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**globalizing indian thought**

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# **I. Centre for Climate Studies**

## **Does Climate Change Leads to Severe Household-Level Vulnerability? Evidence from the Western Ghats of Kerala, India.**

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### **Abstract**

Due to climate change, erratic and extreme rainfall events are rising in Kerala, India. This, in turn, is triggering landslides and floods in the Western Ghats of Kerala. Accordingly, this study analyzes the distribution of vulnerability toward climate change among households residing in the Western Ghats of Kerala. Based on landslide data of Kerala for the years 2018 and 2019, five villages from the Idukki district of Kerala that accounts for the highest number of landslides are chosen as the study region. The landslides and floods have either entirely or partially destroyed 3367 households in the study region during 2018 and 2019. Among these, 348 families are selected for the study. To facilitate the analysis, we have done focus group discussions (FGDs) with the local self-body representatives, government officials, and households to understand the significant socioeconomic factors that need to be considered for studying the household-level vulnerabilities towards landslides and floods. Accordingly, data is elicited using an interview schedule and analyzed using robust logistic regression models. The results show that households with low or subsistence landholding are significantly vulnerable to landslides and floods. A substantial number of agricultural laborer households live in hazard-prone regions, resulting in unequally distributed exposure to climatic hazards. The study reveals that the family's historic wealth (landholding) plays a significant role in households' capacity to attain education and, thereby, to secure a permanent income from the non-primary sector. The study highlights the need to frame a holistic climate adaptation policy for the region. For this reason, a sustainable climate adaptation policy comprising rehabilitation and land use policy has to be developed.

**Keywords:** Climate Change, Household Level Vulnerability, Landholding, Western Ghats of Kerala.

## **Examining the Vulnerability of Traditional Fisherfolk to Climate Change in Six Coastal Villages of Central Kerala**

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### **Abstract:**

In recent years, the Kerala coast has been highly exposed to severe tropical cyclones and widespread coastal erosion. Coastal flooding is a regular occurrence in the state, disturbing the livelihoods of traditional fisherfolk and laying waste to their assets. The present study examines the livelihood vulnerability of traditional fisherfolk in six villages of Thrissur and Ernakulam districts that have been affected by coastal erosion. A total of 221 households have been considered for the study. A Climate Vulnerability Index (CVI) is employed to examine the situation in the two districts, following the IPCC framework incorporating a community's exposure, sensitivity, and adaptive capacity to climate change. Exposure is determined by the incidence of natural disasters and climate variability, while sensitivity includes the dimensions of health, food, and water. Adaptive capacity looks at the socio-economic status of the households, livelihood diversity, and social networks at play. Vulnerability is a positive function of the community's exposure and sensitivity to climate change-induced crises, and a negative function of its adaptive capacity. The value of the CVI ranges from zero (low) to one (high). The parameters for the CVI have been chosen based on literature and initial fieldwork among the fisherfolk in the two districts. The results of the study show that fisherfolk in Ernakulam were more exposed to the vagaries of climate change, but they had a lower sensitivity and higher adaptive capacity than their counterparts in Thrissur. Fisherfolk in Thrissur had a better score for livelihood status but fell short in terms of socio-economic profile and social networks. Combining the three components of the CVI shows that fisherfolk in villages of Thrissur that face coastal erosion have a significantly higher vulnerability. The value for CVI was 0.676 for Thrissur and 0.485 for Ernakulam, indicating that that fisherfolk in Thrissur need to be given a greater degree of support to face the consequences of climate change. Households in Ernakulam were better equipped to deal with the changing situation, although measures need to be taken to reduce their exposure to storm surges and cyclones in the region.

**Keywords:** Climate vulnerability, exposure, adaptive capacity, fisherfolk, climate change

## Research Progress and Future Agenda in Climate Finance: A Systematic Literature Review

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### Abstract

The major focus on climate finance shifted after the International Treaty on climate change at the Paris agreement. The government has taken many reforms and steps to reduce carbon emissions by providing alternatives. The paper conducts a systematic literature review on climate finance related to carbon emissions, the adoption of green bonds, and government steps toward climate change abatement. Also, to maintain the quality of the work, only those papers are selected which are published in A\* and A-category journals. So, the study revealed 33 articles related to the specifications of the study. Further, it is found that developed countries focus significantly on climate finance issues as the US and Europe's contributions to the research are quite prominent. In contrast, developing countries must take the issue seriously and conduct more research on the area. Thus, the future agendas on the given topic are also where the focus can be shifted. A focus can also be given to compatibility with established market conventions and financial innovation. The study also has implications for policymakers in terms of the smooth phasing of policy implications and countries not becoming overburdened in debt as a result of implementing the collaborative model of climate change. The carbon market is a relatively new area in climate finance, and investors are attracted towards carbon ETFs, the more focus can be given to the specific investment patterns.

**Keywords:** Climate Finance; Carbon Emission; PRISMA; Green Bonds

### Introduction

The inclusion of climate finance in the Paris Agreement was supported by all the countries worldwide and got approved on December 12, 2015, to assist the transition to the construction of low-carbon economies and to aid communities in preparing for the worst effects of climate change. The accord clearly states that rich nations are not avoiding their obligations to provide financial support for the battle against climate change, which is already acknowledged as a component of the UN Framework Convention. While developing nations are not required to contribute to climate finance, they are encouraged to do so as long as it does not lessen the obligations of wealthy nations to do so. Climate finance literature now has a distinct but admirable viewpoint following the Paris

agreement. Therefore, the current study purposefully selected those published articles that addressed particular questions about the Paris agreement for climate finance.

RQ1: What research dimensions have been covered in climate finance areas post-Paris Agreement?

RQ2: What are the measures suggested by the researchers regarding carbon emissions?

RQ3: What are green bonds and fiscal recovery packages' role in climate change?

So based on the above research questions and requirements of the study, finally, 33 articles are being considered for the systematic literature review in the study.

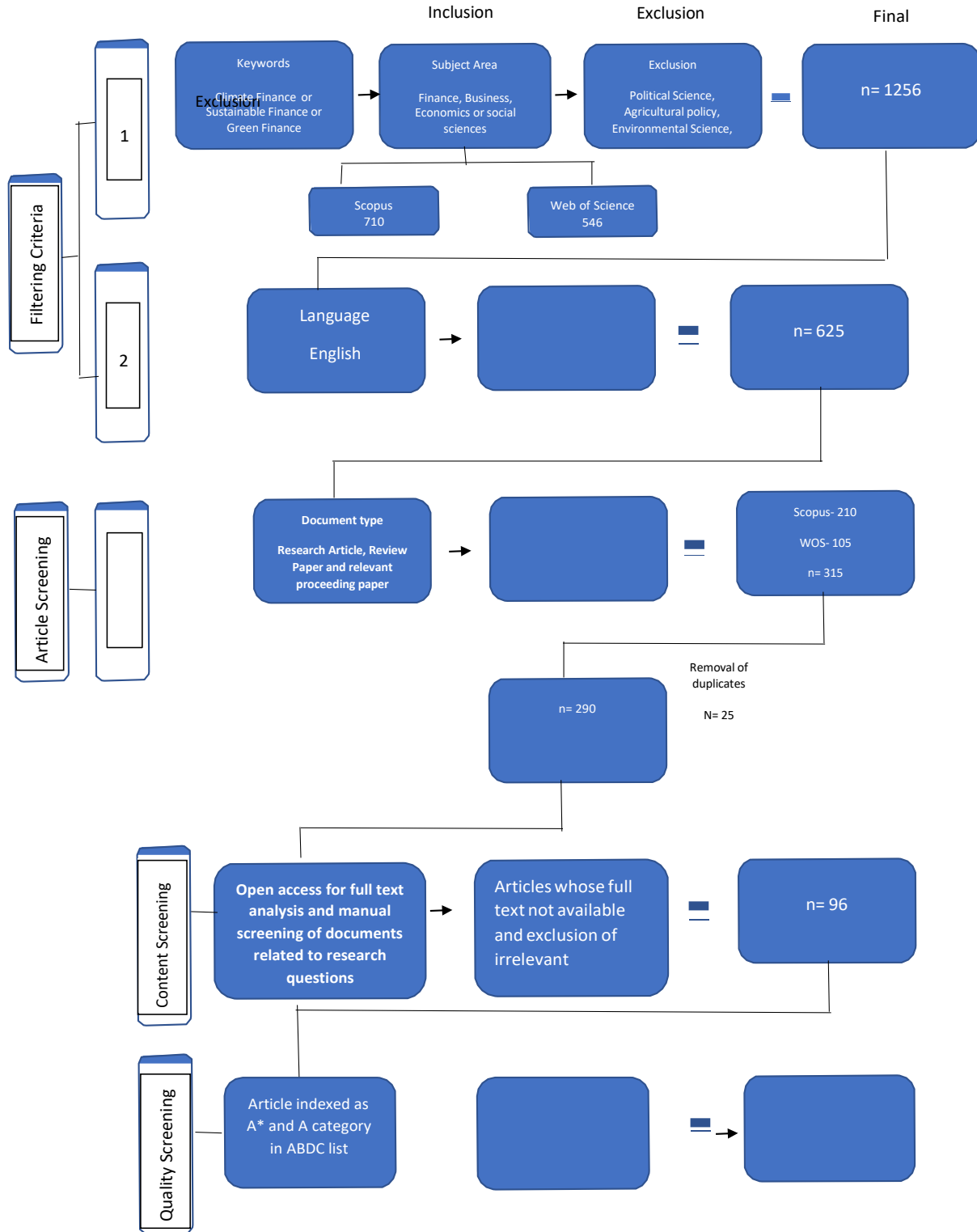


Figure1: PRISMA model for article selection

## Literature Review

### Carbon Emission leading to climate risk

Carbon emissions or Greenhouse gases emissions which are a major cause of climate risk, have been given consideration in the research (Funder & Dupuy, 2022; Palea & Drogo, 2020) in which they have talked about the cost of debt, climate-related disclosures, the role of public policies as a key factor in relation climate finance. The financial market structure of a country and the policy measure by the global economies around the world plays a major role in declining the climate risk (Chenet, Ryan-Collins, & van Lerven, 2021; Dikau & Volz, 2021; Robinson, Botzen, & Zhou, 2021).

S.No	Author(s), year and country of the study	Title of the Study	Keywords	Journal	Type of Paper	Objective	Findings
1	(Palea & Drogo, 2020), Italy	Carbon emissions and the cost of debt in the eurozone: The role of public policies, climate-related disclosure and corporate governance	cost of debt, carbon emissions, climate-related disclosure, emission control mechanisms, Paris Agreement, Eurozone	Business Strategy and the Environment (A)	Empirical	The study investigated the association between carbon emission and cost of debt financing	Analysis shows that after the Paris Agreement, less polluting industries begin to pay a bigger spread for their emissions.
2.	(Tan, Sirichand, Vivian, & Wang, 2020), China	How connected is the carbon market to energy and financial markets? A systematic analysis of spill overs and dynamics	Carbon market, financial markets, Structural breaks, Connectedness, Error variance decomposition, Macroeconomic determinants	Energy Economics (A)	Empirical	To analyse the connection between carbon market to energy and financial market.	Carbon energy finance system is higher than the volatility linkages during the period.
3.	(Ren, Li, yan, Wen, & Lu, 2022)	The interrelationship between the carbon market and the green bonds market: Evidence from wavelet quantile-on-quantile method	Carbon futures, green bond, Wavelet analysis, Quantile granger causality test, Quantile-on-quantile regression	TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE (A)	Empirical	The study aims to develop a methodology that takes into account various time scales and market dynamics in order to quantify the interdependence between the carbon futures and green bond markets.	The study finds that carbon futures have favourable effects over the medium to long period and unpredictable performance over the short term. When both markets are in an extreme condition, the consequences are more noticeable.

4.	(Mörsdorf, 2022)	A simple fix for carbon leakage? Assessing the environmental effectiveness of the EU carbon border adjustment	Carbon border adjustment, Carbon leakage, Computable general equilibrium, EU climate Policy, Energy-intensive industries	ENERGY POLICY (A)	Empirical	The present study models and compares the three versions of carbon border adjustments in a computable general equilibrium model.	The research demonstrates that the Commission's plan, which only addresses imports and excludes indirect emissions, would cut carbon leakage to a comparable level.
5.	(Pellegrini, Arsel, Orta-Martinez, Mena, & Muñoa, 2021)	A perspective on treaties, maximum wages, and carbon currencies: Innovative policy instruments for global decarbonization	Decarbonization, Innovation styles, Carbon coins, Personal carbon trading, Carbon tax	ENERGY POLICY (A)	Conceptual	The study explores the global decarbonization strategy for innovative policy instruments.	This article emphasised on the involvement of several, potentially underappreciated entities in expediting the decarbonization, particularly those of new multilateral organizations, labour economists, central banks, insurance companies, accountant, and taxation experts.

### Green Bonds as a measure of climate change

Green bonds introduced by investment managers and big financial firms will play a crucial role in collecting the funds needed for climate change-related risk (Fatica & Panzica, 2021; Fatica, Panzica, & Rancan, 2021), but there arises a question of who will bear the cost for going green whether its government or institutions or big investment firms or policymakers or the individuals living in the country (Baer, Campiglio, & Deyris, 2021; Böhringer, García-Muros, & González-Eguino, 2022).



S.No.	Author(s), year and country of the study	Title of the Study	Keywords	Journal	Type of Paper	Objective	Findings
1.	(Monk & Perkins, 2020)	What explains the emergence and diffusion of green bonds?	Green bond, Energy transition, Innovation system, Niche, Multi-level perspective	Energy Policy (A)	Review Paper	Case Study Methodology 20 semi-structured interview and literature survey Time Period: April 2015 to October 2016	Findings indicates three sets of factors in diffusion of green bonds. Goal directed action of intermediaries Group of self-re-enforcing process Wider conceptual process development for favourable selection environment
2.	(Fatica & Panzica, 2021)	Green bonds as a tool against climate change?	climate change, corporate sustainability, environment, green bonds, impact investing	BUSINESS STRATEGY AND THE ENVIRONMENT (A)	Empirical	Collected data for all the bond tranches issued worldwide up to 2019 from Thomson Reuters Refinitiv. Also, the financial data of the company for profits, market capitalisation, total asset, debt and revenue and also EGS ratings.	The study finds that after borrowing in the green market, green issuers' assets' carbon intensity decreases in comparison to conventional bond issuers with comparable financial and environmental ratings.

3.	(Böhlinger et al., 2022)	Who bears the burden of greening electricity?	Renewable energy subsidies, Feed-in tariffs, Microsimulation, Computable general equilibrium,	ENERGY ECONOMICS (A*)	Empirical	Three policies: increase in mineral oil taxes, increase in value added taxes, exemption of electricity surcharge for residential consumers Microsimulation model Social Welfare analysis	The study finds that all the three alternatives can attenuate the regressive distributional effects compared to feed-in-tariffs.
4.	(Fatica et al., 2021)	The pricing of green bonds: Are financial institutions special?	Sustainable finance, Climate change, green bonds, financial institution, Bank loans	JOURNAL OF FINANCIAL STABILITY (A)	Empirical	Data Source: Dealogic DCM which covers data about bond market worldwide. Selected bond tranches between 2007-2018 issued by financial as well non-financial companies. 1397 bonds are identified out of 271,312 fixed income securities and 697 bonds are selected based on	The study suggests that at the time issuance, investors are not able to identify the clear link between the issuing bank and the green investment projects which explains the absence of premium for the issuers.

## Discussion

Climate finance is the primary concern currently, and focusing on climate change, reducing carbon emissions and fossil fuel burning will be the key to improving climate-related issues. So, the present study focuses on the research progress and future agendas in climate finance which will enable the prospects for implication to industries and provide suggestions for future research. The study focuses on the two essential dimensions of climate finance: carbon emission, which leads to climate risk. The

studies clearly show the association between carbon emissions and the cost of debt financing. So, results depict that after the Paris agreement, fewer polluting industries spread across the level of carbon emission, which is elaborated in the previous studies (Ouazad & Kahn, 2022; Palea & Drogo, 2020). The connection between carbon emission and the energy market is also studied in the literature where carbon energy and emission have a long run volatility linkages during the period (Chenet et al., 2021; Dikau & Volz, 2021; Mörsdorf, 2022). The second part focuses on the climate change measures in which green bonds and green electricity are important measures for reducing climate change risk. So, the studies focused on the pricing of green bonds, emphasized the responsible centers for sustainability and green electricity, the emergence and diffusion of green bonds, and how the use of green bonds can be implemented for reducing climate risk (Böhringer et al., 2022; Fatica & Panzica, 2021; Fatica et al., 2021; Monk & Perkins, 2020).

### **Implications of the Study**

The thorough literature review gives several implications for governments, policymakers, managers, and investment managers. The green fiscal policy package can fasten economic growth by reducing emissions. So, the government must focus on the reduction of greenhouse gas emissions. Further, the study provides the policy initiative aimed at supporting the formation of social networks for financial innovation where climate donors and government should leave the notion of climate finance coordination which is merely the administrative process, instead should focus on specifics of climate governance. Accelerating climate change and disruptions lead to the new renewable energy and ancillary service provision that must be at the top in the mind of the policymakers. Thus, it provides implications to regulators and stakeholders for monitoring systematic climate risk in financial institutions. The implication to the industry regarding the strength of tourists for confronting the potential crisis. Finally, financial economists must address the issue of climate finance in an unprecedented manner of risk arising due to climate finance change.

### **Suggestions for future research**

Future studies could explore the implications of additional climatic shocks on macro-financial dynamics, such as those that influence energy efficiency or inventories. Additionally, the policy and effect analyses conducted in this research may be examined again using other formulations of climate damage. Further studies are suggested to identify the blind spots that occurred during the crisis, and more focus must be given to identifying the reasons for inducing climate change (Hepburn, O'Callaghan, Stern, Stiglitz, & Zenghelis, 2020). Future studies may also adopt for analysing the

effects of additional green policies like green quantitative easing and the potential function of a public investment bank encouraging investment in sustainable technology. More studies need to conduct a more thorough analysis of potential linkages between green finance policies and the technological and investment choices businesses make. Future studies should focus on the issue of low carbon emission bonds after the Paris protocol and its effect on climate change intensity and government steps for promoting the same. Digital carbon currency is at a very nascent stage, focusing more on concept building; its acquisition and adoption must be studied in future research. At the cutting edge of empirical finance and asset pricing, the ambiguity of climate risk probabilities and the correlation of natural disaster shocks open up new research areas. The global public goods are the result of the comprehensive overview, so it is suggested to include transfer volume, cost-proportion, and transfer rate for valuing the differential of climate change effect (Monk & Perkins, 2020).

## **Conclusion**

The study discussed the issue of climate change, climate risk, and the use of green bonds as an essential measure for handling climate-related issues. The study classified regulatory, stakeholder, physical, technological, and legal as top risks for the next five years in climate finance, while physical, regulatory, technological, stakeholder, and legal are the top risks for the next 30 years. Further, the study revealed that green bonds with external assessment and those issued after the Paris Agreement result in a more significant decrease in emissions. So, more and more countries should encourage the issuance of green bonds. The policy measures are combined mainly of three constituents: Green Basel-type capital requirement, green public guarantee to credit, and carbon risk adjustment in credit rating can help in carbon emission. Combining these will help in handling the climate risk in a better way. Finally, the study concludes that several iterations of the carbon border adjustment, which would include indirect emissions and offer export refunds on carbon prices, would boost the measure's efficacy; however, these advantages should be balanced against the political and legal dangers involved. The way humankind use, finance, and value fossil fuels and the climatic changes they cause might be drastically altered by a carbon currency, a maximum wage, and wealth limitations. Comparing green bonds with external review to those with self-labeling, the premium is higher for the former.

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## A Bibliometric Analysis on Environmental Performance and International Trade

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### Abstract

While trade openness has led to invitation of opportunities for economic growth but the threat to undermining sustainable growth in the view of exhaustion of resources, which leads to environmental degradation, poses a major dilemma to firms, industries, and countries. There is an increment in the requisite of green performance and sustainable development of firms influenced by international policies. Considering the significance, the paper employs bibliometric analysis to identify the trends related to the respective research area using the key words “Environmental Performance” or “Environment” and “International Trade” or “Trade” and considering 1895 articles identified from the Web of Science database. The citation analysis shows that each article has been cited 37.38 times and 2021 being the highest cited year. Emerging Markets Finance and Trade is the most prominent journal with about 8 percent of the total publications accounting for 162 publications and USA being the top country of publication. The results show the increment in the number of studies that have been conducted is constant and the persistent need for sustainability provides scope for further research.

**Keywords:** Environmental Performance, Environment, International Trade, Trade

### Introduction

Environmental related issues are becoming prevalent for range of members associated with a firm, be it stakeholders, employees, consumers or general public (Ilinitich et al., 1998). Environmental performance is the measure of the sustainable state of any firm. There is an increment in the requisite of green performance and sustainable development of firms influenced by international policies (Wang et al., 2020). With the increment in world trade and upscaling ecological problems, competitive edge is gained by the firms by the means of environmental performance (de Villiers et al., 2011). As the economies have become interdependent, self-sufficiency is almost a myth. Countries need to allocate economic resources among themselves in order to grow (Vijayasri, 2013) keeping in mind the sustainability aspect.

Considering the growing importance of environmental performance in association with international trade, the current study aims to identify the patterns and trends in the publication regarding the stated research area by performing bibliometric analysis on 1895 selected articles from Web of Science, collected using the key words “Environmental Performance” or “Environment” and “International Trade” or “Trade”. The research area is quite prominent and have seen a surge over the years.

## **Literature Review**

While trade openness has led to invitation of opportunities for economic growth (Vijayasri, 2013) but the threat to undermining sustainable growth in the view of exhaustion of resources, which leads to environmental degradation, poses a major dilemma to firms, industries and countries (Mungai et al., 2022). Industries around the globe are devising strategies to curb the climate changes occurring due to industrialization (Pittock, 2016). To plan and have control over performance, cost and environmental strain, the firms consider environmental performance indicators as a significant tool (Jasch, 2000). By the means of forty parameters and the environmental performance index evaluates over 180 countries to measure performance based on climate change, ecosystem vitality and health of the environment (Wendling et al., 2018). With the growing importance of sustainable development in the globalized world, there is need to shift the environmental arguments from emotional to factual and evidence based in order to facilitate decision making (Hsu & Zomer, 2014). With increasing need for environmental sustainability, the professionals as well as the academicians are drawn towards relationship between firms, trade, and environment (Starik & Marcus, 2000). There is question on the present economic system’s sustainability due to rapid degradation of ecosystem (Hsu & Zomer, 2014).

## **Research Methodology**

For identification of publishing trends and popular themes in the current years for considered topic of study, the existing literature is analysed using a systematic and quantitative way known as bibliometric analysis (Tijjani et al., 2020). For the field of Environmental Performance and International trade, the study employs bibliometric analysis. Web of Science, being a prestigious database, uses Journal Citation Reports to incorporate the publications (Zhu & Liu, 2020), hence considered for the dispensing overview of the respective topic. The retrieval of data took place on 20<sup>th</sup> May, 2022. The study is conducted only published articles. The number of articles chosen were searched through the keywords “Environmental Performance” or “Environment” and “International Trade” or “Trade” in the search box of Web of Science database.

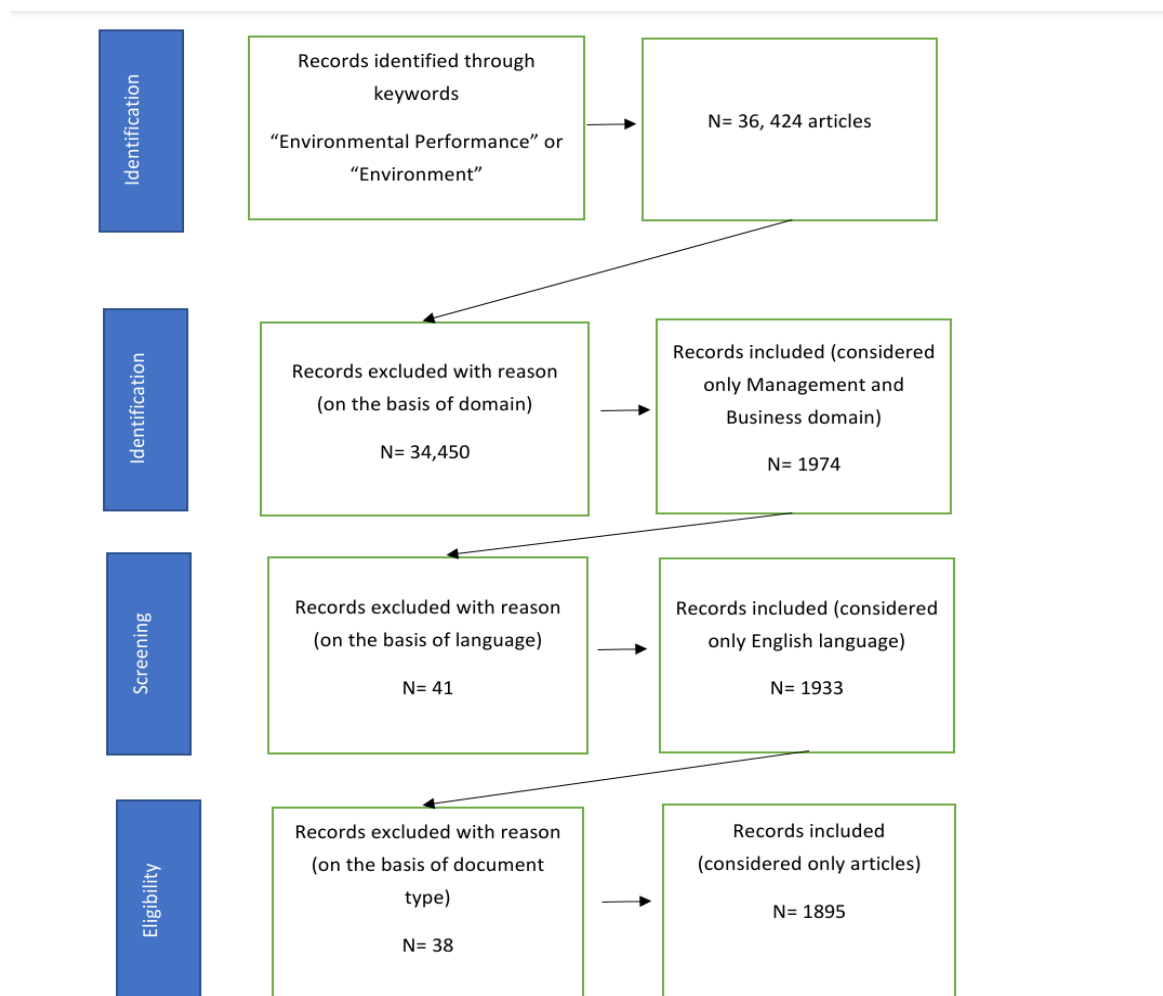


Following criteria is been used to consider the collected sample for study through Web of Science:

- Initially the results displayed 36,424 articles after the search of the key words “Environmental Performance” or “Environment” and “International Trade”.
- Our analysis is relevant to the domains of business and management. Hence, the disciplines Business and Management were selected for filtering the number of articles leaving the results of 1974 articles.
- The next step consisted the selection of only English language documents resulting in exclusion of 41 articles.
- After that only published articles type document were chosen for enhancement of reliability of the study which removed 33 articles.

Finally, 1895 articles were chosen for the further analysis.

**Figure 1 Flowchart as per PRISMA model**



**Source: Author's own**

### **Data Analysis**

Tables, tree maps, figures and bar graphs representing the year of publication, citation analysis, top 10 authors, publishers, journals, and countries of publication is presented in the study.

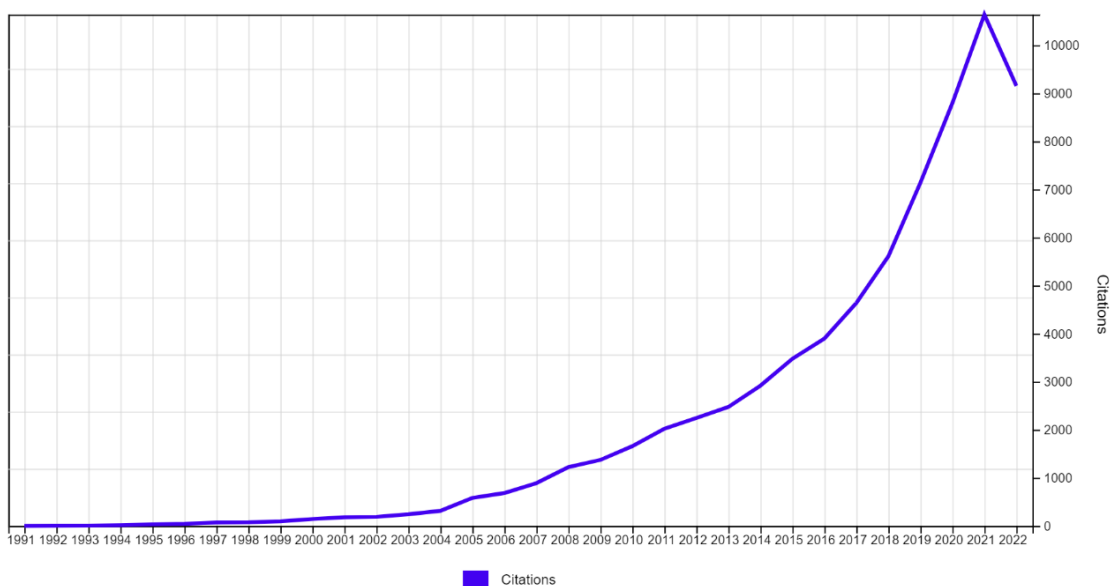
### **Citation Analysis**

Table 1 and figure 2 shows the citation summary of the identified articles. The total number of publications from the year 1989 to 2022 are 1,895 having a total citation of 59,910 articles and 59,385 articles without self-citation. The number of articles have been cited for 70,841 times which averages out to be 37.38 citations per article. 34.4% of the articles cited are form Management domain followed by Business, Environmental Sciences, Environmental Studies, and Economics which is 30.06%, 14.03%, 12.77% and 12.29% respectively. The highest number of citations were done in the year 2021.

**Table 1 Citation Summary**

<b>Publications</b>	<b>Citing Articles</b>	<b>Times Cited</b>	<b>Average Citation per article</b>
1895 (1989-2022)	59,910 (Total)	70,841 (Total)	37.38
	59,385 (without self-citation)	69,948 (without self-citation)	

**Source: Analysis Output**

**Figure 2 Number of citations per year (1991-2022)**

**Source: Analysis Output**

### *Subject Domain*

The maximum number of studies related to the topic and keywords is conducted in the field of Management (1225 articles) followed by Business (1154 articles), Economics (399 articles), Operations Research (247 articles) and Environmental Studies (235 articles). Management and Business together covers the maximum number of researches in the respective area. Table 2 shows the top 10 subject domains where the environmental performance and international trade related studies have been conducted.

**Table 2 Subject Domains in the research area**

<b>Subject Domain</b>	<b>Record Count</b>	<b>% of 1,895</b>
Management	1225	64.644
Business	1154	60.897
Economics	399	21.055
Operations Research Management Science	247	13.034
Environmental Studies	235	12.401
International Relations	167	8.813
Ethics	69	3.641
Engineering Industrial	49	2.586
Information Science Library Science	49	2.586
Regional Urban Planning	46	2.427

**Source: Analysis output**

## Authors

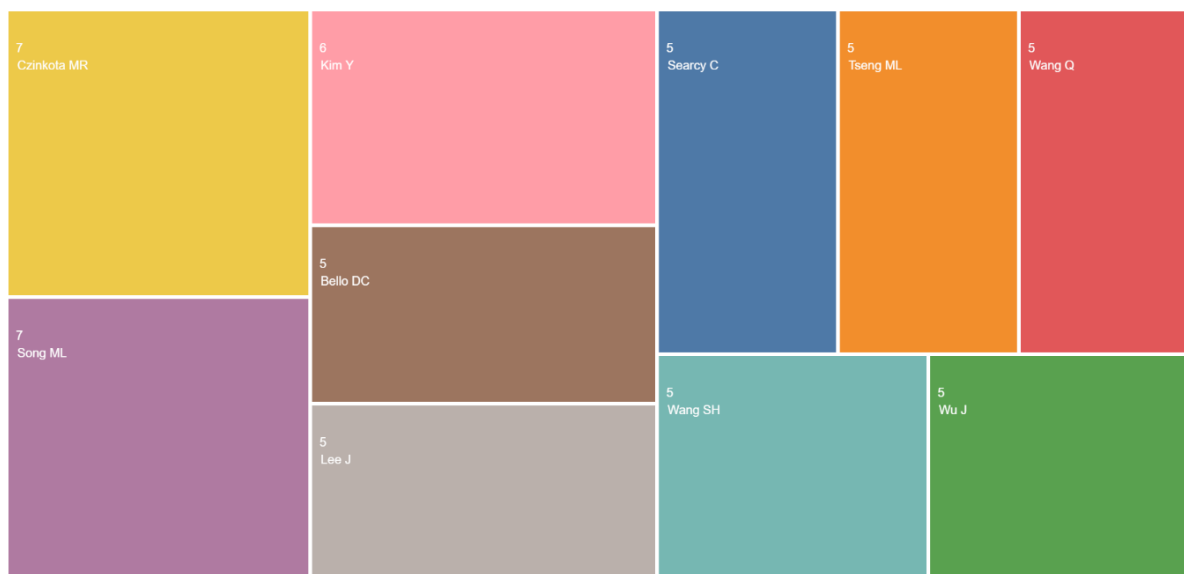
Table 3 and Figure 3 provides the summary of the prominent authors in terms of publication in environmental performance and international trade. The number of publications done by the authors have contributed in the development of the concept and given different perspective on the same providing scope for further researches. The results show that none of the authors have contributed extensively to the research area. The maximum number of articles are authored by Czinkota MR followed by Song ML.

**Table 3 Prominent Authors in Terms of Publication**

<b>Authors</b>	<b>Record Count</b>	<b>% of 1,895</b>
Czinkota MR	7	0.369
Song ML	7	0.369
Kim Y	6	0.317
Bello DC	5	0.264
Lee J	5	0.264
Searcy C	5	0.264
Tseng ML	5	0.264
Wang Q	5	0.264
Wang SH	5	0.264
Wu J	5	0.264

Source: Analysis output

**Figure 3 Prominent Authors in Terms of Publication**

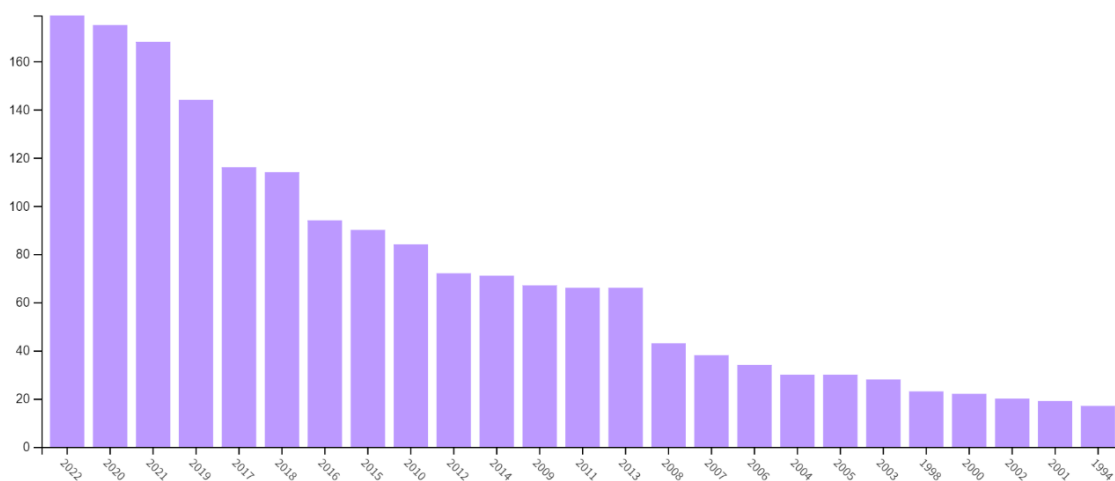


Source: Web of Science

### ***Publication Year***

The earliest publication was in 1989 as per the Web of Science database. Figure 4 represents the trend in publication relevant to the topic. It can be seen that over the years, the number of publications has increased. Not a single year has passed where the publication stats have declined. This shows the relevance and significance of studying environmental performance and international trade in the current scenario.

**Figure 4 Publication years**



**Source: Analysis output**

### **Journals**

Emerging Markets Finance and Trade is the most prominent journal in the respective field. It has published 8.5 percent of the articles which accounts for a total of 162 articles published by the journal since 1989. Business Strategy and the environment is the second in the list with 95 articles leading by European journal of Operations Research (84 articles), Journal of Business Ethics (62 articles) and Journal of Environmental Economics and Management (60 articles). Table 4 and Figure 5 show the top 10 journals in which maximum number of publications have been done.

**Table 4 Top 10 Most Prominent Journals**

<b>Publication Titles</b>	<b>Record Count</b>	<b>% of 1,895</b>
Emerging Markets Finance and Trade	162	8.549
Business Strategy and The Environment	95	5.013
European Journal of Operational Research	84	4.433
Journal Of Business Ethics	62	3.272
Journal Of Environmental Economics and Management	60	3.166
Management Science	52	2.744
Technological Forecasting and Social Change	46	2.427
Corporate Social Responsibility and Environmental Management	38	2.005
Journal Of Business Research	36	1.900
Strategic Management Journal	28	1.478

Source: Analysis output

**Figure 5 Most Prominent Journals (Top-10)**

Source: Web of Science

### Publishers

**Figure 6 Top 10 Publishers** In the list of top publishers, Elsevier tops the chart having a total of 451 publications over the years. Wiley, Taylor & Francis, Emerald Group, Springer Nature are the prominent publishers in the researched field with 288, 264, 236 and 174 publications respectively. The publications mentioned in the Table 5 and Figure 6 are in regards to the topic being studied.



Source: Analysis Output

**Table 5 Top 10 Publishers**

<b>Publishers</b>	<b>Record Count</b>	<b>% of <u>1,895</u></b>
Elsevier	451	23.799
Wiley	288	15.198
Taylor & Francis	264	13.931
Emerald Group Publishing	236	12.454
Springer Nature	174	9.182
Informs	100	5.277
Sage	72	3.799
Inderscience Enterprises Ltd	20	1.055
Vilnius Gediminas Tech Univ	20	1.055
Academic Journals	17	0.897

Source: Analysis Output

### **Countries of Publication**

It is depicted in Table 6 that the maximum number of publications in terms of countries is done in USA which accounts for a total of 33.14 percent. China and England are far behind USA in publication in the research area and are only half way near and below account for 18.8 and 12.3 percent. The table shows less contribution from European and Asian countries.

**Table 6 Top Countries of Publication**

<b>Countries/Regions</b>	<b>Record Count</b>	<b>% of <u>1,895</u></b>
USA	628	33.140
Peoples R China	358	18.892
England	234	12.348
Australia	115	6.069
Canada	103	5.435
Germany	103	5.435
South Korea	81	4.274
Italy	77	4.063
Spain	77	4.063
Taiwan	77	4.063

**Source: Analysis Output**

### **Discussion**

With growing concerns for environmental sustainability in the globalised era, the field of trade and business are shifting towards considering environmental performance as a key aspect for a holistic growth and development. The paper employs bibliometric analysis to identify the trends related to the respective research area using the key words “Environmental Performance” or “Environment” and “International Trade” or “Trade” and considering 1895 articles for the final study by filtering out from 36,424 articles. The results of the analysis show that on an average each article related to the environmental performance and international trade is cited 37.38 time with a H index of 123 during 1989 to 2022. There is a constant increase in number of publications and citations per year which have never declined even a single year. 2021 has the greatest number of citations till now which is 10,631. Management and Business domains consist the maximum number of studies conducted accounting for about 64 and 60 percent of the total published articles. It is found that any of the authors have an extensive contribution in study area, only Czinkota MR and Song ML have made efforts with 7 articles each in the respective field. Emerging Markets Finance and Trade is the most prominent journal with about 8 percent of the total publications accounting for 162 publications. Elsevier is the leading publisher in the field with the most number of publications over the years. From the analysis it is clear that other than China, the contribution of other Asian countries is almost negligible and European countries are also way behind USA which is the country with highest



number of publications accounting for 33 percent of the total publications.

## Conclusion

The growing concerns regarding environmental performance of firms in international setting has attracted both academicians and professionals. The analysis performed on the selected articles has provided literary information regarding the trends and patters of publications done during 1989-2022 in the given study area. The results show the increment in the number of studies that have been conducted is constant and the persistent need for sustainability provides scope for further research.

## Scope for future research

USA being on the top of the leader board for publications with not more than a little contribution from Asian and European nations leaves the scope for further research from the respective regions. Domains other than management and business has attracted less attention in the research area of environmental performance associated with international trade. The respective study area has witnessed no prominent authors in management and business domain over the years opening the horizons for being pioneer in the field.

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## **DOING WELL BY DOING GOOD: AN EXPLORATORY STUDY OF THE ADOPTION OF SUSTAINABLE PRACTICES IN THE CONSTRUCTION VALUE CHAIN**

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The construction industry in India is the largest consumer of virgin natural resources. To promote sustainable practices in this industry, the Central Government has promoted industrial by-products like fly ash from thermal power plants and Ground Granulated Blast Furnace Slag (GGBS) from steel manufacturing as viable alternatives to cement in concrete. They have also devised building codes and Green Building rating systems to promote the usage of these materials. However, the widespread adoption of these prescriptions has been slow and limited. Despite the availability of technology related to the inclusion of these by-products in cement and concrete production since the 1800s, their low adoption, especially in India, is a cause for pressing environmental and ecological concern. In this paper, we study the supply-side and demand-side challenges for the adoption of sustainable practices in the Indian construction industry. Through a qualitative approach, we explore the adoption challenges across the construction industry value chain - raw material suppliers, construction companies and customers and supplement our findings by interviewing academics in the construction technology and environmental space. Our interviews gave us rich insights into the adoption challenges faced by construction firms in India. We noticed an emerging trend in the factors affecting the adoption levels of circular/closed-loop practices in the construction value chain, leading us to two major propositions. Based on the insights from the interviews, we recommend solutions to promote the seamless adoption of closed-loop and other circular economy practices in the construction industry. Further, we describe the case study of a mid-sized construction firm to demonstrate how attention to specific sourcing practices and an optimized business and production model can help overcome the industry's challenges of transitioning to sustainable business practices.

## Workplace wellbeing through Indian Psychology

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### Abstract

Workplace wellbeing is a concern for every organization. Researchers and human resource leaders are actively exploring newer paradigms and techniques to achieve optimal results from their interventions for workplace wellbeing. Amidst the various models and techniques available, I attempt to analyze three models from Indian psychology that can be used to design and develop workplace wellness interventions. For this purpose, the *triguṇa* concept from the *bhagavadgītā*, the model of states of mind from Patanjali's *Yoga Sūtras*, and the *pañca kośa* model from the *taittirīya upaniṣat* are elucidated. Based on these three models, I attempted to discuss yoga-based interventions for workplace wellbeing and the intrinsic challenges in implementing such wellness programs.

**Keywords:** workplace wellbeing, Indian psychology, *triguṇa*, *yoga*

### 1. Introduction

Wellbeing is a major concern in the industry. Organizations are exploring numerous means to enhance the wellbeing of their workforce. A workplace wellness program generally addresses prevention, promotion, and management of an employee's physical and mental health. Nowadays, many of the workplace-prevalent physical ailments are rooted in mental disharmony. And a common buzzword, stress, is evidently present in every workplace. Some of the common workplace wellness programs that organizations adopt are: healthy food, workplace gym, recreation center, yoga, etc. (Daniels et al., 2021). Even though many options for wellbeing management are available, still, handling mental health is a tough task. The effectiveness of many of these interventions sometimes boils down to effective mind management.

## 2. Purpose

As the major challenge is to manage the mind, Indian Psychology offers a spectrum of models and tools that help us understand the structure and functioning of the human mind. For the purpose of this study, I will adopt concepts from i) *bhagavadgītā*, ii) Patanjali's *yoga sūtras*, and iii) *taittirīya upaniṣat*. The concept of *triguṇa* is well defined and elucidated in the 14th chapter of the *bhagavadgītā*. The states of mind are explained in the Vyasa *bhāṣyam* of the *yoga sūtras*. The *pañca kośa* model is explained in the *taittirīya upaniṣat*. The purpose of this study is to synthesize ideas from these three core models from Indian thought for workplace wellness.

## 3. Existing gaps

Systematic reviews suggest that many of the workplace wellbeing interventions that are offered by organizations do not conduct a need and outcome analysis in order to design an effective workplace wellbeing intervention (Hulls et al., 2020; Pandya et al., 2022). This ignores the need to customize wellness interventions as per the needs of the workplace, and often a common and popular set of techniques are offered as interventions. I propose that the theories based on Indian psychology can help provide a generalized framework for developing varied workplace wellbeing interventions.

## 4. Methodology

I used a narrative synthesis method to discuss the specifics of three Indian psychology models and how they can be applied to design the workplace interventions. The original verses were read in *saṃskṛta* and an available translation was used to synthesize the narratives presented in the coming sections.

## 5. Models from Indian Psychology for Wellbeing

### 5.1. *Triguṇa*

*Triguṇa* can be considered as a personality model which presents the framework of three basic *guṇas*: *sattva*, *rajas*, and *tamas*. Based on the combination of these three *guṇas*, various types of personality characteristics can emerge. Some of the following verses from the *bhagavadgītā* (BG) convey the main features of this theory (Tapasyananda, 2012). Firstly, the existence of three basic *guṇas* is mentioned:

*sattvaṃ rajas tama iti guṇāḥ prakṛiti-sambhavāḥ nibadhnanti mahā-bāho dehe  
dehinam avyayam* (BG 14.5)

This verse conveys that the whole nature is of three *guṇas*, namely *sattva*, *rajas*, and *tamas* and they also bind the soul to this body. The characteristics of these three *guṇas* are presented in the subsequent verses.

*tatra sattvaṃ nirmalatvāt prakāśhakam anāmayam sukha-saṅgena badhnāti jñāna-saṅgena  
chānagha (BG 14.6)*

*Sattva guṇa* is characterized by goodness. Being pure, *sattva* expresses itself as illumination and wellness. It creates an attachment towards happiness and knowledge.

*rajo rāgātmakam viddhi triṣṇā-saṅga-samudbhavam tan  
nibadhnāti kaunteya karma-saṅgena dehinam (BG 14.7)*

*Rajas* is characterized by passion. It expresses itself through strong desire and affection. It creates attachment towards action and its results.

*tamas tv ajñāna-jaṃ viddhi mohanaṃ sarva-dehinām  
pramādālasya-nidrābhis tan nibadhnāti bhārata (BG 14.8)*

*Tamas* is characterized by ignorance. It expresses itself through negligence, laziness, and sleep. It basically covers the real nature and creates a delusion. The following important verse conveys the relative dynamics of the emergence of one particular *guṇas* at a given time. It is like the mutual competition between the three *guṇas*; whichever wins emerges as predominant, and the other two are expressed as secondary traits.

*rajas tamaśh chābhibhūya sattvaṃ bhavati bhārata  
rajah sattvaṃ tamaśh chaiva tamaḥ sattvaṃ rajas tathā (BG 14.10)*

Sometimes *sattva* predominates over *rajas* and *tamas*, and similarly, *rajas* predominates over *sattva* and *tamas*, and sometimes *tamas* predominates over *sattva* and *rajas*. Based on the relative combination of these three *guṇas* to different degrees, innumerable varieties of expression of behavior can be expected. Lastly, it is described how these three *guṇas* lead to different types of results.

*karmaṇaḥ sukṛitasyāhuḥ sāttvikam nirmalam phalam rajasaḥ tu phalam duḥkham  
ajñānam tamaḥ phalam (BG 14.16)*

Actions done in a *sattva* state lead to pure results, *rajas* lead to results that end up being painful subsequently, and *tamas* leads to further ignorance. This emphasizes the need to perform actions in the state of *sattva* to reap the best results.

The above-mentioned *triguṇa* model provides insight into the behavioral manifestations of the intangible mind. This is very important because we need to know what our thoughts are telling us in order to change our behavior when we need to.

## 5.2. State of mind in *Yoga Sūtras*

Patanjali's *yoga sūtras* are the basis for yoga philosophy, which deals with the functioning of the mind elaborately. Vyasa's commentary on Patanjali's *yoga sūtras* further helps us to understand the deeper meaning of the verses (Prasada, 1998). In his commentary on the first verse, Vyasa describes five states of mind as: *kṣiptam*, *mūḍham*, *vikṣiptam*, *ekāgram*, and *niruddham*.

*kṣiptam mūḍham vikṣiptamekāgram niruddhamiti cittabhūmayah*

(Vyasa's commentary verse 1, Patanjali's *yoga sūtras*) Based on the underlying *guṇas* in each of the states as given in the following table 1, we can derive that progress in culturing of mind goes from *tamas* to *rajas* to *sattva*, where the mind gradually progresses from the lowest *kṣipta* and *mūḍha* states to *vikṣipta* and *ekāgra* states and later even to the exalted *niruddha* state.

Table 1: Interaction of *triguṇa* and states of mind

States of mind	<i>triguṇa</i>		
	<i>sattva</i>	<i>rajas</i>	<i>tamas</i>
<i>kṣiptam</i>	Less dominant	Dominant	Less dominant
<i>mūḍham</i>	Less dominant	Less dominant	Dominant
<i>vikṣiptam</i>	Dominant	Less dominant	Less dominant
<i>ekāgram</i>	Dominant	In trace	In trace
<i>niruddham</i>	Transcended	Transcended	Transcended

The *kṣipta* state is full of agitated activity and passion. There is a sense of mental instability. The *mūḍha* state is full of delusion and confusion and again contributes to mental instability and indecision. The *vikṣipta* state is characterized by occasional tranquility of mind but is intercepted by *rajas* and *tamas* in between, disturbing the mental balance. However, it is better than the *kṣipta* and *mūḍha* states, where there is no chance of *sattva* to express itself dominantly. *Ekāgra* state is a state of focus and purpose. This can be achieved only when the *sattva* is adequately developed. *Niruddha* state is often not experienced by the majority of the population as it requires deep effort to still the mind. The main message to be observed from this analysis is that expression of mind depends on *triguṇas* and, therefore experiences of happiness and wellbeing can be and should be consciously cultivated through the promotion of *sattva*.

### 5.3. Pancha Kosha

The *pañca kośa* model is taken from the *taittirīya upaniṣat*, *brahmānandavallī* section (Gambhirananda, 2010). According to this model, human existence is in the five dimensions.

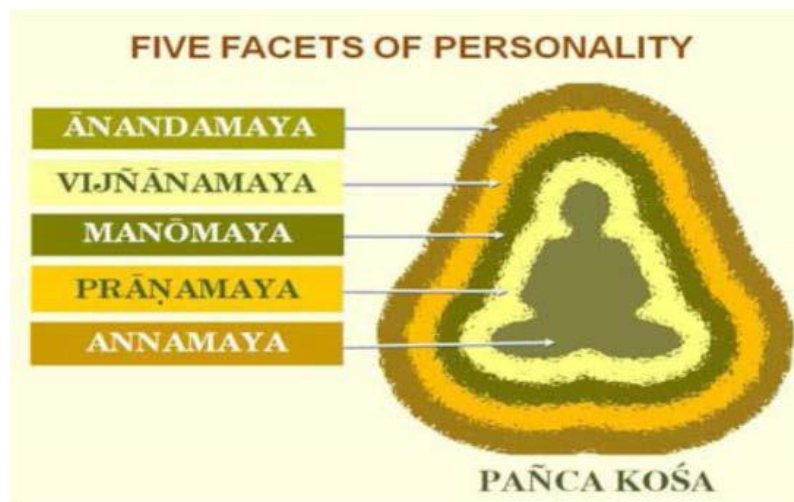
Figure 1: *pañca kośa* model

Image source: [www.panchakosha.com](http://www.panchakosha.com)

The *annamaya kośa* is the grossest one that constitutes our physical body. *Prāṇamaya kośa* is the next subtler *prāṇic* body where the *prāṇic* energy governs all activities. *Manomaya kośa* is the next subtler layer where the mind and its emotions are represented. The next subtler layer is the *vijñānamaya kośa*, which constitutes the intellectual faculty. The last and the subtlest one is the *ānandamaya kośa*, which is the layer of bliss and happiness. When we realize that we are more than just our physical bodies, that we have four other levels of existence, we can work on all of them and change our behavior in a way that will last.

## 6. Application of these models for designing wellness programs

The above-mentioned three models from the Indian psychology can be used to design a robust wellness program that can accommodate majority of the mental health needs in the workplace. A workplace intervention for psychological wellbeing can be designed in the following steps: i) recognize ii) accept iii) plan change iv) review and optimize v) continue with new understanding. Based on the *pañca kośa* model, there were many interventions that were suggested for medical and workplace applications (Bhide et al., 2021; Maharana et al., 2014; Mani et al., 2021; More et al., 2021; Pardasani et al., 2014; Raina, 2016).

One of the cost-effective holistic interventions that has shown good clinical and workplace efficacy is *yoga*-based interventions. *Yoga* is a holistic tool for promoting physical and mental wellbeing. It has been adopted in many workplace settings. Some of the commonly used *yoga* components in health interventions in various setups include *āsana* (physical postures), *prāṇāyāma* (breathing practices), *kriya* (cleansing practices), and *dhyāna* (meditation practices). Even though there are a few other important components of *yoga* as propounded by Patanjali, *āsana*, *prāṇāyāma*, and *dhyāna* are the most commonly used components in health interventions.



Mapping to the *pañca kośa* model, for *annamaya kośa*, asanas and diets are suitable practices. For *prāṇamaya kośa*, *prāṇāyāma* would be beneficial. For *manomaya kośa*, emotion culture is suggested, and for *viññānamaya kośa* reading, introspection, counselling, etc., are suggested. For *ānandamaya kośa*, it is suggested to learn to stay attuned to the blissful awareness and conduct all the daily activities as *karma yoga*. As a means to get feedback from our mind, we can use the *triguṇa* model, which can reflect the actual state of mind that expresses the current observable behaviors.

This will be useful in reviewing and optimizing the interventions. Once these practices are perfected, they must be continued to reap a sustainable effect. However, these steps are not devoid of implementation challenges. What are some of the challenges and how do we address them using these models?

## 7. Challenges in implementation

In the first step of recognition and acceptance, the first two models of *triguṇa* and states of mind are useful in gauging the receptivity of a person to change. First of all, to recognize and then to recognize requires a certain disposition of mind that is predominant in *sattva*. Even the awareness that someone is experiencing a mental health crisis and needs assistance may be overlooked in a state of mind dominated by *rajas* and *tamas*. So, observing such conditions, we must first attempt to plan activities that first enhances *sattva*. Employees can be incentivized for activities that promote *sattva*. This will enable them to receive and assimilate the wellbeing interventions well. This is likely to reduce the issue of relapse as the change is more intrinsically motivated and tend to last long.

## 8. Limitations

Yoga-based workplace interventions may have a few limitations as it requires adequate space to practice yoga in a group. Ideally, a yoga instructor is needed unless an in-house employee is empowered to lead the yoga sessions. Sometime the work schedule like night shift work may not allow employees to participate in the daytime sessions. Finally, workplace issues that require organizational change cannot be addressed through this approach.

## 9. Conclusion

I tried to discuss three classic models from Indian psychology, namely the *triguṇa* model, the states of mind of Patanjali and the *pañca kośa* model. Based on this, yoga-based workplace intervention was proposed and it was shown to be a holistic intervention covering all the five facets of human existence, as shown in the *pañca kośa* model. Also, some of the challenges that

would be emerging in workplace implementation were also discussed. Summing up, theories from Indian psychology can provide useful insights for modern management problems.

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## **Are Sustainable Innovations Key to Survival During Turbulent Times ?**

### **A Case Study of the Cochin International Airport Limited**

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#### **Abstract**

One of the factors that contribute to the success in today's dynamic business environment is how sustainability and innovation is integrated into Business strategy. Aviation being a cyclical Industry, the challenges are much more. Right from its inception, the Cochin International Airport Limited (CIAL) has integrated innovation and sustainability into their business strategy. CIAL was the first in India to build an airport using the Public-Private Partnership (PPP) model with inclusive growth and with Non-Resident Indian (NRI) investment. CIAL was the first airport in the world to operate 100% on solar Power. For additional revenue they have set up of a cargo center, inbuilt hydrant fuel system for refueling business, Maintenance Repair and Overhaul (MRO) facility for aircraft repair. Because of these sustainable innovations they are very successful in their Business operations. These innovative initiatives have helped them in increasing their non-aviation and non-aero revenues. They have been making profits 2002-03 till 2021-22 (except for 2020-21 due to Covid-19) and paid dividend year after year even when many airports including big airports were running at losses. They have won the Champions of Earth award in 2018 which is UN's highest environment award for the world's first airport fully running on solar power. CIAL recently won the Airport Service Quality award in 2022 of Air Council International in 5 – 15 million passenger categories in Asia Pacific. This award is one of the highest honor in global aviation sector. This paper discusses the innovation and sustainability initiatives that contributed to the success of CIAL, based on secondary data.

**Keywords:** Sustainable Innovations, Sustainability, Airport, CIAL, PPP model

#### **1. Introduction**

The turbulent changes in the business environment is characterized as in the VUCA world—volatile, uncertain, complex and ambiguous environment—is posing fresh management and leadership challenges for the Airports [13]. Sustainable innovations would be the key to survival of Airports during such turbulent times [14]. The Cochin International Airport Ltd. (CIAL) has demonstrated it through its various sustainable innovations.

The CIAL is the first green field airport project in India developed with Private Public Partnership (PPP) model. While building the airport, CIAL took into consideration of the people, community and culture which lead their sustainable growth. They hold many firsts in innovation and the growth was always through Innovation and sustainable business model. It is the first airport in India developed in PPP model and with inclusive growth, first airport to operate fully on solar power, first eco friendly airport and first to commission one of the biggest floating solar power plant. When 102 airports (around 75 percent) of Government owned airports in India are still running in losses, CIAL is one of the Airports that is consistently growing in profits year after year since its inception [1].

CIAL recently won the Airport Service Quality award 2022 of Air Council International in 5 – 15 million passenger categories in Asia Pacific. This award is one of the highest honor in global aviation sector.

CIAL aspires to become a Rs 3,000 crore company by 2023 with 20 percent revenue from Aero, 30 percent from Non Aero and 50 percent from non aviation revenue [2]. The Indira Gandhi International Airport (IGIA) New Delhi, the largest airport In India has 22 percent revenue from Aero, 52 from non aero and 26 percent from non aviation [3]. The IGIA has not made consistent profit year after year like CIAL. Aviation being a cyclical Industry, the CIAL's higher revenue from non aviation is helping them for their sustained growth.

### 1. History of CIAL

Cochin International Airport is India's first green field airport with a novel idea in infrastructure development. The CIAL was built with Public – Private Partnership and with NRI investment. This was the first privatization of airport development in India. The privatization of Delhi and Mumbai Airport came later.

CIAL, has grown rapidly and in 2021 it has become the third largest in international passenger traffic in India after Delhi and Mumbai. CIAL recorded a cumulative annual growth rate of 20% in the initial eight years and 12% later. The passenger traffic for a single financial year touched 10 million in the year 2017-18 and after that the airport has been handling around 10M passengers a year.

The CIAL is the first airport in the world fully powered by solar energy. 40MWp is the total capacity of solar power plants installed at CIAL. This initiative won many international accolades for CIAL including the **Champions of the Earth Award in 2018** from United Nations. The solar project is part of CIAL's efforts to sustain the power –positive airport by using green energy. CIAL has also diversified in to many activities. One of this major activity is Maintenance, Repair

and Overhaul (MRO) facility by Cochin International Aviation Services Limited (CIASL) [4]. CIASL is a fully owned subsidiary of CIAL. They have obtained national and few international certifications like DGCA – India, SLCAA – Sri Lanka and GCAA-UAE. Many international airlines like Sri Lankan Airlines, Gulf Air and Etihad are provided with MRO engineering services by CIASL.

Another innovation is the inbuilt hydrant fuelling at CIAL. With this CIAL meets quick turnaround requirements and provide technical landing facility for refueling of flight operating in nearby international routes

## **2. Importance of Sustainability in Today's Business**

Most organization all over the world is giving great importance to sustainability [5]. They are integrating sustainability into business strategy and also publishing sustainability report along with annual report every year. The sustainability in business address three major issues – the effect of business in environment, effect of business in society and governance. The goal of leading organizations is to make positive impact in these areas. Today several investors and financial institutions are using Environmental, social and Governance (ESG) framework to assess the sustainability and ethical practices of the company. They include water usage, carbon foot print, community development, governance etc.

