inspiration from.

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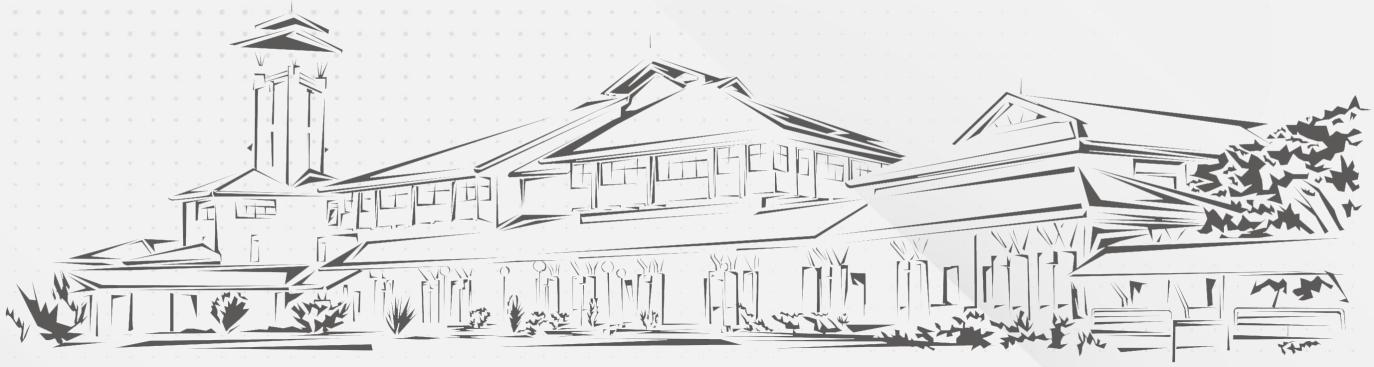

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