## **3. Sustainability and innovation at CIAL**

At CIAL the infrastructure development was always with inclusive growth by employing around 12,000 employees directly and 25,000 indirectly. They also carry out many development activities as a part of their CSR for nearby communities. With the solar power plant generating all the energy the airport needs, rain water harvesting, artificial lake and many other projects they score very high in the sustainability factors. On the Governance CIAL maintains good standards. They have 19,000 shareholders. Since financial year 2003-04, CIAL has been paying dividend except during the Covid-19.

CIAL always believed in Green Design, Green thinking and Green Ideas. CIAL is not just a Green Airport but India's first truly eco airport. There were many innovative initiatives. The first initiative in this direction was Solar Power project followed by floating solar power, power plant, rain water harvesting, artificial lake and many more.

One of their key sustainable project is implementation of Solar Power for the Airport.

### **5.1 Solar Power Project**

CIAL became the first airport in the world fully powered by solar energy in 2018. The payback

period for the solar investment was 5 – 6 years. During the period between 2012 to 2018, the passenger and cargo traffic through CIAL has doubled. With the Solar project the growing demand in future will need more energy and can be met with low cost solar energy.

### 5.2 How and why did CIAL implemented the Solar plant

First and foremost was improvement in the increasing efficiencies of solar power and falling costs. The Solar technology was becoming a cheaper powering alternative [6].

The Second aspect was the energy cost for CIAL. CIAL was sourcing power through local utility service provider, Kerala State Electricity Board (KSEB). KSEB was occasionally increasing the charges / grid tariffs. CIAL being a commercial establishment, the tariff was Rs 7 per unit (KWh). The solar plant of 1.1 MW was generating 4400 units daily. The saving for the airport in their electricity bills was Rs 30,000 daily which amounts to Rs 1.1 crore annually. With this, the airport would be in a position to get the payback in seven years. After the payback period CIAL will have in its premises free source of power generation. The cost will only be a small operation and maintenance cost.

The third aspect was the airport's intent on decreasing airport's emission and its carbon footprint. Powering by solar energy is aligned with this view. One kg of CO<sub>2</sub> emissions is saved with every unit of solar energy generated. With 1.6 lakhs units of electricity generated daily at CIAL, 1.6 lakhs kg of CO<sub>2</sub> emissions will be saved.

The 40 MW of solar energy has reduced the airport's carbon footprint. The reduction in carbon footprint over the period of 25 years would be around 9 lakh metric tons. This is equivalent to not driving 2400 million miles or planting 9 million trees.

Being the World's first airport to be fully powered by solar energy, CIAL won the Champion of Earth prize in 2018. This prize instituted by United Nations is one of the highest environment award. The Executive Director of the UN environment program said "If an airport in Kerala can run on solar power, why can't we do that in terminals in other countries?". He also added **"Many countries in the world have much to learn from the state's experience with the first solar powered airport in the world, a clear example that being that environment friendly is now a conscious business decision for many"** [7,8,9].

It was also suggested to CIAL to display a placard at the CIAL airport showing the UNEP's endorsement of CIAL as the World's first solar powered airport.

Another key innovation is on Non Aero Revenues **Logistics** and **Aviation Services** are the most important item.

### **5.3 Logistics**

The air cargo industry demands the optimum solutions to meet the supply chain challenges of all segments of business. Air cargo centre at CIAL is a leading International cargo center in South India [10]. The unique feature of this cargo center is that it is having the single service provider concept. For Cargo operations CIAL has dedicated large office and warehouse space. As the demand increases there is provision to expand the capacity. CIAL is also planning for a Cargo Village.

### **5.4 Cochin International Aviation Services Limited (CIASL)**

CIAL as a diversification is setting up a world-class MRO - Maintenance, Repair and Overhaul facility. CIASL is a 100% subsidiary of CIAL[11]. CIASL aims to create a one – stop MRO facility providing easy accessibility and superior quality aviation maintenance services in a cost effective manner. CIAL has built a huge infrastructure consisting narrow body aircraft hangars, workshops and Aircraft parking bays. The MRO facility of CIASL is designed for facilitating high quality aircraft maintenance and repair services with low turnaround at a competitive price.

The facility has obtained national and few international certifications like DGCA-India, SLCAA-Sri Lanka and GCAA – UAE.

### **5.5 Refueling Business**

Another innovation is the inbuilt hydrant fuelling at CIAL. With this CIAL meets quick turnaround requirements and provide technical landing facility for refueling of flight operating in nearby international routes. This enables International aircraft to land at CIAL for refueling. The geographical location is at midpoint of East West corridor connecting Middle East countries and Far East countries. CIAL's location advantage is suitable for fuel stop over business. Many airports in the world are doing more business in the technical landings compared to regular operations.

Economic crisis at Sri Lanka led Colombo Airport to zero fuel situation. During this crisis many flights bound to Middle East and European destinations from Sri Lanka requested technical stop



over for refueling at CIAL.

## 6. Conclusion

One of the factors that contribute to the success of business in today's dynamic environment is how sustainability is integrated into Business strategy. Cochin International Airport Limited (CIAL) right from the beginning of the Airport has integrated innovation and sustainability into their business strategy. They have made many innovative initiatives for increasing their non aviation and non aero revenues. Benefits of above projects have helped CIAL in their sustainable growth journey and also in achieving their Vision [12].

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## Resource Specificity, Institutional Arrangements and Energy Justice

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### Abstract

This paper explores the potential challenges in addressing the policy and practical conception of energy justice due to *resource specificity* in energy system. We introduce the concept of resource specificity for energy systems, and how it acts as precursor for genesis of different institutional arrangements. By resource specificity we mean the critical factor of production around which all other resource variables operate in the specific energy system. With the mandate of justice as first virtue of institutions, we analyze the dynamic nature of land intensive crop-based biofuel institutions, which emerged across Africa, Brazil, European Union, India, and United States of America. We have reviewed literature on biofuel policies, regulations, and case studies to explore how different institutional arrangements address the issue of distributive, procedural and recognition justice. The finding provides a facilitative framework for energy system actors to converge their practical and normative conception of energy justice. This framework will open a dialogue among institutional actors to reconcile the issues of energy justice to address climate challenges.

**Keywords:** Resource Specificity, Institution, Energy Justice, Biofuel.

## Climate Change Policies and the Initiatives under the WTO:

### Environment Sectoral and the Usage of NTMs

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#### Abstract

Global efforts towards a world with net-zero carbon emissions by 2070 would require a collective effort by all parties. At the international level, a collaborative effort is being sought to promote dialogue between the trade and environment communities. The paper, therefore, addresses some of the challenges and concerns in the context of climate change mitigation efforts and the process initiated under the WTO on a sectoral effort on the interlinkages between trade and environment.

Key aspects to enhance market access were the liberalisation of tariffs and NTBs/Ms under para 31 of the Doha Ministerial Declaration. The WITS Single Market Partial Equilibrium Simulation Tool (SMART) is applied to visualise the ex-ante impact of the tariff reduction on the selected countries' imports. The study is an addition to the existing literature wherein the focus has only been on tariffs, but alternatively, there is coverage of NTMs as a market access barrier. It also adds to the existing literature which supports a focused approach on balancing tariff liberalisation and reduction or elimination of NTMs as a balanced approach to any sectoral. The paper analysis the future impact of the tariff reduction on environmental goods and maps the application of technical regulations and standards.

#### 1. INTRODUCTION

Debate on trade and the environment is revisited in the context of various WTO proposals made by the Members on issues like environmental goods, plastic pollution, e-commerce and climate change, fossil fuel subsidy, ecological sustainability and trade, etc. A collaborative effort is being sought to promote dialogue between the trade and environment communities. It has led to discussions and negotiations to identify concrete actions for sustainable, resilient and inclusive trade<sup>15</sup>.

WTO members apply the rules and regulations domestically to protect the environment from the detrimental production process. The non-availability of market-driven pricing on environmental

<sup>15</sup> [https://www.wto.org/english/tratop\\_e/envir\\_e/envir\\_e.htm](https://www.wto.org/english/tratop_e/envir_e/envir_e.htm)

resources led to adverse effects, constituting a failure of market that justified by the state intervention. In this context, the first best solution is to have environmental regulation which directly addresses the reasons for market failure. But this does not hold for the negative externalities that have spill over effect. Thus, domestic laws and regulations may not be pertinent to the international transaction of environmental products. However, these are efficient tools for enforcing environmental standards within the nation-state. Therefore, trade measures concerning environmental protection are used as a safeguard measure. The WTO's role is crucial as it provide a linkage of trade measures that get enforced to protect the environment – compliance with these provisions may be enforced and upheld by the dispute settlement body<sup>16</sup>.

## 2. WTO NEGOTIATIONS AND ENVIRONMENT<sup>17</sup>

With the growing demand for addressing the linkages of trade and environmental issues, the UR trade negotiations leading to the reconstitution of CTE to examine the interactions between environmental measures and trade. Observing the need for trade and environmental linkages, the WTO members were to negotiate the elimination of protection of environmental goods and environmental services under the Doha Round. Paragraph 31(i) of the Doha declaration proposes the guidelines for the countries that deal with Multilateral Environmental Agreements (MEAs).<sup>18</sup> The successful negotiations were targeted to decouple economic growth from environment thus having an impact of triple-win situation in trading, environment, and overall development. First, aspect was to reduced or eliminated tariffs and non-tariff barriers on environmental goods (EGs) (Ratna, Kallummal, & Gurung, 2010) and environmental services (ESs). It would further decrease the cost of environmental technologies correspondingly leading to increased usage and stimulating innovation and technology transfer. Second, the larger WTO membership would benefit in two ways from better market access to EGs and ESs. Those engaged in the production of EGs would have better access to large markets to high-income along with it would it would also open up the markets in major manufacturers market also. It would be easier for developing countries to obtain high-quality environmental goods from the OEMs. Ideally, such access should, among other environmental benefits, increase energy efficiency and improve developing countries' water and sanitation situations. Lastly, the environment would be better preserved, especially if a comprehensive

<sup>16</sup> The negotiations can facilitate trade through the reduction or elimination of tariff and non-tariff barriers (NTBs). Domestic purchasers, including business and governments at all levels, will be able to acquire environmental technologies at lower costs. In addition, liberalizing trade in environmental goods will encourage the use of environmental technologies, which can in turn stimulate innovation and technology transfer.

<sup>17</sup> Inputs from Kallummal, Banerjee S. and Gurung, H.M., CWS Working paper (mimeo), 'Elimination of Tariffs on the APEC's Environmental Goods: Analysis of Demand and Supply-side Perspective,' Centre for WTO Studies, IIFT.

<sup>18</sup> WTO, 2001, Ministerial declaration, [https://www.wto.org/english/thewto\\_e/minist\\_e/min01\\_e/mindecl\\_e.htm](https://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm).

definition of environmental goods was adopted to include as EGs those environmental products with production characteristics by avoiding those damaging the environment.

## 2.1 Approaches Suggested under the CTE

Based on para 31 of the Doha Agenda a perspective to liberalise tariffs and NTBs we can assess the various proposals (approaches) notified to the WTO by its Members. Based on the mandate of para 31 of the DDA<sup>19</sup>, the countries made a series of proposals on environmental goods.

Paragraph 31(iii) of the Doha Ministerial Declaration calls for negotiations on "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services", with a view to enhancing the mutual supportiveness of trade and environment.<sup>20</sup>

The group which submitted the first proposal under the committee of trade and the environment was the EU<sup>21</sup>. Under the CTE, four approaches and types of practices were observed these can be listed- based<sup>22</sup>, project-based<sup>23</sup> and third integrated<sup>24</sup> and combined<sup>25</sup> approaches.

## 3. METHODOLOGY AND DATA SOURCES

In the context of the challenges and concerns for the WTO membership on trade and the environment, the paper analysis the future impact of the tariff reduction on environmental goods. The WITS Single Market Partial Equilibrium Simulation Tool (SMART) is applied to visualise the ex-post impact of the tariff reduction on the countries' imports.

SMART is a partial equilibrium modelling tool in WITS used for market analysis. As the name suggests it focuses on one importing market and several exporting partners and assesses the impact of a tariff change scenario by estimating new values for a set of variables. SMART relies on the Armington assumption to model the behaviour of the consumer. In particular, the adopted modelling approach is based on imperfect substitutions between different import sources (different varieties). The SMART model can be used to analyse the impact of domestic trade reform as it provides insights into the distribution of potential gains and losses from any contemplated policy changes. Thus, it can help predict any adjustment costs associated with reform implementation. It also provides an

<sup>19</sup> Doha Development Agenda and also referred to as Doha Development Mandate (DDM).

<sup>20</sup> WTO, see [https://www.wto.org/english/thewto\\_e/minist\\_e/min01\\_e/mindecl\\_e.htm](https://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm).

<sup>21</sup> WTO, 2002, Multilateral Environmental Agreements (MEAs): Implementation of the Doha Development Agenda., TN/TE/W/1, 21 March 2002.

<sup>22</sup> Many countries like Canada, ECs, New Zealand, Norway, Qatar, Singapore, Switzerland, and the US

<sup>23</sup> Joint submission by India and Argentina

<sup>24</sup> WTO, 2005. Integrated Proposal on Environmental Goods for Development", submission by Argentina, 14 October 2005, TN/TE/W/62.

<sup>25</sup> WTO, 2011, Combined Approach for Environmental Goods, Submission by Mexico and Chile, 15 February 2011, JOB/TE/16.

analytical framework for examining the impact of foreign trade liberalisation. It thus simulates the possible effect of a given trade policy intervention or reforms (tariff changes) for a single market on critical variables, including import flow, variations in tariff revenue, economic welfare effects, and other measures (Othieno & Shinyekwa, 2011).

In the SMART model, we have analysed 480 6-digit products listed under the nine members' proposals to the CTE. At 4-digit these in turn fell to a much lesser number which is 247 Environmental products.

The MFN bound rate data has been extracted from the WTO Tariff profiles.<sup>26</sup> The MFN bound rate provides data on the average bond rate applied by the countries on their import. The study presents exploratory data analysis to identify the selected countries' existing trade scenarios

#### 4. TOP TRADERS IN ENVIRONMENTAL GOODS<sup>27</sup>

The environmental goods' trade pattern shows the countries' export and import orientation. The immediate impact of tariff liberalisation would manifest in the countries' trade patterns, more particularly in imports, which undertake liberalisation. The table below (Tables 1 & 2) presents the export and import share of the EGs<sup>28</sup>. Additionally, the table also provides information on the composition of trade, by including the exports by the countries, their compositional shares in the countries' total trade in EGs, and lastly share of global imports in EGs

Table 1 suggests with USD 4.5 trillion in imports accounted for EGs products across 25 countries having a total import share of 73 per cent in the global imports of EGs. The twenty-five countries have an average compositional import share of 70 per cent in their total trade, suggesting a high level of global concentration in terms of imports of EGs.

**Table 1: Top Twenty-Five Global Importers in 480 Environmental Goods (2019)**

Rank	Top 25 importing countries	Import Value (in billion USD)	Export Value (in billion USD)	Import Share (%) in Total Trade	% Share in World EG Import
1	United States	831.3	641.7	56.4	12.9
2	Germany	481.9	755.8	38.9	7.5
3	China	398.8	957.2	29.4	6.2
4	France	241.7	198.7	54.9	3.8
5	United Kingdom	235.4	189.4	55.4	3.7
6	Netherlands	211.9	194.5	52.1	3.3

<sup>26</sup> WTO | Tariff Download Facility: WTO tariff data base

<sup>27</sup> Compilation of 480 products listed under the nine members proposals to the CTE. WTO, 2005, Synthesis of Submissions on Environmental goods, informal note by the secretariat, doc no TN/TE/W/63, dated November 17, 2005.

<sup>28</sup> Environmental goods (EGs) refers to 480 6-digit HS codes mentioned in CTE summary document no TN/TE/W/63.

7	Canada	201.5	152.0	57.0	3.2
8	Japan	194.9	362.4	35.0	3.1
9	Italy	155.1	225.0	40.8	3.0
10	Belgium	149.0	119.3	55.5	2.4
11	Hong Kong, China	144.3	106.1	57.6	2.3
12	Spain	129.4	134.4	49.0	2.2
13	Korea, Rep.	129.2	234.8	35.5	2.0
14	Singapore	112.9	132.3	46.1	2.0
15	Poland	105.9	119.1	47.1	2.0
16	Australia	96.9	18.2	84.2	1.8
17	Russian Federation	92.1	109.5	45.7	1.7
18	India	87.2	112.0	43.8	1.5
19	Vietnam	75.9	53.7	58.6	1.4
20	Malaysia	75.2	84.0	47.3	1.4
21	Austria	71.0	76.3	48.2	1.2
22	Switzerland	70.6	78.5	47.3	1.2
23	Brazil	70.1	39.7	63.8	1.1
24	Czech Republic	70.0	114.5	38.0	1.1
25	Thailand	68.1	101.8	40.1	1.1
<b>Sub Total of 25 Countries</b>		<b>4,500.33</b>	<b>5,310.84</b>	<b>70.1*</b>	<b>73.1^</b>
<b>All Countries (480 EGs)</b>		<b>6,419.56</b>	<b>6,419.56</b>		

Note: # = Taiwan= Other-asia n.e.s.,<sup>29</sup>\* = average of compositional shares of 25 countries ^ = .share of each member in the total global imports.

Source: Authors based on the online WITS Comtrade database.

The United States hold the highest share of imports accounting for nearly 13 per cent of the total global import of EGs, followed by Germany with 7.5% and China with 6.2%. The compositional import share of China is a meagre 29 per cent, suggesting that nearly 71 per cent is exported. While India has a compositional import share of 44 per cent accounting for 1.5 per cent of total global imports - any further tariff liberalisation measure will have a binding impact with tariffs bound at zero would have a considerable influence on its trading partners' imports.

**Table 2: Top Twenty-Five Global Exporters in 480 Environmental Goods (2019)**

Rank	Top 25 exporting Countries	Export Value (USD Bn.)	Import Value (USD Mn.)	Export share in total trade (%) &	% Share in World EG Export
1	China	957.22	398.85	70.6	14.9
2	Germany*	755.78	481.87	61.1	11.8
3	United States	641.69	831.26	43.6	10.0
4	Japan	362.44	194.88	65.0	5.6
5	Korea, Rep.	234.75	129.17	64.5	3.7
6	Italy*	224.98	155.10	59.2	3.5

<sup>29</sup> See, <https://unstats.un.org/unsd/tradekb/Knowledgebase/50104/Taiwan-Province-of-China-Trade-data>.



7	France*	198.70	241.74	45.1	3.1
8	Netherlands*	194.55	211.90	47.9	3.0
9	United Kingdom	189.40	235.36	44.6	3.0
10	Canada	151.96	201.54	43.0	2.4
11	Spain*	134.42	129.36	51.0	2.1
12	Singapore	132.27	112.95	53.9	2.1
13	United Arab Emirates	130.85	63.14	67.5	2.0
14	Belgium*	119.26	149.00	44.5	1.9
15	Poland*	119.13	105.93	52.9	1.9
16	The Czech Republic*	114.49	70.03	62.0	1.8
17	India	111.98	87.15	56.2	1.7
18	Russian Federation	109.55	92.12	54.3	1.7
19	Hong Kong, China	106.05	144.29	42.4	1.7
20	Thailand	101.77	68.06	59.9	1.6
21	Taiwan <sup>#</sup> .	95.99	67.36	58.8	1.5
22	Malaysia	83.98	75.24	52.7	1.3
23	Switzerland	78.55	70.61	52.7	1.2
24	Austria*	76.29	71.01	51.8	1.2
25	Turkey	75.68	67.94	52.7	1.2
<b>Sub Total of 25 Countries</b>		<b>5,501.73</b>	<b>4,455.86</b>	<b>54.3</b>	<b>85.7</b>
<b>All Countries</b>		<b>6,419.56</b>	<b>6,419.56</b>		

Note: & = Share of exports in total trade (exports plus imports) of 25 top exporters, \* = European Union Members, # = Taiwan= Other-Asia n.e.s.

Source: Authors based on the online WITS Comtrade database.

In the exports of EGs China (with a compositional share of 71 per cent), Germany (61 per cent) and the United States (44 per cent) accounted for nearly 37 per cent of the global exports, thus suggesting the possibility of the three countries could be having closer ties under the global value chain driven by the OEMs (see tables 2 & 3). Other developing countries' compositional share of exports of more than 50 per cent like Singapore (2.1%), India (1.7%), Thailand (1.6%), Malaysia (1.3%) and Turkey (1.2%) with below 2 per cent share in the global EGs exports could be faced with negative impact from a partial liberalisation of the mandate provided under the Para 31 (iii). Specifically, these developing countries contribute only 7 per cent to total EG exports and accounted for similar import shares (see table 2).

#### 4.2 Simulating Changes in Import for the Reporter: Analysing SMART

SMART (partial equilibrium model) is used to understand the implication of tariff liberalisation, the bound rate has been set to zero<sup>30</sup> as the new tariff rate, and import and export elasticity is kept at the default level of 0.5 and 99 per cent, respectively. The paper reports the period before and after

<sup>30</sup> All the past plurilateral agreements under the WTO the bound rates are reduced to zero.

liberalisation as ex-ante and ex-post scenarios respectively. The members which proposed a list-based approach are selected based on their import values and average bound duty rate.

All the reporter countries would experience an increase in imports after binding the MFN tariff to zero as a pre-requisite under the EGs proposal. Consequently, the countries have to forego the tariff revenue they enjoyed in the ex-ante situation. The larger the tariff rate, the greater the amount conceded as revenue earned in terms of tariff rates on EG products. A reduction in the tariff would be reflected by a change in the prices of the product in the recipient country - in most cases, it will fall directly in proportion to the tariff rate. The product's fall in price, as a consequence of the tariffs, would enhance the consumer surplus, which is reflected in the result. Hence, the change in the import and the amount of consumer surplus is positively correlated, and so is welfare. The liberalised tariff rate significantly reduces the deadweight loss and increases the overall welfare of society.

**Table 3: Impact of tariff liberalisation on the Reporting countries (billion USD)**

Reporting Countries	Total Import Change	Tariff Change in Revenue	Consumer Surplus	Welfare Effect
Developed Members				
European Communities*	12.59	-11.41	0.22	0.25
The United States*	10.63	-8.58	0.11	0.12
Korea	6.40	-2.26	0.08	0.11
Japan*	0.90	-1.17	0.01	0.01
Canada	1.02	-1.07	0.02	0.02
Chinese Taipei	4.86	-2.38	0.33	0.35
New Zealand	0.27	-0.21	0.00	0.00
Switzerland*		0.00	0.00	0.00
Developing Members				
China	27.38	-25.09	1.17	1.23
India	24.85	-7.73	3.21	3.33
Qatar	0.77	-0.43	0.02	0.02

Note: \* = SMART results on the import change, consumer surplus and welfare effects need to be re-evaluated based inclusion of AVEs.

Source: Authors based on SMART Analysis of the WITS Comtrade database.

### 4.3 Possibilities for Indian Gains: EGs Sectoral

A partial approach to market access would not be of gain for India, as much of the trade policy has shifted further inwards – behind the borders – which needs to be addressed for achieving the full potential of the EG sector.

**Table 4: India's SMART Results for EGs Liberalisation – (ex-ante analysis of tariff)**

Reporter	Partner	USD Billions			Percentage (%)	
		Imports before elimination	Imports <sup>31</sup> after elimination	Change in Imports	Shares to Positive Changes	Shares to Total (Positive and Negative)
India	China	23.37	31.81	8.44	33.89	33.97
	Germany*	6.60	9.05	2.44	9.82	9.84
	The U.S.	10.27	12.13	1.86	7.47	7.49
	The U.K.	2.67	4.33	1.66	6.65	6.66
	Italy*	2.15	3.28	1.13	4.55	4.56
	U.A.E.	4.89	5.71	0.82	3.28	3.28
	Australia	1.29	2.09	0.81	3.24	3.24
	Sweden*	0.60	1.38	0.78	3.12	3.13
	Finland*	0.33	1.08	0.75	2.99	3.00
France*	1.95	2.42	0.47	1.90	1.90	
<b>Countries' + ve Impact</b>		<b>105.47</b>	<b>130.37</b>	<b>24.91</b>	<b>160</b>	
<b>Countries' – ve Impact</b>		<b>-0.06</b>	<b>0.00</b>	<b>-0.06</b>	<b>33</b>	
<b>Total 480 EGs</b>		<b>106.64</b>	<b>131.49</b>	<b>24.85</b>	<b>193</b>	

Note: Five of the 10 economies that have a positive impact are from the European Commission.

Source: Authors based on SMART Analysis of the WITS Comtrade database.

It has been observed that 80 to 100 per cent gain in total export has been distributed among the top ten beneficiary countries. In table 5, we have reported changes in India's exports to some of the identified markets. As seen, the largest change post-reduction of the tariff was seen in EC, followed by US and Canada. After a tariff reduction, EC would account for 3.70% of the total positive change in India's export and an overall 5% in total change in India's export.

**Table 5: India's Export Changes in Other Markets: EG**

Reporter	Rank in the Reporters'	Imp. before (US bn.)	Imp. after (US bn.)	Ch. in Imp's (US bn.)	% Sh. to Positive Changes	% Share to Total (Positive and
EC	4	12.40	13.00	0.60	3.70	5.00
US	8	11.93	12.32	0.39	2.60	3.66
Canada	7	1.35	1.40	0.04	2.42	4.10
Qatar	8	0.35	0.39	0.04	4.78	4.89
<b>Total</b>		<b>26.03</b>	<b>27.11</b>	<b>1.07</b>	<b>13.5</b>	<b>17.65</b>

Source: Authors based on SMART Analysis of the WITS Comtrade database.

## 5. HARMONISATION OR ELIMINATION OF NON-TARIFF MEASURES

The second barrier to market access is the measures imposed 'behind the border', these are mostly domestic measures which as per the WTO are regulated by two principles like the Most Favoured Nation (MFN) and National Treatment (NT).

<sup>31</sup> Total trade before, after and change in the trade as per the SMART Results.

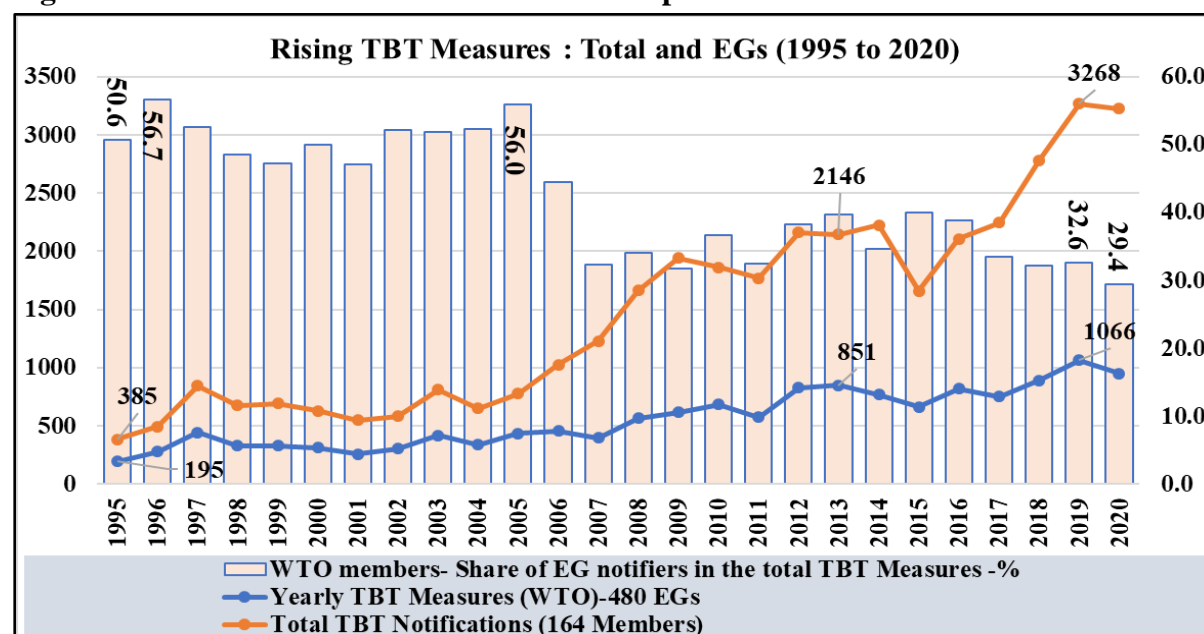
## 5.2 TBT Measures in the EGs

The majority of NTBs are from the TBT measures with a total of 2,830 TBT regulations, standards, and CAPs notified by 82 WTO members. Achieving an effective trade (enabled by market access) would need harmonisation or elimination of some of these measures, especially those identified as deviated measures. We have further identified a list of the top 15 products based on the offensive interest list (based on India's top exports change) and defensive interest (based on India's top imports change) from among the 247 4-digit EG lists.<sup>32</sup>

### 5.3.1 TBT Measures imposed by the identified Ten WTO Members

The total TBT measures notified to the WTO have been increasing at a secular trend from 1995 to 2020, as also observed in Figure 1 below.

**Figure 1: Environment Sectors Barriers in Comparison to total TBT Measures**



Source: Compiled based on the CWS online database on TBT measures.

The trends in the universe of 480 identified EGs at a 4-digit level have also shown a rising trend, but plateaued out after 2009, as the annual growth decreased in terms of the annual number of notifications. This is reflected in the share of the EGs to the total which dropped from a high of

<sup>32</sup> Kallummal Murali and Somdutta Banerjee (Mimeo), "Elimination of Tariffs on the APEC's Environmental Goods Analysis of Demand and Supply-side Perspective", forthcoming CWS Working Paper, Centre for WTO Studies, New Delhi.

almost two-thirds of the total TBT notification to one-third by 2020 – indicating a pattern which is known as frontloading of the barriers.

#### 5.4 Environmental Goods – Imbalance in the Negotiations

Due to paucity of time, we have not attempted a detailed transposition of the 480 6-digit tariff lines for HS 2017 and have not attempted to track the binding status of the same across markets (importers). Therefore, the case of the APEC list of 54[59 transposed to HS 2017] products has been traced to their bound status for the WTO members mentioned in Table 6.

**Table 6: APEC EG List Approach: Comparison of MFN Bound# Vs TBT Measures**

S.N.	4-digit HS	China (NTMs- No)	China (%- Bound)#	EC (NTMs-No.)	EC (% -Bound)#	India (NTMs- No)	India (%- Bound)#	USA (NTMs- No)	USA (% -Bound)#	USA (NTMs- No.)	UK (% - Bound)**
1	4418	1	0.0	53	0.0	0	0.0	9	3.7		EC MFN Bound Rate
2	8402	14	10.3	30	2.7	0	30.0	14	4.2	1	
3	8404	1	0.0	3	0.0	0	0.0	0	0.0		
4	8406	0	2.0	0	2.7	0	25.0	3	3.4		
5	8411	1	4.0	2	2.1	0	25.0	3	0.8		
6	8412	1	5.0	2	1.2	0	25.0	1	0.0		
7	8417	3	8.0	3	1.7	0	25.0	4	3.9		
8	8419	41	11.5	26	1.6	1	36.5	28	0.8		
9	8421	10	8.6	18	1.1	0	36.3	12	0.0		
10	8474	2	5.0	4	0.0	0	25.0	0	0.0		
11	8479	7	1.4	6	0.9	0	37.0	8	0.4		
12	8501	21	7.3	39	2.7	7	25.0	19	2.4		
13	8502	3	9.0	2	1.4	0	32.5	1	1.3		
14	8503	0	6.5	0	2.7	0	25.0	0	3.1		
15	8504	25	7.3	17	1.3	2	12.5	19	0.0		
16	8514	1	0.7	1	1.3	0	25.0	9	0.9		
17	8541	2	0.0	20	0.0	1	0.0	3	0.0		
18	8543	7	0.0	23	1.5	0	13.3	9	0.0		
19	9013	3	0.0	9	0.0	0	0.0	1	0.0		
20	9015	1	5.0	4	3.1	0	40.0	0	0.0		
21	9026	5	0.0	70	0.0	0	0.0	2	0.0		
22	9027	9	1.2	49	0.7	0	6.3	3	0.1		
23	9031	2	1.8	24	15.6	0	15.0	4	0.0		
24	9032	6	3.7	1	20.7	0	20.4	2	0.7		
25	9033	0	6.0	0	3.7	0	40.0	0	1.1		
26	9620		0.0		0.0	0	0.0	0	0.0		
<b>Correlation</b>		<b>0.54</b>		<b>-0.12</b>		<b>0.00</b>		<b>0.15</b>		<b>n.a</b>	

Note: # = for simplicity average of six-digit MFN bound rates are used; \* the UK does not have Independent MFN bound rates as it was an integral part of the EC until 2020.

Source: Kallummal, Banerjee and Gurung (Mimeo), see Table 7.

Kallummal, Banerjee and Gurung (Mimeo) table 6, provided a correlation exercise carried out across the five markets. The results emphasise the European Commission has a negative correlation between MFN bound rates and the number of TBT measures notified suggesting a replacing tendency. In simple words, more usage of TBT measures is seen on those heading-level tariffs where there is a low MFN bound tariff. For the rest of the countries- US, India and China the correlation was positive. It can be noted that India had the lowest correlation of zero.

## 6. CONCLUSION

There are structural differences among the WTO Membership, and broadly the economies are divided into developed (high-income), developing and least developed countries (LDCs) – these segregations are based on innovation, technological capabilities, and per-capita incomes. Any trade liberalisation with a solemn goal like the free international movement of environmental goods, to speed up sustainable development, needs to be pegged in the reduction of tariffs along with harmonisation or elimination of TBT barriers. Otherwise, the outcome would only favour and enable the higher income and developed economies with a large number of deviated TBT measures and private standards. These economies would restrict product movement from exporting countries with a higher applicational share of international standards, and it would bring in an unbalanced gain only for a few countries operating in the EG sectoral.

1. WTO members apply the rules and regulations domestically to protect the environment from the detrimental production process. The lack of market-driven pricing on environmental resources leads to adverse external effects, constituting a market failure that can justify state intervention. In this context, the first best solution is to have a domestic environmental regulation, which directly addresses the reasons for market failure. But this does not hold for the negative externalities that have spill over effects
2. Since the launch of the DR in 2001 and despite the adoption of Sustainable Development Goals in 2015, there has been little progress except for a tariff reduction of 5% for the list of 54 environmental goods.
3. Paragraph 31(i) of the Doha declaration proposes the guidelines for the countries that deal with Multilateral Environmental Agreements (MEAs). The successful negotiations were targeted to decouple economic growth from environment thus having an impact of triple-win situation in trading, environment, and overall development.
4. There may be significant trade responses to liberalisation in EGs on the import side (but not on the export side). The final price of an EGs would be determined by two factors: the quantum

of tariffs (taxes) or the import regulations (NTBs/NTMs). Both of these have different implications, the former being '*price-enhancing*' and later being '*cost-enhancing*'. As technical regulation (TBT measures) leads to altering the production process, raising the prices of free on board (FOB) to accommodate the additional regulatory requirements of the new TBT regime notified by the importing member. Therefore, there is a need for harmonisation of such measures as the deviated standards may act as non-tariff barriers to the exporter of the EGs - so the cost of all producers is impacted in a similar proportion.

5. This study provides a different point of view from the existing literature where the focus has only been on tariffs. The study finds that the regulations do have a cost enhancement and specifically when tariffs are liberalised across countries with no harmonisation attempted for the NTMs. It is desirable to have harmonisation of the TBT measures which would lead to equitable and more effective implications for all the participants towards the achievement of environmental concerns as envisaged under the CTE mandates.
6. The paper analyses the future impact of the tariff reduction on environmental goods. The WITS Single Market Partial Equilibrium Simulation Tool (SMART) is applied to visualise the ex-post impact of the tariff reduction on the countries' imports.
7. The results for India show that the tariff-alone approach is not a sufficient condition for an EGs sectoral agreement, it highlights that equally important are the TBT measures which are applied to these products and there is an urgent need to harmonise these at international levels. Preferably a standard (non-mandatory) would be encouraged in the EGs sectoral.

## 6.1. Path forward

Through trade liberalisation, some of the Climate challenges faced by businesses, policymakers, and leaders as they engage with issues and problems such as climate and the insights into the frontiers of climate change interventions. Climate change mitigation could be addressed by way of addressing some of the glaring imbalances, like:

1. First and foremost, the intent should be to bring a balance between Tariffs and NTMs across EGs to enhance the mutual supportiveness of trade and environment. Additionally, the efforts should be to harmonise NTMs with international standards, since deviated (national) standards are more onerous and stringent.
  - a) Within the above-given ambit, for tariffs such as specific tariffs, the AVEs should also be provided since it will better aid in harmonising the tariffs with non-tariff measures. For example, in table 4 our analysis finds that Switzerland applies specific duty on 1556 national Tariff lines out of 1849 total national tariff lines. Hence, there is a need to address this aspect.
2. To bring about a more effective change, the Members should identify those National tariff lines within 6-digit HS which have universal EG coverage, since it will be easier for countries to work on them. In other words, a small list approach should be adopted with a specific focus on these national tariff lines wherein the duties and NTMs are applied.
3. Lastly, a mix of the small list and project-based approaches could be adopted for other National tariff lines within 6-digit HS which don't have universal EG coverage. This approach would address diversity in environmental standards with common but differentiated responsibilities and would bring in trade liberalization to meet the environmental as well as development goals. Additionally, these approaches would address the mandated requirements in a cohesive, focused, directed and integrated manner.



## **IT'S THE WRONG CHOICE, BABY! THE PIVOTAL ROLE OF TIME PERSPECTIVE ON THE FOOD CHOICES**

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### **Abstract**

According to numerous studies, Time perspectives have been recognized as a powerful driver for a multitude of behaviors. In this study, we first examined whether Time Press drives the consumer buying behavior toward unhealthy, inorganic products. Second, we analyzed if the time perspectives over the time of the members of a buying diad start to complement each other which helps them optimize their buying process. Results indicate that Time press makes people more present-oriented and when under Time Press, they prefer the short-term unhealthy options over the long-term health benefits of organic food items. Results also suggest that over time, the Time Perspective of buying diad complements each other.

**Keywords:** Time perspective, Time press, food choices

### **Introduction and Research Aim**

Trend for food consumption has changed rapidly in recent years. Consumers have become more conscious of their health and the way their choice of food affects it (Chrysochou, 2010; Siro´ et al., 2008; Verbeke, 2005). Moreover, studies have also indicated that they have become more conscious than ever for the ecosystem apart from their own health (Banterle et al., 2013; Vermeier and Verbeke, 2006). These new trends might help in fighting the food-related epidemics like diabetes, obesity etc which are still prevalent (Banterle and Cavaliere, 2014; Courtemanche et al., 2014). More people are interested in sustainable resource usage and long-term well-being as a result of the demand for environmentally friendly food (Reisch et al., 2013). But it's still debatable to what degree consumers appreciate such things and act in a manner that is compatible with their values (Haws et al., 2014).

Consumers are discouraged from selecting organic food for a variety of reasons. One of them is the expensive price (Bhattacharya and Sen, 2004; Marian et al., 2014; Verhoef, 2005). Another factor is the Present orientation of customers and their desire for immediate gratification (Chekima et al, 2019)

We examine the potential impact of Time Press and Present orientation toward Time Perspectives in food choices in this essay, which is mostly concerned with the second element. Researchers in the fields of economics and psychology have conducted a wealth of studies on time perspectives, particularly on how it affects intertemporal choices. The power of time perspective to influence a variety of consumer behaviours, including sustainability and health, has been shown by a wealth of recent studies (Adams and Nettle, 2009; Blaylock et al., 1999; Franzen and Vogl, 2013; Frederick et al., 2002; Joireman et al., 2001; Takanori and Goto, 2009). However, there is very little research on the role that Time Perspective plays in influencing food choice behaviour and how it interacts with environmental influences. The purpose of this article is to examine, using a choice experiment methodology, if situational factors, such as Time Press, influence customer purchasing behaviour toward inorganic products (CE). We may particularly examine consumer behaviour in a context of decision-making thanks to the CE. It also looks into how the purchase cycle's various time perspectives relate to one another.

This essay is structured as follows: the following section gives an introduction of time perspectives and how they impact intertemporal choices. We discuss the experimental setting in the sections that follow. The sample characteristics are then discussed, along with the empirical analysis of the data, before the findings and conclusions of our study are presented.

### **Historical context and the research hypothesis**

The unconscious way that people relate to time subjectively and the method by which their social and personal experiences are divided up into various temporal frames that aid in providing these experiences with consistency and significance can be described as time perspective (Boyd & Zimbardo, 2005). These temporal time frames serve as the prism through which judgments are made, but if they are consistently overemphasised, they develop a bias in cognitive temporal orientation toward past, future, or present (Boyd & Zimbardo, 2005).

Time perspective, or particular aspects of it, has been linked to a variety of psychological theories and actions. There is a substantial body of study that explores how time perspective affects behaviours connected to one's health as well as how it affects intertemporal decisions.

The Time perspective's aspect of present orientation captures the hedonistic and risk-taking attitude toward time. It is a preference for current pleasure with little thought for the future (Boyd & Zimbardo, 1999). It seems to be connected to lower socioeconomic status, worse academic performance, more reckless behaviour, and greater drug usage (Petry, Bickel., & Arnett, 1998). It is typically connected to recent stressful events, a sense of powerlessness and loss of control, as well as unhealthy coping mechanisms including rage and withdrawal (Wills., Sandy, & Yaeger, 2001). People with high present orientation spend less effort in changing bad habits (Luo et al ,2016), show

less verbal intelligence (Zajenkowski et al, 2016) & more impulsivity and hence more risky sexual behavior (Sullivan et al ,2021), and likely to exhibit high grandiose narcissism (Zajenkowski et al, 2016).

The second facet of Time Perspective, Future orientation, is an attitude towards the time that prefers present behavior to be dominated by a striving for future rewards (Boyd & Zimbardo, 1999). It has consistently been related to less smoking (Adams and Nettle, 2009; Harrison et al., 2010; Robb et al., 2008; Scharff and Viscusi, 2011; Takanori and Goto, 2009), more exercising (Adams and Nettle, 2009; Ouellette et al., 2005; Wardle and Steptoe, 2003) and less alcoholism (Bishai, 2001; Takanori and Goto, 2009). People with high future orientation are more creative (Chiu, 2012), less prone to violence (Miconi et al, 2020), and less inclined to gamble (Låftman et al, 2020).

Past orientation is the third aspect of time perspective. The past negative and past positive are its two dimensions. The past negative, as its name suggests, expresses a bad perception of the past. A very different mindset from the first dimension can be seen in the past positive. The previous positive element displays a warm, emotional, and nostalgic attitude toward the past, in contrast to the first item, which connotes tragedy, suffering, and anguish (Boyd & Zimbardo, 1999).

Research has shown that situational factors have a significant effect on the time perspectives of an individual. The individual's first memory is a window into the rest of his life. This memory plays a crucial role in building his past perspective (Adler, A. ,1930) and future perspective (Barber et al, 2020). Ely and Mercurio found out that the richness of some phenomenological features of memory is influenced by gender and is intimately related to the Present and Future time perspectives (Ely and Mercurio, 2011). But memory itself is nonreliable and can be reconstructed in a given situation (Loftus & Palmer, 1974), 'false memories' can also be planted in the mind (Braun., Ellis & Loftus., 2002). Robert Levine shows how places influence the purpose of life and hence the Present Time perspective (Levine, 1997). Perception of time is a cognitive process and is therefore subject to cognitive illusions (Ornstein, 1975 ).

Time Press is one of the contextual elements that affect time perspectives. Being in a continual haste or feeling pressed for time is known as time press. It also has to do with whether individuals think they have enough time to perform the things they need to or want to, such as time for job, family or fitness (Southerton, Tomlinson, 2005).

Warren Bennis and Philip Slater argued that the world is changing so rapidly that everything-homes, careers, roles & responsibilities will soon be temporary (Bennis & Slater, 1998). Toffler argued that this would lead to 'future shock' which is stress and anxiety due to rapid change that would affect personal relations and social institutions (Toffler, A. ,1970). Due to this accelerated change, time is scarce, people are in a so-called 'time war'-our hyper-efficient, nano second world destroys our

orientation to the rhythm of the natural world. Our excessively future-oriented high-tech lives subjugate us to a new simulated environment (Rifkin, 1987).

In daily life when faced with time pressure and routine decisions, people conserve their mental energy and rely on heuristics (Kahneman et al., 1982). Psychologists have named this tendency, calling humans 'cognitive misers' (Fiske et al., 1991). John Darley and Dan Batson (1973) in their famous 'Good Samaritan' study demonstrated that the time pressure can cause people to be present-oriented. As the pace of modern life keeps on accelerating further (Levine, 1997) this may cause more people to behave as present-oriented and display the characteristics which is typical of present-oriented individuals. For instance, those with high levels of present hedonism are more likely to use alcohol and other drugs (Alvos, Gregson, & Ross, 1993; Keough, Zimbardo, & Boyd, 1999), engage in risky behaviour while driving (Zimbardo, Keough, & Boyd, 1997), and engage in violent altercations. They are also less likely to practise safe sex (Hutton et al., 1999; Rothspan (Keough et al., 1999).

One of the characteristics associated with present orientation is that it makes people less inclined to buy organic products (Chekima et al., 2019). However, only a small number of research have specifically examined the connection between time views and food preferences (e.g., Cavaliere et al., 2014; Piko and Brassai, 2009; Houston and Finke, 2003). Houston and Finke (2003), for instance, looked at how temporal preferences affected dietary decisions and discovered that those with high future discount rates have poorer. To our knowledge, no previous study work has examined how consumers' opinions of the worth of nutritious and environmentally friendly food features may alter over time.

Additionally, as we have seen, the pressure of time causes people to become more present-focused (Darley & Batson 1973). In light of this, further research is necessary to determine the relationship between time pressure and behaviour, particularly in the context of organic food purchasing. We have two main objectives in the studies that are summarised below. We start by examining the link between time pressure and behaviour, particularly in the context of buying organic food. We propose that those who are strapped for time will purchase nonorganic food even if organic alternatives are accessible. Then, we investigate if, over time, the members of the buying unit's respective Time perspectives begin to complement one another.

## **OVERVIEW OF THE EXPERIMENTS**

In the studies that follow we demonstrate that the people who are time-pressed i.e people who are in hurry usually buy non-organic food when compared to the times, they are not in a hurry and shop around leisurely. We also explore the role of individual time perspective in the members of the buying diad and show that the time perspective among the diad usually complements each other.

Experiment 1A proves that people should buy groceries when they have ample perceived time to shop. In experiment 1B we show that the people who buy in a hurry for an extended period of time tend to complement each other's TP.

### ***Experiment 1A***

A random selection of 50 participants (N) will be made from the IIMK class of students. Using a matched pairs design, individuals will be paired up according to important factors like age, gender, or socioeconomic position. Then, with each group having 15 members, each couple will have one member placed in the experimental group and the other in the control group.

Members of both the groups will be asked to take part in simple games like 'break the pyramid' and will be given token money as a prize to do well. This prize money has to be spent on a basket of food items like yogurt, milk and vegetables before moving on to another game. These baskets of food items will have equal choices of organic as well as nonorganic foods. We selected milk, veggies, and yoghurt since they are frequently consumed by both men and women and are staples of daily diets (Miklavec et al., 2015; Wang et al., 2013). Yogurt, milk, and vegetables are ideal food items to employ in a CE study because people are familiar with these products.

Respondents are often asked to choose one product from a collection of product profiles in a choice experiment from a number of option sets with varied degrees of attribute scaling. The control group members will be given four baskets to pick from, but they will have plenty of time to make their selections before moving on to the next game.

The experimental group will be given many more baskets to choose from which the above 3 baskets will be a part of, but this group will be rushed, as in they will be told that 'you can play as many games as you want and earn as much as you want.

Now, the mean of the number of organic products chosen in both groups in the above 3 baskets can be compared and seen if the time crunch had any significant effect on the buying behavior.

### **EXPECTED RESULTS AND DISCUSSION**

We expect that the mean of the number of organic products chosen in the control group where there was ample time to choose will be significantly higher than that of the experimental group where they were forced to choose in the time-constrained situation. This will show that when time-constrained people will choose to buy the non-organic products rather than the organic ones.

Our results run counter to other studies on consumers' impressions of the organic designation. For instance, according to research by Van Loo et al. (2011), Americans are more prepared to spend extra for organic chicken breast, especially if it has the USDA organic stamp. The favourable attitude

toward organic products is also present throughout Europe. For example, Van Loo et al. (2014) and Aprile et al. (2012) found that customers like the EU organic label.

### ***Experiment 1B***

Having demonstrated that people choose to buy inorganic products instead of organic products when time-pressed, in experiment 1B we explore how does the time perspectives of each member of a buying diad adjust to the other.

30 buying units consisting of 2 members each will be identified with purchasing history of more than 3 years. Care has to be taken that these units are homogenous in terms of age, socio-economic status, and other demographic variables.

Each buying unit will be given 4 baskets of FMCD products to choose from. We have chosen a basket of FMCD products like refrigerator, Washing machine, dishwasher, etc because the lifetime of these products are high and these products are apt to be considered from the perspective of both present and future.

Once the buying unit chooses a product and settles for it we will separate each member and take them to a place where they cant hear each other. This will ensure that the opinion of one doesn't influence the opinion of the other while answering. We will then proceed to ask them the most important reason why they decided to choose a particular FMCD product. Their response will be coded in the category of present and future perspectives. The mean score of each member can be analyzed to check whether the Time perspective of each member compliments or supplements each other.

### **EXPECTED RESULTS AND DISCUSSION**

We expect that the time perspective of each member of the buying unit will complement each other. For example, in each decision taken if the most important reason to choose the product for the husband will be in the immediate present then the wife will think of the long term and vice versa.

### **GENERAL DISCUSSION**

Adding to the previous literature on how situational factors like time press can affect behavior, we have shown how time press can make people more present-oriented and nudge them to buy unhealthy inorganic food items. Hence, we conclude that when buying groceries people should shop when they have ample perceived time or else they will be short-changed and end up hurting their self-interest. Contrary to the traditional studies mentioned earlier, Van Loo et al. (2011) discovered that Americans are more willing to pay for organic chicken breast, particularly when it bears the USDA organic designation. Europe likewise exhibits this favourable attitude toward organic products. For instance,

Van Loo et al. (2014) and Aprile et al. (2012) discovered that consumers have a good opinion of the EU organic badge.

Our study provides proof that customer preferences for healthy and environmentally friendly aspects of food goods differ depending on whether they are focused on the now or the future. People who are more present-focused and less ready to put off satisfaction do not benefit from eating organic food. They could overlook the long-term advantages of eating better and more sustainably because they are primarily focused on the now, instead emphasising flavour and other aspects of food that might provide instant satisfaction.

Customers come in the form of dyads when shopping for expensive goods like electronics, furniture etc. If the results of the second experiment is as expected then it will prove that the time perspectives of a member of the dyadic group complement each other. Salespeople must then gauge who is present-oriented and who is future-oriented and pitch accordingly. Advertisements shall also be designed accordingly.

Research on temporal perspective and health outcomes has traditionally been relevant in developing public policy because it reveals the reasoning behind allegedly illogical health choices (Lawless et al., 2013). However, research hasn't truly examined the specific influence of time perspective on nutritional choices. Overall, the study's findings support the importance of temporal perspective and contextual elements like time constraints in characterising the range of consumer food preferences. Despite the fact that this result may not be entirely unexpected or earth-shattering, it is still crucial information for policymakers because it suggests that they should take time preferences into account when drafting laws that encourage people to purchase and consume, among other things, healthier and more environmentally friendly food products.

Even though the literature has not yet addressed the possibility of influencing time preferences, we believe that policies or programmes that could encourage consumers to attach more importance to future events may be a successful way to help them choose healthier and more environmentally friendly food options. Examples of policies and initiatives that could be useful in this regard include those that inform people about the potential long-term advantages of eating healthier and more sustainably produced foods. As consumers consider the future, this may also help to lessen their sense of uncertainty. Consequences of current activity, which frequently serve as a dissuader from engaging in virtue. Because of this raised awareness, the sustainable and healthy elements of food products may receive more attention.

Given the high and rising rates of obesity and medical expenditures not just in the US but also in many other nations, this topic is crucial in the fields of food policy and health. Time preference-based evidence may also be relevant for marketing goals because different time preferences can be used to

create customised labels that may be more effective at communicating healthy and environmentally friendly features to customers.

Many questions remain unresolved, despite the fact that we anticipate this research significantly adds to the body of knowledge on temporal perspective and purchasing behaviour. If present-oriented people are into unhealthy lifestyles such as binge-watching and binge eating (Epel, Bandura, & Zimbardo, 1999) how can they be nudged towards future orientation which is characterized by mindful consumption and healthy buying habits? What is the role of time perspective in post-purchase cognitive dissonance? Do these future-oriented people who under the situational factor of time constraints buy unhealthy food items later on regret it? When couples are in love and do they start mimicking each other time perspective and buying habits?

### **Limitations**

We have shown, at least in our experimental study, that how time press can make people more present-oriented and nudge them to buy unhealthy inorganic food items. While, we have also shown that the time perspectives of member of the dyadic group complement each other there are certain limitations to this paper that should be mentioned. The study should be repeated with a bigger sample size to ensure the reliability of our findings as the analysis is based on a very small sample, even though the results are strong enough to draw conclusions. The study of potential relationships between time views, time press, and other socio-demographic variables may also benefit from larger sample sizes. Given the multitude of potential confounding variables that could potentially influence both time perspective and food choice behaviour, another limitation of our study is that we are unable to conclusively determine whether time pressure can lead people to choose inorganic or unhealthy options in food. Additionally, choice experiments are carried out in a fictitious environment where product visuals and characteristics are specially created to meet the objectives of the study. Therefore, the experimental design may help to make some product attributes more or less important.

Future studies should assess how reliable our findings are in various contexts, such as those involving different food types and food qualities, different time perspective measurements, and different geographies, given that experimental results are typically context-dependent.



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## Decolonizing Climate Crises: Beyond the Archives of 'western ecocriticality'

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**Keywords:** decoloniality, climate crisis, ahumanism, deep ecology, ecosophical assemblages, Advaita Vedanta

### Introduction

Ecology as a discipline and climate crisis as a concern have always remained an area of research for ecologists, activists and academics whose knowledge have been structured exclusively through Western approaches to engage and explore the Anthropocene (Ferdinand, 2021, Trisos, Auerbach & Katti, 2021). However a change has occurred where theorists and philosophers are aiming to position non-western philosophy, to work out a broader decolonial framework, in order to find a way of producing an effective radical sensibility that may work towards conceptualizing 'justice' in the context of profound transformations of the earth system devoid of the traces of western concept of anthropocene (Mignolo 2011, Moore, J. W. 2015, Pellizzoni, L., 2015). We argue, given the current climatic crisis, it is necessary to widen and diversify this effort by fusing radical western epistemology with ongoing decolonization activities. This paper therefore, explores not only the localised forms of decolonization of ecology, but also forges a transversal wedding between radical western epistemology and non-western, or, to be more precise, Indian parallax views. We propose that these ideas will help address concerns related to present climate change as well as contribute to the ecological recovery of Earth's inhabitants.

Moreover, the complex interplay of the various eco-critical strands throughout the current climate crisis successfully reveals the contradictions of state machinery's eco-political intervention. It culminates in the creation of various ecosophical assemblages that, in Guattari's words, utilise a new "conceptual grammatology," a grammatology that could be converted into a practical praxis to implement different eco-healing modalities and create practical strategies for existing in a "qualitative diversity" beyond anthropocentrism. These assemblages, however, are stirred by the ethics of post-structuralist micropolitics. As a result, rather than regarding humanism as a superfluous philosophical concept, these assemblages are productively disjunctive and tend to "difference engineer" it into a growing problem space. Humanism thus has the opportunity to endure in these assemblages as, implacable stains, looming over the ecosophical rebuilding of the bio by the latter.

## Western thinkers Eco-critical Interventions

What we call ecology does not merely stand as a surface for reworking diverse eco-parallax views, but as an unmitigable problem field. This problem field arises out of and expresses its insistence to make Anthropocene a representative index of human centric world 'structure', marking the dominance of human over rest of the entities, (Crutzen,2002; 2006) rather than viewing it as a provincial historical or a cultural 'event'(Patricia Wolfe, 1999:2; Pasternak 2017:14-15). Though, it cannot be denied that creative reworkings of ecological dynamism or potentials that human existence demands entails multiple levels of parasitical engagement with nature, making way for a tolerable degree of exploitation of the latter, it is only after the massive exploitation of ecology affecting that trilogy of human, humanity and humanism stood as irresolvable knots (Bonneuil and Fressoz, 2016; Crist 2013; Davis and Todd, 2017; Haraway et al., 2016).

None of what we encounter as eco-critical interventions or ecosophical assemblages keenly partake of any form of decolonial enquiry, with the exception of a few sporadic attempts by some Western thinkers to work out semblances of decolonial enquiry by inventing a form of a-humanism engaging with minor positionalities or "thresholds" of epistemology. The Heideggerian idea of self-care or Simondon's non-anthropocentric view of technology connect with the life-promotional processes that thinkers like Levi-Strauss were eager to start, but they imaginatively diverge from Strauss' conviction while reworking anthropocentrism into a salvageable assemblage. Sloterdijk's anthropotechnic or anthropotechnogenic and Bernard Steigler's "Neganthropocene" are current paradigms of non-anthropocentric assemblages, although the nuanced non-anthropocentrism they provide stands as problematic fields needing renewal. Their non-anthropocentrism directs us toward making the earth habitable by offering a homotechnological turn that is not counter-natural but co-natural, entangling both humans and non-humans in a process of non-linear co-becoming, similar to Deleuze and Guattari's reconstructive version of non-humanism. However, what we are currently looking for are far more expansive ecosophical "spherological" assemblages that could combine various a-humanist ideologies with more extensive decolonization processes involving ongoing interaction with South Asian epistemic and non-epistemic practises.

Such assemblages even establish the groundwork for a brand-new conceptual grammar that could be used to construct practical eco-healing strategies and methods of existing in a diverse diversity beyond anthropocenity. However, because they are experimental offshoots of poststructuralist micropolitics, they do not necessarily strive to cause a fundamental rupture with anthropocenity rather they want to reshape it as a key component of post-human or non-human assemblage. These assemblages do, of course, establish a path of flight from humanism, but they do so by treating it as a growing issue area rather than as a superfluous metaphysical abstraction. This relationship aims to "dissolve" the ontology of the human rather than eliminate it. Humanism thus benefits from remaining in these assemblages as hauntological traces or, to put it better, ineradicable stains

(Zylinska, 2014). The non-humanist, trans-humanist, and post-humanist rebuilding of the *bio* is the only way we may come into contact with the spectral presence of the exceptionalist human.

This persistence ensures that reconstruction bears the resonances of the affectualities of human exceptionalism or the configuration of the human gets to play the role of ‘vanishing mediator’ in the exercise of reconstruction. However, it is the resilience of this vanishing human mediation that we need to remove not from the realm of animal studies based on Derridean notion of ‘animot’ (Mallet, 2008)—that folds the differentiation between animal and human into a ‘queer assemblage’ reflecting the invisible persistence of the latter—but also from our commitment to creating a new earth in the form of what Michael Serres calls *biogea*. It is not simply because our times is enmeshed in the process of encountering the untimely in the form of a pandemic that the exponents of global epistemology have converged towards showcasing an abolitionist refusal of anthropocenity, given that we have encountered such pandemics before. Rather the global epistemology is at point of abolishing humanity instead of treating it as a kind of intellectual waste product that may continue to exist in a state of imperceptible molecular dispersal within the emergent discourses because the pandemic that we are assailed by currently has brought forth something novel.

This pandemic has not only created a climate of total violence insidiously connecting with other forms of anthropocentric violence existing side by side only to create yet another oedipal trap, but it has made evident how nature could turn the grammar of its own exploitation by anthropocenity into a war machine against the latter. It is due to nature effecting its own tactical anthropocentization to incite a climate of total anthropocentric violence that critics such as Patricia MacCormack have turned towards expressing abolitionist refusal of the encyclopaedic human or its tissues by working out an ahuman manifesto (MacCormack,2020). But then, such western philosophical work do not partake of any form of eco-critical enquiry to work out broader ecosophical assemblages. The Heideggerian concept of self-care (Foucault, 1988) or Simondon's non-anthropocentric view of technology connect with the life-promoting processes that thinkers like Levi-Strauss were eager to initiate, they also imaginatively deviate from Straussian conviction while reworking anthropocenity into a redeemable assemblage. Current non-anthropocentric assemblage paradigms include Bernard Stiegler's *Neganthropocene* and Peter Sloterdijk's *anthropotechnics*, although the nuanced non-anthropocentrism they provide is a problematic topic in need of resurgence.

### **Indian Philosophical Insights and Ecology**

In other words, their non-anthropocentrism directs us toward making the planet habitable but also offers a homotechnological turn that is not against nature but rather co-nature, a practise that halts humanism's desire to cause a rupture within a process of an uncanny co-becoming. However, what we really want right now are much more expansive ecosophical "spherological" assemblages that

may combine various humanistic ideologies with more general decolonization processes that require ongoing interaction with South Asian epistemic and non-epistemic practises. Furthermore, the practises that western epistemology has to interact with must be those that reflect the Indian Vedic system.

This is not only because Western epistemic engagement with Indian Vedic tradition is confined to a few sketchy philosophical insights that may be culled from works such as *Purifying the Earthly Body of God: Religion and Ecology in Hindu India* (Nelson, 1998); *Hinduism and Ecology: Seeds of Truth* (Ranchor Prime, 1994) and *Nature in Indian Philosophy and Cultural Traditions* (Baindur, 2015), but because Indian eco-theology is a cornucopia of creative possibilities.

Moreover, the notion of *dharma* in Indian philosophy is based on universal organizing principle that binds all reality. So, the protection the environment from all calamities becomes the *dharma* of Indian psyche. The other concept central to Indian philosophy is *karma*, which holds the belief that every action has consequences and that there is always a causal effect that relates between each and every actions that individual performs. Thus *karma* as closely related to the events being performed on the earth and *dharma* maintains the balance in the socios. Both the concepts establishes the facts that there is a continuous intimate relationship among all forms of creature on the Earth, and one's approach toward the ecology will have karmic consequences. This emphasises the fact that for Indians it becomes a responsibility to maintain the ecological balance by protecting every natural phenomenon on this planet.

Keeping the thoughts of Indian philosophy at the centre many initiatives were taken at a large scale to control the climate crisis and protect the ecology. For instance, *Bhumi* an organisation was established in 2009 by the Oxford Centre for Hindu Studies. It recognized that Hindu communities are capable in becoming the significant voice in addressing the climate crisis through their Hindu mythological preaching (Alliance of Religions and Conservation,2009). Further, Local Hindu communities in India were a part of the vitalist movement where their own practices were of environmental significance. As guided by their religious tradition to express *dharma* through Chipko movement, which was a vehement response against deforestation project (Berreman,2011). This movement was significant as by hugging the trees human being became a part of the non-human-the trees. Such ecological practices, as argued by many critics, were not only for ecological sustainability but a deep devotion to the divine Nature. (Webber,1988)

Therefore, it is essential to blend Indian and Western philosophies through a process of dynamic interactionism in order to create an effective ahumanist radical sensibility that may strive towards constructing a new Earth free of the residues of humanism. Additionally, replicating the significant overlap between Indian and Western ecotheologies is insufficient to generate a radical sensibility



committed to ecosophical ethicality. These overlaps have already been noted and saved. It's interesting to see how Eco-main philosophy's proponent, Philosopher Henryk Skolimowski, ties this perspective into a cross-theological framework by eking out eco-theological strands in Vedic philosophy. Shiva is a power that, in his eyes, transforms and reimagines the world. In Shiva's everlasting dance (tandav), the cycle of rebirth and reawakening is repeated, yet this only serves to start a process of becoming new, a new that develops from the energy chaos that Shiva creates via his dance. Skolimowski asserts that Shiva's dance is evolving into a dance of healing and bringing new, original energy and matter into the cosmos. Again, Advaita Vedanta contains significant ahumanist elements. This is a radical school of Indian philosophy that may not initially appear to be ecological, but by refusing to make a distinction between people, animals, trees, insects, birds, and the environment, it demonstrates its potential to be ahumanist.

According to Eliot Deutsch (1969), Advaita Vedanta is a non-dualistic branch of Vedanta that was principally developed by Sankara. It has been and still is the most frequently acknowledged way of thinking among Indian thinkers (p. 3). In other words, Advaita Vedanta is an idealism-based ontological framework that holds that consciousness alone constitutes the entirety of the cosmos. Furthermore, if all phenomena (including humans, plants, fish, and other living things) have their origins in the divine (Brahman), then the relationships between different phenomena should be ones of reverence in order to recognise the divine essence that resides in each and to promote duty, right, responsibility, conduct, virtues, and the flow of existence throughout the entirety of creation. This kind of moral egalitarianism is exactly what Deep Ecology advocates. Deep Ecology, which Arne Naess founded, rejects the idea that humans and other animals can be classified according to their relative worth (Naess, 1989; 2005). Deep ecologists, like Arne Naess, believe that all living things have the right to a democratic way of life.

As Sloterdijk's spherosophy excellently illustrates, it is vital to put these concepts into practise rather than simply borrowing ideas from Western and Indian eco-theologies. However, by combining elements from both, one can produce a more complete, dense, and equally decolonizing ecosophical assemblage. Unquestionably, the widespread distribution of a variety of decolonial ecosophical affectualities might guarantee that they end up developing a radical sensibility. But a transformational ethico-politicality could only be developed by connecting with Indian eco-theology and giving a praxial turn to the larger, expanding, and decolonial ecosophical assemblages we work out. With the help of this ethico-politicality, democracy may be restructured from its current degenerative state into what Skolimowski refers to as ecocracy in his 2005 book *Philosophy for a New Civilization*.

## **Conclusion**

The article therefore attempts to actualize ecocracy by drawing on the underexplored chthonic

zones between western secular ecosophical ideas/ideals or its nascent desecularized counter-discourses and the non-western ecotheological synergies; revealing how the model of ecocriticism that the governmental apparatuses regularly employs by revealing dense overlap with these apparatuses overt bio and necropolitical agendas, mapping the ways that western ahumanist ecosophy seeks to decolonize itself by engaging with cult, magic, and minor positionalities lying within its immanent exterior; defining the limits of western ecosophy and coming up with creative art of decolonizing them; and attempting to pose a deliberative encounter between western ecosophy and Indian eco-theology. Finally, a radical praxial ecovision seems progressive, enabling not only theoretical dissemination but also a practical grounding on matters achievable with an activist inclination to face the current climate crisis and ecological disasters.

We also expect that this attempt at staging a deliberative encounter between Western and Non-Western eco sensibilities would pave the path for many such experimental endeavours in near future which would productively magnify into those countless other indigenous ecosophical perceptions left out of our proposed approach.

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## **An investigation into the stock market volatility in fast moving consumer goods industry due to climate change**

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**Abstract:** By connecting the stock market returns of the FMCG companies in India with the weather conditions from 2010 to 2021 the study aims to find out the influence of weather conditions in India on the FMCG industry. In the year 2015, India was the top fourth country in the world among the top climate change-affected countries. Hence studying the stock market prices of the FMCG industry before and after 2015 assesses the impact of climate on the financial condition of the country. Sun, Xu and You, (2022) <sup>1</sup> on studying the relationship between physical climate change exposure and stock market returns find that climate change exposure of listed companies and stock market returns are interrelated to each other. The purpose of this study is to get a more in-depth understanding of the present mechanism that is the driving force behind the climate connection by investigating the distinctiveness that resides within it. The effect that exceptionally high temperatures have on erratic stock returns is especially noticeable in businesses that place a strong emphasis on their customers. Even if several issues have been resolved, the impact of the extreme weather continues to be felt. In the end, this article provides further evidence that may be taken as definitive of the influence climate change has had on the stock market.

**Keywords:** *climate change, FMCG, stock market, climate risks, share price volatility*

### **1. Introduction**

It is an acknowledged fact that the weather influence is viewed as one of the economic oddities and that this interpretation is directly tied to the emotional state of investors. A person's mental state or attitude, for instance, might be influenced by the weather, which could prevent investors from rational choices (An *et al.*, 2018). If the occurrence of weather influences has an impact on the choices that investors make, then the behaviour of share prices might be influenced by the varied weather conditions. According to the Efficient market hypothesis, which states that equity markets are warranted by enterprises' intrinsic values and there is no influence of the climate on the yields that they generate (Peng, Li and Pan, 2019). On the other hand, behavioural finance theory has put out the argument that abnormalities in the stock market may, to some degree, be the consequence of significant environmental conditions (Subodh, 2014). As a direct consequence of this, the occurrence

of a weather impact has led to some concerns being raised about the reliability of the Efficient Market Hypothesis.

As far as behavioural finance is concerned there are hardly any sources or authorised data sources existing to evaluate the weather effects of climate change on the stock market. Situated between the torrid and temperate zone, India is a country facing high impacts of global climate change. At an annual rate, India is responsible for the release of around three gigatonnes of carbon emissions. This equates to approximately 2.5 tonnes of greenhouse gas per individual (Chandel *et al.*, 2016). Because of the increased likelihood of natural catastrophes brought on by climate change in the country, the availability of some resources and raw materials may become more limited, hence driving up their respective costs (Tripathi and Jham, 2020). The end effect could be less supply, increased demand, and costs that would be higher. Such an effect is to have definite impacts on the industries of the country.

The fast-moving consumer goods industry makes a significant contribution to India's national income. The fast-moving consumer goods sector has been helping to meet the demand of consumers in India with incomes in the lower and medium brackets (Sudev and Raghunandan, 2018). It is characterised by a well-developed supply chain, fierce competitiveness among the organised and unorganised divisions, and cheap operating costs, and it has a significant presence from multi-national corporations. The fast-moving consumer goods industry in India is the fourth biggest industry in the Indian economy, with a market size of 14 billion US dollars (Shetty *et al.*, 2020).

Acknowledging the importance of fast-moving the consumer goods industry in the country and also considering the scope of growth of the industry as India is one of the fastest developing economies of the world, the present study is into finding out whether the climate change which is intensely occurring in the country is having any effect on the share prices of the companies operating in the fast-moving consumer goods industry.

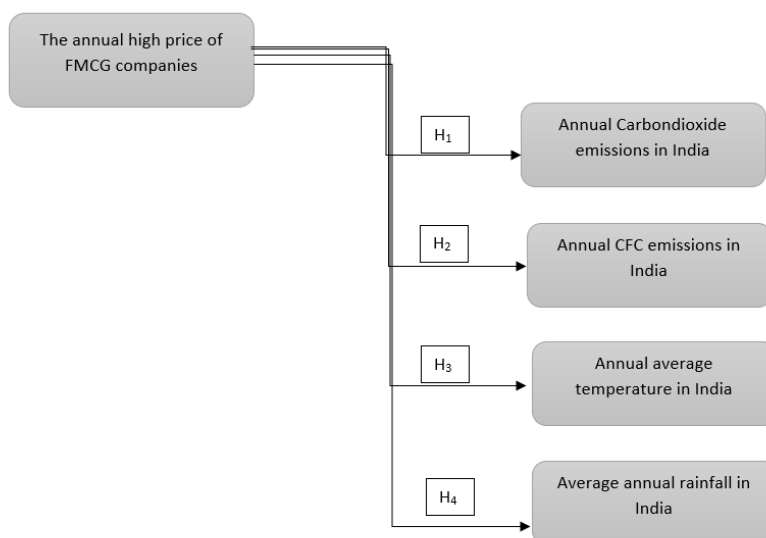
## **2. Literature Reviews**

(Monasterolo *et al.*, 2017; Kennard, 2020; Cunha *et al.*, 2021) are just some of the studies that have shown that professionals have long been concerned with the effect that sunlight has on human behaviours. They argued that the amount of sunlight that a person is exposed to changes their emotion or attitude, which might produce the tendency to participate in certain activities; for example, moderate sunlight favourably contributes to customer behaviour and motivates people to give interviews. According to this point of view, the mental condition or psychological state of a person may be influenced by the climate, which can prevent individuals from making choices that are sensible or as good as they might be. If this is the case, the impact of the weather might have a significant impact on the choices made by stock market participants.

In this respect, the majority of studies that have been conducted on the weather pattern have concentrated on analysing the impact of the absence of sunlight on share prices (Dordi and Weber, 2019; Benz-Saliasi, 2020; Schellhorn, 2020; Tesselaar, Botzen and Aerts, 2020). Researchers Benz-Saliasi, (2020) and Tripathi and Jham, (2020) found an inverse correlation between cloudy days and every day share prices. The latest research has considered several different climatic factors. Fog, heat, and wind velocity were the three local weather parameters that (Letta, Montalbano and Pierre, 2022) used in their investigation of the influence of the climate on the profits of European financial securities. (Kang *et al.*, 2010) explored the influence of weather on share prices by utilising a variety of climate proxy factors in their study. Davies, (2020) and Foley, Degirmenci and Yigitcanlar, (2020) investigated the relationship between weather and returns on the Australian stock market and discovered an unfavourable link between the two variables. According to the findings of (Hsiao *et al.*, 2020), the heat as well as the amount of cloudiness had a detrimental impact on the performance of the Taiwanese stock market. (Lee, 2010) evaluated the role of weather patterns on the share prices of Korean companies using heat, moisture, and rainfall as their variables. Attitude or emotion prevents individuals from judging what is reasonable or in their best interests. If this is the case, the impact of the weather might have a significant impact on the choices made by stock market participants.

### **3. Conceptual model**

The conceptual model of the current study is framed under the theoretical foundations of the Efficient Market hypothesis (EMH). Under the concept of EMH, a market reflect its environment in three forms weak form, semi-strong form and strong form. In the weak form stock market behaves according to past price movements whereas in the semi-strong form the stock market reflects prices of stock according to the publicly available information related to the environment. In the strong form of the market according to the hypotheses, the prices of the stock market reflect all information which is available both in the private and the public. The present study tests whether the stock market prices reflect the information on weather changes which is available in the public domain. Hence according to the hypothesis, the stock market of the FMCG industry must be in a semi-strong form. The conceptual model of the study is depicted below:



#### 4. Methodology

The present research is conducted under the foundation of positivist research philosophy considering the possibility of applying scientific analysis of facts in the study. The study is based on secondary data. The annual high prices of five companies operating in the FMCG sector are considered for the period 2010 to 2021. Along with that the average annual temperature, rainfall and carbon dioxide emission rates in India for some time from 2010 to 2021 are considered for the study. To satisfy the objective of the study, an analysis of variance (ANOVA) of the variables using SPSS software is conducted in the study.

To conduct the ANOVA test, the weather proxies considered are taken as independent variables and the annual high prices of the six FMCG companies in the Indian market are taken as dependent variables. The first two weather proxies considered in the study include the annual carbon dioxide and chlorofluorocarbon emission rates in India. Carbon dioxide is one of the prominent gas causing ozone pollution and is taken as a parameter for measuring climate change in the country (Andrikopoulos, Wang and Zheng, 2019). The next two weather proxies considered in the study are the annual average temperature rate in India and the annual average rainfall rate in India. Temperature and rainfall are two meteorological measures which depict the climatic conditions of a location. Hence temperature and rainfall measures are taken in the study (Muhlack, Soost and Henrich, 2022).

To find the relation this paper considers the Bombay stock exchange (BSE) index prices of the companies Hindustan Unilever Limited (HUL), ITC Limited, Nestle India, Dabur India, Godrej Consumers limited, and Britannia Industries. In doing so, the annual high prices of the shares of the companies for the years 2010 to 2021 have been considered.



## 5. Data Analysis

### Hypothesis 1

H<sub>0</sub>: There is no significant association between annual CO<sub>2</sub> emissions and the share prices of FMCG companies.

H<sub>1</sub>: There is a significant association between annual CO<sub>2</sub> emissions and the share prices of FMCG companies.

**Table 1**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
HUL	Between Groups	8417928.558	9	935325.395	31.663	0.031
	Within Groups	59079.156	2	29539.578		
	Total	8477007.714	11			
ITC	Between Groups	50811.011	9	5645.668	133.913	0.007
	Within Groups	84.319	2	42.159		
	Total	50895.330	11			
Nestle	Between Groups	345265333.240	9	38362814.804	12.288	0.017
	Within Groups	6244034.353	2	3122017.176		
	Total	351509367.592	11			
Dabur	Between Groups	357150.730	9	39683.414	30.838	0.032
	Within Groups	2573.696	2	1286.848		
	Total	359724.427	11			
Brittania	Between Groups	25308825.396	9	2812091.711	15.370	0.043
	Within Groups	365908.711	2	182954.356		
	Total	25674734.108	11			

According to the results depicted in table 1, for all the six companies in the FMCG sector, the significance level is below 5% rejecting the null hypothesis. Thus CO<sub>2</sub> emissions and share prices of FMCG companies are significantly related to each other.

### Hypothesis:2

H<sub>0</sub>: There is no significant association between annual CFC emissions and the share prices of FMCG companies.

H<sub>1</sub>: There is a significant association between annual CFC emissions and the share prices of FMCG companies.

**Table 2**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
HUL	Between Groups	8477007.714	11	770637.065	60.5	<0.05
	Within Groups	0.000	0			
	Total	8477007.714	11			
ITC	Between Groups	50895.330	11	4626.848	47.8	<0.05
	Within Groups	0.000	0			
	Total	50895.330	11			
Nestle	Between Groups	351509367.592	11	31955397.054	19.112	<0.05
	Within Groups	0.000	0			
	Total	351509367.592	11			

Dabur	Between Groups	359724.427	11	32702.221	50.86	<0.05
	Within Groups	0.000	0			
	Total	359724.427	11			
Brittania	Between Groups	25674734.108	11	2334066.737	8.167	<0.05
	Within Groups	0.000	0			
	Total	25674734.108	11			

According to the results depicted in table 1, for all the six companies in the FMCG sector, the significance level is below 5% rejecting the null hypothesis. Thus CFC emissions and share prices of FMCG companies are significantly related to each other.

Hypothesis: 3

H<sub>0</sub>: There is no significant association between the annual average temperature and the share prices of FMCG companies.

H<sub>1</sub>: There is a significant association between the annual average temperature and the share prices of FMCG companies.

**Table 3**

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
HUL	Between Groups	8477007.714	11	770637.065	1.775	0.178
	Within Groups	0.000	0			
	Total	8477007.714	11			
ITC	Between Groups	50895.330	11	4626.848	1.817	0.17
	Within Groups	0.000	0			
	Total	50895.330	11			
Nestle	Between Groups	351509367.592	11	31955397.054	2.154	0.119
	Within Groups	0.000	0			
	Total	351509367.592	11			
Dabur	Between Groups	359724.427	11	32702.221	2.132	0.121
	Within Groups	0.000	0			
	Total	359724.427	11			
Brittania	Between Groups	25674734.108	11	2334066.737	0.074	0.974
	Within Groups	0.000	0			
	Total	25674734.108	11			

According to the results depicted in table 1, for all six companies in the FMCG sector, the significance level is above 5% accepting the null hypothesis. Thus annual temperature and share prices of FMCG companies are not significantly related to each other.

Hypothesis: 4

H<sub>0</sub>: There is no significant association between annual average rainfall and the share prices of FMCG companies.

H<sub>1</sub>: There is a significant association between annual average rainfall and the share prices of FMCG companies.

**Table 4**

		<b>ANOVA</b>				
		Sum of Squares	df	Mean Square	F	Sig.
HUL	Between Groups	7586302.765	7	1083757.538	4.867	0.073
	Within Groups	890704.949	4	222676.237		
	Total	8477007.714	11			
ITC	Between Groups	46730.781	7	6675.826	6.412	0.046
	Within Groups	4164.548	4	1041.137		
	Total	50895.330	11			
Nestle	Between Groups	312255600.820	7	44607942.974	4.546	0.081
	Within Groups	39253766.772	4	9813441.693		
	Total	351509367.592	11			
Dabur	Between Groups	334670.417	7	47810.060	7.633	0.034
	Within Groups	25054.010	4	6263.503		
	Total	359724.427	11			
Brittania	Between Groups	23582584.514	7	3368940.645	6.441	0.046
	Within Groups	2092149.594	4	523037.398		
	Total	25674734.108	11			

According to the results depicted in table 4, for all six companies in the FMCG sector, the significance level is above 5% accepting the null hypothesis. Thus annual rainfall and share prices of FMCG companies are not significantly related to each other.

## 6. Results and Discussions

On conducting the one-way analysis of variance it can be found that the pollution rates in India are significantly related to the stock price movements. Both carbon dioxide emissions and the emissions of chlorofluorocarbons are related to the share prices of companies operating in the FMCG sector. India in the past decade is reported to increase emission rates with its rapid urbanization and increasing population. The country is regarded as one of the fastest developing economies in the world, but the concept of sustainable development needs to be seriously regarded by the authorities in the alarming increase of share prices. Stakeholders of the FMCG industry are found to be aware of such changes happening in climatic conditions. Such awareness of individuals about the environment is to be highly appreciated. But anyhow the country needs to make immediate action to reduce the emission rates as the implications are found to have even affected the stock market movements of the country.

On the contrary, the relationship between the average temperature and average rainfall in India with the share prices of the FMCG sector is found not to have any significant relationship with each other. Such a result might be due to the normal climatic conditions prevailing in the country. India being a country in the temperate zone is used to having high levels of temperature and volatile monsoon rates. Hence such rates are not to be found to have any effect on the sentiments of shareholders in the FMCG industry.

## 7. Conclusions

The findings imply the existence of significant proof of the protracted and cause-and-effect relationships between CO<sub>2</sub> emissions, and trade openness in the FMCG industry. The findings, in addition, validate the presence of the Efficient market hypothesis theory in the economy of India. While the preceding study has produced some fascinating insights, it is important to stress that the establishment of effective energy regulations, which will help to the reduction of carbon emissions while also reducing costs, is urgently needed. To maintain industrial prosperity, it is necessary to take into account other elements in addition to the fundamental causes that we have researched. Taking into account issues about regional development, urbanization, and other external conditions in the context of India would be a fruitful way to extend the scope of this study and might potentially provide positive results.

## 8. Managerial implications

The present study could be an added source of information while studying the relationship between weather and stock price movement in the Indian FMCG sector. The companies used in the study could consider the present study as a reference for understanding investor behaviour. Climate change is a global issue that is found to have an impact even on the stock market of the country. Policymakers could make use of the study to make decisions regarding steps to curb climate change by considering its consequences in the share market through this study.

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## **Innovative Behavior as an Outcome of Dissatisfaction with the Status Quo and Innovativeness as a Job Requirement**

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### **Abstract**

It is desirable by many organizations to have employees displaying innovative behavior to deal with the challenges or work on a day to day and also to come up with products and services that are novel. Though desirable, employees on their own may not consciously engage in innovative behavior unless certain conditions prevail. These conditions could be either that an employee is dissatisfied with the current situation and would therefore like to do something about it or an employee is required to be innovative because his or her role demands it. To understand and explore these relationships empirically, data was collected from 233 IT professionals working in ITeS organizations on the following: (a) dissatisfaction with the status quo; (b) innovativeness as a job requirement; and (c) employee innovative behavior. All these constructs were measured using scales with acceptable psychometric properties. The results of the study indicate that dissatisfaction with status is not strongly related to an employee's innovative behavior but there is an interaction effect with innovativeness as a job requirement. Moreover, the findings suggest that the relationships may not be linear.

### **Introduction**

Being innovative is an important organizational attribute that is directly responsible for bringing success and competitive advantage to the firm in today's competitive market. Innovation in the organizational context is associated with generating, disseminating, and executing new ideas within the work environment. In an organizational setup, employees are the main driving force for innovation as they can engage with work in new ways to accomplish a task in the face of difficulties and hurdles. Thus, innovative behavior displayed by employees is desired in most organizations today and more so in the services industry, including the ITeS. The growing reliance on innovative behavior is because of the increasing complexity of work. Many times employees find it difficult to fulfill their job requirements by merely following established procedures leading to dissatisfaction with the existing way of working. In such a scenario one would expect employees to move away from established norms and explore solutions to pressing work requirements, thereby engaging in innovative behavior.

The innovative behavior among employees has been classified into three stages in which each stage is associated with a different function (Gong, Huang, & Farh, 2009). For example, the first stage includes looking for new opportunities and generating new ideas. The second stage comprises supporting and promoting the idea, and the third stage involves the implementation of the idea. Employees on their own may not engage in innovative behavior unless they implicitly feel that their behavior would be recognized and supported. For this, being innovative needs to be a job requirement. This is another important element that has been examined in this study along with dissatisfaction with the status quo.

Given the above context, it is expected that employees exhibiting higher degrees of dissatisfaction with the current work conditions would have a higher inclination to try finding solutions to the problems being faced and may tend to engage in innovative behavior. It is also hypothesized that this relationship between dissatisfaction with the status quo and innovative behavior, will be moderated by the fact, whether being innovative happens to be a job requirement or not. Not all jobs require one to display innovative behavior and hence despite the dissatisfaction experienced, it is unlikely that employees working on such jobs would display innovative behavior and go beyond the requirements of the job.

To test the hypothesized relationships among the three study variables, the following method and measures were adopted.

## **Methods & Measures**

### **Sample**

Individuals employed in ITeS organizations were chosen as respondents, given the importance of employee innovative behavior in these organizations. It is not to say that employee innovative behavior is not critical in other organizations, but for the sake of examining the relationships between the proposed constructs, employees from ITeS organizations were chosen because of easy access to employees belonging to these organizations. Since innovation initiatives depend largely on employees' human capital as critical inputs for value creation (Chen & Huang, 2009) this study uses individuals as a unit of analysis. The survey was conducted using online mode and the survey link was shared using email ids collected through personal and professional networks.

A total of 247 responses were received and after checking for completeness of data and information, 243 were considered for further analysis. The respondents were largely male (81.4%) and graduate (76.1%) with an average age of about 30 years and close to 6 years of average work experience. The age of the respondents varied from 19 to 48 years and total work experience ranged from 1 to 23 years. The profile of the respondents typically represents the profile of the working executives in the



ITeS industry except that the gender distribution could have been more balanced to reflect the gender workforce diversity that is generally prevalent in the ITeS industry in India.

## Measures

Employee innovative behavior is used as a dependent variable in this study. For measuring employee innovative behavior, most studies refer to a process approach that consists of two processes: ideation and implementation (e.g., Axtell, 2000). Whereas researchers like Scott & Bruce (1994); and Kanter & Rosa Beth (1988) suggest three processes: idea generation, idea dissemination, and idea implementation. This study uses the latter approach of measuring employee innovative behavior and uses the scale developed by Janssen (2001). In this scale, idea generation is captured by statements like, “I create new ideas for improvements.”, idea dissemination by statements like “I am always successful at persuading others to take my suggestions”, and finally idea implementation is captured by statements like “I transform innovative ideas into useful applications” For responses to each item, a six-point Likert scale was used where 1 indicated “Strongly Disagree” and 6 indicated “Strongly Agree.”

Dissatisfaction with the status relates to an employee’s dissatisfaction with the current performance condition (Wang, 2022) whereas innovativeness as a job requirement is an employee’s official work role that could affect an employee’s innovative behavior (Yuan & Woodman, 2010). The two independent variables were measured by a scale developed by (Yuan & Woodman, 2010). The Composite Reliability and Cronbach’s Alpha for the scales used in the study are given in the table below.

**Table 1: Composite Reliability and Cronbach’s Alpha of Scales**

<b>Dimensions</b>	<b>Composite Reliability</b>	<b>Cronbach’s Alpha</b>
<b>Dissatisfaction with the status quo</b>	<b>0.83</b>	<b>0.69</b>
<b>Innovation as a job requirement</b>	<b>0.79</b>	<b>0.66</b>
<i>Employee Innovative Behavior (Sub-dimensions)</i>		
<i>Idea Generation</i>	<i>0.81</i>	<i>0.67</i>
<i>Idea Dissemination</i>	<i>0.82</i>	<i>0.66</i>
<i>Idea Implementation</i>	<i>0.87</i>	<i>0.86</i>
<b>Aggregate Employee Innovative Behavior</b>	<b>0.89</b>	<b>0.84</b>

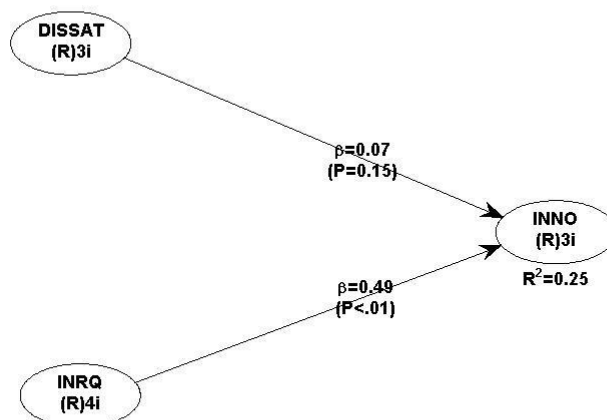
To measure the internal consistency and reliability of the reflective latent variables, both Cronbach’s alpha and composite reliability measures have been used (Chin, 1998; Wong, 2013). Although

Cronbach's alpha is the most widely used reliability measure for internal consistency, some researchers suggest the use of composite reliability instead of Cronbach's alpha as it is a conservative measure of the prediction of internal consistency (Hair, Hult, Ringle, & Sarstedt, 2014; Kock, 2015). Hair, Anderson, Tatham, and Black (1998) suggest a cut-off value for Cronbach's alpha as 0.55. Moreover, a widely used criterion by researchers, is that one of the two coefficients should be equal to or greater than 0.7, and particularly composite reliability coefficient should be greater than 0.7 (Fornell & Larcker, 1981). For all latent constructs used in the study, composite reliability is more than 0.70.

WarpPLS (version 7.0) is used for analyzing the data because it can unambiguously find non-linear relationships between the variables presented in the structural models and estimate the associated multivariate coefficients. WarpPLS uses a nonlinear model analysis based on structural modeling. Generally, it is observed that naturally occurring behavioral phenomena are non-linear. They are either U-shaped or potentially S-shaped Kock (2011). SEMs like LISREL, EQS, or AMOS, don't usually take non-linear associations among latent variables while calculating path coefficients, P-values, or R-squared values. WarpPLS addresses the above shortcomings and gives graphic insights into indicators and latent variables.

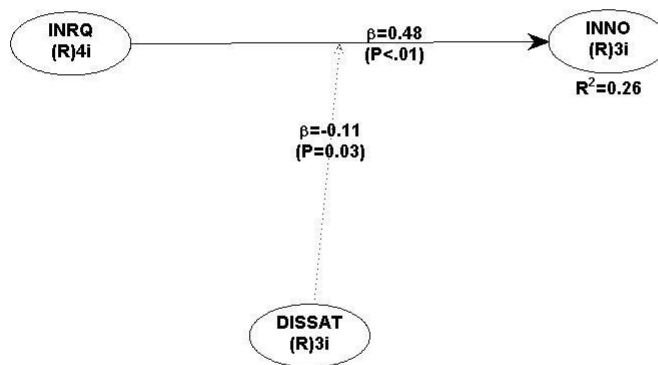
## Results

The results presented below mirror the relationships hypothesized earlier in the paper.



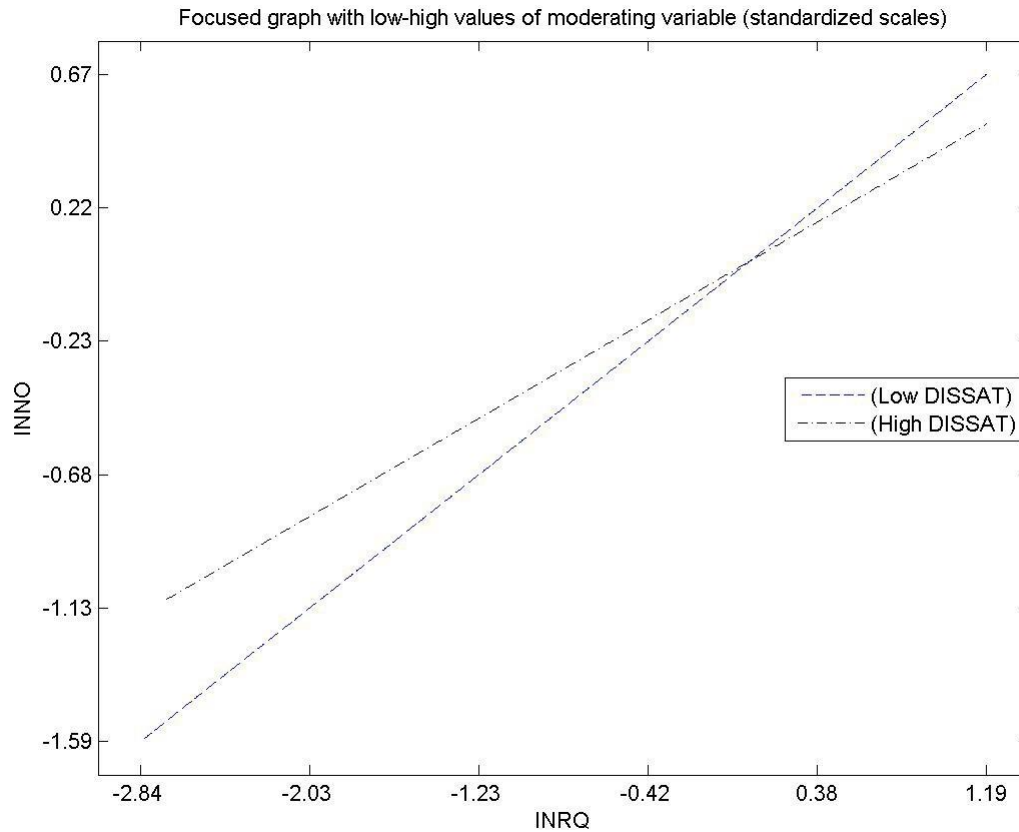
*Fig.1* Relationships between the independent and the dependent variable.

The results indicate that dissatisfaction with the status quo does not have any significant relationship with employees' innovative behavior but innovativeness as a job requirement does. (path coefficient =0.49, p-value =0.001). The reason could be that the relationship between dissatisfaction with the status quo and employee innovative behavior happens to be curvilinear and it is an inverted U-shaped relationship (Wang, 2022).



*Fig.2* Dissatisfaction with the status quo moderating the relationship between innovativeness as a job requirement and employee innovative behavior

The results indicate that dissatisfaction with the status quo negatively moderates the relationship between innovation as a job requirement and employees' innovative behavior (path coefficient =0.11, p-value = 0.03). When the individuals' job environment does not support their role in innovation which is their basic requirement, then they are dissatisfied which results in disengagement from expressing innovative behaviors.



*Fig.3 Moderating effect of dissatisfaction with the status quo*

DISSAT – Dissatisfaction with the status quo

INRQ – Innovation as a job requirement

INNO – Employee Innovative Behavior

As an innovative requirement in the job increases, for employees who are highly dissatisfied with the status quo, their innovative behavior increases more than for those with low dissatisfaction with the status quo but after some point, their behavior increases less than for those with low dissatisfaction with the status quo.

It can be implied that up to a certain point high dissatisfaction with the status quo does not play any role in curbing their innovative behaviors, but after a certain point their dissatisfaction with the status quo starts impacting their innovative behaviors with the given indication that the increment is less in comparison with the employees with low satisfaction with status quo.

## Concluding Remarks

The significance of innovative behavior cannot be emphasized more in today's time and is a premium that many organizations would like to pay for those who can exhibit this behavior. This study examined the basic underlying assumption that dissatisfaction with the status quo will lead to employees displaying innovative behavior but the results do not indicate so. The results are further nuanced with the introduction of innovativeness as a job requirement and here we see some impact of dissatisfaction with status on employee's innovative behavior. The result of this study needs to be explored further to identify the curvilinear relationship between the variables. This could also be seen as a limitation of this study despite literature suggesting a curvilinear relationship at least between dissatisfaction with the status quo and employee innovative behavior. The other shortcoming of this research is its sampling as it relies only on ITeS professionals. It would be interesting to see if the curvilinear relationship holds for employees working in different industries along with exploring the interaction effects.

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## **Gender Inequality: Case Study in a Language Class**

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### **Abstract for round table**

Over the past few decades, the focus for foreign language teaching has shifted to interactive communicative and task-based language learning. This shift to communicative and task-based approach enables the instructors to engage learners in a wide range of varied concepts such as gender inequalities, sexuality, religion, and such. Subject matter that recognizes and responds to the need to the society not only gives students an exposure to the literature and cultural background of the language speakers, but also sensitizes them about the prevalence of the social issues. The present roundtable will discuss about gender inequalities in South-Asian community and how learning language through discussion on gender inequalities sensitizes the language learners. The rampant of gender inequality in South Asia is due to its unrestrained patriarchal norms and discriminatory practices. It is significant to address the communal issue when teaching any foreign language to sensitize the speakers and instigate changes in the society. It provides students with opportunities to participate in the community by making significant contributions to the society. This approach to language learning exposes students to the existing gender inequalities in the society of the targeted language and push them towards strengthening the development of the society.

### **Introduction:**

In the recent decades, the approach to foreign language pedagogy has evolved to interactive communicative, task-based language learning. The interactive communicative approach to learning along with task-based language pedagogy engages learners in foreign language environment by providing a plethora of new activities and creative tasks. The present paper will bring attention to the demand for language instructors to accept the role of facilitator and captivate learners in a wide range of activities and tasks. The concepts for these tasks can be selected from varied concepts to understand the culture of the targeted language. Subject matter which acknowledges the need of the society such as gender inequalities, sexuality, religion and such give learners an opportunity to interact with the society firsthand. This can be through the medium of literature, newspaper reports, social media, etc. Learning a language with focus on the culture of the targeted language makes the classroom environment dynamic and more relatable with the society. It is imperative to expose learners to the cultural background of the speakers of the targeted language to enable effective

language acquisition. This causes higher motivation among learners and invokes their personal thoughts. A language class that addresses communal issues also instigates change in the society by providing learners with opportunity to interact closely with the society. The targeted language creeps gradually into the learner's everyday language by employing a wide range of tasks which give the learners an opportunity deal with authentic input, to build on their vocabulary and allows them to express their opinions without being judged. This intrigues the learners to use the targeted language to share their beliefs and thoughts and, in the process, accomplish the objectives of language class without an intentional effort. This results in higher comprehensible output and increased desire to learn the targeted foreign language.

Foreign language class contributes in giving affirmation and validation to the ethnolinguistic identity of the speakers of targeted language. This builds a three-way bridge of the language learners with the past cultural experiences of the native language speakers, current identity of the targeted language community and the future interchange with the native speakers. An incomplete or false representation of the cultural, ethnic, or racial identity in a language classroom threatens the language community. On the other hand, a complete representation of the targeted language community validates the identity of the language speakers. This favors the foreign language classroom environment and generates higher interest among the language learners. This paper will also discuss some tasks and activities which can be used to give validation to the diverse language community. The present paper will give successful examples from a Hindi language class taught at the undergraduate level at a university in the US.

This paper also aims to inspire language instructors to use assessment as a learning tool in an online class. Task based approach provokes learners to focus on the task, therefore assessments become peripheral and gives a stress-free language learning experience. Authentic language input can be used to provide opportunities to learners to communicate themselves using targeted language. The input should be intellectually challenging to challenge their thoughts and provoke them to express. Themes that are relatable pushes them to be authentic and innovative, and allows free expression, thus facilitating comprehensible language output, developing linguistic competence. This approach assists in attaining the goals of a language class and puts learning predominant to assessment. The author will also share a few assessment tasks that can produce considerably higher desire to produce comprehensible language output. This approach to language learning fills learners with a feeling of accomplishment and fulfilment. An ongoing support of the instructor is significant for successful attainment of the aims of foreign language assessments of the mentioned type.



## Literature:

Since late 1970s or early 1980s the focus in language teaching pedagogy has shifted from grammar drills and translations to learning language through meaningful conversations and interactions in the target language (Butler, Kang, Kim, & Liu, 2018). Halliday (1973) emphasized that the focus of language teaching should be on the ‘use’ and ‘function’ of the language. This led to the shift in focus from ‘form’ of the language in earlier structural approaches to the usage of the language in language teaching approaches. Therefore, the syllabus in TBLT is not planned around the grammatical concepts, instead the concept of task is at the heart of the class. This allows learners to interact with the language and cope with communication. Ellis and Shintani (2014) propose that a task has the following:

- 1) Language use: the task must focus on meaning; not the form
- 2) Informational gap: there should be a gap which encourages learners to encode information and communicate their thoughts
- 3) Innovative expression: the task must require learners to be creative in their language use and produce innovative utterances
- 4) Outcome: the task should have a final outcome which motivates the discourse.

Task based language teaching (TLBT) originated in 1980s from inclusion of tasks in communicative language teaching (CLT) and research on second language acquisition (SLA) which questioned structured and sequential language teaching approaches (Ellis et al, 2020). TBLT has been supported by researchers working on SLA such as Gass & Mackey (2015), Abrams (2019) and Shintani (2015). This has led to TBLT being accepted and used for language classes since its origination (Butler et al., 2018).

Long (1985) pointed that learning language in a sequential manner is not successful in helping learners acquire the language as a whole. Johnson (1982) also stated that the language is not only about producing grammatically accurate sentences. He further emphasized that putting learners in a position where they need language skills which are not taught in class, encourages and enables them to explore the unfamiliar language components (p. 193). Prabhu (1987) has also pointed that language can be acquired effectively by dealing with the target language through interaction in it. Ellis et al (2020) pointed out that this called for CLT approaches, instead of teaching sequential grammatical concepts (p. 4). These CLT approaches further led to emergence of TBLT, in which the syllabus is spelled with the tasks that centers on language usage (Howatt, 1984). Prabhu (1987) and Nunan (1989) are some of the initial works on TBLT that gave thorough description of the design of TLBT course. TLBT engages learners in task performance that requires communication and it takes away the need of producing systematic planned language output (Prabhu, 1987). TLBT bridges the gap between the syllabus and methodology and changes the role of syllabus from a checklist to directives

for language teaching so the lesson can begin with election of task (Nunan, 1989). Many scholars like González-Lloret and Ortega (2014), and Widdowson (2003) have posited that the tasks should be genuine and be similar to the everyday situations of L2 learners.

One of the continued criticisms of TBLT is that planning genuine tasks is a substantial issue if the learners are not exposed to the target language outside the classroom environment (Kessler, Solheim and Zhao, 2021). This doesn't give learners much opportunity to get exposure to authentic language input and engage with the target language.

### **TBLT in a Foreign Language Class:**

TBLT keeps language use and engagement at the center of the lesson. It appreciates and values the contribution of each learner, as they come from different interests, goal and language backgrounds. Therefore, every learner's use and production of the language is different from others. If the tasks devised for language class are personal, relatable and relevant to the learners, it urges and motivates them to engage in the conversation, which requires them to create new and innovative utterances. These meaning-focused utterances can be narration of personal experience, expressing their thoughts on an issue, problem solving, discussions or negotiations. This maximizes participation and self-reliance of the learners in communicating (Bajaj, 2020). TBLT approach indulges learners into solving/ doing the given task and in doing so, they produce the target language naturally, without an intentional effort. Learners have an equal participation in negotiating the course content with the teacher in a TBLT approach (Breen, 1989) The completion of the task fills learners with a feeling of achievement and contentment.

The learners are exposed to authentic language input. If the input is engaging, it not only motivates them to produce innovative language output, but also venture into more language input such as videos on social media platforms, newspaper articles, short stories, etc. outside the class for their personal interest.

Bajaj (2020) mentions that a TBLT class needs a few components: task, a good language input, language output and the role of teacher as a facilitator and feedback.

1. The task can range from listing to comparing to narrating personal experiences and problem solving (Willis, 1996). The kind of task chosen depends on learner's' attained language competence level (Prabhu, 1987). The task should be authentic and relatable to the life of L2 learners to challenge their thoughts and opinions. Open-ended tasks trigger higher participation from the learners and it also gives more contentment to the learners at the completion of the task. It should interest the students. The end result of the task should be clear and an attainable goal. A well-defined task challenges the intellect of the learners and motivates them to express themselves. The themes for beginner-level learners can be more

concretely related to the everyday lives of the learners, whereas the themes for advanced learners can be abstract and imaginative (Estaire and Zanon 1994).

2. Language input can be a possible way of initiating the discussing in the class, a way of challenging the thoughts or beliefs of learners. For beginner-level learners, the task can be based on the understanding of the language input. The task can simply be description of the language input. For advanced learners, the input can be one of the many possible solutions to the problem.

The language input can require reading, listening or offer multimodality. The authentic language input can be chosen from social media, newspaper articles, short stories from literature, blogs, etc. Social media and internet have integrated into the lives of everyone; and the diverse and authentic language input is now easily accessible to learners in developed countries like the USA. It can be a window to give learners a taste of experiences and cultural practices of the native language speakers and the identity of the targeted language community. A complete representation of the targeted language community validates the identity of the language speakers. Therefore, language input promotes learner autonomy and self-learning. Moreover, social media offers the learners with a choice to engage with the native speakers of the language- by interacting or socializing with them. Blattner and Fiori (2009, 2011) and Lomicka and Lord (2011) have used social media platforms for their learners to notice sociopragmatic use of language. Some of these sociopragmatic features of the language are difficult to represent and notice in literature (Reinhardt, 2020). Social media driven language input gives the TBLT class a plethora of opportunities to explore the social, historical and political contexts of the targeted language. It also allows one to observe different genres with respect to audience, level of formality, language variations, conventions and purpose of interactions (Warner & Chen, 2017; Reinhardt, 2020). Language input helps bring learner's attention to how the native speakers convey meaning through multimodality, i.e. through verbal language, pauses, gestures, sounds, expressions, etc (Jewitt, 2014).

3. If the task is well-defined and the language input is thought provoking, learners get self-motivated to produce language output (Bajaj, 2020). For beginner-level learners, the expected output can be monologic and descriptive such as expression of facts based on language input or from their lives. For advanced learners, the expected output can be dialogic, open and argumentative such as negotiation of understanding of life-concepts, problem solving or discourse.

Social media can also be used to interact with the language community (Lam 2000; Hanna & deNooy, 2003; Klimanova & Dembovskaya, 2013)). This can be done by participating in blogs, engaging on Facebook, twitter or Instagram, etc. The learners of the class can also be

encouraged to start a blog for the class where they share thoughts and opinions on what they observe on social media, movies, public forums, online events or in newspapers. It will give learners autonomy (Alm, 2009) and help in developing their personalities (Bajaj, 2020). This also imbibes an understanding of the culture of the target language community in the learners (Lee, 2012).

According to Reinhardt (2020), the language learners can think of social media as 'playground' where they can engage with the language in varied meaningful ways- to observe or interact with the language community. Reinhardt further emphasizes that the learners can keep their identities anonymous or under a different persona or declared, as per their comfort. This allows the learners to experiment with different identities by practicing new voices and sharing different perspectives.

4. Language instructors must support the process of self-learning in the learners by being a catalyst (Bajaj, 2020). It is imperative to give learners constructive feedback to correct the form of the language, but that should be reserved for after completion of the task. Therefore, it is very significant for the language instructors to be tolerant of the learner's mistakes (Willis, 2020).

It is equally important for the language instructors to take feedback from the learners. There should be space for learners to negotiate the course content with the language instructors. This is ideal as it has been observed that there is often a disagreement between the themes preferred by the instructors and learners (Park, 2015).

### **Some Tasks for Hindi Foreign Language Class:**

The author of the present paper has used TBLT for teaching a Hindi class at the University of Texas (UT), Austin in the USA. Some of the tasks that can be used in a Hindi as a foreign language class are mentioned below.

The ultimate goal of a language class is to self-motivate learners to get onto the path of learning and using the language. Task-based approach is used to motivate learners to self-learn and accomplish the task. This approach can be used to assess learners in a language class in the most natural way possible, with the least feeling of being 'judged'. In task-based approach, the learners can be judged for the completion of the task, which calls for innovative and creative use of the language. The major points should be for task completion, some points for displaying an understanding of the task or language input, and very little points for judgement of the level of language achieved. This assessment method provokes learners to use the language innately and not worry about points

deduction for little grammatical errors. Therefore, this assessment approach is not demoralizing for the language learners.

The task given below was used by the author for assessment of the mid-term project. The learners had already read story 'मनोवृत्ति' and 'ठाकुर का कुआँ' by प्रेमचंद. The learners were assigned a task where they had to write the next part/ scene of the story. This motivated learners to look at the situation described in the story from the perspectives of different characters involved and then shaping the story as they would like to see it. After writing the next scene of the story, the learners were asked to enact it. This task could be done alone with a learner showing monologue giving a critique of the story as the last scene, or they could do it in pairs or groups, where they could show a conversation, negotiation or dialogue between the different characters of the story. Open-ended task such as this one, gives learners a chance to explore and investigate their social identity, persona and character (Candlin, 1987).

**What to do:** There are two options for you to work on:

1) कहानी मनोवृत्ति का पाँचवाँ भाग लिखें। पाँचवें भाग में दिखाएँ कि वह महिला शादी करके अपने पति, वसंत के घर आ गई है। Think what will be the प्रतिक्रिया of वसंत, हाशिम, डॉक्टर और वकील when they see the युवती they were talking about is now a part of their family

2) कहानी ठाकुर का कुआँ का अगला दृश्य लिखें। दिखाएँ कि जोखू सड़ा हुआ पानी पीकर अधिक बीमार हो गया है। अब गंगी क्या करेगी? उसके पास इलाज के लिए पैसे नहीं हैं और पीने के लिए साफ़ पानी भी नहीं है।

**How to group up:** There can be any number of students in a group, ranging from 1 to the entire class working together in a group. You can also play more than one character.

**Bear in mind:** Please observe the writing style and vocabulary used by the author. Try and adopt the same style and vocabulary.

**Rubrics:**

Submission of script on Friday, March 12th at noon- 10 points

appropriate vocabulary: 10

alignment with the story: 10

submission of video on time: 10

The learners were asked to adopt the writing style of the story. This gives learners a chance to engage with a different register of the same language and interact with the cultural and ethnic identity of the speakers. This is significant as it gives affirmation and validation to the speakers of the language

register and to the language community as well. This also generates higher interest among the language learners.

The above-mentioned task was used for assessment of mid-term project. The rubrics for the task was shared with the learners while explaining the task. There are points for timely submission of the task, for using vocabulary in accordance with the story and for adopting the language register used by the different characters in the story. This allows learners to perceive and appreciate different language registers.

The learners were also provided feedback on this task. The first step of the task involved dialogue with the team members where the language instructor didn't correct the learners as that can cause their self-motivation and confidence to go down. Hedge (2000) states that the learners should be corrected after the verbal task. The learners submitted a written draft of the last scene after their discussion and this is the step where the language instructor provided the feedback. As Ellis (2015) argues that correcting the form helps with language acquisition. The third and the final step is where learners inculcated the feedback and prepared a video submission of the last scene of the story.

Subject matter which acknowledges the need of the society such as gender inequalities, sexuality, religion, etc. give learners an opportunity to interact with the society firsthand. Learning a language with focus on the culture of the targeted language makes the classroom environment dynamic and more relatable with the society. It is imperative to expose learners to the cultural background of the speakers of the targeted language to enable effective language acquisition. A language class that addresses communal issues also instigates change in the society by providing learners with opportunity to interact closely with the society. This causes higher motivation among learners and invokes their personal thoughts.

We live in a digital world, and social media consumes a lot of our everyday time. Using authentic social media posts or advertisements as a language input, not only gives learners a window to investigate the lives of speakers of language community, but also encourages them to interact and engage with the society. The author of the paper showed some social media posts to the learners in the class. These posts had society asking women questions like how will they be married if they don't know how to cook, or why do they have to study if eventually they must be married and stay-at-home? These questions are commonly asked to women in the Hindi speaking community, however when the L2 learners watched the videos they were shocked.

## आदमियों से पूछो

✔ Published
✎ Edit
⋮

"जो सवाल औरतों से पूछते हो, वे आदमियों से पूछो"

हमारा समाज बहुत-सी बातें औरतों को कहता है, सवाल पूछता है। वे सवाल आदमियों से नहीं पूछे जाते। क्या होगा अगर आदमियों से भी वही सवाल पूछे जाएँ, वही बातें कहीं जाएँ? आप एक विडियो बनाकर लगाएँ जिसमें आदमियों से वे सवाल पूछे जाएँ, वे बातें कहीं जाएँ, वैसा बर्ताव/ व्यवहार किया जाए, जिस तरह औरतों के साथ किया जाता है।

- Here are two sample video:
  - [https://www.instagram.com/p/CCDriLkD00T/?utm\\_source=ig\\_web\\_copy\\_link](https://www.instagram.com/p/CCDriLkD00T/?utm_source=ig_web_copy_link) ↗
  - It may be in English, but yours should be in Hindi:  
[https://www.instagram.com/tv/CJG-TY1151g/?utm\\_source=ig\\_web\\_copy\\_link](https://www.instagram.com/tv/CJG-TY1151g/?utm_source=ig_web_copy_link) ↗

These posts invoked the interest of the learners and motivated them to indulge in an interesting and meaningful exchange of thoughts and ideas. The learners were given the task to make videos where men get asked the same questions that women are asked generally. This highlighted how society treat men and women differently. When the tasks such as one mentioned here encourages open-ended discussions and challenges the thoughts of learners, they focus on the task and language learning becomes incidental.

### **Discussion:**

This paper has highlighted the significance of adopting task-based language teaching approach for language learning. This approach gives the language teacher/ instructor the job of a catalyst that engages learners in a wide range of tasks and encourages self-learning and self-reliance. The subject matter that is relevant, relatable, and personal to the lives of the learners engage them more and urges them to interact and express themselves. This approach of language learning emphasizes the use of language over the form of the language.

It is imperative to expose learners to the cultural background of the speakers of the targeted language to enable effective language acquisition. This causes higher motivation among learners and invokes their personal thoughts. A language class that addresses communal issues also instigates change in the society by providing learners with opportunity to interact closely with the society. The targeted

language creeps gradually into the learner's everyday language by employing a wide range of tasks which give the learners an opportunity deal with authentic input, to build on their vocabulary and allows them to express their opinions without being judged. This intrigues the learners to use the targeted language to share their beliefs and thoughts and, in the process, accomplish the objectives of language class without an intentional effort. This results in higher comprehensible output and increased desire to learn the targeted foreign language.

There should also be scope for negotiation between the instructors and learners because often the interest of the learners is not aligned with what the instructors thinks. Therefore, it is significant that the instructor has a dialogue with the learners to understand their background knowledge and their future aspirations to cater to their diverse needs. Using internet and social media is also one way of encouraging a dialogue between the learners and the native speaker community. Learners find it easy to relate to multimodal inputs of language. It gives them a huge window through which they can enter and observe language registers and styles of native speakers in different contexts and social situations. Social media also gives them an opportunity to interact and engage with the speech community.

Foreign language class validates and affirms the ethnolinguistic identity of the speakers of targeted language. This builds a three-way bridge of the language learners with the past cultural experiences of the native language speakers, current identity of the targeted language community and the future interchange with the native speakers. An incomplete or misrepresentation of the cultural, ethnic or racial identity in a language classroom threatens the language community. On the other hand, a complete representation of the targeted language community validates the identity of the language speakers. This favors the foreign language classroom environment and generates higher interest among the language learners. This paper has also discussed some tasks and activities which can be used to give validation to the diverse language community. The present paper gave examples from a Hindi language class taught at the undergraduate level at a university in the US.

The present paper further made a case that the tasks can be used to assess in the language class, where majority of the points are reserved for completion of the task. Understanding the prompt and the level of the language used can have a small part of the total grades.

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## Factors Influencing Assembly Line Productivity Enhancement in Manufacturing Industry

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### Abstract

The process of optimising an assembly line with respect to specific criteria is known as assembly line balance. Assembly line configuration is a challenging operation, and many industrial business models place significant emphasis on system optimization. Keeping one up and running can be very expensive as well. The main goal of balancing is typically to maximise gains while minimising costs on existing or planned assembly lines. One of the most frequently used production methods is the assembly line. The quantity of work that can be completed in a production system in a given length of time utilising the available resources is known as productivity. Assembly line productivity, according to Pritchard (1995), is the efficiency with which a production system uses its resources to meet production targets at the lowest possible cost. Throughput and utilisation rate, two common productivity metrics, provide a reliable indicator of an assembly line's effectiveness. These two metrics by themselves are insufficient to fully capture the behaviour of a production system. Huang and co. (2003). Along with throughput and utilisation rate, a variety of additional metrics, including assembly line capacity, production lead time, number of value-added (VA) and non-value-added (NVA) activities, work-in-process, material handling, operator motion distances, line configuration, and others, fully characterise a production system's performance. By configuring these variables optimally, an assembly line produces the best results.

**Keywords:** Assembly line, production systems, productivity, and efficiency.

### INTRODUCTION

The key to creating effective and competitive manufacturing systems is flexibility and agility. This amount of flexibility can be easily attained for the manufacturing and assembly of items through the usage of manual assembly techniques. Most often used and typical, manual assembly lines continue to offer a desirable and adequate means of production for goods requiring few

manufacturing steps and straightforward assembly procedures. Companies are being forced by global competition to cut production costs while also raising quality and reducing lead times.

An assembly line may need to be balanced using a variety of techniques, some of which involve equations and algorithms pertaining to particular elements of the manufacturing process. The time required for each task or the resource requirements for each machine can be broken down into smaller components in complex manufacturing processes, such as the mass production of vehicles. This could be especially useful for production procedures involving customised automobiles, which must take a variety of factors into account. Based on the many factors that can influence the production process, assembly line balance can also direct decision-making.

This method frequently provides a wide range of models and data kinds to enable decision-making. Lean Manufacturing, which deliberately and continually finds and eliminates waste at all levels of a production system, has made it possible to execute a number of improvement possibilities that significantly boost assembly line productivity.

## **REVIEW OF THE LITERATURE**

A two-phase variable neighbourhood search technique for assembly line worker assignment and balance problem type-II was developed by Olcay Polat, Can B. Kalayci, zcan Mutlu, and Surendra M. Gupta in 2015. In this study, a two-phase VNS algorithm was presented to address the problem of worker balancing and assignment on an assembly line (ALWABP-2). The findings of this case study demonstrated that assigning workers based on operation execution durations should be more advantageous than doing work study assessments in industrial applications. For systems with non-identical personnel in terms of their abilities and operation times, solving ALWABP is increasingly crucial.

Line feeding optimization for Just in Time assembly lines: An application to the automotive sector, Mustapha Sali and Evren Sahin (2016). This work suggests an optimization model that selects the most effective line feeding mode from a set of three options, including line stocking, kitting, and sequencing modes. An automotive industry first tier supplier factory uses the created mixed integer programme. On the basis of this model, understanding is acquired regarding the trade-off to be taken into account when choosing the more suitable line feeding mode for each individual component, as well as how system characteristics affect this trade-off. The kit container capacity and the permitted BoL area have a considerable impact on the cost, especially in production situations with limited resources, according to the results.

Gavrilo Gurevsky A. Olga Batta Balancing of simple assembly lines under varying task processing times, Alexandre Dolgui, 2012. The Simple Assembly Line Balancing Problem of Type E (SALBP-E) was investigated in this study with respect to different task processing times. Using fundamental stability analysis techniques, the tasks' uncertainty was represented by modest changes in processing time. For feasible, quasi-feasible, and optimal balances, the conditions of stability, the formula, and upper and lower bounds of the stability radius were examined. These issues' computational complexity was also covered. It was recommended to use a polynomial time approach to compute the stability radius of possible balances. Finding a compromise between the objective function to minimise (representing the effectiveness of a workable balance) and the related stability radius to maximise was done using the Pareto optimality idea (reflecting its robustness). In terms of Pareto optimality, two methods for locating non-dominated balances were offered.

"Lean techniques to improve assembly line efficiency: an industrial application," Kaneesa Kanaganayagam, Shanthi Muthuswamy, and Purushothaman Damodaran (2015). This paper focuses on reducing waste in an LEME manufacturing line using lean tools including time and motion research, kaizen events, and spaghetti maps. In this study, five assembly zones (or work areas) were examined, and cycle time was shortened utilising lean tools to cut takt time by 15%. Data gathering, process flow map construction, spaghetti map generation, and kaizen event execution were the four stages of this study project. The findings of this study show that waste in an assembly may be found and eliminated through process analysis and the use of basic yet effective lean techniques.

"Efficiency analysis and optimization of a Multi-product assembly line using simulation," Hesam Soroush, Seyed Mojtaba Sajjadi, and S. Mohammad Arabzad (2014). Arena software is used in this article to mimic the assembly line under investigation and analyse the system's strengths and flaws. When the suggested solutions are put into practise, it is seen that the AATPs A, B, C, and D decrease by 15, 12, 11, and 19%, respectively, and that the work-in-progress products (AWIPs) decrease by 74%. Production (APN) has also been increased by 6%. Opt Quest is used in this study to evaluate various solutions and choose the best one based on the constraints, which is the solution with the lowest value of the goal function.

## **PURPOSE OF THE STUDY**

- ✓ to research the best way to manufacture a product within a useful cycle time without reworking. In order to determine a product's quality, market demand from customers is considered.

- ✓ Factors influencing the production of the appropriate number of products in the appropriate quantities to control demand and lower inventory levels.
- ✓ Effect of prompt product delivery to the consumer or wholesaler. Give customers machines with appropriate manufacturing costs.

## OBJECTIVES OF THE STUDY

- The discussion of a new improvement to the priority rule demonstrates how production time and cost rates both affect production cost.
- The focus of the study is on comprehending the theory and idea of assembly line balance.
- The configuration of the workstations will be improved by ongoing enhancement operations.

## Designing research

Research design is described as a framework of methodologies and techniques selected by a researcher to combine diverse research components in a reasonably logical way in order to effectively address the research challenge. It offers advice on "how" to carry out research using a specific technique. For this study, observational research methodology was employed. To observe workers over an extended period of time, the cross-sectional technique is used.

## ANALYSIS AND INTERPRETATION

### Calculation of Cycle Time:

Total task time = 82hrs.

Working hours per day = 6hrs30mins.

Working days per month = 24 days.

Desired output per month = 2.5 units.

Cycle time =  $\frac{\text{working hrs per day} * \text{no. of working days}}{\text{Desired output rate}}$

$$= \frac{6.30 \times 24}{2.5}$$

$$= 60.48 \text{ hrs.}$$

### Calculation of Workstation:

Minimum number of workstations =  $\frac{\text{sum of task time}}{\text{Cycle time}}$

$$= \frac{82}{60.48}$$

$$= 1.355$$

Approximately = 2 workstations.

<b>Table 1: Assembly check list.</b>		
	<b>ASSEMBLY PROCESS</b>	<b>STANDARD TIME (in mins)</b>
<b>TRANSFER GEAR BOX ASSEMBLY</b>		
<input type="checkbox"/>	Levelling	22
<input type="checkbox"/>	L-Plate fixing	30
<input type="checkbox"/>	Channel fixing with gear box	5
<input type="checkbox"/>	Transfer gear box with L-plate	30
<input type="checkbox"/>	Bolt tighten	10
<input type="checkbox"/>	Level checking	25
<input type="checkbox"/>	Channel welding	25
<b>BASE BOX ASSEMBLY</b>		
<input type="checkbox"/>	Tractor side alteration	45
<input type="checkbox"/>	Material grinding	20
<input type="checkbox"/>	Mudguard gas cutting	20
<input type="checkbox"/>	Side plates, front channel fixing	25
<input type="checkbox"/>	Base box grinding and fixing	20
<input type="checkbox"/>	Mudguard fixing	10
<input type="checkbox"/>	Measurement checking, Levelling & Base bolt checking	60
<b>Z'FRAME ASSEMBLY</b>		
<input type="checkbox"/>	Grinding	10
<input type="checkbox"/>	Base flange fixing	15
<input type="checkbox"/>	Z' frame fixing	20

<input type="checkbox"/>	Front extension cutting & Gusset setting	15
<b>FRONT BOX ASSEMBLY</b>		
<input type="checkbox"/>	Grinding	15
<input type="checkbox"/>	Front flange plate setting	30
<input type="checkbox"/>	Front box fixing	10
<b>PILLAR ASSEMBLY</b>		
<input type="checkbox"/>	Pillar marking and cutting	35
<input type="checkbox"/>	Grinding	10
<input type="checkbox"/>	Pillar Fixing, Pillar Gap Marking, Level	45
	Checking, Grinding, Setting	
<b>FRONT JACK ASSEMBLY</b>		
<input type="checkbox"/>	Grinding	10
<input type="checkbox"/>	Flange plate fixing	25
<input type="checkbox"/>	Front jack setting	20
<b>OIL TANK 'L' ASSEMBLY</b>		
<input type="checkbox"/>	Grinding	10

<input type="checkbox"/>	Oil tank 'L' assembly	20
<input type="checkbox"/>	Bottom oil tank mount bracket fixing	10
<input type="checkbox"/>	Oil tank 'L' cutting	5
<input type="checkbox"/>	Front patta fixing	10
<b>FRONT POST ASSEMBLY</b>		
<input type="checkbox"/>	Frontpost base plate fixing & welding	15
<input type="checkbox"/>	Front post setting	15
<b>COOLER ASSEMBLY</b>		
<input type="checkbox"/>	Cooler bracket grinding	5
<input type="checkbox"/>	Cooler bracket taping	10
<input type="checkbox"/>	Cooler mounting on bracket and setting	15
<b>BACK RODBOX ASSEMBLY</b>		
<input type="checkbox"/>	Grinding & Flange channel fixing	20
<input type="checkbox"/>	Front rod box setting with stay	30
<input type="checkbox"/>	Canopy setting	35
<input type="checkbox"/>	Canopy welding	15
<input type="checkbox"/>	Canopy setting & drilling	15
<b>CONTROL PANEL ASSEMBLY</b>		
<input type="checkbox"/>	Control panel post fixing	30
<input type="checkbox"/>	Control box post bracket	25
<input type="checkbox"/>	Control panel lock	15
<input type="checkbox"/>	Control box plate side bar assy..	15
<input type="checkbox"/>	Pressure gauge fixing	10
<input type="checkbox"/>	Valve: 1DVS20/3-Commercial	10
<input type="checkbox"/>	Adaptor fixing	15
<input type="checkbox"/>	VALVE 2: HC M45/6 BANK	10
<input type="checkbox"/>	VALVE 3: HC M45/1 BANK DETENT	10
<input type="checkbox"/>	Check valves fixing	15
<input type="checkbox"/>	Flow control valve fixing	5
<input type="checkbox"/>	Hold back valvee fixing	5
<input type="checkbox"/>	Control box cover fixing	5



<input type="checkbox"/>	Driling stand fixing	20
<input type="checkbox"/>	Grinding	5
<input type="checkbox"/>	Drilling stand lock fixing	20
<input type="checkbox"/>	Welding process	15
<b>TOOLS BOX ASSEMBLY</b>		
<input type="checkbox"/>	Tools angle fixing	10
<input type="checkbox"/>	Tools box setting and holes marking	10
<input type="checkbox"/>	Tools box fixing	5
<input type="checkbox"/>	Welding process and grinding	10
<b>BREAKOUT ASSEMBLY</b>		
<input type="checkbox"/>	Top bracket fixing	10
<input type="checkbox"/>	Bottombracket fixing	5
<input type="checkbox"/>	Breakout cylinder fixing	5
<input type="checkbox"/>	Breakout roller &pin fixing	5
<input type="checkbox"/>	Canopy fixing	10
<input type="checkbox"/>	Bolt tighten,Welding process &grinding	10
<b>MAST RAISING ASSEMBLY</b>		
<input type="checkbox"/>	MRC bracket fixing in square box with grinding	20
<input type="checkbox"/>	MRC bracket welding	15
<input type="checkbox"/>	MRC fixing	15
<b>MAST ASSEMBLY</b>		
<input type="checkbox"/>	'U' bracket assembly	15
<input type="checkbox"/>	Pulley assembly	15
<input type="checkbox"/>	Turning plate assembly	30
<input type="checkbox"/>	Dumping bracket & cylinder assembly	15
<input type="checkbox"/>	Plummer assembly	10
<input type="checkbox"/>	Center sliding assembly	20
<input type="checkbox"/>	Feed cylinder assembly	15
<input type="checkbox"/>	Rope assembly	30
<input type="checkbox"/>	H plate assembly	20
<input type="checkbox"/>	RG assembly	15
<input type="checkbox"/>	Plummer block fixing	5
<input type="checkbox"/>	Mast fixing with pillar	15
<input type="checkbox"/>	Mast lock bolt welding	10
<input type="checkbox"/>	Mast stopper fixing	15
<input type="checkbox"/>	Pile center fixing	15
<b>PIPELINE ASSEMBLY</b>		
<input type="checkbox"/>	Barclamps & welding visual	60
<input type="checkbox"/>	Pump lines fit up &welding visual	30
<input type="checkbox"/>	Return lines fit up& welding visual	30
<input type="checkbox"/>	Pillar lines fit up & welding visual	30
<input type="checkbox"/>	Jack lines fit up & welding visual	30
<input type="checkbox"/>	Mast pipe lines fit up &welding visual	15
<input type="checkbox"/>	Front jacky line	15
<input type="checkbox"/>	Breakout cine	15
<input type="checkbox"/>	Grinding work	15
<b>REAR LIGHT STAND ASSEMBLY</b>		

<input type="checkbox"/> Left side light stand fixing & welding	15
<input type="checkbox"/> Right side light stand fixing & welding	15
<input type="checkbox"/> Grinding	5
<b>OIL TANK ASSEMBLY</b>	
<input type="checkbox"/> Oil stainer assembly	15
<input type="checkbox"/> Packing assembly	10
<input type="checkbox"/> Filter assembly	15
<input type="checkbox"/> Breather fixing	10
<input type="checkbox"/> Gate valve fixing	20
<b>HOSE ASSEMBLY FIXING</b>	
<input type="checkbox"/> Pillar line hose	30
<input type="checkbox"/> Mast hose	20
<input type="checkbox"/> Pump 1 assembly	15
<input type="checkbox"/> Pump 2 assembly	15
<input type="checkbox"/> Valve hose connection	60
<input type="checkbox"/> Pumping hose fixing	15
<input type="checkbox"/> Cooler hose	15
<input type="checkbox"/> Filter hose	15
<input type="checkbox"/> Return to tank hose	15
<input type="checkbox"/> Jacky line hose	20
<input type="checkbox"/> Suction line hose	20
<input type="checkbox"/> Return line hose	20
<input type="checkbox"/> Rotation motor hose	20
<input type="checkbox"/> Feed cylinder line	15
<input type="checkbox"/> MRC cylinder lines	10
<b>HYDRAULIC SECTION</b>	
<input type="checkbox"/> Oil filling up	45
<input type="checkbox"/> Oil pump pressure check up	30
<input type="checkbox"/> Fuel checking	30
<input type="checkbox"/> Leakage checking	30
<input type="checkbox"/> Tighting hose	30
<b>TINKERING SECTION</b>	
<input type="checkbox"/> Control panel meter cover fixing	10
<input type="checkbox"/> Control panel cover fixing	10
<input type="checkbox"/> Spirit level fixing	15
<input type="checkbox"/> Grindiing	10
<b>ELECTRICAL SECTION</b>	
<input type="checkbox"/> Tractor electric wiring connection	120
<input type="checkbox"/> Lighting check up	30
<input type="checkbox"/> Battery changing & Fixing	15
<input type="checkbox"/> All meter check up	15
<input type="checkbox"/> Bottom wiring fixing	30
<input type="checkbox"/> Hose tag work	30

**Table 2: Allocation of workstation.**

SL.NO		WORK DETAILS	ACT (60.48hrs)	UACT	IDLE TIME
1	A	TGASSEMBLY	3	57.48	-
	B	BASEASSEMBLY	5.30	52.18	-
	C	Z-FRAME ASSEMBLY	1	51.18	-
	D	FRONT DUMMY ASSEMBLY	1	50.18	-
	K	PILLAR ASSEMBLY	2	48.18	-
	H	FRONT JACKY ASSEMBLY	1	47.18	-
	L	PILLAR PLATE ASSEMBLY	2	45.18	-
	E	FRONT POST ASSEMBLY	0.30	44.88	-
	I	FRONT RODBOX ASSEMBLY	1	43.88	-
	N	BACK JACKY ASSEMBLY	1	42.88	-
	J	BACK RODBOX & CANOPY	2	40.88	-
	Q	CONTROL BOX POST ASSEMBLY	0.30	40.58	-
	S	CONTROL BOX ASSEMBLY	1	39.58	-
	U	DRILLING STAND ASSEMBLY	1	38.58	-
	G	COOLER ASSEMBLY	0.30	38.28	-
	O	BREAKOUT ASSEMBLY	0.30	37.98	-
	F	TOOLS BOX ASSEMBLY	0.30	37.68	-

	M	MAST ASSEMBLY	5	32.68	-
	P	BOTTOM BED ASSEMBLY	3	29.68	-
	SNC	SELF LOCK NUT CHANGE	2	27.68	-
	R	PIPELINE ASSEMBLY	4	23.68	-
	T	HOSE ASSEMBLY	4.30	19.38	-
	LBF	LIGHT BRACKET FIXING	0.30	19.08	-
	T	HYDRAULIC WORK	7.30	11.78	11.78
2	V	PAINTING PROCESS	28	32.48	-
	W	ELECTRICAL WORK	4	28.48	28.48

### Calculation of Idle Time and Efficiency

Percent of idle time =  $\frac{\text{idle time per cycle}}{\text{no. of workstations} \times \text{cycle time}} \times 100$

$$= \frac{40.26}{2 \times 60.48} \times 100$$

$$= 33.28\%$$

Efficiency = 100% - percent idle time

$$= 100 - 33.28$$

$$= 66.72\%$$

**Interpretation:**

Each cycle has a 40.26-hour idle period, and each workstation has a 60.48-hour cycle. This calculation results in an observed percent of idle time of 33.28.66.72 is the result of production efficiency. Efficiency can be calculated by multiplying the idle time percentage by 100%.

**Prior to introducing workstation:**

prior to the cycle time calculation. Each assembling process has no set times. Unplanned work that needs to be done. They set their goals for a period of about 14 days. Production is carried out based on this target flow. Lack of planning results in less material being needed for the production flow. This causes the workers to become more idle. Therefore, production efficiency also contributes to poor. The original approach limits the possibility of parallel work.

**Following implementation:**

Cycle times must then be determined for each assembly process workstation. This assists the supervisors in organising a consistent production flow for each assembly line process and identifies potential for parallel work. This aids in inventory maintenance for the supervisors as well. There are no interruptions to the production process, which will boost productivity and cut down on downtime. The current turnaround time for a product is 10 days.

**Conclusion:**

The efficiency of the upgraded assembly line is 66.72% higher than the productivity of the old system. Additionally, compared to the original method, this Single Stage Parallel Line uses half the amount of floor space. For this new assembly line, the requirements for material handling and the sizes of the input and output buffers are also determined. It is also acknowledged that the performance of a single operator can be negatively impacted by station imbalances on an assembly line with multiple stations.

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## BEYOND SUCCESS AND FAILURE: AN EVOLUTIONARY STUDY OF JOINT VENTURES

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**Abstract:** The interplay of cooperation and competition is very different in Joint Ventures (JVs) as compared to other organizational forms. In addition to competition with other actors, JVs involve cooperation and competition between parents. Extant literature on JVs has associated cooperation with success, competition with failure, and deliberated on “success or failure”. We study the evolution of the cooperation and competition between JV parents through three case studies. They reveal distinct stages of evolution of JVs, each marked with a pattern of interplay of cooperation-competition. The study also reveals the role played by the managerial cognition and the knowledge created in JVs on such evolution. Further theoretical possibility of the interplay has been assessed with respect to existing theories and its complementary nature identified.

### INTRODUCTION

Amongst all the forms of organizing, joint ventures (JVs) probably best epitomize the interplay of cooperation and competition. Literature suggests that many JVs are formed to exploit new opportunities (Inkpen, 2000; Inkpen and Currall, 2004; Kogut, 1988; Reuer, 1998), gain technologies (Killing, 1980; Littler and Leverick, 1995; Müller and Schnitzer, 2006), and enter untapped/new markets (Isobe, Makino, and Montgomery, 2000; Luo, 2002). JVs are crucial when there is uncertainty about opportunities (Shan, 1991), and a single firm cannot exploit them. As a result, there is cooperation required between two parent firms. Simultaneously, the parent firms compete (Park and Russo, 1996) to appropriate a higher share of value created through exploitation. Hence, there is a simultaneous existence and interplay of competition and cooperation between two parents in JVs. Study of the dynamic processes in JVs can lead to a rich understanding of the said interplay.

It is striking that there has been a drastic decline in the number of articles published exclusively on joint ventures (JV) in the top journals in the last decade. In addition, JV studies



have been frequently combined with alliance studies, with no distinction being made between alliance and JV literature (Cullen, Johnson, and Sakano, 2000; Das and Teng, 2000; Doz, 1996; Grant and Baden-fuller, 2004; Hamel, 1991; Khanna, Gulati, and Nohria, 1998; Mowery, Oxley, and Silverman, 1996; Parkhe, 1993). However, we are of the opinion that the form, the governance, resource allocation, the nature of the relationship between the parents, communication between the two parents, speed and style of decision making, etc., are very different in JVs as compared to alliances (Barkema, Shenkar, Vermeulen, and Bell, 1997; Rothaermel and Deeds, 2004; Shi, Sun, Pinkham, and Peng, 2014). The level of commitment of resources is much higher in a joint venture, so the intensity of cooperation and competition is also expected to be higher (Beamish and Lupton, 2009; Cullen et al., 2000; T Isobe, Makino, and Montgomery, 2000; Takehiko Isobe, Makino, and Montgomery, 2000). Given the different character of JVs, and a more intense dynamics between parents, there is a need to study them as distinct from Alliances. Extant literature on JVs have explored the effect of antecedent variables like previous experience (Littler and Leverick, 1995; Pfeffer and Nowak, 1976), negotiation (Luo and Shenkar, 2002; Yan and Gray, 2001), contracts (Dasgupta and Tao, 1998), cross-border deals and letter of intent (Tong and Li, 2013), governance structure in terms of contractual versus equity joint venture and equity structure (Beamish and Banks, 1987; Wang, 2007; Yue and Nicholas, 2005; P. Beamish and Lupton, 2009; Lee, Chen, and Kao, 2003), control and communication (Reuer and Koza, 2000), nature of industry and competition among parents (Kamien, Muller, and Zang, 1992), vertical and horizontal aspect of the organization, market characteristics, psychic distance, network centrality (Polidoro, Ahuja, and Mitchell, 2011; Shi, Sun, Pinkham, and Peng, 2014), power imbalance, lock-up provisions, role of government (Hawkins and Feiock, 2011), local-ness, parental conflict and competition (Barden, Steensma, and Lyles, 2005). Popular outcome variables include technology access (Inkpen, 2008), market access (Luo, 2005), resource acquisition (Takehiko Isobe et al., 2000), learning (Al-Azad, Mohiuddin, and Rashid, 2010; Lane, Salk, and Lyles, 2001), trust (Madhok, 1995), acquisition (Chi, 2000), costs of joint venture, funding value, valuation, Initial public offering (Chang, 2004). A close look these studies reveals that the antecedent variables of most of these studies capture only the structural or/and static elements of JVs prevailing at the initial stages. Most of the outcome variables are also static in nature. Such studies cannot reveal the interplay of cooperation and competition. Empirical studies exploring the evolution of JVs hardly exist in the leading journals. Arino and de la Torre, (1998) where a longitudinal study was a carried out, and Doz (1996) where one of the three cases studied was a JV, have revealed the interplay of cooperation and competition to some extent. However, the predominant focus

of these studies has been the direct interplay between the parents. The limitations of the same are explained below.

In JVs, unlike in alliances, three legal entities exist: the two parents and the JV (Reuer and Koza, 2000). As the JV evolves it can develop its own knowledge, capabilities and intent (Inkpen, 2008; Lane et al., 2001; Nakamura and Nakamura, 1985; Oxley and Wada, 2009; Tsang, 2008). It has its own volition and can negotiate with its parents, influence them and even moderate the dynamics of competition and cooperation. Our expectation that joint venture can also influence parents, is reinforced by some preliminary observation. Hence, JVs should not be looked as “pawns” in the hands of parents but that they can influence parents. JVs are active agents and not passive recipients, as treated in the literature. There is not even a single article published that highlights the role of “Joint Venture company” as an organization with its own volition, capable of influencing the parents. In this study we explore the role of the JV as well as the two parents in the interplay of cooperation and competition. We posit that three way interactions plays an important role in the evolution of the JV. This interaction, in turn, also influences the cooperation and competition between the parents and around the parent. This study makes a unique contribution to the JV literature by bringing forth the nuanced dynamics of competition and cooperation during the stages of LOI, resource pooling, emergence, haggling and finally renewal / termination of the JV. It goes beyond the structural and static elements of JV and focuses on the evolution and emergence of the JV over time. It dispels the notion that the relations between parents involved in the JV are based only on rational self-interests. It puts forth the relational and cooperative aspects of the relationship. Finally the study also brings out clearly how a JV is an active agent, and sheds light on the crucial role played by a JV manager.

## **METHOD**

Our research design to study these aspects of JV had to carefully consider the limitations of the earlier studies. JVs agreements are kept confidential by the parent organizations making it difficult for researchers to collect data (Arino and de la Torre, 1998; Khanna et al., 1998; Madhok, 1995; Ring and Van De, 1994). Studies on initial and structural conditions mostly use quantitative data, which is easily available from the secondary sources ( Inkpen and Currall, 2004) but the evolutionary nature of any organization is best captured only through fine-

grained data collected through longitudinal studies. However such studies require a very high amount of time, energy and resources. Quantitative data, as available in most databases, cannot capture the nuances and evolutionary nature of JVs.

A good way to address and overcome the above difficulties is to use “case study” method. We developed three case studies by reconstructing the past carefully after collecting data through multiple and different sources ( Eisenhardt and Graebner, 2007; Fletcher et al., 1997; Yin, 2003,2009). While this process would not be as good as ideal longitudinal studies (where data is collected real time), if we can take due care in data verification, it has the potential to substitute longitudinal data in many situations. In such situations researchers need be cognizant of various biases like hindsight bias(Arkes, Faust, Guilmette, and Hart, 1988; Hawkins and Hastie, 1990), attention bias(Cisler, Bacon, and Williams, 2009), availability heuristic, availability cascade, and choice-supported biases (Tversky and Kahneman, 1973). Taking into cognizance various researcher biases like: hindsight biases, attention biases, available heuristic, availability cascade, choice-supported etc. To execute this process, we collected data from multiple sources: interviews with people in favour of joint venture and people against joint venture, archival data from the organization, news and articles published in magazines, participant observation (as one author had worked for the company).

### **Case Selection**

Three joint ventures were selected for cross-case comparisons (Eisenhardt, 1998; Yin). We restricted our study to equity joint ventures. They were selected in such a way so as to bring forth the role of competition and cooperation in emergence and evolution of Joint Ventures. The first one selected was an international joint venture formed between the Indian and Japanese governments. It was selected because; this JV had evolved over two LOI periods and has been treated as one of the most successful joint ventures in the Indian automobile industry. The contract was initially signed for a ten-year period. It was thereafter extended for another ten years before one parent exited from the venture. In order to facilitate meaningful comparison with this JV, another JV was selected, which was terminated early on by the parents. It was an international JV between an Indian company and an American company in the automobile industry. This JV had very little time to evolve. The third joint venture was selected because it was initially thought to be unsuccessful one. However, after the first round of data collection, we found that this JV had managed to survive despite facing various hurdles and difficulty, by rediscovering itself in a new role.

The LOI of the first JV (Maruti Suzuki) was signed in 1983 It was renewed in 1993. The LOI of the second JV (Mahindra Navistar) was signed in 2005, but was terminated in 2008 with Mahindra acquiring Navistar. The LOI of the third JV, betweenTatas and EIL, was signed in 2008 and the JV continues even today. We believe that these three cases provided us with a quasi-experiment like setting to do a meaningful cross-case analysis (Parker et al., 2008). Through cross-case comparisons, it was possible to look into how some joint ventures evolve and become successful, how some joint ventures struggle to evolve and survive and how some joint ventures simply find it difficult to evolve and fail. As our objective was also to capture role of parents and the JV over a period of time, we included al the three entities in our analysis.

### **Data Collection**

The data was collected through interviews, observation, archives, and secondary quantitative data. Primary data; observation and interviews, were collected in three rounds (Guion, Diehl, and Mcdonald, 2011; Jick, 1979). In the first stage, on the basis existing literature, detailed interview schedule with 165 questions was created. Three top managers from each JV were interviewed as per the schedule. The managers were so selected in order to represent the voice of both the parents in the JV. Only the top managers, who have been with the JV right since the inception were selected for interviews. One of the authors visited the JVs and informally talked to other employees about the JVs. The objective of these visits was to get different perspectives and verify the data gathered through interviews. The data gathered was also verified and enriched by comparing it with favorable and unfavorable secondary data, publications, articles in newspaper and magazines. This data was analyzed to find answers to the questions related to evolution and outcomes of the JVs. After the first stage, some questions were answered, others remained unanswered and a few fresh ones emerged. Additional questions were prepared, in the form of fresh interview schedule, to get fresh data especially to the unanswered question and second round of interviews and observation were conducted. Further analysis was done on this data. After the second round of data collection,we had developed likely explanations for most of the questions. However, we decided to do a third round of interviews with the JVs managers to verify these explanations. After verifications from the managers and other secondary sources, a couple of explanations were modified, to make them consistent with the fresh data. During the second round, authors came across an unexpected finding that the JV managers had played very important role in the emergence of

two of the three JVs.

Hence, from the second round onwards, the scope of data collection was enhanced to include the role of JV manager. This enriched our finding as well as analytical strategy.

### **Data Analysis**

In order to capture the evolutionary nature of the JV, we time bracketed all cases into one year period each (Langley, 1999; Langley, Smallman Tsoukas, 2013; Ven De Ven, 2005; Arino and de la Torre, 1998; Brown and Warner, 1985; Doz, 1996), each starting from the signing of LOI till the period of dissolution of LOI . All important events at various levels, outside and inside JV, were mapped. An event could be at the level of parent, external environment or inside JV. An event was considered important if it was covered in more than two national newspapers and if the interviewed manager considered it important. Only those managers, who were working at the time of the event, were considered for data collection. Afterwards, impact of the event was on the JV and the parents were analyzed. An event could impact the JV by changing the dynamics of cooperation and competition in the external environment and thereby influencing the forces of parental cooperation and competition. These forces of completion and cooperation influence the decisions at the level of JV. Alternatively, these forces can change the intention of parents towards the JV. Every event may not result in a new decision being taken, but it created a possibility of a new decision. However, a decision could be taken independent of an external event, outside of the JV. Like events, all important decisions were recorded along the timeline. On combining events and decisions, two possible types of decisions were observed: decisions linked to an event and those not linked to an event.

## **ANALYSIS AND FINDINGS**

We identified five stages, over a period of time - from signing of the LOI to renewing or terminating the JV. Out of the five phases, the first two of all three JVs were similar but the last three varied from one Joint Venture to other. However, the interplay of cooperation and competition was present in all the stages.

### **1. LOI Stage : Presence of both competition and cooperation**

We named the first stage as LOI stage. In this stage, the two parents decide to get into Joint Venture agreement. For all three joint ventures, the parents had signed joint venture deal after other potential partners were competed out for various reasons. Hence, both competition and cooperation were present in this stage itself. The inter-parent competition was high during this

period as each parent wanted to strike a highly profitable deal for itself. The competition was also influenced by the opportunity (or lack thereof) to partner with other organizations. Maruti signed a deal with Suzuki because earlier negotiations with Renault and other companies had failed. The deal with Renault had failed because of its unwillingness to share technology with Maruti. Both parties negotiated and competed hard to get to each other's resources/knowledge. It can be said that there was competition for sharing of technology and the two firms could not come to a consensus. Both Maruti and Suzuki, the parents, faced intense competition from the external environment, forcing them to look for partners. Neither were in the best of positions in the automobile industry of their respective countries. Maruti was a loss-making firm in India while Suzuki hardly had any noticeable presence in Japan. Both were struggling, and finding it difficult to compete with others in their respective local markets. What worked to their advantage though was the fact that both Government of India and Government of Japan wanted the automobile industry in their countries to grow. Japanese government had realized that it would become difficult for Japanese companies to grow at home; they had as such started supporting companies that were looking to go abroad. The Government of India too wanted the country's automobile industry to grow and was looking for a partner with a better technology for Maruti. This case is a good example of how signing of the LOI (co-operation) was influenced by the extent to which the parents were willing to deploy their resources (Competition for the resource) in the joint venture. Besides this cooperation and competition were also influenced by the competition among other players in the automotive industry in India, Japan, Europe and the United States as companies from developed markets looked for partners in India. External threats from industry became a reference point for the two partners to look for partners.

## **2. Pooling of Resources Dominance of cooperation**

We named second stage "Pooling of Resources". Like the first stage, it was common across all the three Joint Ventures. In this stage, both parents decided to deploy the agreed-upon resources in the joint venture. Optimism and co-operation between the parents were the hallmark of this stage. Conscious efforts were made by both sides to make the JV success. Cooperation was high as Joint Venture, at this stage, is still considered as protection against external threats, a need which both parents recognize. Common external threat became a reference point for the parents to pool resources in the hope that cooperation will help overcome perception of threat. During this period, inter-parent communication was smooth with both parents expecting the best from each other. This cooperation and expectation facilitated learning. With passage of

time, as anchoring of reference point weakened, the parents however also became conscious about not wanting to lose their respective propriety knowledge and were therefore protective of the same. This competition is served between the parents in the form of: governance of the joint venture, appointment of directors, whose manager would hold key positions etc.

### **3. The Emergence/Evolution Stage: Dominance of Cooperation or Indifference**

It can be said that the joint venture reaches emergence stage when the events and decisions in the JV indicate a change in the expectations at the time of signing of Joint Venture. Emergence could be either positive (growth) or neutral (changing of paths and/or goals). From this stage onwards, the three joint ventures followed different routes. The JV stages were not

sequential as depicted in the process diagram. Maruti Suzuki had expected to become profitable after five years but surprisingly it became successful after one year. The success was unexpected and JV had evolved in the first year itself. It successfully grew into a big organization so much so that both parents renewed the LOI after first period got over in 1993.. This unexpected success was attributed to attractive pricing and very lucrative car-financing schemes introduced by the JV manager in Maruti Suzuki. On the contrary, neither TEIL (joint venture between TATAs and EIL) nor Mahindra Navistar entered this stage. Mahindra acquired Navistar after a couple of months while TEIL found it difficult to get business after the deal was signed. The reaction of the parents to the JV was very different in each case when the initial objectives were not met. Mahindra Navistar ended as an acquisition while TEIL went into struggle and survival mode. What could explain different reaction of parents in the two JVs? Our initial answer to this question was “Objectives of the two JVs may have been very different.” However, on closer examination, we realized that “ways of doing business” was very different in these cases. According to a manager: “We do not believe in snapping ties with our partners on a whim.. ...(M)most of our JVs are long lasting. We do not merely do business; we build relationships. For example, one of our partners had another JV offer; though they gave it some thought initially, they decided to continue doing business with us.”

Hence, “ways of doing business” (Mintzberg, 1978) was a critical differentiator between the survival and termination of the JVs. The more rational the parents are, the more difficult they found it to continue their relationship when the initial objectives are not met. On the other hand, parents driven by “not-so-rational values” gave it a second try, or at the least, they do not rush to “call off the JV”. The JV also seemed to be emergent like any other organization (Mintzberg and Waters, 1985). We were however not very happy with the “ways of doing

business” alone. Were there other factors that contributed to evolution and emergence? Do the objectives and goals undergo change under emergence? Further probe, threw up interesting finding in the case of TEIL. This JV found it difficult to get business from its preferred markets. At this point, the JV manager took a decision to diversify into two or more related lines of business. This decision was not taken by parents but was clearly the brainchild of the JV’s CEO. However, the parents did not intervene in this decision and allowed it to be completely driven by the JV manager. Neither of the parents had envisaged this move at the time of signing the LOI. The manager not only entered product markets of his choice, he also leveraged his knowledge and network to get business for the JV. It would have been very difficult for JV to take this “new path” without knowledge and network of the manager. It highlighted the important role of JV manager too had a very important role to play, especially in the evolution of a JV. Research till date has been silent on the role of the manager in the in the evolution of a joint venture. This role is beyond the role of parents as observed and noted in other studies. The JV manager could play this role as parents were indifferent to the JV. He would have found it difficult to chalk new goals<sup>1</sup> and paths<sup>2</sup> for the JV had parental competition been converted into conflict. This emergence could occur because of two possible reasons: i. when the paths of the JVs change ii. When goals of the JVs changed”. We observed that the role played by the manager had an impact on changing the goals and paths of a JV; however, it was with respect to changing the path that the manager’s role was very important. Evolution takes place only when parents do not compete (or, at the least cooperate with each other). This was a stage when there was neither cooperation nor competition between the parents. We decided to call this state of no cooperation/no competition as a state of indifference. It was this “indifference” that brought the role of manager came to the fore.

In TEIL case, an additional factor played important role which was beyond completion and cooperation between the parents. The role of the top management of the parents was critical. The CEO of one of parents frequently changed, thus resulting in a changing perspective of the parents towards the JV each time. The benefit of a steady top management which makes it possible for the JV manager to understand and manage the expectation of a parent organization, and vice-versa, was thus lost.

#### **4. The Haggling Stage: Dominance of competition**

The fourth stage captured was the “haggling stage”. The haggling occurs when the parents disagree over distribution of business/proceeds from the Joint Venture (Beamish and Lupton, 2009; Yan and Gray, 2001). The haggling could be related to property rights, profits, territories, revenues, markets. The haggling becomes especially critical after the emergence/evolutionary stage. The changed conditions make earlier implicit understandings and contract open to



question, lose and irrelevant. Newer conditions bring uncertainty, which increases with time. In this stage, the signed agreements in the first stage become reference points but decisions are taken under new conditions. Hence, there is a gap between “expectation” and “requirement”. This gap heightens the competition and reduces the cooperation, which is limited to unchanged conditions. This is dominantly competition stage interspersed with cooperation. The cooperation is forced by external uncertainty and “ways of doing business”.

All three joint ventures experienced this stage, but they all reached this stage through different routes. Mahindra Navistar did not pass through emergence stage and started to haggle almost immediately after resource pooling. In TEIL, the parents haggled when the CEO had changed in one of the parent firms. In the case of Maruti Suzuki, haggling started after the JV was growing successfully and two parents wanted a greater share of this unexpected success. Haggling in Maruti Suzuki created change in the equity structure and renegotiation of the JV deal. The consequences of the “haggling stage” were different for each of the three JVs. In one case, one of the parents ended up acquiring the JV. In another case, the struggle for survival continued while in the third, JV terms were renegotiated a new agreement. In case of individual firm, when demand exceeds supply and the organization is growing, organizations would put in further investment to tap market potential. However, in a JV firm, sudden growth can lead to haggling and delay in much needed investment to tap the growth. Exactly the same thing happened in the case of Maruti Suzuki, growth led to haggling. Such haggling is especially highly pronounced in more successful Joint Ventures. One of the reasons for this could be the probable shift in mindset of parents from “How can we make this joint venture work?” to, “The other parent should not appropriate more than us.” This shift in outlook is driven by the joint venture and is exogenous to parents. It is a case of cooperation between the parents changing to competition. The shift in outlook in turn affects decision making in the joint venture.

### **5. The Termination/Renewal Stage Competition and Cooperation:**

The fifth stage that we documented was termination of the Joint Venture. Parents are likely to terminate the JV if each perceives the other as being opportunistic. Likelihood of termination is high under two conditions: i. Parents do not have strong “Corporate Value” or “corporate values” emphasize growth, do not value long term relationship beyond objective achievement ii. The manner in which top managers of parent firms view the Joint Venture, i.e., Managerial Cognition. When “long term relationships are not valued”, and “the top managers of parent firms are not favorably disposed towards the Joint Venture”, termination invariably occurs. Stated differently, corporates with strong values attached to developing relationships are likely to weaken forces of competition and hence termination while lack of strong values and rational thinking is likely to increase competition between the parents strengthening forces of termination. But, the final decision to terminate is also driven by “managerial

cognition” of the JV manager of the JV as well CEOs and top management teams of the parents. The manager can either moderate or aggravate the stances taken by the parents. Similarly CEOs/TMT of the parents can influence the JV. For example, in TEIL, when a new CEO EIL’s came on board after the JV had been formed, he was not in favour of continuing the JV as he considered it a burden to the parent company, whereas the earlier CEO had wanted to continue the JV because of his close association from the formative years of the JV. In such a case, the CEO’s cognition was act as a glue increasing likelihood of cooperation. Hence managerial cognition played a critical role in perceiving. Renegotiation of Maruti Suzuki was also driven by another important factor - knowledge creation inside the joint venture. According to a senior person in the now erstwhile JV,

“We created new knowledge in the joint venture. This knowledge was something that neither of the parents possessed earlier. Though it was no world-class R and D knowledge with big ticket patents, the new knowledge acquired was in the form of small process improvements, and knowledge related to markets, local hiring, and understanding customer and consumer behavior. This local knowledge produced through the Joint Venture created small and incremental improvements.”

## CONCLUSION

We employed case study method to investigate the interplay of cooperation and competition in JVs. As might be expected, the method is limited by the availability and accessibility of confidential and nuanced data, and number of cases studied. Despite the limitations the study reveals five stages of evolution of JVs, each stage marked with a pattern of cooperation-competition interplay. The results also indicate the possibility of existence of lower and upper limits of cooperation-competition balance within which JV is the most efficient form of organization. It also reveals the role of managers as agents with own volition, and organizational learning influencing the above interplay. Future studies can explore the above areas in order to develop richer theory and objective validation through large sample studies.

Fig. 1

Case1	Case2	Case3
Maruti Suzuki	Mahindra Navistar	Tata and EIL
Success and evolved	Failed	Struggling and Surviving

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# Managing conflicting goals: A Case Study on ESG Of Coal India Limited

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## Abstract

Integrating ESG criteria into the company's operations has become increasingly important for companies worldwide. With the increasing importance of sustainability, companies have started realizing that the ESG is valuable for reputation building, investment efficiency, and competitive advantages, and ignoring ESG can impair firm value. Given, coal is the most significant contributor to global warming. Notably, three-quarters of the electricity sector CO<sub>2</sub> emission is contributed by coal. Using case study methodology, this study attempted to elaborate the ESG compliances of one of the world's largest coal producer, Coal India Limited.

Coal India Limited (CIL) is the second largest coal producer in the world. CIL is the top public sector enterprise in terms of its total coal production with the prestigious status of "Maharatna". This entails the duty of acting in the best interest of public, planet and profit. In addition to coal production, the company's mission is to improve the quality of life in the economy by implementing policies that benefit and improve the community, society and environmental conditions. Principles such as upholding the highest ethical standards in conduct of business and 'attaining environmentally & socially sustainable growth through best practices from mine to market' reflect CIL's commitment in achieving its societal, environmental and economic goals. As a part of the company's broader commitment to society as a public sector enterprise, it pursues a wide variety of ESG-related initiatives and activities. ESG principles are also at the core of CIL's vision. This paper attempts to examine the ESG status of the organization as well as to study the implementation of CIL's ESG initiatives across several functions of the organization.

## **Climate Variability, Rising Drought and Livelihood Vulnerability of Farmers: A Gender-Environment Perception with Study Area in West Bengal**

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### **Abstract**

This study investigates the facets and magnitude of livelihood vulnerability of farmers in the Bankura, West Bengal, India, across gender on the occasion of rising frequency of droughts. A multisteped purposive sampling technique was used to select study sites and collect field data of 100 farmer households across gender using a well-structured questionnaire. The findings reveal that female-headed households are suffering more from changing climate with increasing frequency of droughts than are the male headed households. Due to the lack of basic amenities and sufficient capabilities, the livelihood vulnerability value was higher for female-headed households. Therefore, to improve the income of the susceptible families, identification of such households and provision of innovative, practical and gender sensitive devices is necessary. These measures are especially needed for those female households who are managing their farm after the death of their husbands and more vulnerable. Such measures will help them developing livelihood resilience.

### **1. Climate Change: An Introduction**

Climate change is curial global environmental challenge confronted by human race with implications on food and freshwater supply, health, among others. According to the latest scientific estimation, the earth's climatic system has palpably transformed and most of the global warming (of 0.1°C per 10 year) notable over the last 5 decades, is ascribable to human radical actions. The Intergovernmental Panel on Climate Change (IPCC) projects that the global mean temperature may increase between 1.4 and 5.8 degrees Celsius (C) by 2100. This conspicuous increase is anticipated to have stern impacts on the global circulation system, ecosystems, level of terrestrial water bodies, agriculture and associated activities. The visual signs of climate change are higher temperature, more droughts, changing rainfall pattern, melting glacier and subsequently rising sea level. The impact would be particularly harsh in the tropical areas which largely comprise the Developing World, including India. Given that

the cruelty of climate change has become accepted by the scientific world, it is critical to understand its implication at the field level, particularly the livelihood of populace dependent on primary sector for survival.

## **2. Climate Change and Gender**

Climate change renders multiple threats to farmers' clique. Vulnerability is a concept often employed in the context of climate change to identify risks that address current and projected impacts. However, the term vulnerability can be placed in a wider social pretext, driven by factors such as land ownership and access, inadequate livelihood multifariousness, lack of alternative employment opportunity which singles out traditionally exploited, discriminated and highly exposed section of the society, i.e., women. Female gender are likely to be more vulnerable with the minimum resources, legal land rights, poor literacy, and the little emancipation to take part in management and coping procedures. The following points highlight gender vulnerability in the farm sector: (i) women cultivators are at more precarious state as they tend to work mostly as family laborers in their husband's farms and in case of widowhood able to get hold of marginal land holdings, invest effort for longer period, or limit cultivation to only cereals, (ii) radical climate swings in calamity-ridden agrarian regions mostly subject women to compelled migration, rising gender based exploitation, resource poverty owing to selling off landed property and subsequently food insecurity (Singh and Singh, 2019).

In the situation of climate change, it is likely to have greater negative impact on women in economically underdeveloped areas in particular, as the earning capability of women in such regions are much lesser compared to men. With this backdrop, this study evaluates gender-environment outlook of climate variability in agriculture and their vulnerability.

However, among all the visible manifestations of climate change, this study will focus on drought and its effect on farmers since in converse to other climatically adverse events such as floods, which are typically confined to small regions and characterized by defined sequential intervals, droughts are difficult to identify in time and space, affecting wide areas over long periods of time. Moreover, the effects of one drought occurrence can persist over more number of years relative to floods (Changnon and Easterling, 1989).

## **3. Concept of Drought-**

Droughts are classified as hydro-meteorological risks as they have an atmospheric or hydrological origin (Landsberg, 1982). Droughts are complex atmospheric phenomena caused

as an aftermath of decreased or absence of rainfall (Wilhite, 1993). The usual impact of agricultural drought is crop failure, land degradation, food insecurity and human starvation, epidemic leading to distressed exodus of people and livestock.

#### **4a. Rationale for Choosing Study Area as West Bengal**

West Bengal is predominantly an agrarian State. In majority of its districts than 70 per cent of land area is used in growing crops. Rural non-farm sector has undergone low diversification and more than 55 percent of the rural worker population derives employment from cultivation (Census of India, 2011). According to Agricultural Census, 2011-12, 84 percent of the operated area belongs to small and marginal farmers and the average size of the agricultural land is 0.77 ha (as in Ghosh, 2011). The State has achieved an all-time record in food grains production and ranks first in production of rice in the country followed by potato (Economic Times, 2022). However, West Bengal also comes to be most climatically vulnerable states of India. 75 percent of the districts of the state, which are abode to around more than 70 million, are susceptible to intense climate variability events such as cyclonic depressions, flash floods, and droughts, according to an independent analysis released by the Council on Energy, Environment and Water (CEEW) in 2021. Districts such as Howrah, Kolkata, North 24 Parganas, Paschim Medinipur, and South 24 Parganas are cynosures for cyclones, which have increased five-fold in the state in last five decades.

Other than cyclones and floods, West Bengal has also recorded a two-time increase in droughts in the last decade. The intense drought centers include Bankura, Ganjalghati, Hirbandh, and Purulia. Once irregular in occurrences, drought-like conditions now have afflicted more than 45 per cent of the state in recent period. According to the CEEW, even frequent flood-ridden areas of otherwise dry Bankura and Purulia have witnessed a shift towards sheer drought affected in the recent past (ceew.in).

#### **4b. Bankura**

Given the above discussion, Bankura district has been selected as the study area for carrying out the above study on rising drought and its effect. A brief overview to Bankura is as follows.

Bankura is situated to the west of West Bengal. It is also included in the area known as "Rarh" in Bengal. Bankura district is situated at 23.25°N 87.07°E. The Damodar River flows along the

Northern boundary of the district. The most important river flowing through the district is Dwarakeswar River. The western part of the district has red soil, hard and lateritic in nature. The eastern part is fertile and greener. The economy of Bankura district is characterized by an overwhelming agro-economic base and low urbanization. Agriculture is the primary occupation with average land size available per cultivator is around 0.41 ha. 66 percent of the rural population is engaged in various forms of agricultural labour occupation whereas 32 percent of the rural work-force derives livelihood from self-employment in farming (Census, 2011). However, Bankura has dry climatic conditions with vast wastelands. The climate, especially in the upland tracts to the west, is much drier than in eastern or southern part. The district is usually susceptible to drought but in the past decade it has experienced particular rise in frequency of drought condition which is an evident effect of climate variability viz-a-viz climate change (District Census Handbook Bankura, 2011; Bankura District Statistical Handbook, 2014). Therefore agricultural population of Bankura has largely shifted to monocropping and the cropping pattern is skewed heavily towards paddy cultivation. Besides rice, the other crops cultivated are potato, wheat, vegetables, mustard, summer til. However, their farming is generally scattered in nature. In 2006 the Ministry of Panchayati Raj marked Bankura one of the country's 250 most underdeveloped districts and had been obtaining financial assistences from the Backward Regions Grant Fund Programme (BRGF) for some time (Ministry of Panchayati Raj, 2015).

#### **4c. Research Methodology**

A multi-Stage selection technique was used to choose study region and finalize sample of farmer families to be interviewed. After selecting Bankura as the study district (because of the afore-mentioned reasons), Indpur Block was decided as the study block which represents the drought prone condition of Bankura aptly. At the next stage, one village is finally picked up which resonates the district's arid climatic condition well and this was where the field work was actually carried out. To understand farmers' perception on climate change across gender, farming households were first categorized into male and female. In lieu of this, list of cultivators were obtained from gram panchayat separately for male and female. Due to low number of female farmers in the study area only 25 such de jure farmers could be managed whereas farming community being dominated by male, 75 male farmers were picks up for the primary survey. So the total sample size comes to be 100. Random sampling method was employed to decide upon the farmers households with whom in-depth interview was conducted for the objective analysis. The primary data gathered relates to the agricultural year 2021-22 starting from July to June.



## 5. Method of Estimation

### 6. Rational Indicators and Their Selection

It forms the preliminary task to first zero down to the accurate indicators to derive accurate and comprehensive results. Therefore, after substantial review of literature, this study has identified some of the key indicators for the three facets of vulnerability, namely, exposure, sensitivity and finally, adaptive capacity.

Exposure refers to strain resulted from changes in frequency, intensity, duration, and nature of climate stress. An area like Indpur is characterized by degraded land resources and is concomitantly experiencing greater adverse impacts of climate swing owing to which agriculture, which is the main stay of farmers, is under severe threat. In this case construction of an exposure index is a precondition for varied farm groups which can be developed using their perspicacity of drought and their implications in lieu to spot out the most precarious community.

Sensitivity is the extent to which a biological structure is affected either pessimistically or beneficially, by meteorological impetus. In other words, Sensitivity gauges the capability of a system to react to meteorological fluctuations and strives to understand the level at which climatic anomalies are likely to influence a cohort.

Adaptive capacity refers to the capacity of a system to cope with the climate fluctuations and minimize the adverse consequences. In order to understand gender-specific livelihood vulnerability, it is imperative to identify a system's capacity to overcome. So in the current study attempt has been made to understand to what extent sample farmers have adopted different measures to enhance adaption competence. The selected indicators for calculation of livelihood vulnerability index have been explicitly discussed below.

#### **Table 1. Selected rational indicators for livelihood vulnerability index Component Indicators**

The focal point of this paper was to amalgamate gender sensitive indicators, and to develop a Livelihood Vulnerability Index (LVI) separately for male and female that could be applicable at any scale, be it macro or micro. The LVI by gender helps to single out the most vulnerable members' group of society and analyze vulnerability intra-farmer community. The data on indicators collected through field survey were categorized into three sub-components of exposure, sensitivity, and adaptive capacity under the two distinct groups, namely, male and female. The indicator-based approach is a precise combination used to measure the vulnerability by computing indices. Before combining indicators to gauge vulnerability across gender, the indicators were first normalized to scale of zero and one using equation (I and III) and if the indicator has an affirmative relationship with selected indices then equation (I) was

employed:

$$IIIIIIII = \frac{KK_i - KK_{\text{minimum}}}{KK_{\text{maximum}} - KK_{\text{minimum}}} \dots \dots \dots (IleeII)$$

Where  $K_i$  is the original sub-set for the group  $i$  and  $K_{\text{min}}$  and  $K_{\text{max}}$  are minimum and maximum values, respectively. For each sub-set, the vulnerability was affirmed using primary data.

After each component was standardized to scale noted above, the mean of each sub-component was estimated by using equation 2 to calculate the value of each major component.

$$KK_h = \frac{\sum_{i=1}^n II_{h,ii} K_i}{n} \dots \dots \dots (IleeIII)$$

Where,  $K_h$  is one of the three components/sets of the community group  $h$ , exposure (EXP), sensitivity (SENS) and Adaptive capacity (ADP), index  $k$  represents the sub-component indexed by  $i$ , that make up for each major component, and  $n$  is the number of sub-components in each major component.

Once the values for exposure, sensitivity and adaptive capacity were calculated, the three contributing factors (exposure, sensitivity and adoptive capacity) were combined using equation (3) to obtain potential livelihood vulnerability index (PLVI).

$$PPPPPII_{II} = (EE_{II}) - (AA_{II}) * SS_{II} \dots \dots \dots (eqIII)$$

Where  $E_d$  indicates exposure;  $A_d$  indicates adoptive capacity and  $S_d$  represents sensitivity. We have scaled the PLVI based on the results obtained from the vulnerability index score, i.e., -1 (least vulnerable) to 1 (most vulnerable) (Singh and Singh, 2019).

Like stated earlier, each of the above-mentioned indices have been calculated separately for male and female farmers in strive to understand the livelihood vulnerability of farmers in drought at gender disaggregated level.

<b>Exposure</b>	
<b>1</b>	Families observe that the rainfall has decreased (percentage)
<b>2</b>	Families feel that summer days have become blazing (percentage)
<b>3</b>	Families perceive that frequencies of droughts have raised (percentage)
<b>4</b>	Families perceive that water level has decreased (percentage)
<b>Sensitivity</b>	
<b>1</b>	Families unable to access gas cylinder for cooking intention (percentage)
<b>2</b>	Families cannot access portable water for household consumption (percentage)
<b>3</b>	Families have to depend on government irrigation purpose (percentage)
<b>4</b>	Families are dependent on quacks in the village due to lack of subsidized government medical facilities (percentage)
<b>5</b>	Families do not have toilet/latrine (percentage)
<b>6</b>	Families lack all seasoned or pukka house (percentage)
<b>7</b>	Proportion of Below Poverty Line households is more than APL (percentage)
<b>8</b>	Head of household has not gone to school (percentage)
<b>Adaption Capacity</b>	
<b>1</b>	Families changing their pattern of cropping (percentage)
<b>2</b>	Families planning to switch to off-farm occupations (percentage)
<b>3</b>	Families having access to KEOSKS (percentage)
<b>4</b>	Families started conserving-rain water harvesting to mitigate climate variability (percentage)
<b>5</b>	Families having secured their crop through crop indemnity/insurance (percentage)
<b>6</b>	Families have extended storage facility to safely stock greater agriculture products (percentage)
<b>7</b>	Families have taken help of extension services to cope up with climate variability (percentage)
<b>8</b>	Families resorting to crop shift-diversification (percentage)

(Source: Field survey, 2021. *Note:* HH means household)

## 7. Results and Explication

### 7a. Incidence and Frequency of Drought in Bankura

Even after seven decades of independence Bankura district is characterized by poor socio-economic condition and low cropping intensity (Goswami, 2021). During normal years this district receives an annual rainfall of 1400 mm with the month of July receiving the maximum shower compared to rest of the months of the entire year.

**Table 2: Drought Classificaion**

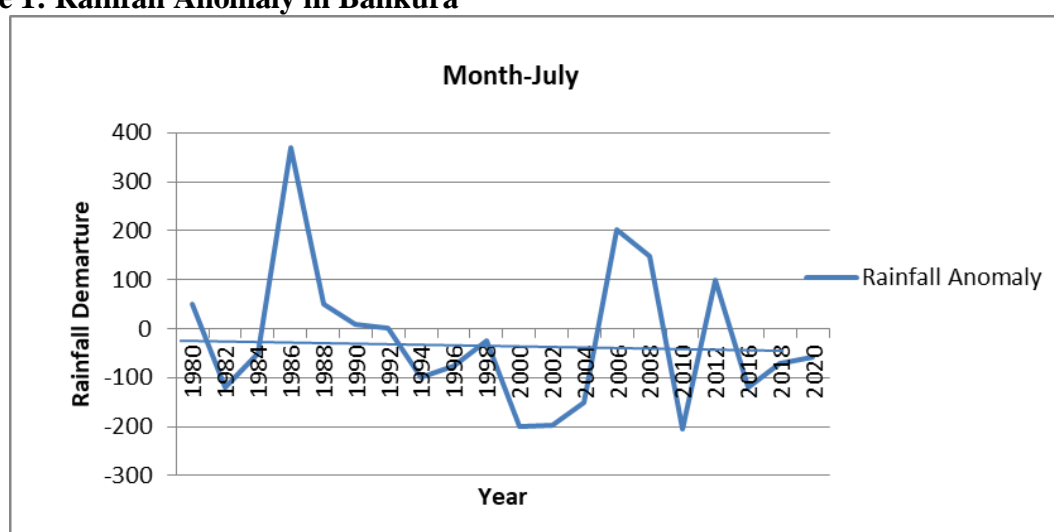
<b>Percent Normal</b>	
+/-20%	Normal

-21 to -60%	Moderate drought
>-61%	Severe drought

Source: Goswami, 2021

According to IMD's criteria, a negative deviation up to 20 percent will be considered as normal situation of monsoonal precipitation. However, Rainfall deviation from (-)21 percent to (-)60 indicates moderate drought. Whereas, a deviation more than (-) 60 percent can be ascertained as severe drought (see Table 2).

Figure 1: Rainfall Anomaly in Bankura



Source: Meteorological Data of Bankura, GoWB, 2021 as in Goswami, 2021

Figure 1 unveils high degree of anomaly in rainfall received in Bankura over the years with a progressive rise in the frequency of drought post 2000. While between 1980 and 2000 there has been 1 moderate drought year, 5 severe drought years and 1 extreme drought year, the longest and most intensive droughts have been recorded since 2000 particularly severe in the years 2005, 2009 and 2010. Complacently, 2007 and 2011 were predominantly humid.

### 7b. Socio-Economic Overview of the Respondents

Coming to socio-economic outline, respondent households in the study area are noted to be characterized by the exceeding underdeveloped situation with women dominated households suffering more than that of male, irrespective of the fact that all the farmers interviewed, belonged to small and marginal land category.

Table 2: Socio-Economic Characteristics of the Sample

	Particulars	Koch Bihar
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Category of Farmer Households				Chhota Khalisamari Panchayat
Female Cultivators Household	Religion and caste of the sample households	Hindu	SC	15(60)
			OBC	9(34)
		Religious Minority	Gen	-
			Muslims	1(6)
		Total		
	Farm Details	Average Farm Land Holding (Ha)		0.85
	Demographic Details	Total Male Members (15-59 yrs)		-
		No. of Male Members Migrated		-
		Female Members (15-59 yrs)		1.02
		Number of Children (below 15 yrs)		2.1
		Number of Aged Members (above age of 60 yrs)		0.27
		Total number of Working Members (15-59 yrs)		1.02
		Dependency Ratio		2.32
Male Farmer Household	Religion and caste of the sample households	Hindu	SC	52(70)
			OBC	19(24)
		Religious Minority	Gen	-
			Muslims	4(6)
		Total		
	Farm Details	Average Farm Land Holding (Ha)		1.65
	Demographic Details	Total Number of Family Members		4.77
		Total Male Members (15-59 yrs)		1.87
		No. of Male Members Migrated		0.38
		Female Members (15-59 yrs)		1.05
		Number of Children (below 15 yrs)		1.37
		Number of Aged Members (above age of 60 yrs)		0.48
		Total number of Working Members (15-59 yrs)		2.87
Dependency Ratio		0.65		

*Note:* Figures in brackets are percentage of Total in each Category; 'Gen'- General Category;  
Source: Primary Survey

While the de jure<sup>33</sup> female farmers did not have average operational land size not more than 1 acre, the male farmer households were found to be privileged in this regard. Though they too remained in the small farmer classification nevertheless their land size was calculated a perceptible double that of de jure female cultivators.

Demographic composition and dependency ratio of a household are crucial components which should be taken note of because they give insight to earning potential of a family and level of economic burden ought to be borne by the working members in feeding unemployed mouths. Table 2 further shows that not only de jure female farmers had marginal land holding but also these households were characterized by no seasonal migration and high dependency ratio of more than two times the working members' size. This indicate precarious economic situation of such single mother female headed households. In contrast, with regard to male farmer households the family size was not only big, more male members were part of active work force with incidence of migration taking place in the household as well, all of which vividly underpins relatively better economic prospect of the family.

**Table 3a: Exposure Index of Farmers Households by Gender**

Indices	Bankura	
	Indpur	
	M	F
Rainfall Decline	0.75	0.92
Hotter Summer	0.91`	0.93
Frequency of Drought Increased	0.94	0.97
Decline in Water level	0.90	0.92
Exposure Index	0.88	0.94

Source: Field Survey, 2021

**Table 3b: Sensitivity Index of Farmers Households by Gender**

Indices	Bankura	
	Indpur	
	M	F
Lack of Clear Energy Cooking Source	0.77	0.91
Lack of Private Drinking Water Source	0.58	0.84
Irrigation Dependence on Government Source	0.59	0.72

<sup>33</sup> The female farmers who have legal right to the agricultural land that she is operating is called de jure female farmer.

Free Medical Facilities	0.62	0.71
Lack of Sanitation Facility	0.43	0.79
Poor Nature of House	0.49	0.77
Below Poverty Line	0.55	0.84
No Electricity Access	0.49	0.61
Illiteracy	0.54	0.83
Sensitivity Index	0.65	0.78

Source: Field Survey, 2021

**Table 3c: Sensitivity Index of Farmers Households by Gender**

Indices	Bankura	
	Indpur	
	M	F
Cropping Pattern Change	0.076	0.021
Switching to non-agricultural Activities	0.179	0.099
Information Technology	0.170	0.063
Rain Water Harvesting	0.19	0.067
Crop Insurance	0.099	0.077
Expansion of Storage Capacities	0.34	0.21
Extension Services	0.071	0.038
Multi Cropping System	0.21	0.083
Adoptive Capacity Index	0.25	0.09

Source: Field Survey, 2021

**Table 3d: Livelihood Vulnerability Index of Farmers Households by Gender**

Indices	Bankura	
	Indpur	
	M	F
Exposure Index	0.88	0.94
Sensitivity Index	0.65	0.78
Adoptive Capacity Index	0.25	0.09
Livelihood Vulnerability Index	0.55	0.67

Source: Field Survey, 2021

**a. Exposure Index (EI)**

Exposure to climate swings has a perceptible effect on the sustenance of the sample households, discussed earlier. The computed said index reveals that women-led households found themselves to be more exposed to climate variability such as rainfall decline, hotter summer days rising frequency of droughts than the male counterparts (see Table 3a).

### **b. Sensitivity Index (SI)**

Consistent suffering from chronic poverty, poor literacy rate, extensive variations in access to indispensable facilities and greater dependence on unskilled work for survival formed some of the principle factors making respondent cultivators sensitive towards changing climate, as suggested by Table 4b. The calculated sensitivity index reveals that female cultivator households were more susceptible relative to male gender. The present study findings further unveil that since lion's share of female led farmer households belonged to BPL category, more than 90 per cent of such households had to take resort to forest resources for cooking. Pradhan Mantri Ujjwala Yojana (PMUY, translation: Prime Minister's eco-friendly cooking Scheme) was launched by Prime Minister of India Narendra Modi on 1 May 2016 to allocate free LPG gas connections to BPL women families. However, the respondents stressed not having enough fund to refill their cylinders which came without any subsidy. As a result, the 'fall-back option' remained unclear non-timber forest materials for food preparation. In addendum, more than 75percent consumed untreated water extracted through community water supply owing to fund crunch to set up private water sources such as handpumps. Wood source for cooking causes lung related chronic diseases like cancer and asthma. Non-portable drinking water, coupled with timber burnt smoke, not only raises sensitivity to meteorological variability but also perceptibly raise health related expenses. Also, more than 75 per cent of female-headed households in Indpur depended for irrigation on government. Further, most of the female farm households were not in a position to avail private medical services due to lack of understanding of the emergency and more importantly, fear of incurring higher health check costs. Similarly, lack of other base minimal amenities, like sanitation, access to electricity, and high level of illiteracy played important contributory role in augmenting sensitivity of the women farmer households to climate change. These highlights reveal that vulnerability in an area is not only multi-faceted and multi-layered but also is gender-specific.

### **c. Adaptive Capacity/Capability Index (ADI)**

Adoption capacity is usually a potent measure to diminish hazard from crop loss and optimize net earnings attainable. Adaptation strategies include personal responsible at field-level to safeguard their livelihoods from climatic shocks. Agriculturists generally make lucid choices from a cohort of options pertaining to mitigation in the form of agricultural practices and technologies available in their region. Farmers' choice of adaptation strategies usually determines the level to which the farmers' attempt to cope up



with the climatic adverse circumstances so as to control output damage and reap maximum profit attainable from the given situation. Upon looking deeper into differentiated adaptive capacity among the sample households (see Table 4c), it is observable that less than 5 percent female-headed farmer households have diversified cultivation in favor of less drought-prone crops, such as pulses and oilseeds. Besides that, due to strict rural hierarchy and social insecurity, widowed females had restricted physical mobility and therefore could not afford to travel long distances away from home in search of non-farm employment opportunities like their male colleagues. As a consequence, only 8-10 per cent female-headed households were noted to be engaged in off-farm occupations outside native. Gender disparity is also found with regard to access of information on various farm related issues of climate change owing to wide level illiteracy and concomitantly poor degree of awareness. Similarly, with regard to other adoptive strategies, as well, women found themselves in precarious state. Inadequate financial resources of the spouseless female agriculturalist folks acted as hindrance towards taking up rain-water conservation measures in a meaningful manner or expanding crop store capacity, despite vivid understanding of the need. Illiteracy and subsequently lack of confidence further barred the female land operators from seeking gender specific extension services in order to develop right knowledge about balanced use of fertilizers in lieu to reap optimum benefits in the progressively drying climate-edaphic conditions. In the case of crop insurance, firstly more than 65 per cent of the women cultivators in the surveyed region were waiting for successful completion of the legal process entailed in the name conversion of the land after death of their husbands. As a result they were not eligible to seek provisions of government led crop insurance schemes. While, for those who already had land in their name, official complexities and prolonged strenuous process inhibited the single women from getting themselves enrolled for crop insurance even if that meant guaranteed compensation upon losses rendered by natural calamities as a remedial measure. In other words, with respect to adoption of coping strategies as well, women remained significantly behind the male gender.

#### **d. Livelihood Vulnerability Index (LVI)**

The relative strength and interaction of exposure, sensitivity, and adaptive capacity indices determine the level of vulnerability of the farmers across gender in the particular study area (Table 4d). Indices of exposure for Indpur, Bankura indicated that female led farm families are exposed to a greater extent to drought. In addendum, sensitivity indices showed that

surveyed female households are in the same way sensitive as they have conspicuously low adaptive capacity to combat aridness than that of male counterparts owing to perceptible socio-economic hindrances. In totality, livelihoods of women farm households are potently vulnerable to said form of meteorological extremity than that of male cultivators in the study drought-prone district of Bankura (female lagging behind male by 12 index points).

### **8. Inferences and Policy Suggestions**

The study has striven to examine the multiple facets and extent of livelihood vulnerability of the farmers by gender in the Bankura region of West Bengal, a leading agricultural state of the nation. The respondent farmers were noted to plausibly exposed to the said form of climate change, namely drought. The progressive decline in precipitation with subsequent shrink of aquifer coupled with increase in temperatures (farmers' perception) have meaningfully unraveled the biophysical vulnerability in the system and consequently revealed the precariousness to the livelihood of the cultivators across gender. Farmers resorted to several adaptation approaches to overcome the current environmental predicament. However, poor access to base minimal amenities (sensitivity), low income, and high level of illiteracy came up to be formidable barriers to income security. The woe of the female headed de jure farmers were observed to be significantly higher than the male counterparts given their poorer socio-economic condition vividly indicating their higher degree of vulnerability over the men farmers. On the basis of the present findings, this study has suggested some policy interventions. Firstly, since the ground water level is continuously declining, and thus creating a water scarcity even during monsoon season therefore there is an urgent need to scale-up water conservation procedure through construction of rain-water harvesting structures. Using rural based public works schemes like MGNREGS in this regard can be of particular relevance. It is a well known fact that social forestry is a potent instrument to combat climate change as forests improve water-holding capacity of the soil as well as help in bringing rain shower at regional level. Forestation and farm forestry projects are undertaken under the Mahatma Gandhi National Rural Employment Guarantee Scheme as well. Therefore MGNREGS programme can be useful for carrying out both these forms of work by providing labour and necessary raw materials free of cost. Secondly, lower crop yield forms yet another chief obstacle in the trail of attaining safe and sound income, where agriculture is the major source of survival. Therefore, less water intensive crop varieties should be introduced through agricultural extension cells of the state government which would not only render higher farm output but also lower production cost. Lastly, given that since this paper underpins that women-

led cultivator households are much more at risk to climatic extremes than that of men, there is a need for gender-specific deliberation and mainstream them in climate-smart policies. Some suggestions in this regard include- (a) Gender oriented extension services to be provided to the women so that despite wide-spread illiteracy they have thorough knowledge about drought resistant varieties and the balanced dosage of inputs required to be used at farm level during drought conditions so as to optimize farm productivity-profitability; (b) in de jure female farmer households, the widowed single women grieved that despite death of their husband they were struggling to get the land plots converted in their names which is barring them from taking advantage of different government schemes to get subsidized loans which could enable them to adopt state-of-the-art technology in their agriculture and subsequently improve their livelihood besides contributing to food security. In view of this plight, it become an imperative responsibility of the government to ensure and expedite the process of official name transfer of the land so that within short span of the husband's death declaration the land becomes in the name of the wife and they can smoothly carry out the food production process independently without pain or fear of cash crunch (c) lastly, women, including, marginalized groups must be encouraged to participate in the planning and execution of climate response actions to ensure the equitable distribution of benefits.

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## **II. Centre of Excellence for Social Innovation**

## An Analytical Study on India's Rural Start-Up Potential

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### Abstract

With USA and China occupying the first two places, India had emerged as the 3<sup>rd</sup> largest startup ecosystem in the world. Over the last year, India has added 44 unicorns taking the total count to 83, replacing UK's third position, ahead of Israel (30 unicorns) and France (24 Unicorns) and UK (22 unicorns) in 2022. With 487 unicorns in its list, USA is occupying the top place and with 301 in its pocket China sitting in the second position, India possess unicorn's worth of \$277.77 billion. Along with unicorns, 'gazellas' and 'cheetas', the future unicorns are on rise in India. Gazella is a startup founded after 2000 with the potential to go unicorn in 2 years, while cheetah may go unicorn in the next 4 years. Gazellas have an estimated valuation ranging from \$500M to \$ 1 billion and the valuation of Cheetas range from \$ 200 million to \$ 500 million. The "Atmanirbhar Bharat" campaign since its launch in 2014 had fuelled large amount of ambitions in the young startup ecosystem of the country.

In this context the current paper presents an analytical view of India's Rural Start-up potential, its challenges and ambitions.

### 1. Introduction

India receiving the support from the "Atmanirbhar Campaign" has become the third largest start-up hub ahead of other countries. The start-up ecosystem in India created nearly 590000 jobs during the period 2018-2021. These start-ups exhibit immense potential as catalysts for integration of India's economy in the global value chains and increase its footprints in the global platforms. The data from the Economic Survey of 2021 presents that with the addition of 5,000 recognized start-ups during the period April 2019 till the December 2021, Delhi has become the Start-up Capital of the country and Bengaluru occupied the second place with the addition of 5,000 start-ups during the period and Maharashtra occupying the third place. The

555 districts of the country have atleast one new start-up during the year 2021. The top three cities together headquarter 68% of these companies, with the start-up ecosystem, tended to gravitate towards the select urban centres and most of these start-up markets largely cater to the needs of the middle, upper-middle and higher sections of the society the Indian economy has 60 percent of its population hailing from rural background which calls for inclusive innovation and removing the bottlenecks for growing entrepreneurial potential and creating equal opportunities to cater the needs of rural poor and capture the innovative ideas of rural India and reshape them into tangible business models for further commercialization. Rural innovation often does not get the due recognition like the mainstream innovations, and the ideas of the rural innovators do not find their way to reach the government incubation hubs nor the international innovation think tanks.

This gap between the urban-rural divide in India's start-up trajectory needs to be addressed by extending the facilities of start-up incubation to the rural start-ups too. Rural India provides immense opportunities in terms of offering large customer base and huge market potential of over 850 million that remains untapped. Many rural innovations were left unrecognised, compared with the urban ones. In addition also the rural innovations lacks exposure to convert their ideas into viable commercial products.

Most of the common problems faced by the rural start-ups include fear of risk, lack of standard training and skills, limited purchasing power, competition from the urban entrepreneurs, lack of infrastructure and connectivity, lack of availability of standard tools and equipment resulting in production of lower standard quality products, illiteracy, and scarcity of inputs.

The Digital campaign that started in India since 2014 started a new revolution of technology reaching the doors of rural households, this led to a significant rise in the new rural start-ups emerging from rural India. These start-ups from the rural areas are striving for a continuous upliftment and empower the rural livelihood by providing innovative solution to the problems in the villages. Today with technology reaching the rural household 'Bharat' has been connected digitally, socially and physically to India by providing accessibility, connectivity to the rural villages.

Trust and networking are the two significant factors while working in the rural markets. Rural Businesses work on trust and relations, having a strong network in the rural markets and winning the confidence of the people would result in winning the rural markets. Hence the rural-entrepreneurs operating at micro level are the trusted associated between the rural start-ups and the rural markets.

An establishment of strong micro-entrepreneurial network in rural India helps the rural startups to win the confidence of the people. Such kind of an ecosystem is a win-win situation for the entrepreneurs along with the start-ups and this network can be used to expand the business by the Start-ups. The same time lot of opportunities and rural development could be seen in the villages along with increase in the livelihood opportunities for the people. This approach to encourage rural start-ups activities can lead to multidimensional prosperity of the economy as a whole.

## **II. Technological Innovations in 2021 driving the Rural Start-ups and changing the rural livelihoods-**

With a contribution of 45% to the GDP and 38% of the total internet subscriptions rural India's business potential is fast growing in the country's economy. Accounting for a collective investment of \$39 billion plus, the year 2021 has been a substantial period for the rural start-up ecosystem in the country. The rural economy has been experiencing a significant rise in the rural start-ups committed to transform the rural livelihoods through technology. The rural India too has seen the digital payments revolution using technology; many online sales take place in rural areas where the sellers share their photographs of the products online and customers purchasing and closing the transaction by digital payment has become a common feature in rural areas. They have been making their impact across the economies and have been instrumental in accelerating the GDP growth of the country. With optimized supply chains, improved access to quality lifestyle, door-step delivery, dignified livelihood opportunities, digital transactions and more, many Start-ups like, AgroStar, Aibono, Apna, Avaz, Bhajiwala, BharatAgri, Bijak, Bikayi, Chikitsak, Clover ventures, DeHaat, DIKSHA, EezyNaukari, E Fasal, EnCashea, Ergos and FarMart, Frontier Markets, Goonj, Hesa, Intellolabs, Khatabook,



Lal10, Meesho, Odaku, Rozgar Dhaba, Udhaar are all redefining business and success stories in rural India by connecting the producers with resellers and marketing products to consumers via social media by targeting the tier 2 and the tier 3 markets. In addition, agriculture input start-ups including seeds, fertilizers, machineries, pesticides, customer hiring centres which provides the farm equipment's like cultivator, plough, tractor, mini tractor, harvesting machines on lease basis along with other areas viz. financial inclusion, digital enablement, agri-processing, food processing, health care, waste management, skill training institutes, generation of alternative energy sources, handicrafts & handlooms, hospitality & rural tourism are all sectors that has the potential for rural start-ups.

During the Covid-19 pandemic, many rural start-ups have rose to the occasion with several fund raising initiatives by providing the medical facilities and health care infrastructure facilities. Many start-ups catered to the rural demand during this period by providing the digital connectivity and fintech enabled payments.

### **III. Various Start-up Support Ecosystems for Rural and Tribal Entrepreneurs-**

The Government of India has stated the initiatives for taking up the training in the entrepreneurial development schemes and programs through the Ministry of Skill Development and Entrepreneurship (MSDE), which is intended to provide skills among the youth and women throughout the country by providing essential skills in entrepreneurship education and mentorship. MSDE has also taken a project to enhance the skills and providing mentorship to the MSMEs in the 6 temple towns of Puri, Kollur, Varanasi, Pandharpur, Haridwar and Bodh Gaya. The MSDE through collaboration with Deutsche, Gesellschaftfür International Zusammenarbeit (GIZ) Germany is initiating a project to provide economic empowerment for the women entrepreneurs and women start-ups. The incubation needs of women entrepreneurs in Rajasthan, Assam and also Telangana are met by this. Similarly the, PM YUVA (PM Yuva Udyamita Vikas Abhiyan) by the MSDE is also providing the skillset requirement to the alumni of the Industrial Training Institutes and the Kaushal Kendra's.

The Bank Credit facility is provided by the Ministry of Rural Development for establishing the micro enterprises who had received the skill enhancement programmes by the Rural Self Employment Training Institutes (RSETIs). 585 rural self-employment and 23 banks of the country are offering this. Similarly the DAY-NRLM, programme is supporting the rural youth since 2016 by providing the self-employment through financial assistance and forming the local community cadres to accelerate entrepreneurship. The Ministry of Tribal Affairs through the (PMVDY is supporting the youth of the tribal areas through offering the Entrepreneurship Development Programme which is linked with the markets. Under this the tribal cluster groups are supported in their entrepreneurship traits. In addition the Prime Minister's Employment Generation Programmes for the MSMEs is rolled out to create self-employment opportunities for the non-farm sector. In addition, the Innovation societies of State governments of Andhra Pradesh & Telangana are providing the startup support to the rural start-ups of the state.

#### **IV. Agri-start-ups supporting the Farming activities in the rural livelihood:**

In India more than 56% of the population, i.e half of the population still depend on agriculture. With 118.7 million farmers still depend on irrigation, but the use of technology in the irrigation has been very much limited. This resulted in the low productivity and out put levels with just 17-18% of contribution of the agricultural-sector to the GDP. However, the last few years saw the rise of number of agricultural technology start-ups that were providing technological access to the farmers but also making significant impact on the Indian farmers. An analysis on few start-ups is provided to understand the support given by the agricultural starts-ups to the farming community:

***Krishi Network*** – This is founded by IIT ( K) alumni to provide a platform for easy accessibility of information to the farmers and support generation of higher profits from irrigation. The network provides both online and offline support with the boarding of agri-input merchants, stake holders in the agri-supply chain. The network is available in 4 languages and helps in establishing reliable connection with the experts in the agricultural logistics chain and agriculture.

**Hesa-** Hesa provides digital, social and commerce support in a single platform for the rural India. The headquarters is in Telangana and it provides doorstep access for an integrated B2B market space for buyers and sellers with a network of 30,000 village entrepreneurs and have more than 700,000 customers in period of just one year. Hesa has to its credit of partnering with 65+ brands and unique initiative of providing win-win situation for both the start-ups and the entrepreneurs.

**Jai Kisan-** This is a Mumbai based rural fintech platform committed to financial inclusion. This is founded in the year 2017, offers digital financial services assistance to the farmers from availability of credit to income generation and provision of rural commerce transactions. The start-ups is working with 700 organized and unorganized entities and has more than 1.5 lakh customer base.

**Fasal-** This is an AI based platform to provide agriculture ecosystem to record different growing conditions on the farm. By using the AI and data science algorithms it gives the on-farm predictions. It helps in weather forecasts, irrigation and pest-disease management, fertilizer application management and also supports with the real-time information alerting about the crops.

**Ninjacart-** Founded in June 2015, initially it was a food delivery start-up but was transformed into a B2B agri start up in order to solve provide a solution for the fresh agricultural supply chain delivery from the farmers to the retailers.

**WayCool-** This start-up founded by Karthik Jayaram and Sanjay Dasari in the year 2015 it offers a B2B agritech platform using technology to control the end-to-end agriculture supply chain from providing the farm inputs to the sale of the farm product through multiple distribution channels.

**Aibono-** This start-up has been based on the idea of 'seed-to-plate', wherein it supports the farmers in increasing the crop yield on one hand and also supports in the sale of their crop yield

to the producers. The start-up firm uses technology like soil sensors, IOT, drone technology to predict the output by using the predictive analytics and also alert the farmers timely to increase the crop yield.

*With the 'Digital Bharat' campaign of the government, technology has penetrated into the lives of the people, the new start-ups are thriving in the villages along with the tier-3 and tier-4 cities impacting the rural livelihood and providing immense opportunities to the poor. After the disruption caused by Covid-19 the start-ups are bringing hope back to the rural household by providing livelihood to the rural poor, especially the Women. The discussion on few start-ups is provided below:*

**Meesho-** This Bengaluru based new unicorn provides social commerce platform for women-led businesses in fashion and hominids. Focussing on women entrepreneurs it is based on a reseller model in which a large number of curate products from its platform and sell them on other social platform to sell directly to customers. It has helped large number of women entrepreneurs and has over 13 million entrepreneurs and 45 million customers across the country. With a mission to achieve financial independence to women Meesho has been focussing on Women empowerment through its model.

**Frontier Markets-**This is also one of the fastest growing women-led social e-commerce platform. This digitally enabled platform allows rural customers to purchase instant solutions form the products and services at a faster rate from the women salesforce. It provides agricultural serves, durables and electronics and digital services to the last mile of the villages.

Operating through the stronger gender-lens, the company is providing women empowerment in rural communities and rural women entrepreneurs by providing immense opportunities through generating employment and income for the rural women. They have on-board 10,000 new rural women entrepreneurs across 2000 Indian villages that are continuously increasing.

*Deal share*-The platform is based on “WhatsApp-first India”, and is consisting of Tier II and Tier III towns. Through the platform users can get fruits, vegetables, beauty and wellness products and other needs at a discounted prices. The company has the presence in more than 5 states and has around 600 vendors. The company has a module of Dealshare Dost, this Dost is a micro-entrepreneur in the sub-locality who belongs to that place and has easy access to the local manpower.

## **V. Conclusion:**

The rise in this start-up activity which caught the pace during the last decade is going to provide immense opportunities to the young India. Especially, during the special phase of demographic dividend, where the large number of Indian population is going to be within the ‘working age’ group and this young India advantage is going to last till 2055. Historically demographic dividend supported 15% of their economic growth in advanced countries. As of 2020, 67% of India’s population is between 15 to 59 years. The Start-up initiatives are in the right direction to provide employment for the young India. As there is immense potential in the rural markets and this can be tapped with technology, and technology has led to the emergence of many start-ups and entrepreneurs that were helping rural India to connect with the mainstream markets by providing various platforms for growth, providing solutions for the rural problems and lending a helping hand to the farming community and empowering the rural women.

## **Discovering origins, exploring current and future trends of tech social enterprises:**

### **A systematic literature review (2005-2022)**

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**Keywords:** Social Enterprise, Technology, Digital Innovation, Systematic Literature Review, tech social enterprise

### **1. Introduction**

Social enterprise (SE) is a concept that is gaining traction globally and is seen as a cutting-edge strategy for addressing social and environmental challenges. They are distinct from businesses and nonprofits since they work together to meet both social and financial objectives (Berbegal-Mirabent et al., 2021). These businesses are effective instruments that are essential to the global economic development process. As an alternative to private companies, co-corporates, and public businesses, the idea of a social enterprise as a distinctive commercial organizational model first appeared in the United Kingdom in the late 1970s. They are thought to have developed when non-profit organizations evolved and looked for more viable and long-lasting ways to serve the community (Alter, 2007). Additionally, free-market fundamentalism has been considered as the cause of ongoing deregulation, devolution, and privatization of state and local government services over the past ten years throughout the world, which created economic and social inequality, which in turn has stimulated the increase in the number of social enterprises (Bull & Crompton, 2006).

It is universally acknowledged that social enterprises can provide innovative solutions to challenging and enduring social and environmental issues (Zahra et al., 2009) but to resolve these issues, social enterprises increasingly need technical improvements (Ghazinoory et al., 2020). For every organization, whether for-profit or not-for-profit, technological innovation is the new backbone, and it is due to technology that social enterprises are able to develop cutting edge solutions to address social concerns (Del Giudice et al., 2019). Technologies like Distributed Ledger Technology, Artificial Intelligence, Internet of Things, Open-Source Software are being widely used to tackle social problems (Gagliardi et al., 2020). The article focuses on understanding the evolution of literature related to such tech social enterprises and highlighting the future scope of the study.

There are seven sections in the article. The first section is introduction. Through in-depth literature, the second section gives the study's context. The third section outlines the bibliometric analysis methodology that was used. The findings of the analysis carried out for

this study are covered in the fourth part. Future research directions are presented in the fifth section. The findings of this research investigation are presented in the sixth section. The study's managerial implications are discussed in the final section.

## **2. Literature Review**

The existing research on social enterprises has explored the typology of social enterprises, financial and non-financial performance, different business models, and human resource practices in these organizations (Gupta et al., 2020; Murphy et al., 2022) and characterized by heterogeneous investigations constituting the analyses of methodologies adopted, the empirical studies conducted for examination of the conflicting results, review papers centred around the state of technology in the social ventures. For example, Gerli et al., (2021) in their findings emphasized the ecosystem setups that can support social entrepreneurship's technical advancement, whereas Ratten (2013) investigates the role of technological innovations such as mobile online services in the growth of social e-enterprises and Rensburg et al., (2009) discuss the adoption of ICT in social outsourcing based on community business models.

Previous literature included only a few articles for the analysis, primarily due to the studies' constrained scope. Hence, there is a need for the study to offer a comprehensive grasp of the literature related to 'technology & social enterprises' from a multi-disciplinary and multi industry perspective. The current study incorporates research studies from different sections such as economics, technology, sociology and entrepreneurship. Besides, this study will be the first to compile the literature on 'technology in social enterprises' for 17 years and include a thorough analysis of the most significant themes identified in the literature.

## **3. Methodology:**

Data is extracted through the Scopus database as it has extensive journal and citation coverage, and is regarded as a trustworthy resource for systematic literature reviews (Abrizah et al., 2013; Mongeon & Paul-Hus, 2016). After a thorough discussion among the authors, it was decided that the keywords "Technolog\*" OR "Digital Innovation" AND "Social Enterpr\*" had high relevance to the goal of this study. As a result, the existing literature is retrieved using these keywords. Using the framework described below (Figure 1), 156 articles were finally selected for the purpose of this study.

The first search query was "TITLE-ABS-KEY "Technolog\*" OR "Digital Innovation" AND "Social Enterpr\*". This resulted in 344 documents starting from 1976. However, the authors

applied the “publication year” filtering strategy and kept the data from 2005 to 2022. This period is chosen since the year 2005 because the previous scientific production is not significant (Figure 1). Four documents were excluded at this stage. The dataset was further constrained to 239 papers when the subject area was reduced to "Social Sciences; Business Management and Accounting; Economics, Econometrics & Finance; Arts and Humanities." Articles and reviews are regarded as "certified knowledge" by Ramos-Rodrigue & Ruz-Navarro (2004), hence the search was limited to them in terms of inclusion criteria, yielding 165 items. Then, we limited the scope of our search to just journal papers. One document was filtered out using this method. Finally, after excluding all non-English items from our search results, 156 articles were still present. A comma-separated file (.csv) containing all the pertaining to these 156 articles was retrieved from Scopus.

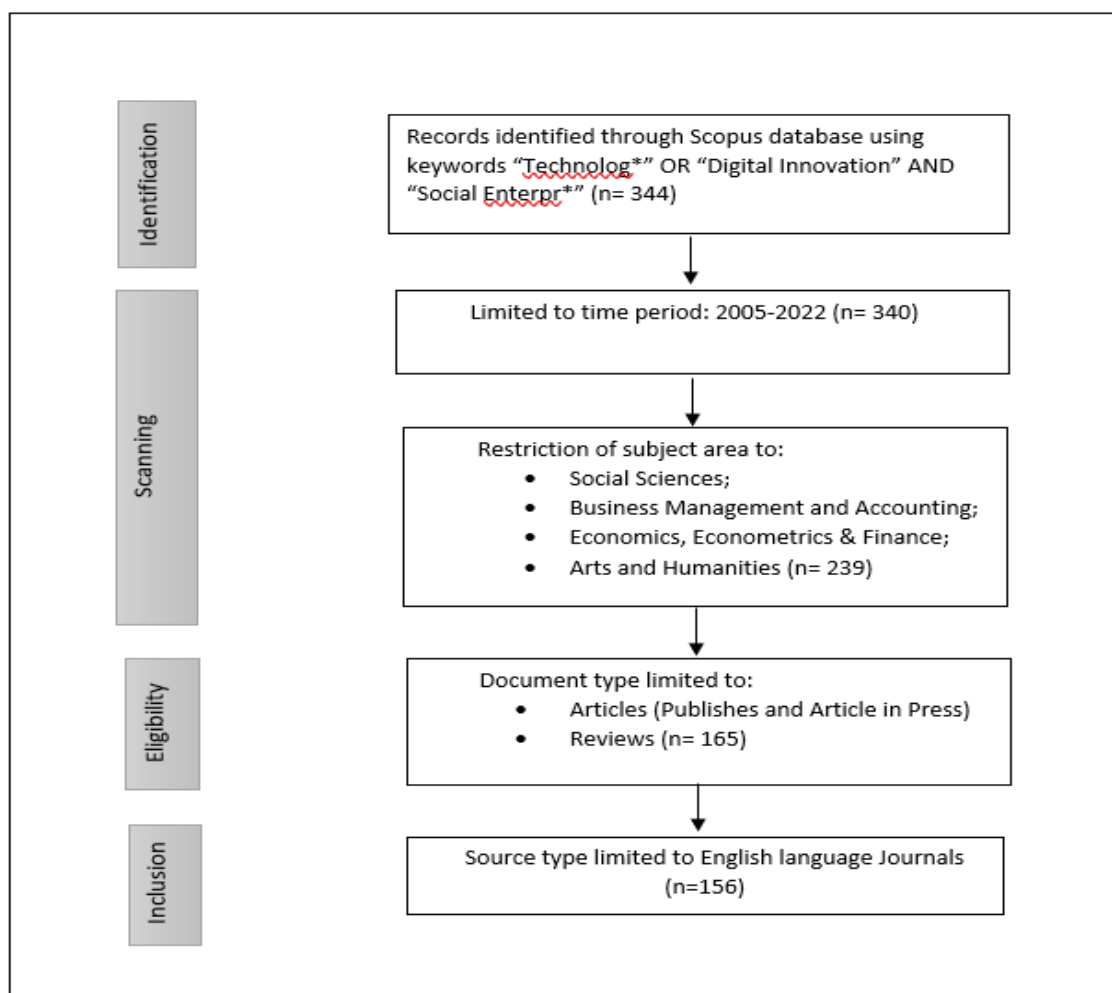


Figure1. Flowchart representing data selection process

Source(s): Author's Own



The second phase included careful evaluation of the sampled articles (156) to establish important study themes, explore the history of literature in each theme and identify the primary theoretical techniques and theories used.

**4. Results & Discussion:**

**4.1 Evolution of the scholarly research on technologically oriented social enterprises**

Figure 2 demonstrates the recent heightened interest in understanding this phenomenon. Even though the first article was written in 1976, the number of publications increased only after 2005. Particularly, the amount of research on the application of technology in social enterprises peaked in 2016, when nearly twice as many publications were published as in 2015.

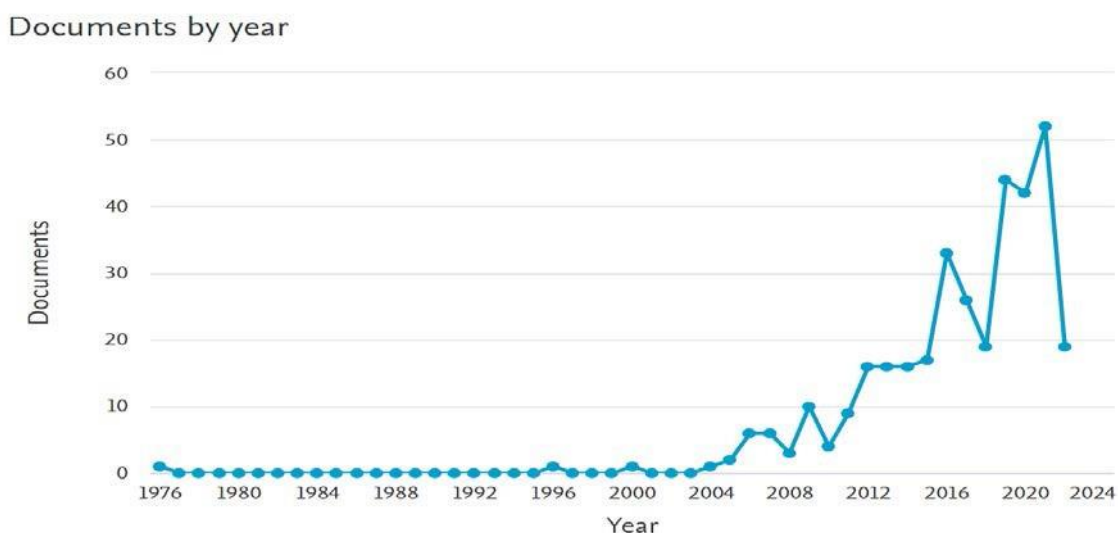


Figure 2. Publication trend

Source: Author's analysis of Scopus data

**4.2 Growth of Literature, emerging trends and likely trajectory of Social Enterprises**

Time Period	Keywords	Frequency
2005-2012	Technology for the marginalized and unemployed	9
2009-2015	Networks of community-based social enterprise	5
2012-2018	Contribution of the technology to the scalability of social enterprise	6
2015-2020	e-social enterprises	3
2018-2021	Tech social enterprise & Sustainability	10

Table 1. Growth of Literature and emerging trends  
Source: Author's analysis of Scopus Data

Table 1 demonstrates the different themes that evolved between 2005-2022 in the research field based on the keywords used in the literature. As shown in Figure 2 the initial growth of the literature in the field has been slow with few articles being produced between 2005-2012, out of which most of the articles were centered around the use of technology for the social inclusion of the marginalized and unemployed section of the society. Another important dimension of research that drew the attention of scholars during 2009-2015 is Networks of community-based social enterprises, while the period between 2012-2018 witnessed the growth of literature based on the use of ICT in social enterprises, undoubtedly information and communication technology has played important role in leapfrogging the growth of social enterprises (Javed et al., 2020; Ratten, 2013). The term 'e-social enterprises' has been the main focal point for researchers during the period between 2015-2020. In current times, sustainability is a topic of conversation in every sphere of science and the field of social enterprises is not untouched by the influence as the 'social enterprise business model' is considered as an innovative and effective way of achieving sustainable development (Goyal et al., 2021). Thus, the relationship between social enterprises and sustainable development is being explored widely by researchers since 2018 and the trend continues to flourish in the current period.

### 4.3 Core Research Themes

The intellectual contribution of the literature related to 'tech social enterprise' is presented in this section under five main research themes. This review part highlights the findings of academic research about many elements of these enterprises during the period considered for the study i.e. 2005-2022.

**4.3.1 Adoption of technology for the marginalized and unemployed,** Heeks & Arun (2010) discuss the use of digital technology and ICT for providing livelihood to poor women in Kerala through the innovative model of social outsourcing and explores the transitional labor-market programmes (TLMPs) aimed at employing unemployed youth in the hospitality industry (Kelly et al., 2015) while some studies on the theme discuss the role of digital technology in empowering the disabled (Darcy et al., 2019).

**4.3.2 Networks of community-based Social enterprises,** Articles constituting the theme, arguing that the phenomenon of social enterprise is strongly connected with the network and community-based organizational structure. The power of these community-based social enterprises could be understood with the example of Wikipedia which has offered a novel socio-technical solution that is sustainable and enables an activity system with significant positive externalities (Bonomi et al., 2017). Rensburg et al., (2009) supported the argument by coining the term ‘infopreneurs’ which is used by the authors to refer to ICT mediated network of “social entrepreneurs”.

#### **4.3.3 Role of ICT in Scaling tech-social enterprises:**

Frączkiewicz-Wronka & Wronka-Pośpiech, (2014) explained that ICT is an excellent instrument for empowering people and bringing about change because it helps staff, volunteers, and other stakeholders work more effectively, provides higher-quality services, and makes better use of limited resources by facilitating more effective working patterns hence is very helpful to social enterprise in scaling the operations and enhancing their reach to the beneficiaries. Similarly, Cordella & Paletti, (2018) concluded that ICTs make it possible for organizations that provide public services, like social enterprises or private businesses, to produce those services alongside organizations in the public sector which ultimately help these social enterprises to scale.

#### **4.3.4 e- social enterprises:**

The combination of ICT and Social enterprises has given rise to a new kind of social enterprise, known as e-social enterprise. These firms are seen as ICT-enabled e-systems that aid in the development and management of SEs. According to Javed et al. (2020), who discuss the significance of ICTs and ICT-based innovation in the creation and management of e-social enterprises and drew their conclusions from in-depth interviews with social entrepreneurs, the adoption of ICT in social entrepreneurship is urgently needed in order to generate the greatest possible social benefit.

#### **4.3.5 Tech social enterprises and Sustainability:**

Goyal et al., (2021) stated that social entrepreneurs strive to devise solutions that are within the financial means of the BoP and satisfy their needs. These solutions have always been supported by technological advancements, like the use of cloud integration, remote monitoring and IOT, which has boosted scalability and assured higher service quality at lower costs. Another study

Seyedsayamdost & Vanderwal (2020) has highlighted the use of distributed ledger technologies (DLTs) to address global concerns in the fields of development and humanitarian aid. Even, blockchain technology is increasingly used in the humanitarian and development sectors as a method of addressing global challenges (Seyedsayamdost & Vanderwal, 2020). The studies suggest that disruptive technologies are not only benefiting the for-profit corporate world but are also revolutionizing the way non-profit sectors work so that maximum benefit can be provided to the marginalized sections. underprivileged section of society.

#### **4.4 Technology and trajectory of Social enterprises**

Social enterprises have seen tremendous growth in the past few decades and one of the major attributes of this growth is, the early adoption of technology by social enterprises. To thrive, SEs largely dependent on finding innovative business models to be cost-efficient and simultaneously reach the marginalized section of society, it is needless to say that technology like ICT has played a vital role in Social Enterprises achieving scalability.

#### **5. Future recommendations:**

The use of technology for innovative business models in social enterprises is a really broad concept thus there is scope for further studies. Future studies can investigate the convergence of beneficiaries or consumers with technology throughout the value chain. Beside this, the effect of technology integration in the business model on the firm performance of the social enterprise and the barriers to the adoption of technology in social enterprises remains key questions to be explored. The results also suggest that there is a lack of comparative studies so more studies could compare the pace of technology adoption in different geographical contexts.

Though the studies have investigated the role of social entrepreneurship in achieving different sustainable development goals, but the influence of social entrepreneurship on multiple SDG goals at a given time is an underexamined area. Further, studies have discussed the role of internet and mobile technologies in abundance but have not yet explored the role of emerging technologies of Industry 4.0 such as IOT, Artificial Intelligence, and cloud integration in much detail. The theme of SBMs and sustainability has not been investigated extensively but has enormous scope to be explored in the future.

Future studies can also discuss the different policy frameworks being adopted by the government of India for the growth of innovations that are directed toward creating social impact.

## 6. Conclusion:

To conclude, this study has collated the literature on ‘Social Enterprise & Technology’ during the last 17 years. Moreover, the study uses several filters to extract the data, only articles and review papers that have been published in English and related to social science; business management and accounting; Economics, econometrics and Finance have been included and other documents like Conference papers, books and editorials have been excluded for this study. In order to identify the potential areas of future research on tech social advancements this study examined the important advancements and contributions made by the field. By doing this we were able to map the intellectual structure of the research field and divide scholarly research into five primary themes.

## 7. Managerial Implications:

Our study assists social entrepreneurs, policymakers, and organizations that support Social Enterprises by collecting and organizing scattered knowledge regarding tech SEs and directing it toward factors that can improve the SE's capacity for social innovation. A systemic perspective on tech social businesses is essential for organizations that want to assess their prospects, challenges, and strengths to create an effective innovation plan that will increase their capacity to produce a social benefit. The study highlights the importance of community-based efforts in the scalability of social enterprises. Furthermore, it is important for managers of social enterprises to: (1) provide sustainable solutions and options, mapping social needs and investigating social innovation potential while taking several angles (approaches, sponsors, or partners) are necessary, (2) understand the role of ICT in bringing social innovation, and (3) mobilize institutional partners and public policy decision-makers to spread innovation in different areas.

Finally, to foster the entrepreneurial spirit and use the lessons learnt, the SE needs to be set up to assess the numerous interactions with partners and the community as well (Ko et al., 2019).

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## **Bottom of the Pyramid (BOP) - Women on M-Health Intervention in a wrestle of equity and inclusion: A Qualitative Investigation**

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### **Abstract:**

Studies addressing the technical and social challenges of deprived women add immense benefit not only to the body of knowledge but also to the community at large. This study aims to understand the enablers and impeters for the women in the bottom of the pyramid segment to adopt technically enabled health care interventions in their pregnancy. In-depth interview technique was used as a qualitative methodology and a total of 11 expected mothers from the bottom of the pyramid are chosen to participate in the interview process. The response is coded in the requisite format to carry out content analysis, to identify the prominent themes, to explore the intention and as well as barriers to the adoption of mobile health care products using textual analysis software (NVIVO). 16 nodes of factors influencing attention to mHealth interventions were produced by the interview. The nodes generated from the interview were classified on the basis of the factors being enablers or inhibitors and differentiated as socio-cultural factors, personal factors, psychological factors and characteristics of the maternal health care system. The findings highlight how the initial phase's elements define what may be done by the health industry to improve and interactively broaden its scope as it develops and also offer perceptions into and comments on the mHealth initiatives in the healthcare industry.

## ANTECEDENTS OF NETWORKING BEHAVIOUR IN WOMEN ENTREPRENEURS

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### Abstract

In the context of entrepreneurship, the role of networking is becoming crucial for the success of the start-ups. It would be interesting to know through reviews (past studies) that how men and women behaves while networking for their start-ups. This paper aim to research the antecedents in women entrepreneurship and classify them into formal and informal networks, strong and weak links, capital (social, human), motive, and network (familiar, business).

This paper consists of three parts. I start off by getting some of the most important paper on women entrepreneurship management and antecedents of networking behaviour. I then assess the existing literature on women networking, highlighting some of the key difficulties raised by this body of work and noting the significant contributions made to date. I propose directions for future research in the third and the concluding section.

The results demonstrated that several variables, including network (both personal and impersonal), capital (social and human), motivation, formal and informal network, and strong and weak ties, appear to have an impact on the development and success of the women's start-ups.

**Keywords :** Dimensions of networking, social capital, Ties, Motivation

## **Impact of the Maternal and Child Health and Nutrition Intervention: Evidence from Sirohi District of Rajasthan**

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### **Abstract**

The Maternal and Child Health and Nutrition Intervention: Transformation Initiative 2020 was implemented in 100 tribal villages of two Blocks (Abu Road and Pindwara) of Sirohi district in Rajasthan, with the aim to reduce malnutrition (weight for age) in children upto the age of five years by 45% (from the existing level of 52.3 according to NFHS-4) over a five- year period (2016-21). The present study is an independent external end-line evaluation to assess the impact of the intervention. The evaluation has been done using a comparison of key indicators in project area with a control group chosen as Reodar Block in Sirohi district, where no intervention was implemented. 10 out of 100 project area villages were selected and five villages from control group. The study respondents comprised individual women (n = 600). Data were collected through self-designed, pre-tested schedules. In the comparison between project group and control group, we found better performance in project area for all the indicators related to maternal and child health. This study makes operational and strategic recommendations. Operational recommendations comprise measures that can be immediately adopted at the implementation level, such as PLAs, training to field level workers and promotion of locally available nutritious foods. At strategic level, the intervention could be treated as a field demonstration, and subsequently scaled up to the entire Sirohi district, under the aegis of the National Nutrition Mission. It is imperative to address women empowerment in a holistic manner by focusing on social and economic aspects. There is need for inter-sectoral convergence and sustainable public-private partnership models.

### **Keywords:**

Maternal and child health, women's health, experimental design, Rajasthan, evaluation research.

### **Acknowledgement**

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## 1. INTRODUCTION

Maternal and child health has been the keystone of public policy in India. The Reproductive, Maternal, New-born, Child and Adolescent Health (RMNCH+A) policy framework was adopted by the Ministry of Health & Family Welfare (MoHFW) in 2013 to improve the access, utilisation and outcomes across the entire spectrum of health ranging from reproductive and maternal health to infant, child and adolescent health. Adopting a lifecycle approach, the framework is based on equity, universal care, entitlement, and accountability (National Health Mission, 2022). On the other hand, the Ministry of Women & Child Development (MWCD) in 2017-18 launched the National Nutrition Mission (NNM) to monitor the progress of nutrition interventions across the country, with an overall objective to improve the nutritional status, reflected by the reduced levels of stunting, under-nutrition, anaemia and low-birth weight (MWCD, 2022). Rajasthan, a State located in North Western India is known for its rich history, traditions and vibrant colours. The State is characterised by the Thar desert in the North and the West, plains in the Centre and East, and the Aravali hills in the South and East. Though famous for tales of valour of the *Ranis* (queens) of yesteryears, today women in the State have low socio-economic status due to cultural and historic discrimination against women. Sirohi, a district located in South Western Rajasthan, home to the famous tourist destination, Mount Abu, is characterised by hilly terrain and high ST population, with remotely located populations, which pose a challenge for last-mile delivery of health services. As presented in table 1, Sirohi district is spread out over an area of 5,136 sq. km., with a population of 1,036,346, living in 470 villages grouped into five Tehsils. The district is characterised by high proportion of rural population (79.9 percent), low female literacy (39.7 percent), high SC population (19.5 percent) and high ST population (28.2 percent) (Directorate of Census Operations, Rajasthan, 2011). Sirohi is among the five districts of Rajasthan with high tribal population (>28%). The main tribes of Sirohi district are the Bhils and the Garasias (RajRAS, 2022).

**Table 1: Key Demographic Indicators for Rajasthan and Sirohi District**

S. No.	Indicator	Rajasthan	Sirohi District
1	Area (sq. km.)	3,42,239.74	5136
2	Population	6,85,48,437	10,36,346
3	Population density	200	202
4	Decadal growth rate	21.31	21.76
5	Rural population (%)	75.1	79.9
6	Sex ratio	928	940
7	Under-six sex ratio	888	897
8	Literacy (%)	66.1	55.3
9	Female literacy (%)	52.1	39.7
10	Scheduled Caste population (%)	17.8	19.5
11	Scheduled Tribe population (%)	13.5	28.2

Source: Directorate of Census Operations, Rajasthan (2011)

Due to low performance on socioeconomic indicators, Sirohi has been selected under the Aspirational Districts Programme or ADP, an innovative policy initiative launched in 2018 to transform 112 most under-developed districts of the country through an approach based on convergence, collaboration and competition (NITI Aayog, 2022). Numerous voluntary developmental organisations are working with the office of the District Collector in Sirohi under the ADP. The Centre for Micro Finance (CmF), a resource organisation based in Rajasthan, launched the Maternal and Child Health and Nutrition (MCHN) Intervention: Transformation Initiative 2020, with the aim to reduce malnutrition (weight for age) in children upto the age of five years by 45% (from the existing level of 52.3 according to NFHS-4) in 100 tribal villages of Sirohi district of Rajasthan.

Based on an experimental design comparing experimental groups and control groups, this paper is an outcome of the evaluation of the Transformation Initiative 2020. This paper is laid out as follows: The next section presents an overview of the literature followed by research methodology and results & discussion. The paper concludes with recommendations at operational and strategic level.

## 2. LITERATURE REVIEW

Experimental designs which rely on random assignment and quasi-experimental designs which lack in random assignment are very popular in evaluation research in the social sciences (Campbell and Stanley, 1963; White and Sabharwal, 2014). A number of reviews (such as by

Singh and Vellakkal, 2021) and evaluations of maternal and child health interventions have been conducted by deploying such designs (Ekirapa-Kiracho, 2017; Okanufua, 2022).

### **3. RESEARCH METHODOLOGY**

We had a choice among three comparison methods for our study, end-line versus baseline comparison, project group versus control group comparison, and comparison of project group with key indicators as reported by government/ other surveys. In our case, the baseline is available for few indicators under investigation. In several instances the indicators reported in our end-line are not comparable to the data reported by government/ other surveys. This could be due to the difference in methodology and approach adopted by different surveys. Consequently, sometimes the data seem inconclusive. The project group versus control group comparison has helped us overcome these problems in methodology and measurement.

For the end-line evaluation, we used a quasi-experimental design comprising a project group and a control group. Out of 100 villages in the project area where the Transformation Initiative was implemented, 10 villages (amounting to 10 percent sample) were randomly selected for the evaluation, comprising five each from Pindwara and Abu Road Blocks. Five villages were selected from control group (Reodar Block).

The study respondents comprised 600 women. In each selected village, a list of registered women was obtained from the Anganwadi Centre (AWC). The respondents were selected for the survey through random sampling. Around 40 women were interviewed from each village, thus, making 200 women from each of the three Blocks, and 600 women in all.

Survey instruments (schedules) were designed and translated into Hindi. At the designing stage, the schedules were shared with three experts and their feedback obtained and incorporated. An external team of eight field investigators was trained to administer the schedule. The schedules were pre-tested prior to carrying out the full-fledged survey. The schedules were administered through personal visits to the women.

### **4. RESULTS AND DISCUSSION**

#### ***4.1.1. Socioeconomic Profile of Women***

Key indicators related to the socioeconomic profile of the 600 women respondents are summarised in table

2. The data reveal that more than 80 percent of the respondents belonged to under 30 age group. 62.8 percent of the women were illiterate. Out of 223 literate women, 81.6 percent had either non-formal education or had studied till grade 8, which indicates that a sizeable number of them dropped out of

school. Overall, 32.5 percent respondents had one child upto the age of six years, 52.8 percent respondents had two children, 14.7 percent had three children or more. There was high proportion (close to 85 percent) of combined ST and SC population. 31.7 percent of the respondents had a family size of 3 to 4 members, 47.7 percent had 5 to 6 family members, and the remaining 20.6 percent had seven or more family members. Majority of the respondents (48.5 percent) were farmers, 25.5 percent unskilled labourers, 15 percent skilled labourers and remaining 11 percent were engaged in other occupations.

#### ***4.1.2. Participation in PLA Meetings***

As part of the intervention, CmF organised Participatory Learning and Action (PLA) meetings in its project areas. 167 respondents (83.5%) in Abu Road and 172 respondents (86%) in Pindwara participated in PLA meetings. Field level workers (FLWs) such as Anganwadi Workers, ASHAs and ANMs used these meetings as a platform to orient the women towards health and nutrition for pregnant and lactating women and children.

**Table 2: Key Socio-Economic Indicators of Sample**

Block		Abu Road	Pindwara	Total	Reodar	
Whether Project or Control		Project	Project	Project	Control	Overall
Age Group	Age (18-25)	83	83	166	74	240
	Age (25-30)	83	86	169	84	253
	Age (30-49)	34	31	65	42	107
Literacy	Illiterate	122	115	237	140	377
	Literate	78	85	163	60	223
Educational level	No formal schooling	21	31	52	17	69
	Grades 1-5	24	16	40	13	53
	Grade 6-8	15	24	39	21	60
	Grades 9-12	16	11	27	8	35
	Graduate	2	3	5	1	6
Number of Children Upto the Age of 6 years	1 Child	52	70	122	73	195
	2 Children	111	108	219	98	317
	3 Children	32	20	52	26	78
	4 Children	4	2	6	2	8
	5 Children	1	0	1	1	2
Social Category	ST	171	154	325	121	446
	SC	5	13	18	48	66
	OBC	15	28	43	22	65
	General	9	5	14	9	23
Family Size	3-4 members	56	61	117	73	190
	5-6 members	95	95	190	96	286
	7 or more members	49	44	93	31	124
Primary Source of Income	Agriculture	91	96	187	104	291
	Unskilled Labour	50	53	103	50	153
	Skilled Labour	29	36	65	25	90
	Other	30	15	45	21	66

Source: Field survey

### 1.1.1. Access to Health and Nutrition Services

As presented in table 3, the respondents were inquired of whether an Anganwadi Centre (AWC) was located in the village, and whether they visited it. Only 84 (14%) out of 600 respondents said that there was no AWC in their village. In Abu Road and Pindwara, all of them visited the AWC. However, in the control group, only 93.4 percent of them visited the AWC. 299 respondents (89.3%) in project area and 88 (48.6%) in control group attended AWC meetings. 315 (94%) respondents in project area and 104 (57.5%) in control group reported that the child was weighed at the AWC while 213 (63.6%) respondents in project area and 32 (17.7%) respondents in control group were aware of the child's weight. Thus, all the data related to meeting attendance and growth monitoring point out that the performance of project areas (Abu Road and Pindwara) was better compared to the control group (Reodar).

The respondents were inquired of whether the village had a Sub Centre, and whether they visited it. 229 (57.3%) respondents in project area affirmed that a Sub Centre was present in



their village, whereas the corresponding figure for the control group was 62 (31%). Out of the 229 respondents in project area, 96.1 percent had visited a Sub Centre, while 82.3 percent from the control group had done so.

**Table 3: Access to Health and Nutrition Services**

Block		Abu Road	Pindwara	Total	Reodar	
Whether Project/Control		Project	Project	Project	Control	Overall
Whether AWC in Village	Yes	152	183	335	181	516
	No	48	17	65	19	84
	Visited (if yes)	152	183	335	169	504
Whether Child Weighed at AWC	Children weighed at AWC	146	169	315	104	419
	Aware about weight	96	117	213	32	245
Participation in AWC Meeting	Yes	140	159	299	88	387
	No Response	12	24	36	93	129
Whether Sub Centre in Village	Yes	90	139	229	62	291
	No	102	57	159	114	273
	Don't Know	8	4	12	24	36
Visit to Sub Centre	Yes	89	131	220	51	271
	No	1	8	9	11	20

Source: Field Survey

Maternal Health, Child Health & Nutrition (MCHN) Day is organised at village level every Thursday, wherein pregnant and lactating women visit the AWCs and the FLWs deliver health and nutrition services to them. According to the survey, 99.3 percent of respondents in project area and 91.0 percent in control group made a visit to AWC on MCHN Day. As revealed by the data presented in table 4, project area respondents fared better as compared to control group in terms of services received on MCHN day, such as weight measurement (100 percent in project area vis-à-vis 51.6 percent in control group), height measurement (99.7 percent and 24.7 percent in each group), blood pressure measurement (99.5 percent and 31.3 percent, respectively), haemoglobin (100 percent and 46.2 percent, respectively), immunisation (100 percent and 93.4 percent), and supplementary nutrition (89.9 percent and 87.4 percent, respectively).

**Table 4: MCHN Day Visit and Services Aailed**

Block	Abu Road	Pindwara	Total	Reodar	
Project/ Control	Project	Project	Project	Control	Overall
Visit on MCHN Day	198	199	397	182	579
Weight	198	199	397	94	491
Height	197	198	395	45	440
BP	198	196	394	57	451
HB	198	198	396	84	480
Immunization	198	198	396	170	566
Supplementary Nutrition	170	186	356	159	515

Source: Field survey

### 1.1.2. Antenatal Care

During the first trimester of pregnancy, antenatal care (ANC) helps monitor the growth of the baby and health of the pregnant woman. The pregnancy is registered and Mamta card issued to the pregnant woman at the time of first ANC. The key indicators related to ANC are presented in table 5. With reference to the last completed pregnancy, we found that 99.8 percent of the total women (400) in project area and 89.5 percent of 200 respondents in control group had got their pregnancy registered. In the project area, 350 out of 399 (87.7%) women had got their pregnancy registered within three months whereas, in the control group, this figure was 36 out of 179 (20.1%). While 93.7 percent of pregnant women had undergone at least four ANC's in project area, only 6.1 percent in control group had undergone four ANC's. 54.2 percent of control group respondents had undergone two ANC's only. 99.3 percent of women in project area had received two doses of TT immunisation and the corresponding figure in control group was 90 percent. 99.5 percent of women in project area and just 83.5 percent in control group had received IFA tablets. The consumption of IFA for more than 3 months was lower in the control group, primarily because of the late ANC registration.

**Table 5: Key Indicators Related to Antenatal Care**

Block	Abu Road	Pindwara	Total	Reodar	
Project/ Control	Project	Project	Project	Control	Overall
ANC Registration	199	200	399	179	578
Early ANC	173	177	350	36	386
4 or more ANC checkups	184	190	374	11	385
TT (2 times)	112	113	225	106	331
Received IFA	200	198	398	167	565
IFA Consumption (>3 months)	177	176	353	15	368

Source: Field Survey

### 1.1.3. Delivery and Postnatal Care

Data related to delivery and postnatal care are presented in table 6. Out of all the deliveries conducted in respect of the project area women, 394 out of 400 (98.5%) were conducted in institutions. The corresponding figure for control group was 169 out of 200 (84.5%). In the project area, only 11.0 percent of newborns had birthweight below 2.5 kg. On the other hand, in the control group, the corresponding figure was 30.2 percent. 87.8 percent of the women in the project area and 40 percent of them in the control group initiated breastfeeding within 24 hours of birth. A glance at the data reveals that 91.1 percent respondents in the project group and 42.3 percent in the control group had exclusively breastfed for six months. The data related to immunisation of the youngest child reveal that in project group, 99.3 percent children had been vaccinated while in case of control group, the corresponding figure was 89.5 percent.

**Table 6: Key Indicators Related to Delivery and Postnatal Care**

Block	Abu Road	Pindwara	Total	Reodar	
Project/ Control	Project	Project	Project	Control	Overall
Institutional Delivery	195	199	394	169	563
Birth Weight Below 2.5 Kg	23	19	42	49	91
Early Initiation of Breastfeeding	170	181	351	80	431
Exclusive Breastfeeding	170	185	355	77	432
Immunisation of Child	198	199	397	179	576

Source: Field Survey

## 5. CONCLUSION

Through a comparison of key indicators between control group and project area, this study concludes that in project areas, rural women got the opportunity to participate in PLAs through which they were motivated by FLWs to participate in MCHN Day, visit the AWCs and Sub Centres. The study found greater utilisation of MCHN services among the project area women. The study found that the women in the project area had fared better than that in the control group in terms of indicators such as participation in MCHN day, visit to AWC, weighing of child at AWC, ANC visits, IFA consumption, institutional deliveries, birth-weight of newborn, breastfeeding practices and immunisation of children. To conclude, the end-line evaluation has generated evidence on better performance of key indicators in project area as compared to control group.

## 6. POLICY IMPLICATIONS

On the basis of the findings, this study makes certain recommendations, which are brought into focus in this section, beginning at the operational level (implementation level) and moving towards strategic (policy) level. Though the findings are from Sirohi district, they are applicable for other districts with similar demography, socioeconomic profile, geography and agro-climatic characteristics. AWCs have to

trigger health and nutrition-seeking behaviour of women so as to increase the utilisation of AWC services at the village level. It is here the role of civil society organisations like CmF becomes pertinent, which through its existing PLA can play a vital role in catalysing and mobilising the communities at the grassroots level. Through long-term engagement at grassroots level, PLAs have the potential to change the community norms and generate demand for health and nutrition services by the rural women. So far, the PLAs have succeeded in enhancing participation of women as well as FLWs, the positive outcomes of which are reflected in the achievement of key indicators by project area women. So, the PLAs need to continue with more reinforcements and intensity. Inputs could be obtained from faculty and researchers at community science departments and extension departments of agricultural universities or Krishi Vigyan Kendras in order to promote the use of locally available resources for complementary feeding, inclusion of low-cost nutritious recipes in daily diet, inclusion of protective foods like local vegetables and fruits in daily diet (to improve diet quality), establishment of nutrition gardens in backyards/ farms, *etc.*

The present intervention with focus on two Blocks could be seen as a first step towards building a sustained engagement of the public health system with the communities. The intervention in the two Blocks could be intensified to cover the entire range of services under the RMNCH+A and NNM. As of now, adolescents and unmarried women aged 15+ are not included in the intervention under study. However, the FLWs could direct the social and behaviour change communication change components related to health and nutrition towards this group because they are a captive audience and likely to adopt these changes as they step into married life and motherhood in the near future. Just as the RMNCH+A strategy takes a lifecycle approach and recognises adolescence as a critical stage linking childhood and motherhood, future interventions need to adopt a similar approach. They could take into account holistic and comprehensive health care and nutrition for newborn, children, adolescents and women in the reproductive age group. However, the women should not remain like passive recipients of the system and only be expected to receive what is doled out to them. In order to build sustainability into the model, women need to be empowered socially as well as economically so that they become active participants. Economic empowerment can come through interventions promoting livelihoods and availability of credit, such as organising rural women into self-help groups.

There is a strong need to adopt a holistic approach based on developing the ecosystem around the client. This can come through strong inter-sectoral convergence and partnership, as envisaged in the various policy initiatives. There is need to establish and strengthen

coordination mechanisms among different departments/ agencies at district and sub-district level, such as the district administration, women and child development, ICDS, health and family welfare, WASH, rural development, agriculture, school education, and Panchayati Raj Institutions. The development goals of a society cannot be met alone either by government or civil society or CSR initiatives of corporates. It is imperative to develop sustainable public-private partnership models that can leverage the strengths of all the partners, government, corporates and civil society organisations. There lies immense opportunity for NGOs to tap into the corporate social responsibility funds available with corporates.

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## **Gandhi in Hispanic-America *circa* 1920-2020**

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### **Abstract:**

This study examines the reception of Gandhian thoughts and practices in Hispanic- America over the last one hundred years between circa 1920 and 2020. It focuses on how individuals and groups have adapted and adopted Gandhian thought in Spain, Mexico, Argentina, and the United States of America. The rationale of this study is to plug a research gap within the field of Gandhian legacy studies. Most studies on the influence of Gandhi have ignored his impact in the non-English speaking world, especially, Hispanic-America. Therefore, this study examines the entry of Gandhi into the Hispanic world in the 1930s, the nature and consequences of the Mahatma's encounter with Giuseppe Lanza del Vasto, the influence of Gandhi upon the workers' movement led by Cesar Chavez, the writings of Ivan Illich, as well as the anarchist thought of the neo-Zapatistas in Mexico.

**Keywords:** Active Non-violence, Catalan, Cesar Chavez, Gandhi, Hispanic America, Ivan Illich, Lanza del Vasto, Zapatista

### **1. Introduction**

The aim of this research project is to map the reception of Gandhian thoughts and practices in Hispanic-America. Mapping the Hispanic-American reception of Gandhi is part of the larger purpose of understanding and examining Gandhi's global legacy. Gandhi's global legacy is an important area of research within the knowledge domains of Intellectual History, Peace Studies, Philosophy, and Political Science (Hardiman 2011). For mapping Gandhi's global legacy, it is necessary to study people's perceptions of Gandhi and their adoption of his ideas and practices in Hispanic-America. The Hispanic world is a vast geo-cultural region with more than twenty countries across Asia, Europe, Africa, and the Americas.

## 2. Literature Review

There are very few studies on the impact of Gandhi in Hispanic-America. The most prominent study is an online article by Enrique Gallud Jardiel. This article is however confined to Gandhi's reception in Spain from the 1930s until the 1980s. Consequently, our project started with a revision of bio-bibliographical studies. The point of departure was Ananda Pandiri's *Comprehensive Annotated Bibliography on Mahatma Gandhi*. This *Comprehensive Bibliography* listed thirty one other Gandhian bibliographies (Pandiri 1995, I:311-317). Of those thirty one bibliographies, only one mentioned the Gandhiana works in Spanish (Sharma 1955). However, Sharma's bibliography was dated (1<sup>st</sup> edition 1955, 2<sup>nd</sup> edition 1968 with a 1979 reprint). Therefore, an updated bibliography of Gandhiana (material on Gandhi and translations of the works by Gandhi) became necessary. So, the first phase of our project was dedicated to the compilation of a *Hispanic Gandhiana Bibliography*. Further details of this bibliography is elaborated in the section on methodology.

## 3. The Conceptual Model

The conceptual model for this project titled 'Gandhi in Hispanic-America' is 'reception studies'. In reception studies, researchers examine the impact of select texts and discourses that originated within a particular culture upon another culture. Such studies may generate novel perspectives about both cultures - the originator culture as well as the receptor culture. The receptor culture, or the receiving culture, could transform itself into an originator culture too. It may thus function both as an originator as well as a receptor culture. The receptor culture often tends to adapt and adopt texts and discourses, and, in the process may exercise its own agency. Rarely, do cultures inertly receive texts and discourses without being an active agent. At times, the receptor, or receiving culture, enters into a dialogical relationship with the originator as well as new receptors. Thus, a network of cultures emerge within which new elements are generated and circulated, and thus, the process of re-generation and re-circulation continues. This model could yield interesting insights, especially, if the period of study is sufficiently large, for example, ranging from a few decades to a few centuries. The present project however has a smaller time frame of a hundred years *circa* 1920-2020.

## 4. Methodology



This project titled ‘Gandhi in Hispanic-America *circa* 1920-2020’ is located in the interdisciplinary domain of Area Studies. Within Area Studies, this project is restricted to Gandhiana in Castilian (Español or Spanish). The project began with the compilation of a *Hispanic Gandhiana Bibliography* (2020-2021), which was funded by the Gandhi Research Foundation, Jalgaon, Maharashtra. But, the *Hispanic Gandhiana Bibliography* is more than a bibliography on Mahatma Gandhi. Besides Spanish language books, there are references to archival material; articles in journals, magazines, and newspapers; audio recordings; braille texts; comics; manuscripts; music; music for movies; musical notations; newspaper clippings; posters; songs; university dissertations/theses; and videos. The list was compiled from the collections available in leading libraries in Europe and the Americas - Biblioteca Nacional de España, Biblioteca Nacional de Argentina, Biblioteca Nacional de México, Biblioteca Daniel Cosío Villegas of El Colegio de México, the Dirección General de Bibliotecas of la Universidad Nacional Autónoma de México, and the Library of Congress, Washington D.C.

## 5. Data Analysis

The second phase of our project was dedicated to identifying and analysing the data that emerged from the *Hispanic Gandhiana Bibliography*. Three axes emerged. The first two axes were predominantly diachronic and the third one was substantially synchronic.

**Axis 1** - The publication of material related to Gandhi in Spanish language newspapers and magazines (or hemerographical Gandhiana) waxed and waned as it corresponded with important events in Gandhi’s life or in the history of India (like, for example, the Salt March of 1930; Gandhi’s assassination; the partition of India; as well as posthumous events such as the commemoration of Gandhi’s birth centenary).

**Axis 2** - The crests and troughs in the publication trajectory of Hispanic Gandhiana similarly corresponded with milestone events or short-term processes in the history of Hispanic-America. Some of those included the Republican Regime in Pre-Civil War Spain; Franco’s Regime (1937-1977); the interruption of global trade caused by World War II; the Cuban Revolution (1959) and its declining influence since the 1980s; the return of electoral democracy in post-Franquista Spain; Latin American Orientalism generated by a popular interest in the religious and esoteric literature as well as the spiritual traditions of India; Catholic Liberation Theology; the Neo-Zapatista Rebellion in Chiapas, Mexico since 1994; and the Catalan Statute of Autonomy, 2005.

**Axis 3** - The third axis that determined Gandhi's impact in Hispanic-America coincided with the labours as well as the publications of the writings of notable individuals like Giuseppe Lanza del Vasto, Cesar Chavez, Ivan Illich, Adolfo Perez Esquivel, Javier Sicilia, and Pietro Ameglio.

## **6. Results & Discussion**

1. The earliest Hispanic engagement with Gandhi could be dated back to 1931, when his writings were translated into Spanish in Madrid and Barcelona.
2. The flow of books from Spain to Hispanic America was interrupted by the Spanish Civil War, the Franco Regime, and World War II. Notwithstanding the interruption, the Latin American quest for Gandhi remained unabated and this resulted in new publications emerging especially from Argentina and Mexico, amongst other Latin American countries. If the earlier route of arrival of Gandhiana was through Spain, the new route was through other countries in Europe and via the United States of America, when not directly from India.
3. Gandhi's disciple Giuseppe Lanza del Vasto founded ashram-like Christian communities in Europe and America known as Communities of the Ark.
4. Che Guevara was fascinated by Gandhi, whom he encountered in Nehru's *Discovery of India*.
5. Mauricio Achar, the founder of the largest chain of books stores in Mexico known as Librerias Gandhi, was a believer in the power of nonviolence and named his bookstores after the Mahatma. Over the last four decades, these bookstores have become a prominent feature of Mexico's intellectual and cultural life.
6. Influenced by Gandhi and Lanza, Adolfo Perez Esquivel, the founder of the organisation Servicio Paz y Justicia practised active nonviolent civil resistance against

military dictatorships in Argentina. For his work, he was awarded the Nobel Peace Prize in 1980.

7. Cesar Chavez, a labour leader active during the 1960s and the 1970s in the US, was inspired by Gandhi in his movement for ensuring workers' rights.
8. Gandhi's interpretation of swaraj was echoed by the Catalan struggle for autonomy and the Zapatistas in Chiapas, who named one of their municipalities as Moises Gandhi.

## **7. Conclusions**

Gandhi is an example of the globalisation of Indian thought. The presence of Gandhi in Hispanic-America over the past one hundred years is but one part of that process. Diverse sections of Hispanic-American society echoed his thoughts in their practices. Those social sections included practising Christians, Left-wing armed rebels, working class movements, civil society organisations, and unaffiliated individuals. Almost all of them were working without any direct assistance from the organs of the State. This suggests that people-to-people contact across cultures, religions, ideologies, countries, and civilizations have been extremely effective. This observation may be expected as it is in accordance with Gandhi's own thoughts and practices, which were usually non-statist when these were not anti-statist. However, Gandhi has at times been instrumentalized by organs of the State by employing him as an element of 'soft power'. In 2016, the Indian head of State unveiled a Gandhi statue in Ghana. The statue had to be removed two years later due to the call-out or cancel culture. Other statues of Gandhi elsewhere too have been removed or vandalised. Such acts are perhaps a reminder to States and states(wo)men that circumspection may be wiser than harnessing Gandhi into the armoury of 'soft power'.

## **8. Managerial Implications**

The managerial implication that emerges from this study is the efficacy of being 'servicial' as one would say in Spanish, which if translated into English may be comparable to Richard Greenleaf's idea of servant leadership (Greenleaf 'What is Servant Leadership?'). 'Servicial' in Spanish means to be caring, to serve, and when necessary, to lead from behind like

a shepherd. Nowhere is it more evident than in the neo-Zapatista governance model. In Zapatista territories, the people command and the government obeys.

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## Exploring the Relationship Between “Yogah Karmasu Kaushalam” and “Satyam, Nityam, Purnam”

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### Abstract

The IIM Kozhikode’s vision is **Globalizing Indian Thought** by inculcating Authenticity (*Satyam*), Sustainability (*Nityam*) and Fulfillment (*Purnam*). The motto of the Institute is *Yogah Karmasu Kaushalam* that is part of the Verse 50 in Chapter 2 of Srimad Bhagvad Gita. The general understanding of its meaning is “excellence in action or a skillful approach to performing action has been termed as Yoga:”. **Satyam** means Truth (authenticity), **Nityam** means eternal (Sustainability), and **Purnam** means fullness (completeness or wholeness). This paper explores the inter-relationship among these terms from a spiritual perspective based on the Godly wisdom from the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya. Accordingly, the world drama in which we are all actors, is an inter-play between three eternal entities namely the God, the souls and the material world – all of them exists for ever. The God is eternal and is always complete or full in spiritual knowledge, powers and virtues. However, the souls go through a cycle of birth-death-birth, taking and leaving the physical body made up of the five elements of the material world. The souls also go through a longer cycle (Kalpa) of completeness-incompleteness-completeness of inculcation of spiritual knowledge, powers and virtues. A soul being in its Swadharma means being the embodiment of the virtues such as purity, peace, happiness, love, knowledge, powers and bliss. At the end of the Kalpa (5000 years), the God’s incarnation and practice of Rajayoga lifestyle enable the soul to completely regain its Swadharma through Rajayoga. This Yoga brings back the completeness of the soul leading to excellence in its action. The state of the material world also follows the cyclic change of completeness-incompleteness-completeness of the soul. **Satyam, Nityam, Purnam** is always applicable to God and not for souls. Though the objective of every soul is to be **Satyam, Nityam, and Purnam**, this can only be achieved by performing elevated actions based on eternal and authentic wisdom for utmost half a Kalpa. Therefore, the vision of the soul namely **Satyam, Nityam, and Purnam** be achieved through *Yogah Karmasu Kaushalam*.

**Keywords:** *Yoga, Karma, Satyam, Nityam, Purnam*

### 1. Introduction

The Indian Institute of Management Kozhikode's vision is Globalizing **Indian Thought** by inculcating Authenticity (Satyam), Sustainability (Nityam) and Fulfillment (Purnam). The motto of the Institute is **Yogah Karmasu Kaushalam**. This paper explores the relationship between “**Yogah Karmasu Kaushalam**”, and “**Satyam, Nityam, Purnam**”. This paper explores the relationship these phrases from a spiritual perspective based on the Godly wisdom from the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya. Accordingly, the world drama in which we are all actors, is an inter-play between three eternal entities namely the God, the soul and the material world – all of them exists for ever (BG: 2.12)<sup>34</sup>.

<sup>34</sup><https://www.holy-bhagavad-gita.org/chapter/2/verse/12>

“न ह्येवाहं जातु नासं न ह्यं न मे जनाधिपः ।  
न चैव न भविष्यामः सवद्यमतः परम्” ||BG: 2- 12||

This means that “Never was there a time when I did not exist, nor you, nor all these kings; nor in the future shall any of us cease to be”.

### 1.1 Yogah Karmasu Kaushalam

The verse 2-50 explains Yoga as<sup>35</sup>

“बुद्धयुद्धो जहातीह उभे सुकृतदुष्टे ।  
तदायोगाय युद्धं योगः कमसु कौशलम्” ||BG: 2- 50||

Meaning “One who is equipped with equanimity in this life discards both merit and sin. Therefore, remain established in yoga; yoga results in perfect action”

A definition of yoga is “yoga is equanimity of mind during the performance of action”. If the equanimity of mind is always maintained, one will be able to perform perfect actions with total attention and dexterity. Therefore, the results will always be beneficial. A *Karma yogi* will be performing the actions as per the *swadharma*. The word ‘*Kaushalam*’ also means performing actions with devotion and detachment<sup>36</sup>. The detached attitude not only enhances the value of action but also improves the concentration and skill of the person carrying out the action. In order to perform the actions with devotion and detachment one has to develop the attitude of a trustee, i.e., and instrument in the hands of the Supreme.

It is clear that the Karma (Action) is performed by the Soul using the body as an instrument. The body is made up of the 5 basic elements of the matter namely earth, water, fire, wind, and space with the subtlest being the space and the grossest being the earth<sup>37</sup>. Yoga (derived from the Sanskrit word *Yug* meaning union) means union of the Soul with the Supreme Immortal Power (God).<sup>38</sup> Therefore, there is an inter-play between three eternal entities namely the God,

the soul and the matter (five elements of the material world).

## 1.2 Satyam, Nityam, Purnam

The three important keywords of Indian thought relevant in the globalized world are *Satyam*, *Nityam* and *Purnam* - *Satyam* meaning relentless pursuit for the truth/reality, *Nityam* means sustainability and continuity and *Purnam* means wholeness<sup>39,40</sup>. *Satyameva Jayate* was adopted as the national motto of India on 26 January 1950<sup>41</sup>. This means that 'Truth alone triumphs', and can be found in *Mundaka Upanishad*. The references to Satyam<sup>42</sup> and Nityam<sup>43</sup> with the contextual meaning as appeared in Bhagavad Gita is as follows:

<sup>35</sup> <https://www.holy-bhagavad-gita.org/chapter/2/verse/50>

<sup>36</sup> <https://www.speakingtree.in/blog/karmasu-kaushalam-excellence-at-work>

<sup>37</sup> <https://www.thehindu.com/society/history-and-culture/prana-and-the-five-elements/article24218715.ece>

<sup>38</sup> <https://www.speakingtree.in/blog/yoga-is-the-union-of-the-soul-with-the-supreme>

<sup>39</sup>

[https://www.researchgate.net/publication/282839075\\_Globalizing\\_Indian\\_Thought\\_Is\\_There\\_an\\_Indian\\_Way\\_of\\_Management](https://www.researchgate.net/publication/282839075_Globalizing_Indian_Thought_Is_There_an_Indian_Way_of_Management)

<sup>40</sup> <https://www.newindianexpress.com/opinions/2014/mar/24/2047-globalising-indian-thought-589876.html>

<sup>41</sup> [https://en.wikipedia.org/wiki/Satyameva\\_Jayate](https://en.wikipedia.org/wiki/Satyameva_Jayate)

<sup>42</sup> <https://www.holy-bhagavad-gita.org/w/satyam>

<sup>43</sup> <https://www.holy-bhagavad-gita.org/w/nityam>

**Satyam:** BG: 10.4-5 (truthfulness), 16.1-3 (truthfulness), 16.7 (truthfulness), 17.15 (truthful), 18.65 (truly)

**Nityam:** BG: 2.21 (eternal), 2.26 (always), 2.30 (always), 3.15 (eternally), 3.31 (constantly), 9.6 (always), 10.9 (continuously), 11.52 (eternally), 11.53 (eternally), 13.8-12 (constant), 18.51-53 (always).

The next section explains the Godly wisdom on Rajayoga from the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya.

## 2. The Godly Wisdom and the Rajayoga Lifestyle

The three major powers in the world that interact and leads to various activities are the powers of (i) the Soul, (ii) the Supreme Soul and (iii) the Five elements of the Nature. The change in the stage of Soul from a perfect stage to an imperfect stage (*Satopradhan* to *Thamopradhan* stage OR virtuous to vicious stage) is depicted in the knowledge of the Cycle of Time. The harmony among the Souls and between the Soul and the External Nature is dependent on the internal stage or nature of the Soul in the Cycle of Time. The Cyclic variation of the stage of the Soul and the intervention of the Supreme Souls is also depicted in the Knowledge of the Cycle of Time.

As per the Godly wisdom, the soul is a conscient energy in the form of a tiny divine light located in the forehead. The soul is different from its instrument – the body with its organs, and is the master of the body. The soul is eternal and is originally complete and perfect with virtues such as knowledge, *purity, love, peace, happiness, bliss, and power*. While being in the body, the soul always desire to experience and sustain the above eternal virtues. In the *soul consciousness*, the soul is aware its nature and the virtues emerge naturally. Soul realization can be achieved through the Rajayoga meditation practice. The God or Supreme Soul is the supreme among all souls, is also a subtle, infinitesimal point of light but does not come into the cycle of birth and death like a soul. All religions have images, idols, or memorials bearing some name representing His form of light. He is worshipped in different names such as ‘Shiva’ meaning the benefactor and other expressive names like Allah, Jehovah, and The Father etc. His original abode is *Paramdham* or *Brahmlok* or Incorporeal world is also the original abode of all souls. It is an infinite expanse of golden-red light beyond this physical world. The souls can establish connection with Him through thoughts during Rajayoga meditation

The Cycle Time is also known as the World Drama Wheel or Wheel of Time, or *Kalachakra* and it has connection with *Swastika*<sup>44</sup> (Figure 1). The Cycle Time of duration 5000 years (*Kalpa*) has four major epochs namely the Golden-Age, Silver Age, Copper-Age, and Iron Age each with a duration of 1250 years. The cycle repeats itself after every five thousand years. The



souls are actors on the drama stage and repeats the part in every cycle. At the beginning of the cycle, the *Sanatan Dharma* was present in the Golden age where the souls were complete and perfect and possessed divine qualities and nature and they enjoyed complete purity (16 degrees, *Satopradhan*), peace and prosperity. During the second epoch, the silver age, even though the souls were enjoying a high degree of purity, peace, and prosperity but a little less (14 degrees, *Sato*) compared to the Golden Age. This is indicated by the arm going down in the silver age. After having experienced beatitude and fruition for many births, the souls get influenced by the vices and becomes unrighteous in the Copper age. This is indicated by the arm going left

44 <https://en.wikipedia.org/wiki/Swastika>

in the Copper age as left hand symbolizes impure and un-auspicious. From one *Sanatan Dharma* prevailed during Golden and Silver ages, multiple *Dharma* emerges during copper age and humanity is divided on various religions, disputes emerged, and the vices started ruling the soul leading to unrighteous actions making the souls increasingly impure leading to more sorrow (8 degrees, *Rajo*). This process continued and the souls became more impure in the Iron age. This is indicated by the arm going up in the Iron age with increased conflicts, clashes, and calamities. (0 degrees, *Tamopradhan*). At present, we are going through a crucial phase in the history, marking the confluence of the end of Iron Age and the beginning of the next Golden Age. It is called the Confluence Age (epoch) when the God re-incarnates in this world to annihilate *adharma* and re-establish the *Dharma* (*Sanatan Dharma*) or righteousness. It has been mentioned in Srimad Bhagavad Gita (Verses 4.7-8)<sup>45</sup>.

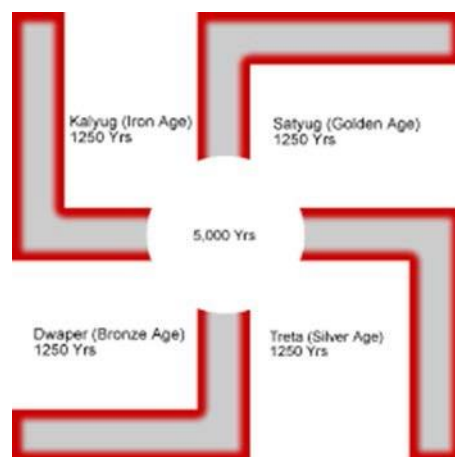


Figure 1: The World Drama Wheel (The Cycle of Time)

“यदा यदा िह धमः ॥ १ ॥ णिनभःवित भारत ।  
अःुःानमधमः तदाःानं सृजाःहम् ॥BG: 4- 7॥

प॒रत्रा॑णाय साधू॒नां वि॑नाशाय च दु॒ष्ट॑ताम् ।  
ध॒मसं॑हापनाथा॒य स॑वामि यु॒गे यु॒गे”||BG: 4- 8||

**“BG 4.7-8:** *Whenever there is a decline in righteousness and an increase in unrighteousness, O Arjun, at that time I manifest myself on earth. To protect the righteous, to annihilate the wicked, and to re-establish the principles of dharma I appear on this earth, age after age.*”<sup>46</sup>

The God creates the Golden Age or new vice less order by imparting the Godly Wisdom. The act of ‘creation’ does not mean creating anything new, but it means transformation or re-establishment of the righteousness or *Sanatan Dharma* in the already existing creation. The God Shiva, the Supreme Father of all souls, is indeed re-establishing it now and through this, the world will be freed from miseries. And the paradise, which is full of purity, peace, and happiness, will be re-established again. The loveful remembrance of God in a soul conscious state is called Rajayoga. Through this process, the soul gets purified and develops its original virtues such as *knowledge, purity, love, peace, happiness, bliss, and power. Once the soul gets*

45 <https://www.holy-bhagavad-gita.org/>

46 <https://www.holy-bhagavad-gita.org/>

*purified, the nature (5 elements) also gets purified.* The positive transformation of soul gets transmitted to body, relationship, society, and the environment. The soul enjoys harmonious relationship with itself, other souls, the environment, and the God. This way the entire universe gets back to its original state. The impact of Rajayoga on mental, physical, social, and environmental wellbeing is an active area of research. Table 1 lists selected research work based on the Rajayoga. As evident from the research outcomes reported, the Rajayoga lifestyle based on the Godly wisdom is quite effective in self-management including self-control, control of vices, self-transformation, and improving the physical health and relationships. This also indicates the incarnation of the Supreme in this world for the transformation of the world, as given in Gita verses 4.7-8.

Author	Impact of Rajayoga Meditation
<b>Impact on Mental Health</b>	
Meenakshi et al. (2021)	Well-being
Rupal et al. (2018)	Physical and mental illnesses and well-being
Sareen (2012)	Self-control
<b>Impact on Physical Health</b>	
Ghar et al. (2016)	Cardiorespiratory parameters
Kiran et al. (2014)	Chronic Tension Headache
<b>Social Impact</b>	
Pratibha et al. (2015)	Spirituality
<b>Impact on Agriculture</b>	
Jensen (2021)	Sustainable Yogic Agriculture as a Mind–Matter Farming Approach
Pandey et al. (2015)	Yogic Farming: An Ancient Technique for Enhancing Crop Performance

Table 1: Summary of selected research on various impact of impact of Rajayoga based on Godly Wisdom

### 3. Relationship Between “Yogah Karmasu Kaushalam” and “Satyam, Nityam, Purnam”

#### 3.1 Satyam, Nityam, Purnam

Looking from the perspective of the Godly wisdom, the following meaning of Satyam, Nityam, Purnam emerges – the three entities namely the Soul, the God, and the matter are true, eternal and exists for ever. However, only God maintains its true characteristics or nature, perfection or the blissful nature eternally, i.e., for ever. The Soul undergoes a change in its characteristics or nature (Swadharma) during the cycle of time from Perfection (completeness) to imperfection (incompleteness) and at the end of Kalpa, it regains the completeness through Rajayoga. The matter follows the same pattern of change as that of the soul. It is also visible in the connotation “Satyam, Shivam, Sundaram”. It is said that the God is truth meaning that He is always authentic or truthful and complete. However, the Soul goes through various stages like *Sattva*, *rajas* and *tamas* and so is the matter.

In the Brihadaranyaka Upanishad<sup>47</sup>, it is said that “*purnam adah, purnam idam purnat purnam udachyate; purnasya purnam adaya purnam evavasisyate*” (Brihad. 5.1.1). The Upanishad says, “*Purnam adah*: that origin of all things is full (God); *purnam idam*: this entire creation  
<sup>47</sup> [https://www.swami-krishnananda.org/upanishad/upan\\_12.html#:~:text=The%20Upanishad%20says%2C%20%E2%80%9CPurnam%20adah,Full%3B%20purnam%20evavasisyate%3A%20the%20Full](https://www.swami-krishnananda.org/upanishad/upan_12.html#:~:text=The%20Upanishad%20says%2C%20%E2%80%9CPurnam%20adah,Full%3B%20purnam%20evavasisyate%3A%20the%20Full)

that has come from that origin of all things is also full (Soul and matter); *purnat purnam udachyate*: from that Full this Full has come (By having yoga with the God, the Soul becomes full); *purnasya purnam adaya*: having taken away this Full from that Full; *purnam evavasisyate*: The Full still remains unaffected (the God is always full)”. That is why there are praises of God such as ocean of knowledge, love, peace, ...

The God does not come into the cycle of birth and death like a soul. Therefore, the connotation “Satyam, Nityam, Purnam” is always applicable for the God who is eternal, ever pure, always perfect .. and becomes a reference for all souls to become like.

### 3.2 Yogah Karmasu Kaushalam

Though the soul is eternal and is originally complete and perfect with virtues such as knowledge, *purity, love, peace, happiness, bliss, and power*, it comes to the cycle of birth-death-birth. According to the cycle of time, the souls go through the cycle of completeness-incompleteness-completeness of inculcation of spiritual knowledge, powers and virtues. Therefore the connotation “Satyam, Nityam, Purnam” is not always applicable for the soul. It is applicable only for two *Yugas* of the cycle of time (Golden & Silver). However, for the remaining Two *Yugas* (*Copper & Iron*), being in the body, the soul always desires to experience and sustain the above eternal virtues. It is only during the confluence Yuga (Confluence of Iron and Golden), by practising RajaYoga, based on Godly wisdom, the soul will be able to regain its original virtues and become complete and perfect – *Satyam, Nityam, Purnam* for the next half a Kalpa. Therefore Yogah Karmasu Kausalam is a means by which the soul achieves the status Satyam, Nityam, Purnam for half a Kalpa.

## 4. Conclusion

The relationship between the connotations “**Yogah Karmasu Kaushalam**” and “**Satyam, Nityam, Purnam**” is explored in this paper from a spiritual perspective based on the Godly wisdom from the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya. Accordingly, the world drama in which we are all actors, is an inter-play between three eternal entities namely the God, the soul and the material world – all of them exist for ever. The God is eternal and is always complete or full in spiritual knowledge, powers and virtues. However, the souls go

through a cycle of birth-death-birth, taking and leaving the physical body made up of the five elements of the material world. The souls also go through a longer cycle (Kalpa) of completeness-incompleteness-completeness of spiritual knowledge, powers and virtues acquiring Swadharma means inculcating the virtues such as purity, peace, happiness, love, knowledge, powers and bliss. At the end of the Kalpa (5000 years), the God's incarnation and practice of Rajayoga lifestyle enable the soul to completely regain its Swadharma through Rajayoga. This Yoga brings back the completeness of the soul leading to excellence in its action. The state of the material world also follows the cyclic change of completeness-incompleteness-completeness of the soul. **Satyam, Nityam, Purnam** is always applicable to God and not for souls. Though the objective of every soul is to be **Satyam, Nityam, and Purnam**, this can only be achieved by performing elevated actions based on eternal and authentic wisdom for utmost half a Kalpa. Therefore, the vision of the soul namely **Satyam, Nityam, and Purnam** be achieved through *Yogah Karmasu Kaushalam*.

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## **Reskilling workers in the informal labour market for better livelihood opportunities in India**

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### **Introduction**

The majority of the workforce in India belongs to the informal category, that is, they do not have formal work contracts and are often not covered by employment laws. Importantly these workers have very low levels of formal qualifications even though many of them have the skills for the tasks they are asked to perform. These skills are often acquired on the job or informally and infrequently formally recognised or certified.

This paper discusses the skill development initiatives for the informal workers in India and also describes a few case studies to illustrate some practices for the skills development of informal workers which incorporate social inclusion principles in their implementation.

### **The informal sector in India**

More than 90 percent of the labour force in India can be termed as informal (Economic Survey, 2018-19). Informal labour is engaged in both formal as well as informal sectors of the economy. There has been growing use of informal labour in the formal sector over the last three decades. This happened through increasing contractualization and outsourcing. The formal sector replaced regular workers in large numbers with contract and casual workers over the last three decades. Such growing use of contract and casual labour happened because the cost of contract labour is significantly lower compared to that of regular workers. In 2013-14, the wage gap between contract and regular workers in the organised manufacturing sector was 25 percent. This implies that producers can reduce the cost of labour significantly through the growing use of contract and casual workers. This is being widely practised by employers in both manufacturing and service sectors and as a fallout, there has been a rise in the proportion of contract workers from 12 percent in 1990-91 to 33.6 percent in 2013-14 (Jayaram, 2019).

In 2017-18, the size of the labour force in India was 484 million. Barely 34 million are employed in the organized sector and have access to institutional social security like provident funds and employees' state insurance. Rest are categorized as informal workers and do not have access to any form of institutional social security (Economic Survey, 2018-19). This

segment is about 93 percent of the labour force. Out of these 450 million informal workers, approximately 252 million workers are employed in agricultural and related activities, 55 million in construction, 48 million in manufacturing, 49 million in the service sector and the remaining 46 million in trade. The informal economy contribution has been over 60 percent while that of the household sector in the total gross domestic saving is about three-fourths (Economic Survey, 2018-19). This is the manifestation of the growing clout of the informal economy vis-à-vis that of the formal economy.

Broadly, in a structural sense, there are two reasons behind this phenomenon of increasing informalization. First, is the quest of employers to minimize costs in a competitive environment. When India embarked upon liberalizing its economy in 1991, the domestic economy experienced deregulation and it had to compete with international establishments. Production structure in the majority of instances gradually got decentralized to accommodate more and more informal labour. The apparent and explicit motive is to reduce the cost of production, particularly through economizing on the labour cost. Informal labour is way cheaper than formal labour.

Second, a comparative analysis of India's sectoral and occupational distribution over the years reveals that occupational distribution could not keep pace with changes in the sectoral distribution of national income. A proportionally large segment of the workforce is still stuck in the primary sector. Even when the contribution of the primary sector has declined over the years but it still provides livelihood to a large segment of the labour force. At present, the contribution of the primary sector is 14.2 percent but it engages about 42 percent of workers. Since independence, workers engaged in the primary sector fell but not to the extent of the fall in sectoral contribution towards GDP (Economic Survey, 2019-20).

### **Research objectives and scope**

This study proposes to critically analyse the skill and entrepreneurship development policy adopted in India in 2015 and examine whether it is relevant in the context of high informality in the Indian labour market with the help of relevant case studies.

### **National Skill Policy and the informal sector**

The National Skill Development and Entrepreneurship Policy, 2015 has identified thirteen policy objectives. Out of those, the following objectives are relevant for informal workers:



- i. To provide both vertical and horizontal pathways towards a more skilled workforce by integrating with formal education.
- ii. Focus is on increased employability and better livelihood opportunities and at the same time increased productivity in all sectors.
- iii. Improvement of training infrastructure and providing quality trainers on a broader scale.
- iv. Recognizing the importance of on-the-job training and making apprenticeship imperative in actual work environments.
- v. Prioritizing the skilling of both economically and geographically disadvantaged sections of the population
- vi. Promoting greater participation of women in the workforce through appropriate skilling and gender mainstreaming
- vii. Promoting greater stakeholder involvement and coordination

Initiatives and measures, undertaken by the State in recent years which are relevant to the skill development of informal workers, are as follows:

1. Right to Education Act, 2009 has been introduced which provides compulsory education up to the age of 14 years (equivalent to standard VIII).
2. Measures undertaken to provide vocational education in a more holistic manner and this subject is specifically included within the National Skill Qualification Framework which was adopted in 2014.
3. Introduction of Recognition of Prior Learning (RPL) in 2014 to give credence to skilling acquired through learning on the on-the-job. The objective is to get recognition for the skills they already possess. The Apprentices Act 1961 was suitably amended to facilitate greater engagement of apprentices in micro and small enterprises.
4. Mandating skilling of the weaker section of the population including women and the disabled based on the principle of inclusion
5. Introduction of Mudra scheme to encourage entrepreneurship, particularly in MSME sectors

A first reading of the objectives described above reveals that the goals set in the national policy on skilling and entrepreneurship are exhaustive in a normative sense. Policy objectives talked about accommodating informal workers within the broad skilling ecosystem and showed the right intent. However, most of the policy objectives focus on different aspects of skill development in a formal setting. Imparting skill and vocational training for a vast number of informal sector workers are part of some of the objectives mentioned in the policy document, but still, it did not receive enough attention. Policymakers still rely heavily on traditional formal arrangements.

Almost five years have elapsed after the skills policy was introduced. A review is necessary to take stock and proceed further. However, not much data is available in the public domain, particularly concerning the informal sector. Without such data, assessments of policy in terms of fulfilling the objectives set out in the plan document would be a bit difficult.

### **Case Studies**

There are a few interesting case studies which are relevant in assessing the efficacy of skill objectives. These are discussed below.

#### 1. Tata institute of Social Sciences-School of Vocational Education (TISS-SVE)

Tata Institute of Social Sciences (TISS) established the School of Vocational Education (SVE) in 2011 to provide skill training to youths by offering various vocational training courses. The basic objective of that initiative was to design appropriate skill programmes at different levels. The focus is to train youths in job-specific skills rather than just providing them with general education. The target beneficiaries comprise youths belonging to both organized and unorganized sectors.

This particular approach of providing customised job-specific training programmes is categorized as the Work Integrated Training Programme (WITP). Over the years, this programme flourished and expanded. At present, under this initiative, courses are offered in 19 different fields, across 90 locations spread over 22 states. Some of the prominent fields among the 19 chosen fields are agriculture, automotive, electronics, healthcare, media and entertainment, pharmaceuticals, printing and packaging, and renewable energy, as well as the more popular, BFSI (Banking, Financial Services and Insurance) among others.

One of the big advantages of this initiative is that it allows drop-outs from the formal education system to rejoin the learning ecosystem through participation in vocational training courses. It

is particularly beneficial to those who discontinued education after the secondary level and joined the workforce without any vocational training. This initiative allows them to resume education and learn something that enhances their job worthiness. They get to acquire new skills without having to leave their job.

## 2. The example of street food vendors in Coimbatore and New Delhi

A survey among the 49 street vendors in New Delhi and Coimbatore in 2015 revealed that providing training in the informal workspace was very effective. Street food vendors had the necessary cooking knowledge and skills. These skills they acquired either at home or while working. They did not require further skilling in traditional cooking. However, they lacked marketing expertise and needed assistance in cleanliness and packaging. Training intervention for these street vendors would be effective if it is organized near the workplace and at hours when they were not that busy. Arranging a training programme near their workplace at lean hours was very successful.

The respondent vendors mostly acquired skills at home and while working at restaurants, street food stalls etc. They had acquired skills from other family members and seniors/peers at places where they got the opportunity to work. Some of these workers later started their businesses as street food vendors. It is possible to map and cluster street food vending areas. The next logical thing to do is to introduce customized short-duration flexible on-the-site skill development programme(s). These would enhance skills as well as provide knowledge concerning occupational health and safety.

This particular case demonstrates that imparting training informally can be very effective. The first step would be to assess the existing skill endowments and identify training needs. The next step would be the customization of the training intervention in an enabling environment. The stress should be on ‘informal apprenticeship’ where a trainee sharpens skills on the job in line with the ‘learning by doing method. This kind of skilling ecosystem is very widely recommended by various world bodies (ILO 2011).

## 3. DHAN Foundation

DHAN (Development of Humane Action) Foundation is a non-profit organization established in 1997 and is registered as a public trust. It promotes social entrepreneurship. It forms community organizations and introduces need-based skilling interventions. The objective is to empower the community through the upgradation of skills. Community

intervention happens through forming collective organizations in the form of self-help groups and empowering those with suitable skilling efforts in both rural and urban areas. For example, the formation of community organizations and providing banking and financial knowledge such that they can carry out their functions in an effective manner. The most popular way of doing this is to form women's self-group at the grass-root level. Also, there is a structure that is followed and self-help groups are federated accordingly. Self-help groups are linked to financial infrastructure. The ultimate objective is to create livelihood opportunities for its members and beyond. This effort is further bolstered through appropriate training intervention.

The Dhan Foundation example is about empowering women workers at the grass-root level. It is not about imparting explicit skill training. It is about grass root mobilization through the formation of self-help groups. Once self-help groups are formed and subsequently empowered, livelihood skill acquisition follows organically. Livelihood skills here can lead to wage employment as well as self-employment. After initiation and empowerment, Dhan Foundation withdraws from the process and self-groups subsequently operate on their own. In this structure, the availability of micro-credit plays a very important role. Micro-credit organizations are curated with appropriate skills and knowledge.

#### 4. The Case of Movement for Alternatives and Youth Awareness (MAYA)

Movement for Alternatives and Youth Awareness (MAYA) is an organization based in Bangalore and was established in the year 1989. It is a non-government organization specializing in development initiatives and training interventions. It specialized in the area of child rights with a special focus on the eradication of child labour. It takes a holistic view of the subject and endeavours to provide vocational training such that livelihood opportunities are created in the future. It has initiated several community-based programmes that empower children in 52 slums in Bangalore. Such initiatives are customized based on the specific needs of the immediate surroundings.

MAYA's initiatives resulted in the formation of self-help groups. It has worked towards imparting quality training and subsequently improving production methods. This enables the artisan to secure a better deal both in terms of production and marketing. The basic principle is that improvement in production will result in better marketing outcomes.

## **Lessons from the case studies**

### **a. Training for holistic empowerment**

These case studies demonstrate that often skills development not only results in better vocations but also in empowerment. Any evaluation of training thus should consider the spillover effects which can be significant. The street vendor case study demonstrates that informal learning can be a very effective instrument in a context where there exists prior learning in the form of learning by doing. Also, there is a possibility of enhancing further skilling by identifying training needs. Training initiatives are conceptualized keeping in mind these needs. In the case of street food vendors, stakeholders did not require skilling in basic cooking. They required intervention in the areas of marketing and safe packaging. The Dhan foundation case study shows that it promotes social entrepreneurship by providing enabling infrastructure. The role of the organization lies primarily in facilitating the process of empowering the capability of its stakeholders. Training people is not an explicit priority but to empower the community. Better skilling may lead to getting improved access to livelihood opportunities.

### **b. Providing an enabling environment**

One of the basic objectives of imparting training is the empowerment of stakeholders. For that, there is a need to create an enabling environment. For example, the Dhan Foundation example, discussed above, showed that it promoted social entrepreneurship through community organization and upgrading skills. Its community banking programme sought to empower stakeholders through micro-finance involving women's self-help groups in both urban and rural areas. Similarly, in the Maya example, it is seen that imparting skills through vocational training can be very effective if it is conceptualized in a holistic manner.

### **c. Pedagogy of training for empowerment**

Along with imparting skills, another basic objective of the training process is to empower stakeholders to act holistically. It is imperative to create an enabling framework. The overall content and lessons of training should unfold gradually in an organic way such that stakeholders determine their agenda as they deem fit. Facilitating interactions among the stakeholders and developing indigenous social safety nets should be part of any capacity-building process.

Street food vendor case study reveals that arranging short courses near the place of work spanning a few hours during the relatively lean business hours can be very effective. Such courses are of a duration of a few weeks offered in the location of actual work. Small groups attend such training programmes. The fact that these are being organized very close to their place of work, helps them to participate in greater numbers. Also, street vendors never feel that they are out of place. They can very easily identify with their immediate surroundings. This enhances the training effectiveness as the degree of internalization is higher.

d. The Significance of the change agents

Change agents play an important role. The effectiveness of skilling depends on how it is designed particularly whether the needs of the stakeholders are assessed appropriately. The context is very important here. Socio-economic realities and cultural indicators play important roles. Dhan Foundation case study shows that after initiation and empowerment, it withdraws from the process and self-help groups subsequently operate on their own. Maya case study demonstrates that the provision of enabling environment is important. An improved production method facilitates artisans to obtain a better deal both in terms of quality and marketing of their products.

### **Conclusions**

India has a huge informal labour force whose skill endowment is very low. Skilling/reskilling informal sector workers in a holistic manner is an important instrument for raising productivity and empowerment. Skill objectives set out in the skill policy documents are broad and wide-cast. The basic structure, however, remains skewed towards formal arrangements and relevant for a small section of the workforce.

The few case studies that have been analysed as part of this study showed that skill development should be holistic and can't be limited to imparting technical knowledge but should constitute components of empowerment. Mere skilling is not enough. To make skilling sustainable, empowerment must precede skilling interventions. Further, skilling should be context-specific and indigenous to consider ground realities. Training for the sake of training might not be adequate. It should be conceptualized in a broader framework that thrives on facilitating and empowering stakeholders.

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## **A study in Self-Esteem, Resilience and Leadership Among Social Work Students**

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### **Abstract**

Social work education has shown to be a methodical, intentional intervention that prepares professional social workers to strengthen, advance, and empower the society most vulnerable groups. Different degrees of social work education have aided professionals in stepping in and managing crises in the lives of people, organisations, and communities. It would be incorrect to claim that social work instructors have not adequately addressed this requirement in the curriculum. However, it was discovered that systematic efforts to comprehend the leadership abilities, resiliency, and self-esteem of social workers in India had not been done. Developing leadership abilities should be a major goal of social work education since a competent social worker is also a good leader. Thus, the purpose of this work is to comprehend the self-esteem, resilience, and leadership abilities of social work students in order to make appropriate suggestions for the advancement of the field.

**Keywords:** Social, work, Leadership, Self Esteem, Resilience.

### **Introduction**

Social work is described as an art form that uses a scientific approach to empower individuals to take care of themselves and to bring a variety of resources to bear on individual, group, and community needs. According to Friedlander (1951), social work is a profession that supports people in achieving social and personal fulfilment and independence. It is based on scientific knowledge and expertise in human relations. It is an art because it takes a lot of skill to understand how to solve problems. It is a science because it tries to gather information in an unbiased way. It is a profession because it has all the qualities of a job.

People driven by religion, which promised charity as the reward for salvation, humanism, humanitarianism, philanthropy, democratic ideology, equality of all citizens, respect for human personality, and respect for others' rights, including those of the poor, the handicapped, the unemployed, the emotionally disturbed, and those in need, have historically assisted those in distress, destitution, and deprivation. Over time, the philanthropic activity carried out by people



and non-profit organisations came to be known as social work. Due to this historical association, social work is now often referred to as such, and its participants are known as social workers. Historically, social work has been linked to charities and voluntary service to the poor. According to renowned social work scientist Friedlander, the three major goals of social work are to: “i) improve the person's democratic and humanistic behavior; ii) build constructive forces inside and around the individual; and iii) modify people's unpleasant circumstances. Gordon Brown claims that the goals of social work are to: (i) give people physical or material support; (ii) assist in social adjustment; (iii) assist in resolving psychological problems; and (iv) provide people with problems with adequate opportunities to raise their standard of living so as to prevent problems from resurfacing”.

### **Social Work's Evolution as a Profession**

A professional service known as social work is one that deals with intrapersonal and interpersonal changes brought on by unfulfilled needs in an individual, group, or community. It is based on an understanding of human interactions and relationship skills. One of the more recent fields of study, social work, is progressively encompassing all facets of human existence. Social work, previously thought of as handouts to the needy, is today a field with a scientific approach and an artistic style that addresses issues in many facets of society. It helps families that are experiencing financial or emotional hardship.

A social worker essentially aids others in their efforts to aid themselves, and helping others is the best reward for this line of employment. It makes sense for someone who cares about people to be interested in them and like working with them, which may include thinking about a career in social work. A social worker should also be tolerant, adaptable, and able to get along with individuals from all backgrounds and deal with them realistically without passing judgement. Social work provides benefits beyond the intrinsic joy that may be found in the profession. Qualified social workers find employment with minimal trouble in programmes for public assistance, family welfare, child welfare, health services, mental health, community organisation, geriatric care, leisure time and group services of the state as well as private agencies and volunteer organisations. Additionally, social workers are often used in administration, research, and training.

## **Self-Esteem**

Self-esteem is a psychological, social, and partially physical feeling that begins at birth and evolves as a result of the experiences in life that take place in the years leading up to and throughout maturity. According to recent studies, a student's self-esteem is significantly impacted by their education and their time in school. Additionally, studies demonstrate a link between a student's accomplishment and their sense of self-worth.

At its core, self-esteem is a measurement of one's opinion of oneself. The idea of self-esteem is fundamentally social in nature since a person's value is mostly determined by how they evaluate their own talents and value in relation to those of others. Students' self-esteem is greatly affected by what other people think of them, which is affected by their many successes and failures and how they are seen.

## **Resilience**

Good psychology places a strong emphasis on the idea that one of the cornerstones of wellbeing is our ability to deliberately generate and experience positive emotions. Examined as a further tenet of human wellbeing is resilience. Humans' remarkable capacity to recover from and even flourish in the face of significant life setbacks is known as resilience. According to research, resilience is a trait that most people have but may not realise they have until they face a traumatic event, a crisis, or a lot of stress.

It is crucial to understand that representations of resilient behaviour or resilient people are assumptions. Masten (2001) points out that there are two elements at play. A person must first encounter a "serious" danger or risk that has the potential to have unfavourable consequences before one can assess their level of resilience. Research has looked at a number of variables that might jeopardise healthy growth. According to studies, children who are reared in physically violent households, with parents who are alcoholics or mentally ill, or who are poor, are at a high risk of developing a wide range of issues (Masten, 2001; Masten & Robins et. al., 2002; Crowe, 2003).

The assessment of a favourable or positive result is necessary for the resilience second component. The normative expectations of society for the person's age and circumstance may determine the criteria for appraising the results (Masten, 2001). Throughout life, resilient reactions to hardship are typical. As we go through life, we all face a number of difficulties.

Raising children, divorcing, moving, losing a career, becoming sick, losing a significant partner, and experiencing bodily deterioration in later life are all regular occurrences in human existence. Focusing on how people preserve their health and well-being and continue to develop as individuals despite the ineluctable problems of life, researchers looking at adult development and the ageing process have examined how people develop as adults. The psychological resources that form the basis of resilience include a flexible self-concept, which enables individuals to alter essential aspects of their self-definition in response to “shifting circumstances; a feeling of autonomy and self-direction; and environmental mastery and competence”. Resilience also benefits from social resources. There are excellent connections with other people that provide closeness and social support.

### **Leadership**

A highly prized and sought-after commodity is leadership. “The phrase Leadership is... may be finished in a variety of ways. In reality, there are nearly as many diverse definitions of leadership as there are people who have attempted to define it, as Stogdill (1974) noted in a review of leadership research”. It resembles the terms "democracy," "love, and "peace" in many ways. Even though we all know what we mean when we use these phrases, different people may have different ideas about what they mean.

Leadership academics may finally agree on one thing after decades of disagreement: “there is no universal definition of leadership. It is still up for debate if management and leadership are two distinct processes. Some focus on the quality, aptitude, or interpersonal components of leadership”. Due to things like rising global influences and generational disparities, leadership will continue to mean various things to different individuals. The fact is that leadership is a complicated notion with a lengthy definitional history (Rost, 1993).

### **Self-worth, resiliency, leadership abilities and social work**

A social work education combines both hands-on experience and academic study. Fieldwork is an important and fundamental part of social work education because it connects theory and practise, philosophy and action, and knowledge of people with strategies for assisting them. The aim of social work is to improve social functioning wherever there is a perceived need for improvement, whether on a societal or personal level. The tasks assigned to social work trainees are comparable to those assigned to craftspeople, and the importance of administrative

and non-administrative abilities is debatable. This is a significant barrier to sociability. Self-esteem is a trait that may be effectively developed in those who are lacking in confidence and are willing to work on it. However, it is crucial that teachers and other caregivers take a proactive interest in kids' self-esteem and make sure they address problems as they develop so that learning may advance. For social workers to have a positive view of the society in which they operate, self-esteem is necessary. Every parent and educator should place a strong emphasis on the life skill of resilience in their work with children. People who are resilient are open to learning because they believe they can learn, develop their skills, and acquire the knowledge they desire. For social workers to listen to and comprehend a person's, a group's, or a community's situation, resilience is essential. Leadership is the skill of “inspiring, leading, and encouraging others to cooperate in order to realise the objectives of a group or larger organisation”. It's crucial for students to have leadership experience throughout their academic careers in order to gain the skill of forming bonds within “teams, creating identities, and successfully completing assignments”. Additionally, it offers a chance “to develop and demonstrate good interpersonal and communication skills”. Developing leadership abilities should be a major goal of social work students since a competent social worker is also a good leader.

## **Methodology**

**Location:** Delhi/NCR

**Sample Size:** 115 college students.

**Respondents:** Picked randomly without prejudice or any motive of convenience.

**Technique used:** Multiple Regression and Correlation.

**Tools used:** SPSS version 22.

## Results and Discussions

H1: There is a significant relationship between self-esteem, resilience and leadership skill of the social work students.

“Variables	Self - Esteem	Resilience	Leadership Skill”
Self – Esteem	1		
Resilience	0.266**	1	
Leadership Skill	0.268**	0.469**	1

\*\* Correlation significant at 0.01 level (2 – tailed)

The relationship between the dependent variables, such as the students' self-esteem, resilience, and leadership skills, was investigated using Karl Pearson's coefficient of correlation. Self-esteem is favourably and significantly correlated with resilience, according to the above data ( $r = 0.266$ ,  $p < 0.01$  sig). This suggests that the resilience of social work is correlated with self-esteem.

The aforementioned results are consistent with those of Karatas' and Cakar (2011) research on self-esteem, hopelessness, and resilience. The research demonstrates a strong link between “resilience and self-esteem”. Additionally, it demonstrates how resilience is thought to be positively impacted by self-esteem.

Further, self-esteem is favourably and substantially correlated with the leadership skill of social work ( $r = 0.268$ ,  $p < 0.01$  sig) These results show that the respondents' sense of leadership competence will increase as their sense of self-worth increases.

The above table also demonstrates that leadership ability in social work is favourably and substantially correlated with resilience ( $r = 0.469$ ,  $p < 0.01$  sig). Research has been undertaken to determine the connection between leadership ability and resilience. Poor leadership abilities are correlated with low resilience. The aforementioned results are consistent with the research

done by Harland, L. et al. (2005). According to the research, people's leadership skills would improve when resilience is favourably connected with “attributed charisma, idealised influence, inspirational motivation, and intellectual stimulation”. According to research by Ledesma (2014), those responsible for developing leaders must provide safe spaces for both new and seasoned leaders to flourish as people and as organisational leaders in the area of resilience, which has an influence on productivity and sustainability.

Overall, the above table shows a favourable association between leadership ability, resilience, and self-esteem among social workers. And these results concur with those of a 2012 study by Wan Shahrazad et al., which found a strong and favourable relationship between leadership ability, resilience, and self-esteem.

During the experiment, it was discovered that pupils' resilience also rose as their sense of self-worth rose. Leadership ability tends to improve as self-esteem and resiliency continue to rise. So, the hypothesis is accepted, that there is a strong link between “self-esteem, resilience, and leadership skill of the social worker student”.

H2: Leadership skill are significantly predicted by overall percentage of the social work students.

<b>“Variable</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>T value</b>	<b>Sig”</b>
“Constant”	47.302	5.918	-	7.993	0.000
“Overall Percentage”	0.269	0.087	0.148	3.080	0.002

<b>R</b>	<b>R Square</b>	<b>F Value</b>	<b>Sig</b>
0.148	0.221	9.487	0.002

The results from the table above show that among social work students, leadership skills have a positive and significant link with the overall percentage of responders (p 0.05). As a result, it

can be deduced that, respondents' levels of leadership skills tend to rise sharply as their overall percentage of students rises. The overall percentage is a good predictor of leadership ability.

The dependent variable's variance is shown to be partially explained by the independent variables by the value of R<sup>2</sup> (0.022), and the relationship's overall significance is shown by the value of F (9.487). The F stat's high and substantial value attests to the model's fitness. The independent and dependent variables have a significant association, as shown by the value of R (0.148). The R<sup>2</sup> demonstrates that the independent variables, as a whole, explain 22.1% of the variance in the social work students' leadership ability.

Testing the hypothesis reveals that the total proportion among social work students indicates their leadership ability. Hence, the hypothesis is rejected. Thus, it is inferred that the overall percentage significantly predicts the leadership skills of social work students.

H3: Self – Esteem and Resilience influence the Leadership skill of the Social Work students.

<b>Variable</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>T value</b>	<b>Sig</b>
<b>Constant</b>	2.978	5.069	-	0.587	0.012
<b>Self – Esteem</b>	0.442	0.040	0.453	10.933	0.000
<b>Resilience</b>	0.337	0.059	0.238	5.742	0.000

<b>R</b>	<b>R Square</b>	<b>F Value</b>	<b>Sig</b>
0.526	0.276	80.752	0.000

According to the above table's findings, self-esteem and resilience are significantly ( $p < 0.05$ ) positively correlated with leadership ability. The table shows that, when the model's variables are controlled, respondents' levels of self-esteem and resilience tend to substantially correlate with their levels of leadership competence at the 0.05 level. So, we can say that a social work student's ability to lead grows as their self-esteem and ability to bounce back from setbacks do.

The dependent variable's variance is shown to be partially explained by the independent variables by the value of  $R^2$  (0.276), while the overall significance of the connection is shown by the value of  $F$  (80.752). The  $F$  stat's high and substantial value attests to the model's fitness. The independent and dependent variables have a significant association, as shown by the value of  $R$  (0.526). The  $R^2$  shows that the independent variables self-esteem and resilience explain 27.6% of the variance in the Leadership Skills of Social Work Students.

When the theory is put to the test, it turns out that self-esteem and resilience have a big impact on how well social work students can lead. As a result, the hypothesis is rejected, and it is inferred that self-esteem and resilience influence the leadership skills of the social work students.

The aforementioned research findings are congruent with those of Wan Shahrazad et al.'s (2012) study, which demonstrated that self-esteem, resilience, and leadership competence strongly impact one another. Additionally, it has been shown that leadership ability and self-esteem increase with resilience.

## **Conclusion**

One of the most crucial traits that all social workers should possess is self-esteem, resilience, and leadership ability. Study was conducted in order to better understand the leadership, resilience, and self-esteem of social work students, a research was done. The findings showed that self-esteem and resilience had a significant impact on the leadership skills of the social work students and also Leadership skill are significantly predicted by overall percentage of the social work students. This study acts as a platform for awareness. It aims to encourage social workers to enhance their personal and professional abilities, which may lead them to success.



## Managerial Implications

Students may utilise the study's results to better grasp the value of skill development and their own self-worth. The students will benefit from being more observant than reactive as a result. Students studying social work who are resilient are better able to use a problem-solving technique and come up with their own answers. The research results may serve as an intervention for the students, assisting them in setting clear, quantifiable objectives. This will encourage the students to collaborate and develop detailed plans and measures to start achieving their intended objectives

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## **Can Community Based Organisations (CBOs) be vehicles for eliminating income, caste and gender inequality in public service provision in India?**

### **A preliminary study**

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### **Introduction**

Community Based Organizations (CBOs) represent an alternate organizational form that has emerged to address various failings of the State and market institutions, including ensuring equal access to public services. While international developmental agencies promoted CBO formation in many developing countries that had corrupt State and underdeveloped market institutions, State-sponsored and spontaneous emergence of CBOs have taken place in developed countries that are now witnessing the limits of the market and State institutions.

Community Based Organizations (CBOs) operating in the area of public service provision are envisaged to be vehicles for channeling community participation. CBOs are bodies made up of members of the community, who are the beneficiaries of a public project or service, and are often vested with the authority and responsibility for planning and implementing the project as well as for the post-implementation operations and maintenance. CBOs thus complement or even replace the government (and private sector organizations) as providers of public services, as the actual beneficiaries themselves step into the roles of the service providers. CBOs are expected to enable the articulation of needs at the grass root level, the generation of locally responsive solutions, and the long-term sustainability of the outcomes.

However, the institutional agenda of CBOs is not restricted to filling in the voids left by the State and/or market but is more expansive. CBOs are expected to address the deeply-rooted social institutions of gender, class, race, religion, etc., and engender equality, inclusion, and empowerment of marginalized actors in delivering public services. They differ from the State or market-led providers of public services on two accounts: first, it is not sufficient that they provide public services, but they are meant to do it in ways that ensure equality in access to public services; second, they are expected to secure the participation of marginalized groups in the management and day-to-day operations of the CBO.

There is little research into if and how CBOs have (or not) been able to become organizational venues that effectively address institutional sources of inequality as initially envisaged. This paper aims to contribute to the nascent literature on CBOs in Organisation Studies by investigating the abovementioned question. Based on a qualitative field study of *Jalanidhi*, a CBO-led water distribution program from Kerala, India, it investigates what the associated CBOs have addressed extent income, caste, and gender-based inequalities.

### **Background Literature**

The current literature on CBOs is highly fragmented across disciplines. CBOs work in a vast number of areas, including public health, education, livelihood and employability, environment, sustainability, climate change, and governance, and the research studies on their activities and impact tend to be confined to the respective disciplinary communities (e.g., Chaskin & Greenberg, 2015; Hutchings et al., 2015; Laird & Cadge, 2010; Middlemiss, 2008). The extant literature from other disciplines contains examples of CBOs in different sectors from different parts of the world. However, there has been little concerted attempt to study the structures and processes of CBOs systematically. This will be a worthwhile undertaking for the scholars of Organisation Studies, which is yet to turn their attention to this alternate organizational form that holds promise for disrupting the institutionally embedded patterns and processes that perpetuate various kinds of social inequalities.

Thake (2006) classifies CBOs into four broad groups: community groups, community organizations, multi-purpose organizations, and wealth-creating multi-purpose organizations, but warns that the boundaries between the groups are often-times fuzzy. CBOs generally are characterized as small organizations with a local remit that channels community activity (Thake, 2006). The small size of CBOs leaves them vulnerable to changes in the external environment (Rochester, 1999), especially changes in public policy (Hutchinson & Ockenden, 2008), in addition to being 'organisationally and financially fragile, and reliant on over-stretched staff, volunteers and uncertain funding' (Thake, 2006, p.1).

Despite these constraints, CBOs strive to meet their twin goals of providing services while remaining true to the causes of their varied groups of beneficiaries (Cairns, Hutchinson & Aiken, 2010). Here, 'how they do it becomes more important than what they do (ibid). Transparent and participatory structures and processes are critical to this. Many CBOs

incorporate governance structures that stipulate mandatory membership from marginalized groups, processes to facilitate participatory decision-making, and rules and practices that aim to address the specific constraints faced by marginalized groups (Mansuri & Rao, 2004). But are these structures and processes consistently effective in engendering an equivalent experience for the marginalized beneficiary groups? What renders these structures and processes effective or ineffective? More research might be needed to answer these questions satisfactorily and to draw conclusions

### **Research Setting**

India is one of the countries where CBO-led public service provision is on the rise. An area where CBO involvement has become prevalent in India is the provision of drinking water. For example, Jalanidhi Rural Water Supply and Sanitation Project was funded by the World Bank and supported by the Central Government of India and the Kerala Government. The idea was to set up small-scale drinking water supply facilities in rural Kerala involving 50-200 local families (end user community), who own the assets like the pumps, water tanks, and water sources and also operate and manage the water supply. Beneficiary Groups (BGs) were formed as CBOs in each project location to run the facility. The engineers initially supported each BG from the Kerala Water Authority and NGOs, who helped create awareness, forming community owners, training and hand-holding, and the day-to-day running of the project. Currently, Jalanidhi projects span over 227 Gram Panchayats (Villages), wherein 7,754 beneficiary groups manage 5,895 schemes serving around 3 million people (<https://jalanidhi.kerala.gov.in/>).

In their operations, BGs were supposed to pay special attention to the circumstances of marginalized groups and make accommodations. Specifically, the groups included: Low-income groups (People who live Below the Poverty Line), Scheduled Castes/Scheduled Tribes (Commonly referred to as SC/ST in India), Lower caste and tribal people whom the Constitution of India recognizes as groups that need greater developmental help and special treatment than the general population) and women (a group that bears a disproportionate water scarcity burden).

## **Methodology**

This abstract is based on an ongoing qualitative study of Jalanidhi. The study's first phase involved an exhaustive literature review of all published material available on Jalanidhi. These included journal articles, policy documents, review reports, project documents, training manuals, and other materials. The preliminary analysis focused on teasing out the experiences of the marginalized groups – specifically the low-income groups, SC/ST, and women- which revealed where existing structures and practices have failed to generate greater equality (Presented in the Findings Section).

The second phase involves a field study of Nenmeni, one of the CBOs formed under the Jalanidhi project that is widely considered an exemplar. The objective is to uncover if and how Nenmeni has improved its structures and processes in ways that have enabled overcoming the inadequacies reported by the other Jalanidhi CBOs in creating an equivalent experience for the groups mentioned above. The data collection process includes semi-structured interviews of the CBO members, beneficiaries, representatives of the local government, officials of Kerala Water Authority, and NGOs involved in implementation, as well as field observation of day-to-day operations and activities, meetings of the CBO committee members, local self-government, etc. The interviews are recorded and transcribed. In addition, open-ended qualitative coding is done to analyze field notes and interview transcripts. (This study phase will be concluded, and preliminary findings will be ready to be shared at the EGOS colloquium).

## **Findings**

The literature review revealed that although there were clear guidelines that specified the different committees and the membership structures, their roles and responsibilities, the nature and processes of mutual interaction and engagement, ways in which the particular circumstances and needs of marginalized groups should be accommodated, in practice all of them didn't yield the desired results. Presented below are the experiences of various marginalized groups.

### *Low Income Groups*

Jalanidhi marked the devolution of responsibility for water management from the State to the participatory CBOs. This had brought in its paradoxes affecting the poor in particular. Firstly, the State had nearly abdicated its responsibility of managing a natural resource like water that was increasingly getting scarce and inaccessible to the poor and marginalized, washing its

hands off from the primary responsibility of providing an essential service equitably to all its citizens. Secondly, the definition of water supply had changed from being 'need' based to a 'demand' driven service. While a need was an essential requirement for the survival of people, demand stemmed from people's ability to pay for a service. According to Chakrapani (2014), many households with access to water sources like wells and ponds demanded piped water supply as it was cheaper. In addition, Wells and ponds required regular cleaning and maintenance, which was increasingly getting expensive due to high labor costs. This shift from a need-based approach to a demand-driven one meant that the poor and marginalized who needed water for their basic necessities (and did not have access to water sources such as ponds and wells in their house) had to 'buy' water now.

To be inclusive of the poor, Janani had given the poor the option to pay for water either in the form of labor during the construction/ maintenance of a water project or as subsidized monthly water charges. Both forms tended to be inequitable, as labor contribution came at the expense of a day's wage labor essential to meet daily survival expenses, and monthly water charges (even though minimal from the perspective of financially better-off families) often competed with primary healthcare, clothing and educational requirements in a poor household. From an organizational perspective, this treated all members of the project in an equal (on par) and still not in an equitable manner (according to their economic capacity). Nevertheless, such an approach has resulted in the inclusion of the households that could pay and the relative exclusion of poor households that needed water.

Further, extant studies showed that the on-the-ground reality concerning the participation of marginalized groups had been less than ideal (Balan et al., 2016). It has been noticed that despite provisions of representation, these groups had been reluctant participants in the proceedings and deliberations of CBO and the local self-government bodies. Many did not attend the local body meetings, and the ones who attended did so mostly out of the apprehension of being left out of beneficiary lists drawn out by the local bodies for various programs. Reasons for non-participation included the opportunity cost of losing their daily wages to attend meetings and low self-confidence to contribute or question. Interestingly, the poor had relatively higher representation in participatory decision-making bodies compared to the middle class and the rich, who had shown little interest in participatory governance but could not benefit from those opportunities.

### *Scheduled Caste/Scheduled Tribes (SC/ST)*

Jalanidhi placed special attention on the Schedules Caste/Scheduled Tribes. Special category beneficiary groups were created to serve these groups, and they needed to pay lesser water charges when compared to general category beneficiaries. They also could contribute either in cash or labor. Separate Tribal Sub-Projects will also be created to make water accessible to vulnerable tribal populations. However, these groups also faced payment difficulties like the other low-income groups. In addition, though Jalanidhi had provisions for granting free connections for scheduled caste and scheduled tribe families with an annual income below the poverty line (the official threshold for BPL is ₹ 26 a day (\$0.43) in rural areas and about ₹ 32 per day (\$0.53) in urban areas; (<https://www.downtoearth.org.in/news/new-poverty-line-rs-32-for-rural-india-rs-47-for-urban-india-45134>) many BGs had not given the deserving lower caste poor such connections fearing that other poor members from the general class<sup>48</sup> would also expect the same.

The larger social milieu often co-determined the participation of SC/ST groups in CBOs. Kerala society had been dominated by the upper caste, and we find patriarchal interests and caste hierarchies overriding minority communities, weakening the administrative mechanisms of community-managed projects. The upper caste, particularly men had succeeded in consolidating their social power over the marginalized sections, mainly Dalit (lower caste) women (Balan et al., 2016). The main executive body of a Jalanidhi project was the beneficiary group (BG), elected representatives from the community to manage the operations and maintenance of the water supply scheme. Community involvement on the ground had conveniently excluded scheduled caste and scheduled tribes from the decision-making process, with the leadership dominated by upper caste members (Balan et al., 2016). Since the Presidentship of a BG is an honorary position, in most cases, prominent upper caste members or retired government officials got elected to the post. Given the position of socio-economic privilege they came with, most were reluctant to interact with the lower-class members, widening the chasm between the poor and marginalized and the relatively well-to-do within the BG. Further, when meetings were conducted, lower caste members were often apprehensive of asking questions due to their poor education and consequent low technical knowledge on the subject. Caste and class differentiation caused their concerns to be deemed less necessary.

Also, providing free water connections for scheduled caste and scheduled tribe families had an important socio-political implication. It had converted a 'constitutional right' to a 'favor' granted to economically and socially downtrodden by more affluent members of the BG. This has created some 'moral obligation' in the minds of the poor and marginalized,

preventing them from questioning either

48 Forward caste (referred as General Class) is a term used in India to denote social groups that do not qualify for reservation benefits and other affirmative action schemes operated by the government of India. Forward castes form about 25% of the population, the number varying by region. Socio-economic caste Census, 2011.

the management of funds or operational and substantive issues of the scheme. Seen as 'free-riders,' they have mostly forfeited their right to protest when water quality deteriorates or when the supply is erratic or inadequate. The devolution of responsibility of ensuring access to water from the State to local communities can be likened to cutting the umbilical cord between the State and the poor and marginalized, leaving the latter at the mercy of an uncaring and indifferent upper caste dominated local community (Balan et al., 2016). This allegation gains ground when, for example, we examine the issue of the removal of public water taps from which low-income families collected their daily water. One of the terms of the World Bank funding of Jalanidhi projects was to migrate existing water supply systems to community-managed projects, requiring all public water taps in the Gram Panchayats (lowest level of self-govt. at a village level) to be removed and replaced by taps under the Jalanidhi project. Post the migration, several lower caste families continued to collect water from Jalanidhi public taps rather than seek household water connections (that need to be paid for) under the project, much to the displeasure of community members who viewed them as *using* water for free. What surfaced was continued social exclusion, discrimination, and economic incapacity rather than the availability of public water taps that stopped the lower caste from seeking a water connection for their household (Balan et al., 2016).

### *Women*

Women in Kerala had made considerable strides in achieving an improved status and enhanced agency, attributable to social innovations like Kudumbashree. It is a poverty eradication program based on gender, social and economic empowerment of women started by the State government in 1998 that had empowered them through thrift, organizational and leadership opportunities, micro-entrepreneurship, and economic capacity building, supplanting other empowerment strategies by the government.

Though the project plan of Jalanidhi included women in all aspects of decision-making concerning planning, implementation, operation, maintenance, and management of water projects, the primary responsibilities were entrusted to them after project completion. Women were routinely assigned several administrative tasks that were time-consuming, unpaid and unattractive to the menfolk. Socially, women were tasked with fetching water for the household, ensuring its quality, and apportioning its usage among multiple competing necessities. Ensuring such a vital resource often came at the expense of time that could be



economic productively, thereby reducing their income. Women's representation had often amounted to little more than symbolism, with women charged with routine, time-consuming, and unremunerated tasks of the BG. While decision-making and financial management continued to be the prerogative of the upper-caste males, routine yet tough tasks were forced upon the womenfolk creating much stress and lowering their self-confidence. Further, menial tasks like cleaning the water tanks, minor repairs, etc., are almost always handed down to lower-caste poor women to undertake (Sati, 2014), exacerbating inequalities based on gender, class, and caste.

Being a demand-driven project, all the households were not selected for the Jananidhi water scheme; only those who could afford the initial amount (cost sharing of the project) and were willing to pay monthly maintenance charges could be part of the scheme. Being responsible for the basic necessities of a household, the onus of joining the project also had fallen on women. There were instances wherein women from poor households took loans to pay the initial amount and later faced harassment at the hands of moneylenders when they could not repay. In some cases, inadequate water supply and poor-quality water had not made their life any easier as they continued to struggle, their demands and voice falling on deaf ears of government authorities and male-dominated BGs. There are many possibilities to unearth how by withdrawing from the responsibility of providing basic necessities to its citizens, the State has burdened women further with unequal responsibilities of managing a community project without adequate support.

## **Conclusions**

CBOs have been put forward as vehicles for mitigating inequalities of class, caste, and gender in the building of a more equitable society. However, we find that preparatory work far exceeding current levels of awareness building on community participation is crucial to make them inclusive and truly participatory spaces that can be crucibles for more comprehensive social transformations. Or else they will keep reinforcing the institutional sources of inequality.

## **Karma Kitchen- Paying It Forward**

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### **Abstract**

Karma Kitchen - a generous kitchen concept was initiated by Nipun Shah in Berkeley, California. This model of a generous kitchen has since been adopted by volunteer-based factions in many other parts of the world. This case study is about the Surat faction of Karma Kitchen which was initiated in the year 2017, along the same lines as the original Karma Kitchen in Berkeley. Nipun Shah had been practicing generosity with a twist. His belief in the power of community actions and small acts of kindness by common everyday people led him to start several volunteer-driven activities-one of which was Karma Kitchen. The first tenet of Karma Kitchen was that it would always be a volunteer-driven activity. This could bring out the power of community that helped build strong bonds among volunteers.

The Karma Kitchen in Surat was organised once a month in a restaurant. The gist of this kitchen has been to serve food with utmost love and selflessness to anyone who walked in for a meal. At the end of the meal, every guest would be given a bill amounting to Rs. Zero and a note saying that someone before them had already paid for them. The guests would also be presented with a blank envelope to be able to contribute to someone else's meal after them. Karma Kitchen has been an experiment to practice the act of 'Paying it forward.' Karma Kitchen started with the philosophy to serve without expectations. In the transaction model of economics, people expected something in return for something that they did. The goal of this activity was to change this transaction model to a trust model which was the second tenet of the model. The volunteers cooked, served, and gave without expectations. The consumer would be transformed into a receiver rather than a demander. This was in line with the third principle of Karma Kitchen which was the transformation from a consumer to a contributor.

It has been observed in every Karma Kitchen that when given a choice to pay it forward, guests on average paid more than what they would have paid in a regular restaurant format. As this phenomenon unravelled in every Karma Kitchen, the volunteers started feeling more driven to

give their best with utmost love and joy and the contributions kept on rising. The transaction model started changing into a trust model where the volunteers trusted the guests to pay it forward and the guests trusted that Karma Kitchen would give them an experience to cherish. The case has tried to analyse the astounding phenomenon called 'gift economy' or 'giftivism' which was at play in this activity.

## **Role of HR Analytics in organization: A Systematic Literature Review**

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### **Introduction**

In contemporary organizations, the COVID-19 pandemic has accelerated the already existing trend of using data driven decision making in HR. The use of sophisticated statistical tools and quantitative analytical techniques has already replaced the traditional intuitive manner of executing HR domain activities. The role of HR Analytics (HRA) is not limited to predicting the short- and long-term human resource planning but to take the informed judgements in execution of overall organizational strategy. In spite of enormous interest in HRA, and growing demand from industry and academia to adopt HRA in strategic decision making, a systematic review of literature for HRA is warranted. This paper tries to identify the various streams in which the HRA research has developed, tries to identify the gaps in literature and provides direction for future research.

### **Literature review**

Human resource analytics is an emerging domain in human resource management. Organizations faced with the current complexity of business environments and enamoured with the ability of analytics to decode said complexity, are increasingly choosing to implement human resource analytics (HRA) programs within their organizations. But not every organization is enjoying the same level of success. Some organizations are struggling to implement HRA, others have implemented HRA but continued to use traditional metrics and reporting standards. In light of this, the aim of this paper is to examine the factors that help organizations leverage HRA at individual, team and organizational levels through a systematic review of literature. We make two significant contributions through our paper. First, we summarize current literature in a multilevel framework and identify gaps in each of these levels. Second, we identify methodological issues in existing literature such as 93.3% peer-reviewed articles found on Google Scholar using the keyword “Human Resource Analytics” do not possess a statement regarding the authors’ conflicts of interest, or the lack of either qualitative or quantitative longitudinal research in this domain. The review of literature is divided into

four sections. In the first section, we provide a brief summary of the overall literature in human resource analytics. In the second section we highlight the gaps in the literature and explain how our paper attempts to fulfil them. In the third section we also highlight problems associated with the methodology in papers published in human resource analytics. Human resource analytics is defined as a method of logical analysis for collecting data through various sources such as reasoning, discussion or calculation and consists of descriptive, prescriptive and predictive analytics (Fitz-Enz, 2009). But a modern perspective on HRA emphasizes predictive analytics to solve contemporary human resource management problems such as employee retention, diversity and inclusion, etc.

### **Methodology**

One issue in HRA is the challenge of analyzing multilevel longitudinal data. Van der Laken et al. (2018) help answer this question by identifying the challenges in data analysis (multilevel longitudinal data since the individual employee is nest within a team which is nested within a department which is nested in the organization, you have to account for all this, and analyse over a period of time) they suggest a latent bathtub analysis and optimal matching analysis.

Here, we follow PRISMA (Preferred Reporting in Systematic Reviews and Meta Analyses) Protocol to answer each of these questions as depicted in Figure 1. We first explicitly state our research question: What are the individual, team and organizational factors that help organizations leverage HRA? Second, we define our sample as peer-reviewed research papers published in the years 2000 to 2022 with the keywords “Human Resource Analytics”, “Workforce Analytics”, and “HR Metrics”. These keywords were identified through a scoping review. Our sample will consist only OF articles in the English language, which are the predominant form of articles as found in our scoping review. We used Google Scholar and Directory for Open Access Journals (DOAJ) for searching articles (only first five pages where used). Zotero was used for bibliographic management. Studies found using the specific keywords on Google Scholar would be identified if they had relevant titles and abstracts. Once an exhaustive list of identified articles has been created, then all articles will be judged on the basis of (i) must be published in a peer-reviewed journal, (ii) any conflicts of interest or no conflicts of interest is stated, (iii) if the first author is not affiliated with any management consulting firms<sup>49</sup> and (iv) if the article’s full-text helps answer our research question by listing any individual, team or organizational factors of HRA. Using this criteria we will analyse

articles and remove articles. The remaining articles will be used to develop an informed review of the individual, team and organizational factors that can be used to leverage HRM.

## Conclusion

The paper is divided in three sections. In methodological section, a database was developed by identifying 40 relevant articles published in peer reviewed journals by searching the keywords in leading academic databases. In next section, the paper tries to analyse how the domain has evolved with time through descriptive analysis and how area has developed in separate streams over time. The next section tries to synthesize the key observations by developing categories for HRA literature over time. The synthesis of categories helps in understanding how HRA had developed over time and influence analysis of organizational outcomes related to various HR constructs like recruitment and selection, human resource planning etc. Further, this paper tries to highlight the gaps for indicating the direction for future research to advance the field of HRA. Thus, this paper contribute to the literature by providing an insight to the academicians to understand the existing domain and area where the work can be progressed and practitioners who want to utilize the power of analytics in decision making.

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## **The Role of Tridosha in identifying the correct Personality Job Fit in an Organization**

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### **Abstract:**

Ayurveda is a system of medicine which studies medical events in terms of the theory of “Tridosha”. According to the theory, there are three basic elements of life which help keep the body healthy and running. The three elements are Kapha, Pitta and Vata, also known as water, fire and air respectively. The theory of Tridosha implies that all physiological and pathological imbalances in the human body occur due to imbalance in the above mentioned three factors of life. But Ayurveda is not just a science of medicine; it is much more than that. Ayurveda is a way of living. It also describes the nature of human being since birth. According to Ayurveda, every person has one or two of the tridoshas as their describing factor. It identifies not only the diseases that a person is likely to have; it also gives a description of the exact nature of the person based on the imbalance of tridosha.

In current times, most of the organizations rely on psychometric tests for determination of appropriate department and job roles for new recruits. In this paper, researchers draw a comparison of the RIASEC model of personality- job fit theory by Dr. John Holland and the Tridosha theory of Ayurveda to identify the better test of personality job fit in the Indian context. The study aims to understand the effects of “Indianization” of a concept of human resources study and its future use in various organizations.

### **1. Introduction:**

#### **1.1 Origin of Ayurveda**

Ayurveda is considered to be one of the most ancient sciences of medicine, with its origin dating back to the Vedic era. However, the history of this ancient knowledge is disputed with some considering it a part of Rigveda, while some considering it a part of Atharvaveda. Maharishi Bharadwaj is credited with incarnating Ayurveda from Devlok to Mritya Lok. The subject matter of Ayurveda is found in all the four Vedas, but it is most closely related to

Atharvaveda. Both Acharya Sushruta and Acharya Charak considered Ayurveda to be most closely related to Atharvaveda and called it the most sacred Veda. (Sachan, 2021)

Lord Dhanvantri is considered and worshiped as the God of Physician and an excellent surgeon in both the Vedas and Puranas. He is known as the father of Ayurveda, as he was the first embodiment of Lord Vishnu to pass on the knowledge of Ayurveda to humans.

(Sachan, 2021)

## **1.2 An Introduction to Tridosha**

The question about the connection between physiology and psychology of the human body has been an area of concern amongst researchers for a long time. In this context, Ayurveda has presented us with the theory of Tridosha, which forms the basis for the human body (Pt. Kasinatha Sastri, et al., 2021). The theory states that three basic elements of life keep the metabolism of the body running. For perfect health, the three elements need to be perfectly balanced and harmonious with each other, as any kind of imbalance of the same becomes the cause of disease in a person. Restoration of balance in the three factors, thus, forms the basis of treatment in Ayurveda. (Murthy, 2011)

The three factors, as discussed above are known as Kapha, Pitta and Vata

### **Kapha – The growth factor**

Every cell of the body grows, multiplies, reproduces, renews and repairs by itself. The body is protected by cells and tissues, through their defensive mechanism of releasing antibodies and other protective hormones. In Ayurveda, such defensive activities are considered to be the work of the growth factor. Apart from protecting the body from foreign objects and promoting physical growth, this factor also promotes mental abilities and characteristics like tenacity, awareness, intuition, tolerance power and loyalty.

The growth factor as mentioned above is called ‘Kapha’ or ‘Kaphadhatu’, which means the water of life. This growth factor in Ayurveda is known as ‘Kapha’ or ‘Kaphadhatu’ which literally means the water of life. The word Kapha can be translated as generative or developing element of the body.



## **Pitta – The Consuming Factor**

Second is the Consuming factor of life. This consuming factor regulates the metabolic activities of a human body. In Ayurveda, this is called as ‘Agni’ or ‘Pittam’, i.e., the fire of life. Apart from keeping the body temperate, it is responsible for clear skin, good intellect and vision, along with the qualities of cheerfulness and bravery in a person.

## **Vata – The Motive factor**

The third factor of life is responsible for keeping the body energetic. This factor is known as ‘Vayu’ or ‘Vata’. According to Charak, ‘Vayu is the very life of living things.’ Ayurvedic scholars consider Vayu as the driving factor, the energetic factor, or the stimulating factor. It is present in all the cells of the human body.

According to Ayurveda, all types of impacts or agitations, all types of movements whether discretionary or not, flow, breath, and the abilities of the brain like contemplation, reflection, recollection, judgement, reasoning, intellect, articulation, sleep, tenacity etc. are the functions of Vata. (Pt. Kasinatha Sastri, et al., 2021)

### **1.3 Personality – job fit**

One of the key roles of Human resource manager is recruitment. Recruitment is not simply selecting any person for any job. It requires deep analysis of the job and the job role and then selecting a person “best suited” for the role. This testing of suitability for the job is done by analyzing and understanding the psyche and nature of the person through a series of selection activities like group discussions, psychometric test, personal interview, observation etc. As per Robbins, this practice of measuring the fit between the personality of a person and the kind of job that a person should do, falls under the gambit of Personality- job fit theory. Personality job fit is a form of organizational psychological phenomena that postulates that an individual’s adaptability within an organization is determined by the person’s personal traits. Dr. John Holland developed a “personality- job fit theory” in which six types of personalities are identified as being, “Realistic, Investigative, Artistic, Social, Enterprising and Conventional” also called as the RIASEC model. This theory suggests that job satisfaction and turnover are directly related to the personality type of the person and the work environment of the organization. (Chen Zhu, et al., 2018)

Various theories have been postulated on the role of personality and traits of a person and its effect on job satisfaction. As Parsons mentioned in his article on Choosing a Vocation, knowing your true personality, understanding different types of jobs and roles and finding an absolute correlation between the two is paramount to achieving job satisfaction. Job satisfaction is not merely a psychological phenomenon associated only with the workplace or the organization. It has direct correlation with personal lives as well. (Heiser)

In this article, researchers aim to understand the exact nature of people based on the Tridosha theory of Ayurveda and attempt to differentiate the same with the theory of personality job fit. This is done in an attempt to Indianize a global thought and record our study on the difference between of the two theories in an Indian context.

## **2. Review of Literature:**

The word Personality is derived from the Greek word 'Persona' or 'mask', due to dramatic masks which were worn by ancient Greek actors. Personality is now, ironically, studied to uncover and understand the true nature of humans. Personality psychology has been an area of interest for many scientists since time immemorial. Hippocrates and Galen worked on theories which started separating the psychology from physiology of human beings. However, Wilhelm Wundt (1879 AD) was the first person to clearly differentiate between human body and personality. Francis Galton (1869) argued that the differences in psychological traits of people can be measured, thus introducing the concept of psychological testing.

In 1900, Sigmund Freud, greatly influenced the world of psychoanalysis and gave us the concepts of Id, ego and Superego. His colleagues, Alfred Adler and Carl Jung are famous for introducing the concepts of inferiority complex, sibling rivalry and the word association test respectively (Jain, 2016). Apart from the ones mentioned above, many other scientists have worked on development of psychology as a field of study. This includes Erasmus Darwin, Francis Galton, Karl Pearson, Charles Spearman, Raymond Cattell, G.W. Allport, H. Odbert, Hans J. Eysenck, H.G Gough, E.C. Tupes, R.E. Christal, Robert and Joyce Hogan, Murray Barrick and Michael Mount and many more (S, 2014).

In the Indian context, psychology is understood by three major domains, namely Panch Kosha, Tridosha and Trigunas (Rajas, Tamas and Satva). In this paper, researchers have focused

mainly on understanding human psychology and personality from the perspective of Tridosha. (Rastogi, 2010)

Personality has a great role in deciding the career of a person. The most ground breaking model used for testing personality job fit is the Holland model (Zainudin, et al., 2020). Holland's personality job fit theory is also known as the RIASEC model. The paper mentioned six personality types as being Realistic, Investigative, Artistic, Social, Entreprising and Conventional (RIASEC) (Anja Ghetta, et al., 2020)

According to John Holland, description of the six personality types is

### **1.Realistic (R)**

Realistic people are active and stable and enjoy manual activities like building, construction, mechanics, machinery operation or athletics. People belonging to this category enjoy physical activities and like to work with things rather than people or ideas. They are practical and task oriented in their approach.

### **2.Investigative (I)**

They are analytical, intellectual and observant people who are fond of research, data analysis or scientific activities. These people are mostly introspective and avoid taking up leadership roles as they are used to working autonomously. They like to use logical and analytical tools to solve research problems.

### **3.Artistic (A)**

Artistic individuals are original, creative and imaginative people who enjoy creative activities like composing music, writing, painting, drawing etc. These people are averse to conventional jobs and prefer flexibility in their work.

### **4.Social (S)**

People belonging to these categories are gregarious and enjoy participating in group activities. These people are responsible, humanistic and concerned with the welfare of the group. They can be good and persuasive communicators and are usually involved in solving interpersonal problems.

### 5. Enterprising (E)

People belonging to these categories are skilled leaders, assertive, confident, ambitious and energetic. They use their persuasive leadership skills and assertiveness to achieve organizational goals but are averse to conventional and systematic jobs.

### 6. Conventional (C)

People belonging to this category are conforming, efficient and organized. They enjoy working within an established chain of command. They are averse to ambiguity and prefer carrying out well defined instructions and avoid taking up leadership roles themselves. (Holland, 1997)

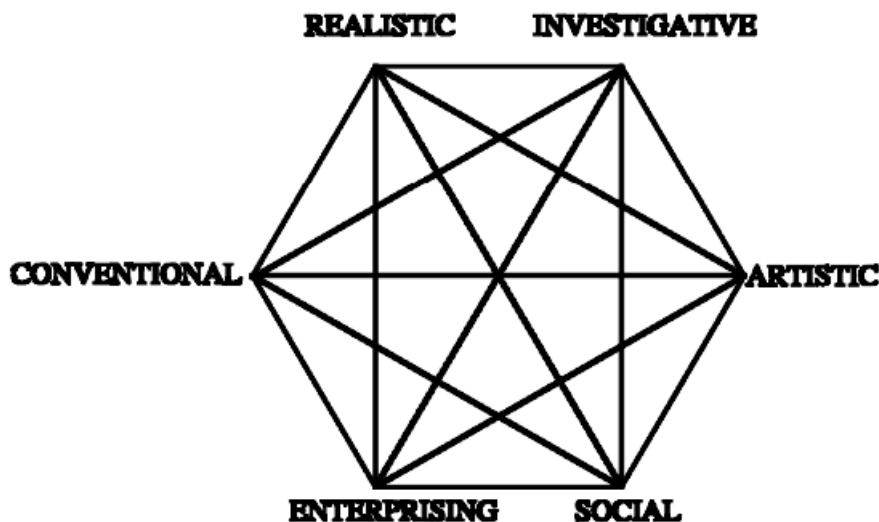


Fig. 1 Holland's Personality types commonly known as Holland's Hexagon theory (Arnold, 2004)

Holland's Personality types and the kind of jobs preferred

Personality Type	Typical Career types*
<b>Realistic (R)</b>	electrician, engineer, veterinarian and the military
<b>Investigative (I)</b>	medical technologist, biologist, chemist and systems analyst
<b>Artistic (A)</b>	musician, reporter and interior decorator.
<b>Social (S)</b>	teacher, counsellor and social worker
<b>Enterprising (E)</b>	salesperson, business executive and manager
<b>Conventional (C)</b>	secretary, accountant and banker

(Holland, 1997)

\*Career types mentioned are just few examples to show the kind of jobs the people belonging to these types of categories may prefer.

### Personality types as per Tridosha theory

According to Charak Samhita, there is no one element which defines the type of a person, rather it is a combination of all the three doshas, with one of the dosha being the primary, the other being secondary and least dominant (Anupama Kondayya, et al., 2020). The types of personality for each of the dosha along with the job profile most suited with the personality are as below:

Primary Dosha	Suitable job profile
<b>Vata</b>	Sales, Marketing, Acting, Dancing, Teaching and other creative fields are recommended
<b>Pitta</b>	Leadership, Management, Medicine, Finance, Politics, Advocacy
<b>Kapha</b>	Administration, Public Relations, Nursing, Counselling

(Pt. Kasinatha Sastri, et al., 2021)

Why do the researchers want to focus on Tridosha theory to test personality job fit?

While Holland's theory focuses on only the area of interest of people to determine their nature and correct personality job fit, Tridosha is determined at the time of birth of an individual itself. Tridosha determines the physiological and psychological characteristics of the human being. Ancient Ayurvedic texts suggest that Tridosha not only tells us about the physiological and psychological aspects of a human being, it also tells us about the kind of diseases a person might be more prone to, the kind of dreams a person is likely to get, the kind of jobs a person will excel at etc. Thus, Tridosha theory provides a more holistic view of the person as whole, not just physically, but also emotionally, mentally and psychologically (Chaya. B.V, et al., 2013). According to Arnold in his paper, Also, research suggests that compatibility evaluated using Holland theory has a weaker relationship with the results. (Arnold, 2004)

### 3. Research Methodology

For the research, Post Graduate students of a university (sample size = 150 students) were asked to fill up the forms for both the Holland Code (RIASEC model) and Prakriti Test. Both the tests were readily available and no questions were either added or deleted. Responses were received from 91 students. The Holland test asks questions about the area of work interest of a person and comprises of 48 questions. The Prakriti test comprises of questions pertaining to the physiology and psychology of people and is of 15 questions.

For the analysis, the responses of Prakriti test were analysed to classify the students among the three doshas or a combination of the three. The responses of Holland test were analysed to assign a personality code to each of the respondent. The job fit for each personality type and the dosha were taken as per the text given by Holland and Ayurvedic literature respectively. The job fit thus received for each personality type (both as per Tridosha and Holland code) were checked to see the difference between the two. Differences between the results were marked as 1 and no difference were marked as 0. Out of the 91 responses received, 66 responses showed a difference in the result of Prakriti test and Holland test, whereas 25 responses showed no difference, which translated in percentage form becomes a difference in around 72.5% of all the responses, which shows a significant variation. The table of difference is as given below:

S. No	Personality	Differences
1	Artistic	21
2	Artistic and Social	0
3	Artistic, Social and Enterprising	0
4	Artistic and Investigative	0
5	Social	33
6	Conventional	9
7	Enterprising	0
8	Investigative	3
	<b>Grand Total</b>	<b>66</b>

The personality type as mentioned in the table above, is as per the result of both the personality tests conducted on students. For ease of analysis and understanding, the personality type as per Tridosha (Vata, Pitta and Kapha) are compared to match with the dominant personality trait of the Holland code. More than one Personality type is written at places due to the fact that many responses led us to understand that there exists a combined personality type and there is no one dominant trait present in such respondents. Please note for the test, Realistic personality type

was not considered as none of the responses resulted in a Realistic personality for any of the 91 respondents.

#### 4. Conclusion

While working on the paper, the hypothesis the researchers had in mind was there would be a significant difference between the results for personality and job fit analysis done through both the Holland test and the Prakriti test. The hypothesis was failed to be rejected as seen from the result as shown above.

Although the concept of Tridosha is Indian, it can be used in a global context in understanding the personality type of people and further to understand the kind of jobs more suited to each personality type.

The managerial implications for the test may prove to be quite significant in the context of the corporate sector, where the human resources department may find the use of the prakriti test as a more fitting and acceptable test to judge roles suitable to employees of different personalities.

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## **Patriarchy and Class Divide in Indian Business Families Behaviour Narratives during Globalization: A Study via their Cinematic Representation in Bollywood**

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### **Abstract**

Indian business families have played a critical role in Indian economy. Previous analyses show that these families have practiced patriarchy and class divide in their social as well as business behaviours. One of the defining and landmark moments in the history of modern India is globalization (1991) of Indian economy. With opening of Indian economy to the world, relatively progressive western values were expected to have an influence on behaviour of Indian business families. Relying on the premise that cinema reflects society, this article analyses the cinematic representation of Indian business families in mainstream Hindi cinema (Bollywood) in two decades post liberalization and investigates if this behaviour changed. Using the theoretical framework of Co-cultural theory (Orbe, 1997) and an analysis of nine Bollywood films, we find that Indian business families continued practicing class divide and patriarchy post liberalization, and the anticipated impact of western values was missing.

### **Indian Business Families, and their Behaviour**

India's business landscape has been dominated by family-owned businesses (Subramanian, 2018; Ward, 2000). Among other practices, these business families have visibly indulged in behaviour that included gender discrimination and class divide. They provided men more opportunities while suppressing women (Sinha, 2012; Echavarri and Ezcurra, 2010). The practice of upper class dominating the lower ones and denying them equality was also a prevalent behaviour (Mullaiti, 1995; Tewatia et al., 2020).

Western business world, on the other hand, displayed relatively modern and progressive values during this period (Becker-Bease and Sohl, 2007). While western societies were not completely devoid of patriarchy, businesses were working towards gender equality and ahead of their Indian counterparts in this quest. Western businesses made significant progress in bringing women close to men in positions

& compensations, prior to the time in discussion in this paper (Adler, 1993; Di Noia, 2002). Similar progresses were being made on the front of social equality as well (Littlefield, 2005)

### **Patriarchy and Class Divide**

Walby (1989) defines patriarchy as organized social structures which enable men to dominate and exploit women. Bannerji (2016) refines it by calling patriarchy as organized and social violence against women. Patriarchy existed (and exists) in Indian society (Malhotra et al., 1995) and has been normalized to an extent that it does not even occur as something unusual (Purkayastha et al, 2003; Pandian, 2021). Using the critically acclaimed Bollywood film *Pink*, Tamakuwala (2017) stated that Bollywood's representation of women suffers from patriarchy and women are represented in stereotyped sketches. Moghadam (1996) argues that patriarchy existed in Indian businesses as well. Women did not get enough representation in Indian businesses and management as well as decision making powers have predominantly stayed dominated by men (Tamakuwala, 2017).

Class divide can simply be understood as differentiated behaviour by members of one homogenous group of society towards other. Perils of this divide are mostly faced by the lower class in form of discrimination (Rose, F., 2018). India has long suffered (from pre-independence era) from class divide and it is visible prominently in its culture. Desai and Vahad (2020) state that upper classes have exploited lower classes and made social systems that help in maintaining and reinforcing their power over lower classes (Bapat, 2016; Saha, 2019). Using Marxian theory of class relations, Pande (2018) explains that class divide persists in India and needs to be bridged for an inclusive growth. Balasubramanian et al. (2006) argues that much like in Indian culture, class divide exists prominently in Indian businesses and is evident in their practices like succession planning or social relationships (Arokkiaraj and Nizami, 2021).

### **Liberalization and Globalization**

For over four decades after gaining independence in 1947, India maintained a closed business environment (Majumdar, 2004). With liberalization in 1991, India opened its business boundaries to the world and invited global players to operate in India. As a result, a significant number of global players entered India via joint ventures (JV) with Indian businesses. Thus, globalization helped bringing knowledge about progressive western values to India (Tamakuwala, 2017). Therefore, Indian businesses stood an opportunity to learn from and adapt to modern world thought processes which were

relatively more progressive and advanced in terms of non-discrimination of genders and classes (Bhattacharya, 2013).

### **Cinema and Society**

Cinema becomes an important medium when we recognize the power it carries to influence human behaviour (Shail, 2012; Gupta and Gupta, 2013). The mainstream Hindi film industry in India, popularly known as Bollywood (a portmanteau derived from Bombay film industry, rhymed after Hollywood), is recognized as one of largest industries in the country. Given this importance and influence, it makes an interesting case to study representation of society by cinema (Trembley, 1996).

Cinema, across the world, portrays social behaviours and truths (Ahmed, 1992) and the culture which surrounds it (Rawat, 2020). Indian films have reflected realities from all classes' viewpoints, and changed over time to reflect changed realities. Jha (2016) studied the representation of women in Indian cinema via item songs. They argued that women have been objectified as sex symbols and not represented in parity with men. Abbasi-Bhura (2001) analyzed this representation by applying feminist theories and concluded that women have been represented in limited form in Indian cinema. As for class-divide, it has been visible in Bollywood via lenses of wealth, caste, gender (patriarchy), and rural- urban divide (Singh, 2021; Wankhede, 2013; Gupta and Gupta, 2013).

This paper attempts to study impact of liberalization on the behaviour of business families via analyzing their portrayal in Bollywood films.

### **Timeline and Selection of Films**

In line with the objective of this paper, the timeline for selecting the films to be analyzed was kept as during and after liberalization in India. A timespan of two decades was considered. The first decade (1991-2000) was expected to show the gradual change in business families value system and behavior, while the following decade (2001-2010; neo-globalization era) was expected to reflect the changed realities of business families in India. To arrive at the list of films to be analyzed in this paper, following criterion were applied.

***Inclusion Criteria:*** In addition to film being a Bollywood cinema and released within our timelines (with an exception to film *Maine Pyar Kiya*, released in December 1989), it must have business family

setting. Further, the film must have been commercially successful. This was required to make sure that audience liked the viewpoints represented via the film (Ruby, 1991). This article analyses representation of business families by taking obvious as well as subliminal cues. Basis above criteria, nine films were selected for analysis. Table 1 enlists these films, English translation of their title, and their release year.

<b>Title of the Film</b>	<b>English Translation of the Title</b>	<b>Year</b>
Maine Pyar Kiya	I loved	1989
Damini	The Lightning	1993
Hum Aapke Hain Koun	Who am I to You	1994
Laadla	Mollycoddle	1994
Hum Saath Saath Hain	We are Together	1999
Taal	Rhythm	1999
Kabhi Khushi Kabhie Gham	Sometimes Happiness Sometimes Sorrow	2001
Corporate	Corporate	2006
Wake Up Sid	Wake Up Sid	2009

**Table 1: List of films considered for analysis**

### **Theoretical Framework**

We analyze behaviour of business families in our selected set of movies by drawing support from the framework provided by Co-Cultural theory by Orbe (1997). The theory states that dominant cultural groups form systems that help them reinforce their dominance and stop dominated groups from gaining power. Co-Cultural theory is about conversations between the individuals from underrepresented/marginalized groups (called co-cultural groups) and the representatives of the dominant society. In our context, these co-cultural groups are women (in context of patriarchy) and low socioeconomic class groups (in context of class-divide). The theory is grounded in five assumptions:

- a. A hierarchy exists in any society that privileges certain groups.
- b. Dominant members occupy positions of power that enable them to create and

maintain the systems that reinforce their perspectives/experiences and mutes those of others

- c. Dominant communication systems function to keep co-cultural group members outside the centers of power
- d. Despite variance across co-cultures, they share a marginalized social position within the dominant system
- e. Co-cultural group members strategically communicate to negotiate the dominant system in which they find themselves

### **Cinematic Representation**

**Class Divide:** Bollywood movies' representation of business family has not shied away from this representation of class-divide (Kumar, 2021). Looking through the dimensions provided by the Co-cultural theory, we find co-cultural groups being victim of an inferior treatment by the dominating groups. In context of business families, these groups were divided basis their socio-economic status (Banerjee, 2021).

The theme of class-divide reflected prominently in *Maine Pyar Kiya* (1989) where a modern businessman Kishen Kumar Choudhary is at odds with his only son for falling in love with daughter of his childhood friend as the two families are not from same economic class. Despite the high importance assigned to love and friendship in Indian traditions (Singh et al., 2018), Kishen places socio-economical class-divide driven behaviour above these values and opposes the alliances of two families. Additionally, Kishen wishes for his son to marry the daughter of an industrialist. This narrative reinforces the co-cultural theory's premise that dominating classes forge relationships and make social structure that continue to support their dominance in society.

After a decade of *Maine Pyaar Kiya* and eight years of liberalization, *Taal* (1999) repeated the same representation in Jagmohan Mehta (head of the family) opposing marriage of his son with the girl he is in love with, on the grounds of socio-economic differences. Even in new millennium, *Kabhi Khushi Kabhie Gham* (2001) portrayed an ultra-modern business family head (Yash) not sanctioning the love of his son with love of his life as the latter does not conform to his socio-economic class. On the lines of Kishen from *Maine Pyar Kiya*, Yash also wishes his son to marry daughter of his business friend. It is interesting how the narrative has stayed the same and business families have not been able to resist the idea of class-divide even after a decade of liberalization..

A contrast, however, is visible in the characters of all three films namely *Hum Saath Saath Hain* (1999), *Maine Pyaar Kiya* (1984) and *Kabhi Khushi Kabhie Gham* (2001) where the sons did not believe in class-divide. Notably, all of these characters were foreign-educated, and this representation resonates with the fact that western values were relatively modern in this regard.

**Patriarchy:** In the bouquet of films we analyse, patriarchy is evident in the behaviour of business families. Here, women form the co-cultural group and are dominated by the men of the family or society (Jha, 2016).

Revisiting *Maine Pyar Kiya* (1989), we see Kishen's wife having no say in her son's life and even when it leads him to leave home to be with his love, she dotingly sides with her husband. Intriguingly, the character is presented to us as an ideal wife. Four years later, in *Damini*, we see head of a business family (Gupta) planning assassination of her daughter-in-law. An outstandingly successful film *Hum Aapke Hain Koun* (1994) represented the female lead, Nisha, getting asked to marry her brother-in-law post her sister's death. The film expects audience to see a higher moral ground in a woman marrying her brother-in-law and taking care of his son rather than taking a stand and marrying love of her life. Not surprisingly, these decisions for women were taken by men of the families. *Kabhi Khushi Kabhie Gham* (2001) shows head of the business (and family), Yash Raichand having the final word in all key business and social decisions. This male dominance is extremely vocal in the film and rather amplified with the iconic dialogue '*Keh diya na, bass keh diya*' (I said what I said, and that is final) by Yash to Nandini multiple times.

A possible contrast was found in *Laadla* (1994) but only prima-facie. The movie showcases the female lead (Sheetal) not only running the business but also displaying masculine traits (Ballaro and O'Neill, 2013) like ambition and competitiveness. Even this exception, however, has subtle underpinnings of patriarchy. We do not know if Sheetal led business on merit or simply because she was the only child of the business head. Further, Sheetal's character is represented in a negative light. She is arrogant and greedy. In contrast, another female character, Kajal - who quits her job happily to turn a caretaker for her love's mother - is portrayed as an ideal woman. Thus, women have mostly been represented as not leading the businesses or having any power in making decisions in business families; and when they do, they are villainous and incapable of making sound decisions (Tamakuwala, 2017).

This display of patriarchy has been evident in succession planning as well. *Hum Saath Saath Hain* (1999) portrays the eldest son (Vivek) as the rightful heir of business (despite being handicapped) in an unquestioned manner. While this power tussle continues to in family, daughter of the family has no say in this critical business decision. Eighteen years post liberalization, *Wake Up Sid* (2009) has Siddharth (Sid) consistently being chased by his father to take over his business, against Sid's own wish. The film shows Sid rebelling against his father and leaving home. His mother, however, continues to maintain her silence on the issue.

As a new age cinema released in neo-globalization era, *Corporate* (2006) made an exception and represented the changed urban realities and women running a multinational firm shoulder to shoulder with men. Nishigandha makes business decisions as VP of the firm. Interestingly, the film positions itself as a realistic urban cinema and shows Nishigandha being manipulated by men and left to rot in prison. Another exception this film makes is by making audience siding with Nishigandha, and not the men.

As an interesting and overlooked dimension, this representation passes the burden of leading the business to men. Men are also burdened with having to make a choice between leading a business or pursuing what they really want. Male leads in *Maine Pyar Kiya* and *Kabhi Khushi Kabhie Gham* must leave home and businesses if they want to pursue their love. Male protagonist in *Hum Saath Saath Hain* must lead the business against his wish only because the parents want him to. In *Taal*, he is a good man only because he does not revolt against his family and rather suppresses his desires. The son in *Wake- Up Sid* must quit home and family because he does not want to lead his father's business. Thus, there is an unaccentuated representation in Bollywood films which shows that patriarchy hurts men as well (Becker, 1999).

### **Conclusion and Limitations**

Scholars have argued how western business behaviour was relatively advanced and progressive. They have hoped that liberalization driven exposure to such values will have an impact on behaviour of Indian business families as well. A representational analysis of nine films fitting the selection criteria and released within two decades of globalization in India, however, shows that despite being exposed to relatively progressive western business values, Indian business families stayed influenced by patriarchy and class-divide. Using the framework provided by the Co-cultural theory (Orbe, 1997), we see that

women and people from low socio-economical classes formed co-cultural groups in contexts of patriarchy and class-divide respectively. There was, however, a contrast in the style of representation of these two concepts and what it aimed to achieve. Class-divide was represented in negative light and films aimed to gain audience's empathy against it. In context of patriarchy, however, these films not only represented it as a way of life but also showed it as the right thing to do. These films, however, did not highlight how men were also bearing the brunt of patriarchy.

While this article analyzes representation of business families in Bollywood cinema, it does have its own limitations. To begin with, only Hindi (Bollywood) films were analyzed. Indian film industry has significant share of films coming from regional film industries (Marathi<sup>50</sup>, for example). Next, taking inspiration from other cultures and letting it change one's values, beliefs, and behaviour is a slow process. This paper analyses films released within two decades post liberalization. This timespan may not be sufficient to reflect change in belief system of Indian business families. A larger analysis may be conducted with extended timeline and wider selection of movies from all languages.

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<sup>50</sup> Marathi is the native language in the state of Maharashtra, capital of which is Mumbai (formerly Bombay) which is home to Hindi cinema and hailed as commercial capital of India

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### **III. Centre for Governance**

## **A Study of Gender Bias in the Mutual Fund Industry in India.**

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### **Introduction**

This paper focuses on gender discrepancies in the Indian mutual fund industry and its effects on investors. The mutual fund sector is a great place to conduct research, because the observed behavior is not influenced by external factors, gender differences can be observed. Furthermore, the consequences of one's actions are directly mirrored in one's financial situation.

The vast empirical and experimental literature in psychology and finance allows us to develop several new hypotheses on female and male fund managers' investing behavior and performance, as well as fund investors and fund management companies' behavior.

We start by contrasting and comparing the behaviors of male and female fund managers. For starters, we anticipate that female fund managers will pursue less riskier investing methods. Numerous studies have shown that women are less risk-taking than men (Chawla, 2014). We expect risk-taking variations between them to be less prominent than among retail investors. This is because female and male fund managers have similar educational backgrounds and experiences, causing them to act more similarly than a random sample of men and women. Female managers have a lower salary than their male counterparts. This points to male managers' trading habits, which include more active bets.

These findings are important for fund investors since the gender of the fund manager is plainly observable information that may be used to predict the fund's investment strategy.

As a result, we investigate whether gender disparities in fund manager investment behavior are mirrored in fund performance. However, we find no significant differences in average performance using multiple risk-adjusted performance measures. Nonetheless, the performance distributions of male and female managers significantly differed. Male-managed funds account for a substantially bigger share of the very best and very poor funds than the rest of the funds. This suggests that male managers' more extreme style bets lead to a higher likelihood of getting extreme performance ranks.

## Review of Literature

“Numerous research on the performance given by mutual fund managers have been conducted”.(Chawla, 2014) in his paper found that “When compared to male-managed funds, female-managed funds have much lower inflows: Inflows into a female-managed fund are around 18% lower than inflows into a male-managed fund with otherwise equal inflows.. Fund families appear to have no need to employ many women because their fee income is based on their assets under management.” (Atkinson et al., 2003) argued that diverse attributes have different effects on return, risk, and fund manager talents, all of which affect overall success. Having a Master of Business Administration degree or a Chartered Financial Analyst certification, in particular, is linked to a fund manager's stock-picking abilities, larger excess returns, and superior overall performance.(Gangi et al., 2021) examine the influence of changes in management's gender composition on fund performance by analyzing performance within funds across time. “There is some evidence that the percentage of female fund managers is negatively associated to the fund's long-term performance.”

Similarly, (Gill et al., 2011) indicates that fund performance is strongly sensitive on the quantile chosen for the returns distribution; also, style consistency for male and female managers can be seen across quantiles. (Luongo, 2011)in his research found that “the Balance fund outperforms the others, and female managers outperform male managers in terms of cost control and risk management. As a result, company size, as measured by the net asset value of funds, has a favorable impact on management performance, but persistence, manager tenure, manager replacement, and funds under managed all have negative effects.” (Rose, 2000) suggest that “there are no intrinsic talent differences between female and male managers, but that only the highest-performing female managers survive.”

On the other hand, (Lancaster et al., 2008) in his paper argued that prior performance, as measured by returns and fund flows, is the most important determinant in determining career prospects, personal characteristics also play a role. The chances of promotions for female fund managers are less and they have shorter tenures than male fund managers, assuming all other factors are equal. This finding applies to women who co-manage funds with other managers to a higher level, implying that working in teams has a detrimental impact on women's careers when compared to men. Furthermore, they show that, all other things being equal, younger managers, managers with a U.S. education, and managers who attended prestigious schools had higher career outcomes than otherwise comparable managers.(Switzer & Huang, 2007) found that “Female managers have statistically significantly higher net alpha and higher value added than male managers, demonstrating that females are undercapitalized but have superior competence, as they are able to extract high value added even without adequate capital allocation.”(Sahi & Arora, 2012) found the “proportion of women and critical mass have a beneficial impact on the ESG rating of

investment portfolios. The recent study adds to the body of knowledge on the GD impact and ESG screening, as well as giving more guidance for equity mutual funds looking for the best ESG performance and long-term growth of their target companies.”

(Kansal & Singh, 2013) in their findings suggest that “A change in fund management can have a considerable influence on fund performance across a variety of fund categories. They show that after a female fund manager is replaced, the performance of the funds improves. Finally, when comparing the performance of the bottom-performing funds to the top-performing funds before and after management changes, we find that the bottom-performing funds' performance remains consistent.” (Welch & Wang, 2013) emphasized that Female fund managers tend to act as gender studies predict: they are more risk cautious and avoid competition in tournament situations. Women are predicted to have a lower level of overconfidence than men, but this difference is so minor that it is inconsequential in fund management. (Bliss & Potter, 2002) argued that gender is not a source of underperformance, according to their study, and thus is not a rational factor in selecting management team composition. Their findings are in line with prior research, which demonstrated no effect of gender on performance in European equities mutual funds.

(Cici & Palacios, 2015) suggested that “The usage of options by mutual funds appears to be compatible with income generating and hedging goals, is systematically connected to portfolio manager experience, education, and gender characteristics, and does not, on average, result in performance gains. Instead, certain options usages result in underperformance.

They found no evidence of long-term or short-term aggressive risk-taking by option users, but rather that some funds use options to efficiently reduce risk.” (Mehta & Shah, 2012) found that “Investors rely on more when making investments, and that mutual funds are the preferred way of investment. The study will be extremely beneficial to AMCs, Brokers, Distributors, and other potential investors, as well as academicians”.(Niessen-Ruenzi & Ruenzi, 2019) came to the conclusion that there are no disparities in performance between men and women. As a result, the money flow impact is unlikely to be explained by reasonable statistical discrimination. They conducted an unconscious association test and discover that “respondents who score higher on the gender bias scale invest far too less in female-managed funds. Their findings imply that gender prejudice influences investment decisions, which could explain why women make up such a small percentage of the mutual fund business.”

(Bigelow et al., 2014) in their study concluded that “when all other things are controlled, female CEOs may be disproportionately disadvantaged in their capacity to obtain expansion capital.

Despite having the same personal qualities and financials as their male counterparts, female founders/CEOs were evaluated as less capable, and IPOs led by female founders/CEOs were viewed as less appealing investments.” (McLoughlin, 2005) looked at the psychological aspect of gender bias. He emphasized that “Women are singled out by gender in ways that make them uncomfortable, which is known as spotlighting. Sort I is discriminating against women with the aim to hurt them (overt sexism); Type II is discriminating against women with neutral intents (tacit sexism); and Type III, a new type of gender bias, is discriminating against women with the desire to benefit them. Undergraduate women engineers named Type III highlighting due to women in engineering (WIE) programs as the direct or indirect cause of their principal gender-bias difficulties in a longitudinal, qualitative study involving three types of schools.”

### **Objectives of the study**

1. To determine whether the mean 10-year returns obtained by female fund managers and male fund managers in comparable schemes differ significantly.
2. To determine whether the mean 10-year returns of female fund managers and their respective benchmark indices differ significantly from one another.

### **Research Methodology**

Data was taken from the website of “The Association of Mutual Funds in India (AMFI)”, Morningstar Principia and Morningstar mutual fund website and their databases. As of December 2021, there are 251 active fund managers in India whose 10 years performance data is available. Out of 251 only 18 are females, which clearly provides the evidence in favor of our hypothesis that bias exists amongst the male and the female fund managers.

We have categorized the fund managers into 3 categories according to their asset class in which they invest. Namely,

1. Equity
2. Debt
3. Foreign Securities

After separating them we compared the data for male and female managers.

For comparison we used the return data of last 10 years (2012-2021). We applied a student’s T Test for comparing the mean returns for each category separately for both male and female managers. We have considered Nifty-50 as our Benchmark Index for equity fund managers only.

### **Data Analysis**

#### **Objective 1**

To determine whether the mean 10-year returns obtained by female fund managers and male fund

managers in comparable schemes differ significantly. An independent sample T-test was performed using SPSS version 26.at the significance level of 0.05

The proposed hypotheses for the same were as below:

H0: The average returns for men and women fund managers are not significantly different.

H1: The average returns for men and women fund managers are significantly different.

The results obtained from SPSS were

### Group Statistics

	Asset Class	N	Mean	Std. Deviation	Std. Error Mean
Weighted Average Performance in decimal	Male	233	17.9320	17.47715	1.14497
	Female	18	10.9911	11.56046	2.72483

Table 1-Gender-wise data

Independent Samples Test											
			Levene's Test		t-test for Equality of Means						
			F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Weighted Average Performance in decimal	Equal variances assumed	Equal variances not assumed								Lower	Upper
						9.119	.003	1.655	249	.099	6.94091
					2.348	23.480	.028	6.94091	2.95561	.83366	13.04815

Table 2 -Results of Independent sample test for gender obtained from SPSS

Inference- Our alternate hypotheses is accepted since the p-value is at 0.003, which is less than 0.05. As a result, the average returns of male and female fund managers differ significantly.

### Objective 2

To determine whether there is a noticeable difference in the average returns of male and female equity fund managers. An independent sample T-test was performed using SPSS version 26.at the significance level of 0.05

The proposed hypotheses were as below:

H0: Male and female equity fund managers' average returns against the Nifty 50 do not significantly differ from one another.

H1: Male and female equity fund managers' average returns against the Nifty 50 significantly differ from one another.

The results obtained from SPSS were

Group Statistics					
	Category	N	Mean	Std. Deviation	Std. Error Mean
Against Nifty	Male	137	26.2851	16.74275	1.43043
	Female	7	19.4657	13.87737	5.24515

Table 3-Gender-wise data for Equities

Independent Samples Test										
		Levene's Test		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Against Nifty	Equal variances assumed	.345	.558	1.058	142	.292	6.81940	6.44478	-5.92071	19.55950
	Equal variances not assumed			1.254	6.924	.250	6.81940	5.43670	-6.06503	19.70382

Table 4 -Results of independent sample t-test for managers' performance against benchmark

Inference- Null hypothesis is accepted because the p-value is 0.558, which is greater than 0.05. Therefore, the average returns of male and female equity fund managers against the Nifty 50 are not significantly different from one another.

### Findings of the study

From the findings it can be understood that when it comes to equity investments both female and male fund managers have easily beaten the benchmark. However, when we consider all the categories male fund managers still significantly outperforms female fund managers.

### Limitations of the study

One big limitation of this research is there are still very few female fund managers in India, so the results are bound to be in favor of male fund managers. However, with more and more female choosing finance as a career the scenario will likely be changing in the future. The other limitation for this study is the lack of data for mutual funds aging above 15 years as the mutual fund industry is still evolving in India, this will not be an issue in the coming years.

### Conclusion

Overall, our data imply that investor gender bias has a considerable impact on female participation in financial markets, which may explain why female fund managers see much lower inflows to their funds than male fund managers. Furthermore, fund companies are less likely to hire managers who generate low inflows, yet our findings suggest that male and female managers perform



equally well.

## Managerial Implications

Overall, our research clarifies why the funds managed by females receive much less inflows than funds managed by their male counterparts and shows how investor's gender bias can have a considerable impact on the fund flow of financial markets. Additionally, fund companies are less likely to hire managers who generate little inflows, and our findings point to customer prejudice as a potential new reason for the low proportion of women fund managers in the Indian mutual fund industry.

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## Unintended Consequences of Lotteries

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### Abstract

Unintended consequences is a frequently-observed phenomenon in which any action has results that are not part of the actor's purpose. Unintended consequences for policy space can be extreme as it affects the large population and hence receive more attention. In this study we have explored the unintended consequences of public policy using state run lotteries as context. While lotteries are usually labelled as gambling and social evil, we have look into more depth

the positive unintended social consequences of implementation of state-run lotteries by the Kerala government in India. The findings of this study show that well managed lottery business has potential to create employment for many people in state and especially to the senior citizens and differently abled people resulted in the generation of regular and stable income for such weaker sections and therefore helped the government in combatting poverty, begging and also handling the problem of habitation of senior citizens by making them financially independent.

**Keywords:** Public policy, Unintended consequences, Lottery, Social consequences, Ethnography, Employment generation, Altruistic mindset.

## Leadership and Governance

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### **Introduction:**

Leadership and Governance – Are they one and the same? How do we differentiate them? Have they got anything to do with Styles? How do they manifest? These are thoughts which we often ponder about. Over the years, Leadership often came to be perceived as the various styles it got practised. Benevolent, Democratic, Autocratic ... became synonymous with leadership.

As regards Governance, the word started gaining relevance when people felt something was genuinely missing in leadership. Irrespective of the varied leadership styles, righteousness was palpably lacking. The intent of leadership became questionable.

Barak Obama or Donald Trump, Margaret Thatcher or Boris Johnson, Shinzo Abe or Xi Jinping, Vladimir Putin or Volodymyr Zelenskyy, Narendra Modi or Dr Manmohan Singh ... They are all leaders by virtue of their titles, but how many of them command love and respect. On the other hand, people like Mother Teresa, APJ Abdul Kalam, JRD Tata to name a few are those who kindle love and respect in our minds.

Leadership to an extent demonstrates Quality and Governance the underlying Value system.

### **Virtual Vs Real:**

Virtual is overtaking Real. Leadership is no exception. As an extension, we can aspire for virtual governance too. Indian history is replete with elements of obscurantism in leadership and governance. Let us endeavour to connect them.

Mathah Paratharam Nanyath

Kinchidasthi Dhananjaya

Mayi savamidam protham

Sutre maniganaa eva (Bhagavad Gita 7.7)

*Everything else is insignificant O Arjuna! Please be aware that everything in universe is woven like warp and weft into me. I hold them just like the thread that holds gems woven as a garland through it, in most unobtrusive manner.*

1. Lord has found it to be more effective to guide his disciple without being obvious. Are the people in governance who jostle for the photographs to be carried in press listening?
2. Perceived invincibility turned Hiranyakashipu to choose his own governance style. Are we seeing this being replayed from Tunisia to Turkey? We shall revisit the parallels later. What needs to be recognised in the introductory phase of the topic is that his own son Prahlada did not endorse his father's governance style.
3. Rama is depicted as "maryada purusha". He lived his life to be an example to everyone. So, he steadfastly held on to the righteous path. He happily obeyed his Father's wishes and retired to forests. But Bharata ensured Rama Rajya prevailed, by keeping Rama's paduka in the throne. Virtual, yet effective.
4. The eighteen-day war was fought between the hundred brothers and five brothers. Yet, everyone knew the man who mattered was not taking up arms but chose to remain the charioteer. And they had decided about the fate of the war before the first arrow was shot. Virtual command was again in play. His leadership was never questioned too.
5. Duryodhana was the leader of the Kauravas. Did his virtual leadership undo him in the eighteen-day war? Bheeshma, Drona, Karna and Shalya led the Kauravas, in succession. Was there a legacy of poor governance too?
6. King Harishchandra is the epitome of truthfulness. On governance, he had no qualms in spending the money handed over to him in trust by Viswamitrar for the welfare of hungry people. During the subsequent trials and tribulations that tested his steadfastness to values, he triumphed. Benevolent governance and leadership that was not abdicated were in display.
7. Gautham Buddha was not a warrior. Many times, he chose silence over words. Yet, he could galvanise people and nations behind him. The connect with the masses need not be through bloodshed or noise.
8. When the clock struck twelve in August 1947, the Father of the nation was away from Delhi. Was it indicating that the thirteenth stroke was not far away? The nation accepted him as our Father and the architect of India's freedom. Did not his absence from Delhi at our tryst with freedom validate his effectiveness as a leader?

9. Acharya Vinoba Bhave (1895 – 1982) was the chosen disciple of Mahatma Gandhi to lead Satyagraha on many occasions. He demonstrated success through the “Bhoodan” movement that significantly contributed to upliftment of economically and socially poor people. His role in Community Leadership earned him the Magsaysay award. His governance was founded on collectivism and inclusiveness, in which even many Central Banks have found merit now.

### **Glimpses of Leadership Traits**

1. **Self-Awareness:** All leadership traits can be summed up in self-awareness. Lord has also built up this from Chapter 2 of Bhagavad Gita and captured in Verse 4.18 where he brings out another facet of principle of Karma.

“Karmanyakarma ya  
pasyeth- Akarmanai cha  
karma yah  
Sa buddhimaan  
manushyeshu Sa yukthaha  
krisnakarmakruth”

He who can perceive inaction in action and action in inaction is erudite. He is a yogi and one who follows all karma.

Self-awareness goes on to disrupt theories of born leaders, trained leaders and thrust leaders. A higher level of self-awareness brings with it higher level of equanimity as articulated in Verse 2.14 of Bhagavad Gita. This enables better judgement by the leader.

The verse reads

“Mathraasparsaasthu Kountheya!  
Seethoshna sukhadukkhadha  
Aagamaapayino nithyaas-  
Thaamsthithikshaswa Bharathah!

This “thithiksha” denotes equanimity.

2. **Exemplary:** Leading by example has been the hallmark of Indian ethos. When Ramakrishna Paramahansa had to counsel a kid to abstain from sweets, he sought some

days’ time. This was to subject himself to the abstention and establish that it is possible. Then only, he came forth to counsel the kid. If the need for conviction can be seen at

display even in what could be perceived as an ordinary event for a Maharshi, it validates what Lord has postulated in Verse 3.21 of Bhagavad Gita that the subjects follow the leader and hence casts much responsibility on the leader to exemplify.

The verse reads

“Yadyathaacharathi sreshta-  
Sthathadevetharo janah  
Sa yat pramaanam kuruthe  
Lokasthadanuvartathe”

Meaning, what the Leader demonstrates, world follows it.

3. **Mutual dependence:** In Verse 3.11 of Bhagavad Gita, Lord articulates on mutual dependence. He narrates the need to propitiate the Devas who will in turn shower mankind with rain and resources. Extending this, Lord Rama did not brush aside the gossip of one of his subjects as he considered that he depended on the subjects to take his reign to prosperity. He also wanted to establish that himself and Sita Devi are beyond reproach in donning their role as King and Queen. Therefore, He had no qualms when He ordered Sita Devi to the forests. Today, are we not witnessing power and aggrandizement rubbing shoulders instantaneously?
4. **Inquisitive:** Though self-awareness has been foregrounded among the leadership qualities, it comes out of the inquisitiveness followed by the likes of Ramana Maharshi. The incessant questioning of one's own existence has empowered them to be leaders without their asserting in any manner. Verse 6.23 in Bhagavad Gita meanders on the dedication that leads to equanimity and eventually to self-awareness. In Verse 7.3, Lord goes on to establish that only the chosen one can reach the ultimate levels in self-awareness. Therefore, he becomes the leader.
5. **Equanimity:** In several places in Bhagavad Gita, Lord articulates on equanimity so that the emotional element in decision making and leadership is played down. Of particular mention are his words in Verse 2.13, 2.14 and 2.63 where he describes “Sthithaprajnan” and about “thithiksha”. In an age where non-proliferation is bandied about without assigning the needed priority on self-restraint to emotionally charged world leaders with nuclear war heads directed at strategic enemy locations, a revisit to equanimity would be most apposite.
6. **Edifying Trust:** When the Pandavas commenced their journey towards heaven, a dog had accompanied them. At the gates of heaven, Yudhishtira found that his four brothers and



wife had fallen enroute while the dog was steadfastly behind. When he was given let through the gates, he demanded that the dog be first let in. A leader never deserts his subjects. This can be demonstrated only through such acts, which edify the virtues. Today, we are witnessing Heads of States from the likes of Pakistan to Afghanistan to Sri Lanka seeking asylum in foreign countries, yet not letting go of their claim to be Leaders!

### **Glimpses of Governance traits:**

1. “Vasudhaiva Kutumbakam” captures our governance targeted at world peace. This was seen in ample measure in the Vaccine Maitri programme of the Government during the pandemic.
2. The welfare of subjects has always been placed ahead of that of the leader. As Governments began to take the subjects for granted, their personal welfare began to gain prominence over that of their subjects. Nepotism became the accepted norm.
3. Corporate governance and boardroom rivalry have seen extremes with siblings falling apart, and the melba acts of the likes of Narayana Murthy at Infosys.
4. India claims to be the largest democracy at a time when the contours of democratic governance are being conveniently redrawn towards autocracy.
5. Indian leadership has been built on inspirational and motivational style rather than the authoritative kind.
6. If we revisit the winds from Tunisia to Turkey, the assumed mediator’s role by Turkey’s Recep Tayyip Erdogan in the ongoing war between Russia and Ukraine must be seen against the rise of neo liberalism and role of media in his home state. Amidst the narratives and endorsements through a choked media, Ece Temelkuran’s “How to lose a country” could turn to be the progenitor for the catharsis of the suppressed subjects against autocratic rule.
7. While the Lord believed in obscurantism to be effective, the Governments of the day enjoy creating a delusion behind democracy in turning autocratic. People’s memory on Perestroika and Glasnost may not be short-lived! What was virtual some time back could be tomorrow’s reality!

**Conclusion:**

The advent of digital and social media and the impact it has made on the current generation has thrown up a new form of leadership under the garb of Influencing. Of late we find many Institutions and Organizations identifying the so called “Influencers” with fan following and using them to initially spread ideas and follow up with specific recommendations and suggestions. Let us hope and expect that these influencers understand the significance and values of Governance before they start to influence others.

(Reference: Shrimad Bhagavad Gita Bhashyam: Sankarabhashyam)

## **Corporate sustainability performance and Firm performance: Review and Sentiment analysis of Twitter data**

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### **1. Introduction**

Corporate sustainability performance (CSP) and its effect on firm performance is a leading area of research involving academics and practitioners (Frempong et al., 2021; Jha & Rangarajan, 2020). The extant literature on the association between CSP and firm performance yielded mixed results (Rahi et al., 2021; Algarni et al., 2022) through meta-analysis (Wang et al., 2016) and literature reviews (Le & Ikram, 2022).

This study aims to furnish an all-encompassing overview of corporate sustainability performance and its influence on firm performance. Further, the study undertakes Sentiment analysis on corporate sustainability to gauge public opinions (Hassan et al., 2021).

The recent publications increase provides orientation and motivation for work in this study area. A systemic literature search is carried out on the company's sustainability performance, firm performance, and the associated indicators. These studies highlight the gap that needs to be explored in future research. The current study also studies the public's opinion towards corporate sustainability, using opinion mining through RStudio.

The proposed research addresses the following questions in light of the discussion above. RQ 1: The present state of development of the Corporate sustainability performance concept. RQ 2: What are the sentiments of the public/ stakeholders toward Corporate sustainability?

The present study will contribute to the literature and deliver a more holistic and comprehensive stance on CSP. The outcome of sentiment analysis indicates positive sentiment among the public towards Corporate sustainability, which firms can consider while framing suitable policies for implementing sustainability in their organizations.

### **2. Literature Review**

In the past few decades, corporate sustainability practices have evolved from a marginal concept to a critical and multi-dimensional concept bringing it to the center of corporate decision-making.

Companies institutionalize and bureaucratize sustainability. However, this solution raises an important question: 'Is sustainability profitable?' It is still one of the most debated topics and has been for a long time. The present research studies how CSP affects Firm performance.

The various studies which reviewed the connection between CSP and Firm performance have been presented in (Table 1).

S/ No	AUTHORS	RESEARCH GAP
1	Algarni et al., 2022	Confirmatory analysis instead of exploratory analysis could be taken.  Arab and non-Arab companies could be compared.
2	Kabir and Chowdhury, 2022	CSR reporting, laws, and protocols in Bangladesh can be studied.
3	Lee and Suh, 2022	Measure representing ESG balance can be studied.  Greenwashing can be explored further.
4	Le and Ikram, 2022	Other regions could be considered.  Other business sectors could also be studied.
5	Hawaj and Buallay, 2022	The quality of ESG disclosure could be evaluated comprehensively.  Unlisted (SMEs) on Bloomberg can be targeted.
6	Lam et al., 2022	Future research could focus on the effect of donations, other than cash, on financial performance.
7	Nirino et al., 2021	1. Future studies can include areas other than the present study.  2. The impact on performance can be studied by distinguishing between significant and authentic practices.

8	Frempong et al., 2021	<p>Firms outside the manufacturing sector could be studied.</p> <p>Financial and non-financial performance could be examined longitudinally.</p>
9	Xu et al., 2021	<p>Further study on unlisted companies in AEC Industry.</p> <p>CER's influence on unlisted SMEs' profitability in the AEC Industry.</p>
10	Kuo et al., 2021	<p>An in-depth study of category indicators for each performance indicator can be conducted.</p>
11	Rahi et al., 2021	<p>Studies should focus on other Industrial settings.</p> <p>Qualitative and quantitative methods could be combined to gain an in-depth understanding.</p>
12	Crous et al., 2021	<p>Study to find the importance of relationships between external indices and self-developed indices.</p>
13	Yilmaz I, 2021	<p>The study can cover a more extended period.</p> <p>The sample size can be increased.</p>
14	Farza et al., 2021	<p>The moderating influence of rapid technological development and corporate governance can be studied.</p> <p>Cognitive effects on the studied relationship can be examined further.</p>
15	Buallay A, 2021	<p>Mixed research techniques (qualitative and quantitative) can be used in future studies.</p> <p>Study SMEs (food industry) to find the association between ESG and performance.</p>
16	Ruan and Liu, 2021	<p>How ESG affects firm performance needs to be studied.</p>

17	Guillén et al., 2021	<p>The most dominant variables in SMEs could be identified by studying the CSR literature.</p> <p>Empirical research to establish a detailed theoretical foundation.</p>
18	Lee et al., 2021	<p>Developing sustainability indicator framework for tourism sectors in India</p> <p>Using a long-term approach, a monitoring system to estimate sustainable tourism.</p>
19	Hassan et al., 2021	<p>Future studies can theoretically analyze whether anticipation of emotion and positive sentiment leads to an increase in the Decentralized Finance market.</p>
20	Ilyas and Osiyevskyy, 2021	<p>Various business model aspects, like value proposition, creation, capture, and delivery, can be studied.</p> <p>Non-financial measures of performance can be studied.</p>
21	Lo and Liao, 2021	<p>Future studies are focusing on family-owned and non-family-owned.</p>
22	Bodhanwala and Bodhanwala, 2021	<p>Longer time horizons can be taken.</p> <p>The components of ESG, Environmental, Societal, and governance can be studied further.</p>
23	Madaleno and Vieira, 2020	<p>Other European countries can be studied.</p>
24	Sardana et al., 2020	<p>The sample size could be increased.</p> <p>Cross-country studies could also be undertaken.</p>

25	Dhanda and Shrotryia, 2020	A business model to make the confluence of sustainability at the micro and macro level.  Inspect policies to integrate sustainability into the organization.
26	Sumanasiri, 2020	Exploring philosophical and cultural factors and change-oriented leadership skills influence management's perception of sustainability.
27	Jha and Rangarajan, 2020	Cross-country studies between developed and developing economic countries could be undertaken.  Path analysis could be studied.
28	Ng and Rezaee, 2020	Firm and industry-specific Sustainability performance factors can be studied.  Other definitions of sustainability performance factors can be studied.
29	Bartolacci et al., 2020	To analyze which specific sustainable behavior affects financial performance.
30	Velte P, 2019	Longer time horizons can be taken.  Heckman's two-stage estimation procedure can be used.

Table 1: Studies on CSP and firm performance

### 3. Methodology

A systemic literature search of 30 studies was carried out on the company's sustainability performance, firm performance, and the associated indicators from literature published in various academic journals.

Our literature search was confined mainly to the academic journals published in 2019- 2022. Studies done prior to that were already included in recent papers. We confined our search to journals from three databases for collecting the literature: Emerald Insight, Taylor & Francis,

Elsevier's Science Direct, and Wiley Online Library. Various keywords were framed to search the literature, such as "corporate sustainability performance and firm performance," "ESG and firm performance," and "CSR and firm performance." Any paper having these keywords in the abstract, title, keyword list, or full text was selected for review.

### **3. 1 Sentiment Analysis**

#### *3. 1.1 Text Mining*

The text mining method extracts data to gather ideas from a virtual platform. (Hudaefi et al., 2021). Various studies have used different types of computer software to perform text mining, including "Python" and R (Hudaefi et al., 2021; Hassan et al., 2021). The present study used text data mining through "R" to execute Sentiment analysis.

#### *3. 1. 2 RStudio*

The present study utilized RStudio to perform Sentiment analysis. Prior studies have also utilized R software to explore themes across various topics (Hassan et al., 2021).

The steps included collecting data from Twitter, processing the data, cleaning, and finally visualizing and analyzing the data to conclude.

Various packages used to run the program included twitterR, rtweet, tm, wordcloud, syuzhet, lubridate, ggplot2, scales, reshape2, and dplyr.

#### *3. 1.3 Data Collection*

Twitter data can be extracted by traditionally downloading it and saving it as a csv or xlsx file or by automated web scraping (Hassan et al., 2021). Twitter data was extracted by initiating Twitter application programming interfaces (APIs) through the Twitter developer account <https://developer.twitter.com>. The search process was carried out by searching the keywords #ESG OR #esg OR #ESGs OR #Environmentalsocialgovernance OR #environmentalsocialgovernance OR #EnvironmentalSocialGovernance OR #EnvironmentalSocialGovernance OR #corporatesustainability OR #Corporatesustainabilityperformance OR #Corporatesustainability OR #CorporateSustainability for 8,000 tweets (n=8,000).



### *3.1.4 Processing and cleaning*

Processing helps clean the tweets to remove hashtags, punctuations, white spaces, numbers, and names from the selected tweets and transform them into text. The tweets were then converted to lowercase alphabets, and English stop words like a the, by, an, and others were removed.

## **4. Findings and Discussion**

The study provides an overview of the CSP- firm performance relationship. The extant literature further proves that the relationship between corporate sustainability performance and firm performance remains ambiguous. However, most of the studies have proven that there exists a positive correlation between corporate sustainability performance and firm performance.

1. Research focusing on developing countries. The extant literature reveals that research for studying the association between CSP- firm performance still needs to be explored in developed countries (Goyal et al., 2013). Moreover, the findings regarding developed countries cannot be generalized to developing countries.

2. Cross-country studies. The literature on CSP- firm performance reveals the existence of single-country studies (Jha & Rangarajan, 2020). Cross-country studies would present a more holistic view of the CSP- firm performance relationship.

3. Mixed research methods. There need to be more studies using mixed research methods while examining CSP- the firm performance relationship (Hawaj & Buallay, 2022; Goyal et al., 2013). Such studies would provide an enhanced understanding of the field and increased granularity on CSP- firm performance relationship.

4. Measuring the non-financial aspects. Most studies on CSP- firm performance relationship examine the impact of CSP on financial performance (Friede et al., 2015). However, other measures of firm performance could also be explored to compare the effect of CSP on the various aspects of firm performance.

Further, lexicon-based Sentiment analysis was employed to study the public's opinion toward corporate sustainability.

#### 4. 1 Data visualization

While data visualization can be made differently, the present study primarily used ggplot and wordcloud. The ggplot presents the data in a histogram and represents the frequency of each word appearing in the sampled tweets. The words with a frequency of more than 30 have been depicted in Figure 1.

Wordcloud represents that the bigger the word, the higher their occurrence in the sampled tweets. Figure 2 represents wordcloud.

#### 4. 2 Sentiment analysis

The study utilized Sentiment analysis, an approach to natural language processing (NLP), to show the eight types of emotions (anticipation, sadness, fear, disgust, surprise, anger, joy, and trust) and two types of sentiment (positive and negative). Studies have used sentiment analysis to mine public opinion over different aspects (Hassan et al., 2021; Hudaefi et al., 2021). The sentiment scores have been highlighted in figure 3. The sentiment analysis results show positive sentiment and trust among the public toward corporate sustainability. These findings provide theoretical and practical insights to organizations to implement corporate sustainability practices, which would further enhance firm performance in the long run.

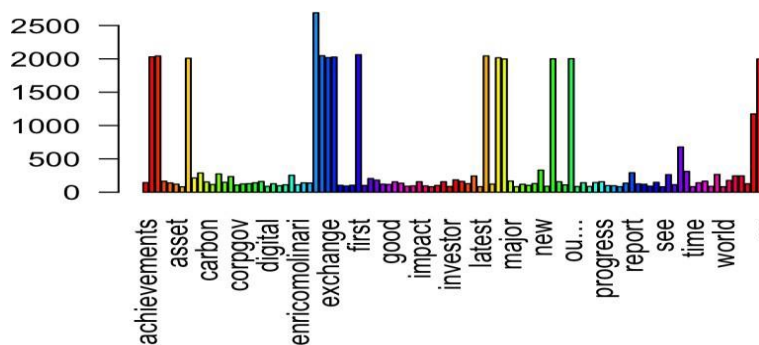


Figure 1: Ggplot representing words with maximum frequency.



Figure 2: Wordcloud representation of 8000 tweets.

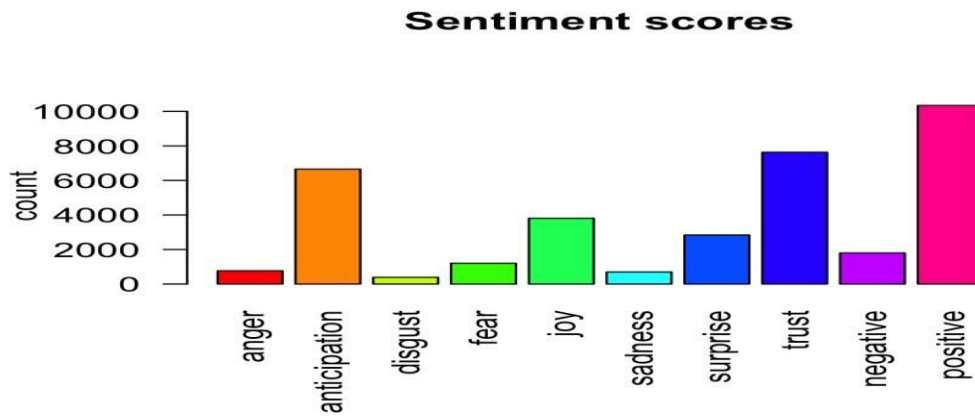


Figure 3: Sentiment scores of 8000 tweets.

## **5. Conclusion**

The study conducts a systematic literature search of 30 studies for 2019- 2022. The review shows that the relationship between corporate sustainability performance and firm performance needs to be clarified. Studies reveal a negative, positive and neutral relationship between CSP- firm performance, with maximum studies concluding a positive relationship between the two. However, more studies need to be conducted on the said relationship in the context of developing countries. Moreover, mixed research studies, when used simultaneously, will yield more comprehensive results. Cross-country studies would also provide a deeper meaning to the CSP- firm performance relationship literature.

The sentiment analysis shows positive sentiment among the public toward corporate sustainability and a growing amount of trust in corporate sustainability. The results fulfill our objective of stating that the public, also referred to as the stakeholders for the business organizations, are aware of the business sustainability practices being carried out and show interest and pay attention to those practices. The positivity sentiment further shows that the public is positive towards the businesses' sustainability practices, and they hope businesses will continue to fulfill their sustainability expectations. The study helps businesses develop a suitable sustainability framework by incorporating stakeholders' awareness and expectations about corporate sustainability. Therefore, businesses should consider the stakeholders' sustainability awareness and expectations scenario while developing a suitable framework for incorporating sustainability practices in organizations, which will further create value and competitive advantage. It will also enhance the firm performance in the long run.

Further study can be undertaken to empirically test the relationship between corporate sustainability performance and firm performance. Also, other stakeholders' expectations could be studied in future studies.

## **6. Managerial contribution**

Managers can take insights from the study to draft suitable policies for implementing corporate sustainability. Studying the public's opinion, which forms an integral part of the stakeholder group for the organization, would help the managers incorporate the public's opinion while framing policies toward implementing sustainability in their organization. Implementing corporate sustainability practices in the organization would eventually create value and a competitive advantage in the long run.

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## Governance Revisited

### The Role of Communicative Governance During COVID-19 Pandemic

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#### Abstract

We live in the most uncertain times that humanity has experienced since COVID-19 hit the entire world. During such a time, when change is the new constant, all the countries of the world (developing as well as developed) are looking for a form of governance that can help them adapt to the new world order of competitiveness leading to the creation of a more sustainable politico-socio-economic growth. An outcome of this change is the need for evolving governance strategies. The governance theory is becoming a commanding political theory acknowledging the need for change while highlighting the discourse of good governance as the significant response. Good governance is the efficiency of the government in getting things done and delivering services to the citizens in the best ways possible. It is a democratic, open, and effective way of governance. The present study, while focusing on the abruptness of day-to-day activities due to COVID, highlights the communicative aspect of governance by the states of Odisha and Tamil Nadu in generating awareness, disseminating information, and providing healthcare facilities and infrastructure to the citizens. The study examines and analyses how communicative governance unfolds in actual practice during a crisis where the governments received overwhelming demand for health infrastructure, highlighting the role that technology and media played in the process.

#### Keywords:

Good Governance, Communicative Governance, Covid-19, Technology, Digital Media

**Why and how about management and public policy? – Crosswinds in strategic business interests, sustainable global trade and economic relations for a promising economy like India**

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**Abstract:**

The nature of approaches to business management keeps shifting. Business and trade in today's global setup is full of surprises and unexpected events to make building smart decisions complicated at both market and state levels. It involves many concepts which are otherwise considered contained within the limits of their application. In conventional approaches business and trade policy making was more about regulation. It did not have much space for interlinked process and was always in short and without much finer points for an enriched engagement of related fields or with the detailed information about the effects and causes to make a better assessment to provide for needed changes in the business system and to sustain in case of total chaos. This paper makes an effort to relate and study business and legal environment with the growing roles of policy and strategy much needed as what in reality about the combination of functional knowledge in varying degree through the relevant fields in maintaining stability of global trade and economic relations, to help the decision making process, to advance sustainable growth of development and to manage improving predictability as of what may happen keeps changing animatedly in a maturing economy like India.

**Key words:** management system; public policy; economic development; sustainability; business and legal environment; globalization; economic relations;

**Introduction:**

The nature of business and trade as a system and how business environment responds remains an interesting question to be studied, analysed and explained in fine points. Always there is a need for detailed practice based and responsive studies to examine the business environment and building the support structures to the business and trade system with newer approaches and better solutions in managing the mechanism of business which are indispensable especially through the lens of management studies and arranged in the orders of strategy and policy with the missing links between them and the convergence among them (Teeter and Sandberg 2017).

Analysing the business and trade system builds enough reliability and accuracy in the overall business environment and they act as an enabler to find newer solutions to aim for certain desired outcomes (Bom and Ligthart, 2013). Working with multiple designs of process makes it more fit

and help craft a successful system with unimaginably reduced burden and for the results being productive, the efforts to go without wasted in wilderness and in managing the outcomes. It helps avoiding mismatches, increasing elasticity, adding up sophistication, to reduce excesses, balance costs and provide better compliance with capacity build to manage issues and improve relationships making a level field to play in (Roberts et al. 2019).

### **Public policy in the tracks of political and business economy:**

Capital building is very intense with many requirements which are changed or reformed constantly. The scales and metrics are also different and difficult based on time and need. Policy making is a larger subject and has many key metrics of policy including but not limited to assessment, understanding the different needs, evaluation of various risks, volatility and urgency and also to be scientific and calculative about the desired returns (Carvajal and Ricardo, 2019). Qualitative assessments of the impacts of policy structure, regulatory compliance and implementation need a carefully crafted massive process based study. Policy reforms need to be carefully calculated and mixed in right propositions to have aggregate effects of reforms which need closer observation using many possible scientific and statistical methods, analytics and patterns to arrive at deciding the elasticity of security and durability of the regulations. There are many optimal and unintended outcomes of policy reforms (Roberts et al. 2019).

To balance between the financial growth and being an advocate of welfare economics it needs to traverse through multiple facets like the international commitments made for environmental safety, hungry to be more sustainable and to be a champion of providing with the needs of development (Ploeg et al. 2017). These are some of the peculiar requirements which are generally understudied in contemporary academic research as they crisscross between very different but related fields of economy, politics, welfare, law and growth all put together (Carvajal and Ricardo, 2019). Some of the key issues and challenges in policy management are as compared in the Box 01.

### **Legislation and regulation in Policy with unique cause and effect:**

With the growth of international investments and investments for achieving sustainable development, policy as an academic area brings together partners located far beyond the ambit of investment and management subjects along with the policies dealing with objectives, settlements and redressing disputes. The public policy is a sophisticated field for greater public good and rule making. Policy then was mostly restricted to private business profits and remained mostly as a private affair and a tool for certain business interest groups and private investment interests which are largely directed through its investor relations (Demekas et al. 2020).

The legislation process and legal institutions play a central, constitutive and conductive role in developing the success of public policy. They serve to restore belief and create trust worthiness of the business and trade and they offer useful insights on measuring the quality of interrelations between the state's motives along with the aspirations of markets (Carvajal and Ricardo, 2019). International trade system takes from the quality and robustness of the legislation and regulation structures to decide on evaluating the circumstances that are favourable to precede for long term economic good of the state (Tomasz and Christina, 2016). Policy offered much innovative support for business, markets and society in the time of pandemic as listed in few points in Box 02.

### **Problems in managing welfare, economics and public policy:**

As development needs in a maturing market are really large, a maturing economy tries to attract global investments to create resources that cater to its growing employment, growth and expansion needs and to have a healthy development index and build prosperity for many of the global billions living within its geographical boundary (Seong-jin Choi et al. 2021). To finance all the growth needs of an emerging economy with its own and limited resource is a difficult task for itself. It needs a substantial share of funds mobilized by the international business community and attracted in possible ways and added to the public expenditure (Demekas et al. 2020).

Policy reforms are made sensible to have intended benefits and they improve along with the improvement in transparency in the markets and with the trade as a system (Howitt, 2009).

The questions of a policy study shall be accounted in the following ways to find the importance of strengthening itself through the multifaceted streams of legislation, regulation and business environment at many levels to help form better accountability of the system and to improve flexibility and resiliency addressing the gaps and to incentivise the performance as following:

1. How to measure strategically placed policy and policy driven strategy to help increase durability and accountability in the business system?
2. How productively a system responds to the calls of resiliency and sustainability?
3. How far the reform agenda shall go deciding on the policy and regulation gap to help increase capital formation?
4. How to deal with the questions on benefits of economy based on a reform agenda?
5. Where to address the risks and troubles in the system which occurs due to a lack in flexibility?

Public policy and strategic management in business is thus not just the intervention in deciding the nature of business and trade system but the provider of embedded hidden solutions to many

of the needs and problems faced by the social and political institutions largely influenced by them (Zaiyang et al. 2021).

### **Is it policy methodology or a prospective structure as a question of academic research?**

The policy management tries to do an overall coverage of the scientific methods, information, identify important problems and to try solving some of the most important challenges in the investment types, business development, process control and feasibility across the design along with the consequences analysed at both economical and political levels (Teeter and Sandberg 2017). The model of the business and trade system and the constituents need many deep and formal understanding aimed at managing a complex system of the multiple frameworks with importance of regulations in public, social and political levels and study where and how such frameworks try improve the already existing pit falls and gaps making the best way to make such system work perfect and to understand it in possible ways to build more than just as in any systems research but along with the details comparing and balancing various contradicting perspectives, sources and interests in them for increasing the credibility and resiliency (Michaelowa et al. 2021).

In regulation there are different perspectives on the public policy as a phenomenon and in general they bring as one bearing the owner perspective two bearing the evaluator perspective and three being the user perspective (Koepke, 2019). It could be easily understood that the kind of placing arguments in the policy specific ways leads to very rare but durable conclusions and tends to use truly pluralist approach to help find sustaining solutions for many ever increasing set of problems derived from many independent ideologies and interacting with varying economic and social beliefs (Scheubel et al. 2019).

### **Policy in trade relations connecting governance, regulation and management in the flow of trade – a new reality:**

To manage complex fund flows is the new reality and it creates the need to have a better defined and connected governance, law, business and healthy economic climate to be created and managed in the domestic economy.

Multi lateral organisations, consortiums of international investors and the local fund managers with other stake holders from the state create a healthy partnership with the local market and work as a task force to create solid effects on the investments and the pattern flow into the state's annals (Michaelowa et al. 2021). It becomes important to observe the themes of international investment regimes and public policy and how they are governed to encourage the healthy flow

of funds needed for a sustainable source of value and in turn to help in attaining sustainable development goals as aspired by the state (Cerna 2013).

It is important to preserve the value chain in the policy space and govern the international trade system and domestic responses to them along with the rights and welfare provisions in them. The interest of investors, legitimacy of public spending and the commitment of the domestic economy to be responsible to the business and trade conduct are the broad purposes to be well addressed before any detailed structuring of policy and strategy is taken forward. Particular multidimensional aspects of policy could be understood as listed in the Box 03.

**Common ingredients key to an integrated policy and strategy:**

The growth of value chain in global trade with the help of standard policy instruments help to bring high standards from attracting investments to the host of benefits in an economy and help to get the advantage of equitable greening of growth and sustainable development through efficient plans in place. Public policies are diverse but connected like the ones on the best interests of the states to protect natural resources and at the same time to maintain a healthy relationship with the markets could allow tremendous growth of business along the questions of some key sectors connected to the rural economic growth, prosperity, food security, safety of agriculture, new dimensions of horticulture, plantations, exports related to food products, food processing and why only in food consumption but also they may extend far till defence, aviation, technology services, automotives which are connected as they have direct impact on environment, green and brown business opportunities, employment and quality of life as these are some of the very hot trends related to protective and conductive attitudes of the state and markets that are required in contemporary issues (Tomasz and Christina, 2016).

Promising developing economies like India strives to build world class investment promotion agencies, public, social and business policy framework for specific investments and monitoring needs on their own. They restructure and maintain own institutions like competition commission to oversee the healthy portfolio of competing investments and make competitiveness best in class with aiding flexible regulations in unitary and specialised scales to have equal importance to both foreign and domestic investors without much discriminatory policies in them. Investment policy and public policy have become closer and closer, effective, connected and open ended and they today deal with different kinds of principle purposes to deal with a large band of portfolio of investors, contractual arrangements, rearrangements, superior regulatory control, value chains, quantifiable standards of fair and equitable treatment, intellectual property rights based regulations, expropriation and many other umbrella clauses that get expanded based on the time and need for example the most favoured nation is one such old trade concept today has evolved

newly and dynamically with new sets of soft laws transforming to form minimal complications with obligations free and hassles free bilateral trade relations.

**Box 1 Five each key Issues and Challenges in Policy Management:**

<u>Issues:</u>	<u>Challenges:</u>
<ul style="list-style-type: none"> <li>i. Creating awareness and develop Understanding about the Policy changes</li> <li>ii. Finding suitable institutional arrangements</li> <li>iii. Improving harmonization and Coordination among the Policy planning teams</li> <li>iv. Enabling Reliability, Quality and Accessibility of data</li> <li>v. Linking policy and subsequent programme with development</li> </ul>	<ul style="list-style-type: none"> <li>i. Setting up Integrated planning with audit, control and performance management</li> <li>ii. Processing, storing and accessing data with focussed use of Information</li> <li>iii. Potential road blocks arising from historical perceptions and past experiences</li> <li>iv. Capacity building with state planning and Budgetary decision making</li> <li>v. Setting action plan, milestones and planning sector specific goals</li> </ul>

**Box 2 Policy – Supporting business, markets and society in the time of Covid 19 Crisis:**

<ul style="list-style-type: none"> <li>i. World over States and regulators responded to Covid 19 crisis through innovative policy measures as major strong crisis responses</li> <li>ii. Many of the policies designed are especially as a response to worldwide pandemic crisis in never been used scales aimed at protecting business, markets and society</li> <li>iii. Effectiveness of policies from the experiences of the states in the pandemic time gives many firsthand lessons about the confrontations with Covid 19 at social and financial spaces</li> <li>iv. Financial regulators world over put forth many innovative policy responses during the crisis period in large scales including several rounds of massive fiscal support programmes</li> <li>v. States tackled multiple waves of pandemic with a variety of monetary and financial policies and aimed at stabilizing business and trade activities and supporting households and firms</li> </ul>
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- vi. Market stimulus packages and reliefs were announced running in billions of USD introduced through specially designed policy measures in several rounds

### **Box 3 Aspects of Policy inclusion and resilience:**

#### **Policy Management system:**

- Question of Policy Management
- Consistently manage Policies and Programmes
- Policy management benefits, challenges and limitations
- Levels of Policy Management
- Design of effective Policy management procedures and structures

#### **Policy Life Cycle:**

- Creation of Policies
- Communication of Policies at multiple levels
- Managing Policy Changes
- Maintaining Policy residues and responses

#### **Policy Stages and connecting nodes:**

- Basic - Regulatory
- Maturing - Standards
- Advanced - Requirements
- Reactive – Strategized



### **Advantages of Policy based Management:**

- Ability to deliver mandated programmes
- Managing costs and resources effectively
- Help improve accountability and transparency
- Improve components of service, images and reputation
- Ensure regulatory compliance
- Offer competitive edge taking care of technology, skills, strategy and data

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## **SOCIAL MEDIA INFLUENCERS, ENDORSERS LIABILITY: ANALYSIS OF AN EMERGING ISSUE IN INTERNET GOVERNANCE**

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**Keywords:** Knowledge mismatch, consciousness, influencers, disability, liabilities.

### **1. Introduction**

The influencers and celebrities could do major harm to the consumers through mis-selling and false advertisement claims. The social media, while being a democratic force for opinion sharing, may create an adverse impact upon consumers in endorsing products without adequate due diligence process. In this regard the need for regulating the influencers and endorses is analysed and the evolving endorsers liability framework is looked into especially in the social media context. Regarding the Indian context, the consumer protection legal framework recognized the need for regulating the endorsers conduct through strict liability framework as part of the Consumer Protection Act, 2019. Moreover the ‘Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements, 2022’ is evolved by Central Consumer Protection Authority as a measure to arrest the evolving issue of social media influencers in varied fields such as finance, automobile beauty products and fitness.

The paper explain the need for effective regulation by way of the social media analysis of the influencers in the disability sector. Disability influencers play a major role in promoting supportive aids and equipment, increasing charity contributions, adopting the practice of physical exercise/yoga or certain medications, participating in social activities like paralympic games, volunteering for clinical trials, surrogacy, sex work, and drug peddling. Aim of the study is to analyze the endorsers’ liability in the areas where the influencers have limited embodied consciousness.

### **2. Literature Review**

The endorsers liability concept has been part of the product liability legal framework in developed legal jurisdictions. The existing academic literature point towards evolved discussion and pertinent case laws in this direction in the United States and European Union context (Soctt 1992; Kertz & Ohanian 1992). The academic literature points out to the fact that the discussion had evolved even during 1980’s in United States regarding endorsement liability (Kaikati 1987). While in the Indian context the discussions in the academic context has been scant. Moreover the existing literature also have evolved in last one decade . The need for more nuanced application of the regulatory standard is proposed in the context of social media related influencers. The recent changes in the endorsers responsibility regulations in India by way of Consumer Protection Act, 2019 and the ‘Prevention of Misleading Advertisements and Endorsements for Misleading Advertisements, 2022’ have pushed for more research in this field. Existing studies, focus on human influencers who are adopted for marketing of product and services, current study emphasis on influencers domain consciousness and liability arise due to knowledge mismatch.



word cloud the anger and disgust are most frequent terminologies and the sentiment analysis shows, influencers has attains their endorsement by sadness and fear factors.

The findings shows that the influencers largely utilize the negative emotions and the contribution to positive emotions are less likely attained. Factors that enables influencers of disability sector adopt motivational strategy shadowing the practical problems of disability brings on individuals' day to day affairs. The influencers who encountering certain disability overfit their experience to disabilities of other forms.

## **7. Conclusions**

Both male and female brand ambassadors adopted Internet technologies for bringing awareness about their activities pertinent to disabilities. While female influencers address disability issues of wider scope, male ambassadors found to rigour in discussions and persuasive in domain of disability advocacy. Both have the same number of followers and frequency of post by male influencers is much higher than female influencers. Both share family and positive feeds in their time lines, and are found to avoid political content. Both male and female influencers share event participants photographs and details. The male ambassadors are more critic about the social incidents than the female influencer. The relevance of regulating the influencers and celebrities through consumer law and advertisement regulation framework

The male influencers are more often faced by litigations and the female influencers receive more social media support for their advocacy. While the followers of male influencers are more from the disability sectors, female influencers are followed by non-disability sectors and significantly liked by women. Time line analysis shows, both male and female influencers more post frequently on disabilities of their exposed areas, and prefer post issues that are generic in nature and less likely of specific to disability categories. The influencer impact on the disability sector is not just affected by their consciousness levels, and are more vulnerable to endorsers liability. The study also suggests that fictional characters used as digital avatars are less likely to represent the territory of virtual influencers, and are liable.

## **8. Managerial Implications**

The relevance of regulating the influencers and celebrities through consumer law and advertisement regulation framework have significant implications for managerial decision making. The legal and fairness requirement in business conduct is imposed upon both the advertising corporate entity and the endorser to be followed. Influencers of disability-related products and services are liable under the social media framework for integrating human rights.

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## Acceptance of e-commerce in family business: A UTAUT Approach

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### Abstract:

E-commerce is a disruptive technology that started as a replacement for information and has now evolved to include buying and selling goods. Family businesses are commercial enterprises in which decisions are impacted by older generations of a family who are related by blood, marriage, or adoption and who can influence the company's vision and willingness to pursue various goals. Family businesses have distinct priorities and outcomes because they were not established or managed like traditional commercial organizations. Family enterprises typically have a strong cultural orientation as contrasted to any other type of commercial firm's growth orientation. Decision-making is influenced by the expertise and knowledge of older generations. Therefore, we decided to identify the variable that influences family businesses' intentions to use and actual usage of e-commerce technologies, especially in India. A UTAUT model approach is used which included eight adoption-related theories. The variable perceived trust is added to the model because it has a direct effect on purchase intention.

**Keywords** – Family Business, Electronic commerce, UTAUT model, India, PLS-SEM.

## PRODUCT LIABILITY LAW IN INDIA: BUSINESS COMPLIANCE FOR CORPORATE ENTITIES

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### 1. Introduction

India has the highest proportion of consumers facing product safety incidents among the top four consumer markets in the world.<sup>1</sup> The role of corporations in a society is not limited to maximizing shareholder wealth but also in adhering to its responsibilities towards the stakeholders, including consumers, employees, media, non-governmental organizations and investors. Mere legal compliance alone will not result in sustainable growth for the company. It requires thinking about all its stakeholders and the planet<sup>2</sup>. However, many corporations focus only on their short-term growth and ignore their responsibility towards consumers, especially on product safety. India enacted the Consumer Protection Act (CPA) 1986 to hold the product manufacturers liable if they fail in their responsibilities towards the consumers. This law was amended in 2019.<sup>3</sup> There is a shift in consumers' approach from '*caveat emptor*' (let the buyer beware) towards '*caveat venditor*' (let the seller beware).<sup>4</sup> The CPA put forth the legal and regulatory framework to protect consumer rights. Among other things, this amended law introduced 'product liability' law for the first time in a comprehensive legislation which was part of sectoral laws only.

<sup>1</sup> UNCTAD (2022), "Consumer Product Safety", Sixth Intergovernmental Group of Experts on Consumer Law and Policy 18-19 July 2022 Room XVII, Palais des Nations, Geneva available at [https://unctad.org/system/files/non-official-document/ccpb\\_IGECOM\\_Consumer\\_Prod\\_Safety\\_Contrib\\_CUTS\\_en.pdf](https://unctad.org/system/files/non-official-document/ccpb_IGECOM_Consumer_Prod_Safety_Contrib_CUTS_en.pdf) accessed on 30 October 2022.

<sup>2</sup> Mayer D, Warner D, Siedel G and Liberman J, 2012, Basics of Product Liability, Sales and Contracts, 1st Edition, lardbucket.org.

<sup>3</sup> Ministry of Law and Justice, 2019, The Consumer Protection Act, 2019.

<sup>4</sup> Doctrine of Caveat Emptor (2020), <https://blog.ipleaders.in/doctrine-of-caveat-emptor/#:~:text=The%20philosophy%20behind%20the%20rule,him%20to%20reject%20the%20same> accessed on 30 October 2022.



## 1. Review of CPA, 2019

A 'product' is defined in Consumer Protection Act, 2019 (CPA,2019)<sup>5</sup> as an article or good (raw material or intermediate product) that possesses an intrinsic value that can be sold as a whole assembled product or in parts and produced for trade and commerce. A consumer is a person who purchases a product (online or offline medium) or avails a service or a person who utilizes the product or takes benefit of the service. The person who (or authorizes another person to) purchases a product should have either paid the consideration (value) fully or partially or promised to pay the consideration for such product in future.<sup>6</sup> The person who utilizes the product or service is a consumer only if they use the product or service with the purchaser's approval. Anyone purchasing a product or service for commercial purposes except for self-employment is not considered a consumer.

A product can be categorized as unsafe and create a danger to person and property when:

- The product is not suitable for its designated purpose
- The product becomes hazardous when utilized in a different manner or in a different environment
- The product has insufficient instructions for use
- Product was assembled, labeled, packaged, distributed to advertised improperly.

The need for product safety is due to the increased dependence by consumers on manufactured goods, lack of awareness about product safety, prevent exploitation and prevent usage of potentially hazardous products. The concepts of product quality and safety are gaining prominence among Indian consumers due to awareness, and different legislations are in place to ensure their safety.<sup>7</sup> India's response to the United Nations 1985 guidelines<sup>8</sup> was by focusing on protecting consumers from health hazards and ensuring their safety from any violation by product manufacturers. It was systematically done by enacting sectoral regulations coupled with a general product quality certification mechanism (UNGCP, 2015). The rules and regulations are covered under the Sale of Goods Act, 1930; Consumer Protection Act, 2019; Bureau of Indian Standards (BIS), and Import accessed on 30 October 2022.

<sup>5</sup> Section 2 (33) of the Consumer Protection Act (CPA), 2019.

<sup>6</sup> n. 5.

<sup>7</sup> [https://unctad.org/system/files/official-document/cicplpd12\\_en.pdf](https://unctad.org/system/files/official-document/cicplpd12_en.pdf) accessed on 30 October 2022.

<sup>8</sup> UN Guidelines on Consumer Protection, 1985 (UNGCP) was revised in 2015 and have amended guidelines on consumer protection vide UN General Assembly resolution [https://unctad.org/system/files/official-document/ares70d186\\_en.pdf](https://unctad.org/system/files/official-document/ares70d186_en.pdf), which inserted new policies on national guidelines on consumer protection. This document is available at [https://unctad.org/system/files/official-document/ditccplpmisc2016d1\\_en.pdf](https://unctad.org/system/files/official-document/ditccplpmisc2016d1_en.pdf)

Policy. Consumer awareness and empowerment are necessary to prevent consumers from being exploited by the producer. In India, it is not only enough to have legislations and policies in place but also to have these legislations and policies implemented, monitored, popularized among the masses so that the consumer can play a constructive role in ensuring their own safety. Hence, there is caveat emptor doctrine as the base for legal regime protecting consumers since 1986.

The adherence to product safety becomes complex with globalization and the increase of international trade. A product considered safe in one country may be regarded as unsafe in another. The measures required for achieving product safety across the globe are<sup>9</sup>:

- Common international standards and agreement on safe and unsafe products
- Sharing information on problems and coordinating enforcement actions
- Clearer information about the products in labeling, warnings, and instructions to use
- Traceability of the products exported and imported
- Timely information about unsafe products in the market to prevent dumping of products elsewhere.

Market competition and product liability are often the two reasons corporates ensure product safety. In addition to the regulatory compliance, a corporate should focus on the following for designing and manufacturing products as safely as possible:<sup>10</sup>

- Ensure safety by design: It requires to conduct design analysis to identify potential hazards and risks regarding long-term use (or misuse). Ensure mandatory safety requirements are incorporated into product design.
- Build safety into the supply chain: Take adequate steps to ensure the supply chain is producing compliant and safe products. Ensure the supply chain contracts mention specific components to prevent unauthorized switching of raw materials.

<sup>9</sup> UNCTAD, 2018, Consumer product safety available at [https://unctad.org/system/files/official-document/cicplpd12\\_en.pdf](https://unctad.org/system/files/official-document/cicplpd12_en.pdf) accessed on 30 October 2022.

<sup>10</sup> Consumer Product Safety Commission, Best Practices for Product Safety, 2006 (<https://www.cpsc.gov/business-manufacturing/business-education/business-uidance/BestPractices>).

- Knowledgeable about the business and regulatory environment: Monitoring safety reports about similar products can provide information about product recalls and the subsequent safety issues.
- Prepared: Ensure a recall plan is in place to be executed as quickly as possible to prevent injuries and limit damages in case of any safety concerns reported against your product.
- Documentation: Ensure proper documentation to demonstrate periodic and material change testing compliance.
- Challenge to manufacture the safest consumer product: The aim should be to utilize safe raw materials and parts, establish a reliable supply chain, and consider the production of products for long-term use when designing and manufacturing a product. Hire external agencies to conduct product safety audits to understand the potential misuses of your product and build safety mechanisms to reduce product misuse.

## 2.1. Product Liability

Product liability is the responsibility of the product manufacturer or seller to compensate for the harm caused to the consumer for a defective product or deficient service. The product liability law is the legal recourse for any defective product<sup>11</sup> or service injury. As the markets for goods and services have expanded with the emergence of the global supply chain, international trade, and e-commerce, consumers have become vulnerable to fraudulent and unethical practices. The requirement for a robust legal framework for industry-wide regulation led to the Indian government revamping the Consumer Protection Act in 2019. The concept of product liability is a key feature introduced in CPA 2019; there was no comprehensive legislation in India. A consumer can initiate a claim against a product manufacturer, seller, or service provider if:

1. goods supplied is defective
2. The consumer is charged excessively for the goods
3. goods hazardous to health and safety are offered to consumers without adhering to standards

<sup>11</sup> Koziol, H., Green, M., Lunney, M., Oliphant, K. and Yang, L. 2018. *PRODUCT LIABILITY: Fundamental Questions in a Comparative Perspective*. Berlin, Boston: De Gruyter.

4. the seller adopts unfair to restrictive trade practices.

The product liability claims are brought under the legal grounds of negligence, strict liability (can compensate the consumer injured by a product without proving manufacturers or sellers' negligence), and breach of warranty. The privity of contract between manufacturer/seller or buyer is not a requirement for claiming liability. The different types of product liability claims are

- Manufacturing defects: The products are manufactured wrongly or are missing parts due to negligent manufacturing processes. Only a few products in the assembly line gets affected by this defect.
- Design defects: The design of the products is wrong, and the whole set of products does not perform its required functions.
- Marketing defects: Product sellers do not offer instructions on how to use the product.
- Breach of warranty: The product has failed to last and function properly during the warranty period.

In addition to the CPA and BIS, the specific sectors such as food, pharmaceuticals, automotive and electronic industries have specific laws that govern and regulate product standards, product safety and liability. Such sectoral laws also recommend the penalties to be imposed in case of breach of statutory obligations.<sup>12</sup>

### **3. Principles and Theories of Product Liability Law in India: Caveat Emptor to Caveat Venditor**

From the early eighteenth century until the early twentieth century, the caveat emptor principle, which means “let the buyer beware,” dominated basic consumer law including the Indian law. Any consumer who experienced losses as a result of a defective product may immediately confront the manufacturer, with no need for the intervention of courts or legislators. With the emergence of global supply chains, increased international trade, and the rapid development of e-commerce; the

<sup>12</sup> Bajaj V, Raghavan K, Kaul S (2020), *Product Liability Laws in India*, (<https://www.azbpartners.com/bank/india-product-liability-2020/>).

contemporary market for exchange of goods and services has undergone tremendous change.<sup>13</sup> It has resulted not only in providing consumers with variety of products and services; but also mode of delivery systems too. It has also exposed consumers to new types of unethical and fraudulent behaviours, as well as the sale of products based on false information.

As a result, a strong legislative framework is essential to regulate industries and defend consumer interests. As a result, the caveat emptor principle, which means "let the buyer beware," has been superseded by the caveat venditor principle, which means "let the seller beware." Consumers can seek legal redress for damage caused by a defective product under product liability legislation. A product must fulfil the typical expectations of a consumer; as a result, it is the obligation of the producers and sellers to ensure that the product is safe and of the quality described.

With this objective the CPA 2019 was enacted, which now specifies the scope of product liability, including the liabilities of all the parties involved to effectuate the end product such as manufacturer, service provider, or seller of any product or service to compensate for any harm caused to a consumer by a defective product manufactured or sold, or by a deficiency in related services.<sup>14</sup> As a result of product-liability lawsuits, general rules of contract law and tort law have evolved.

#### **4. Study Implications**

This paper aims to analyse the need for product liability law and how it impacts the business entities to be adhering to the consumer's increasing demand for safety. The legal provisions under the CPA, 2019 enables to understand the legal regime on product liability law, however, evolution of jurisprudence on this subject after the amendment may be scarce.

#### **5. Methodology**

The paper emphasizes on doctrinal and non-doctrinal legal research methodology for evaluating the efficacy of this new law. Primary resources such as legislations, policies and international legal documents of UNCTAD and UNGCP will be referred. Also secondary sources comprising of books, journal articles and newspaper articles will be analysed to draw relevance to the study of this subject.

<sup>13</sup> <https://www.caclubindia.com/articles/consumer-dispute-resolution-through-mediation-under-protection-act-2019-46827.asp> accessed on 25 October 2022.

[consumer-](#)

<sup>14</sup> Section 82-87 (Chapter VI) of the CPA, 2019 elaborates product liability.

## 6. Finding/Results

The amendment to this legislation has been remarkable considering the inclusion of various important concepts into the legislation such as product liability law, unfair contracts, implications on child as a consumer etc,. In this regards, what are the liability of product manufacturers, product service provides, product seller, consequences of non-compliance etc, would has significant impact on business entities.

*Firstly*, underline the remedies available against product manufacturers, product service provides, product seller, consequences of non-compliance etc

*Secondly*, to understand through legal cases the remedies available to both consumers and business entities when seeking remedy under this law; and

*Thirdly*, whether there is an approach difference before and after the passage of this legislation.

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## **IV. Centre for Digital Innovation and Transformation**



## **The Gloom in the Crypto Market**

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### **Abstract**

The Crypto currency market in recent times has seen gloom and despair as millions lose their investment. The markets have depicted bearish trends and have borne an inherent tendency towards the selling movement. This transformation in the market has manifested itself since the last year. Even top currencies have failed to deliver good returns and have not been able to sustain its prices much to add the misery of the investors. The paper is an effort to capture a glimpse of the market. The study makes an assessment of performance of the coins at three monthly, six monthly and yearly intervals and also verifies its association with its inherent volatility. Welch's ANOVA in the performances in the coins is statistically insignificant at three and six monthly and annual intervals. But when the returns are assessed in terms of volatility the results show significance. The results of the Friedman's Test indicate that the difference in the performances along with volatility in the coins is highly statistically significant. This means that the volatility has affected the complete market and individually the higher volatility does impact performance. Like all assets, this new asset class needs its time for establishment, hence patience is required on the part of the investors.

**Key Words:** Cryptocurrency, coin, volatility, performance

### **Introduction**

Cryptocurrency is a new age financial revolutionary instrument which is a digital currency encrypted with block chain technology. The function of crypto currency has shown considerable disparity in the performance based on the location of the market. In countries such as Dubai they have been developed and even seen its utility for trade in the real estate market. The United States which has been the domicile to numerous successful crypto exchanges has not followed any consistency in the regulation of the market as it could pose financial stability risks to the nation. The United Kingdom has passed a revolutionary bill to adopt blockchain technology to store documents which could make it a crypto hub in the coming times. In India the asset was on a winning streak till taxation regulation and an unsupportive environment in the country have started to increase the volatility of these assets.

### **Literature Review**

The powerful investment tool cryptocurrency has been a subject of recurring studies in recent times. The currency has witnessed the several upswings, downswings and rock bottom lows

and has been resorted to by many as means to experience a shortcut to getting rich with quick money. Yasar Kaya et al (2018) have focussed her study on the performance of Bitcoin on its accession as the most profitable asset. Mario Alas et al (2019) have portrayed performance expectancy as one of the primary reasons in using them. Their research was centred in Spain and emphasised on managing risk as a pre condition to the acceptance of the asset. Paul P Mumtaz (2019) examines the performances with respect to a three yearly period. A focus was made in her study pertaining to Initial Coin offerings. According to them size disables performance. Fang et al (2022) performs an extensive survey with 146 research papers on Cryptocurrency trading.

Another focus on crypto studies includes the adoption of trading strategies. These are divided on the bases of fundamental analysis and technical analysis. Oberlechner (2009) indicates the usage of both by traders and Nti et al (2020) identifies technical analysis as practised by majority. Gerritsen et al (2019) has experimented on the application of specific technical trading for optimising returns. Elliott et al (2005) justifies the use of pair trading strategy in the generation of returns.

The high volatility of the market has led to several research studies in the arena of bubbles and crashes. Charles et al (2019) throw light on the volatility of cryptocurrencies. Cheah et al(2015) makes an evaluation of speculation in Bitcoin markets. Ji et al(2019), Diebold and Yilmaz(2014) and Omame Adje et al(2019) have made assessment with crypto assets with special emphasis to volatility. This paper throws an insight on the performance in the last year as a view representing the gloom and crash in the entire market.

Giudici G, Milne et al (2020) identify the need for higher regulation to be effected on these currencies. Their paper has distinct views on market analysis and perspectives on these currencies. Mikhaylov (2020) proposed the pool complexity approach in the choice of internet optimal technology. Oleksandr Zaietsv et al (2021) motivate the creation of new financial instruments to boost growth. According to them cryptos could not replace the traditional instruments. Daniele Bianchi and Mykola Babiak<sup>b</sup>(2022) propagate that the crypto assets generate positive alphas.

Thus the studies have ranged from the performance of coins, ICO (Initial Coin Offerings), risk acceptance, technology adoption to legal regulation.

The justification of the choice of the topic is because our Country has the largest number of cryptocurrency owners in the world. The financial disaster that the retail investors have experienced over the last few months needs to be addressed and subject to analysis. The paper helps to reduce the gap in literature regarding the current market crash of cryptocurrencies.

### **Methodology**

The data for the coins has been collected from the tradingview.com which provides the prices of more than 200 coins traded in India. The site provides data on performance of various periods and volatility of these crypto assets. A one year time frame has been chosen to capture the image of volatility and falling trend in the cryptocurrency market. The statistical tests have

been applied using SPSS version 15.0 with Welch's ANOVA, Friedman and Tests and use of box plots.

### **Sample**

The sample considered are 30 coins traded in the Indian market. The selection of the coins has been random. These coins are traded actively in the market and hold high market capitalisation.

The coins selected are as follows:

1.Bitcoin	9.Dogecoin	17.Avalanche	25.NEAR Protocol
2.Ethereum	10.Polkadot	18.Uniswap	26.Bitcoin Cash
3.Tether	11.Dal	19.Litecoin	27.Monero
4.USD Coin	12.Polygon	20.Chainlink	28.Algorand
5.Binance Coin	13.TRON	21.Cosmos	29.Chain
6.XRP	14.HEX	22.FTX Token	30.Terra Classic
7.Cardano	15.SHIBA INU	23.Ethereum classic	
8.Solano	16.Wrapped Bitcoin	24.Stellar	

### **Objectives of the Study**

The paper makes an attempt to study the following objectives:

1. To compare and verify the significant difference in the performance of the cryptocurrency coins between the different periods chosen
2. To evaluate whether there exists any relationship between volatility and performance of the cryptocurrency coins

## Data Analysis

**Table 1.Performance of the coins 2022 (In Percentage)**

<b>Name of the Coin</b>	<b>3 months</b>	<b>6 months</b>	<b>Year</b>	<b>Volatility</b>
1.Bitcoin	-7.58	53.15	-58.88	1.14
2.Ethereum	7.03	-58.05	-65.31	2.09
3.Tether	.01	-.04	-.04	0.19
4.USD Coin	-.01	.00	-.01	.01
5.Binance Coin	11.37	-35.41	-10.23	3.78
6.XRP	36.66	-42.05	-58.64	8.48
7.Cardano	-17.69	-62.03	-82.86	7.30
8.Solano	-20.18	-70.81	-80.56	6.45
9.Dogecoin	-7.87	-60.71	-74.63	5.82
10.Polkadot	-11.76	-67.70	-83.14	6.00
11.Dal	-.07	0.00	0.01	0.11
12.Polygon	4.09	-47.21	-39.66	7.37
13.TRON	-9.32	-1.99	-36.50	3.81
14.HEX	-12.70	-76.20	-91.64	4.42
15.SHIBA INU	-8.62	-62.67	-67.34	6.94
16.Wrapped Bitcoin	-7.65	-53.18	-66.08	1.06
17.Avalanche	-23.53	-80.52	-72.20	6.74
18.Uniswap	-20.00	-42.61	-76.09	9.80
19.Litecoin	-0.39	-54.00	-70.41	4.21
20.Chainlink	6.41	-52.73	-72.90	8.21
21.Cosmos	22.98	-54.09	66.91	7.76
22.FTX Token	-11.20	-16.30	-56.44	2.47
23.Ethereum classic	48.31	-41.62	-58.64	10.44
24.Stellar	2.21	-46.29	-67.17	6.54

25.NEAR Protocol	-16.40	-81.81	-59.86	10.89
26.Bitcoin Cash	7.19	-66.31	-80.42	6.94
27.Monero	3.65	-41.89	-49.82	5.03
28.Algorand	-10.20	-59.93	-83.06	8.04
29.Chain	-12.58	-7.46	73.42	49.90
30.Terra Classic	177.63	97.08	97.08	8.05

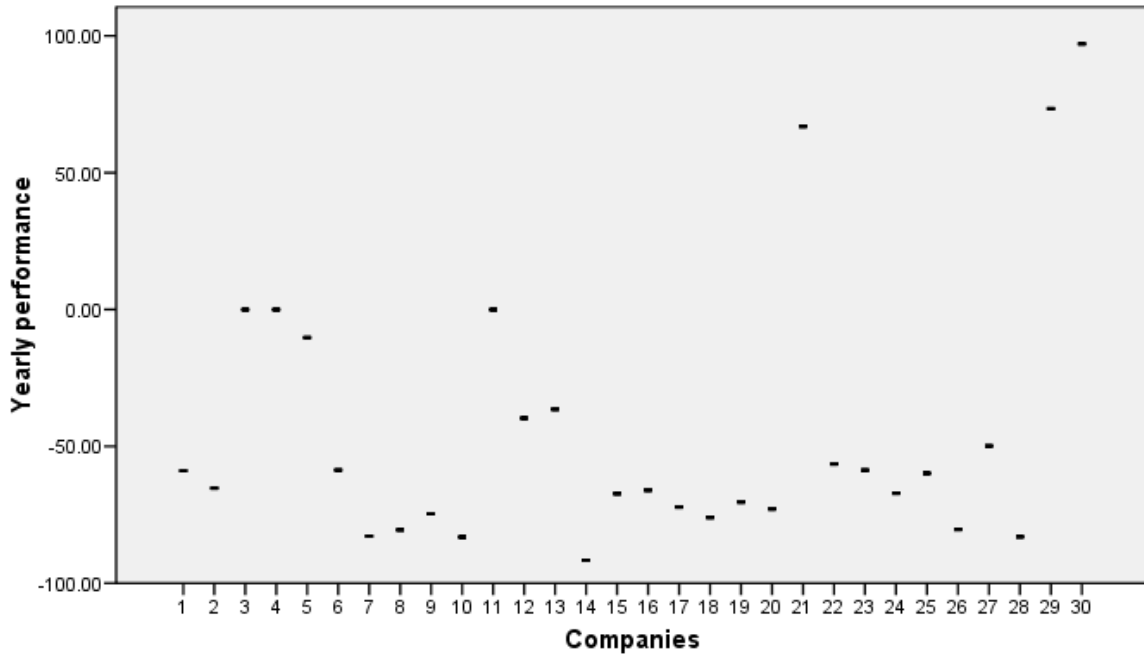
The following table provides the descriptive statistics of the evaluation.

**Table 2.Descriptive Statistics**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Three month performance</b>	30	4.3263	36.42307	-23.53	177.63
<b>Six month performance</b>	30	-37.7793	39.52408	-81.81	97.08
<b>Yearly performance</b>	30	-44.1703	49.10260	-91.64	97.08
<b>Volatility</b>	30	6.9997	8.67153	.01	49.90

The mean returns in the 3 months, 6 months and annual are 4.32%,-37.77% and 44.17%.This shows that the last three months have been comparatively better than the six monthly and yearly performances. The standard deviation of the returns of the performance shows a vast variation with 36.42%, 39.52% and 49.10%.There are wide differences in the volatility of the coins as is evident with the minimum and maximum volatility. The coin Terra Classic has generated positive and highest returns while Avalanche the lowest in all the periods. The returns and volatility of the sample coins is displayed with graphs and box plots.

Figure1. Yearly returns of the Coins



The dispersion in the data is viewed with this chart. Majority of the coins are in the same direction depicting negative returns. To enhance an understanding of the distribution of the data set, box plots have been analysed for yearly performance and volatility.

The box plot reveals that the midpoint the median of the returns is negative. This is a snapshot of the market sentiment and returns in the cryptocurrencies in the past one year. The median falls in the lower section of the box which indicates positively skewed distribution. The width of the box plot represents less variability in the dataset. The cryptocurrency coins Cosmos, Chain and Terra Classic are outliers while Terra Classic indicates the maximum deviation. These are Cosmos, Chain and Terra Classic which have managed positive returns even under recessive conditions.

Figure 2. Yearly returns of the Coins-Box plot

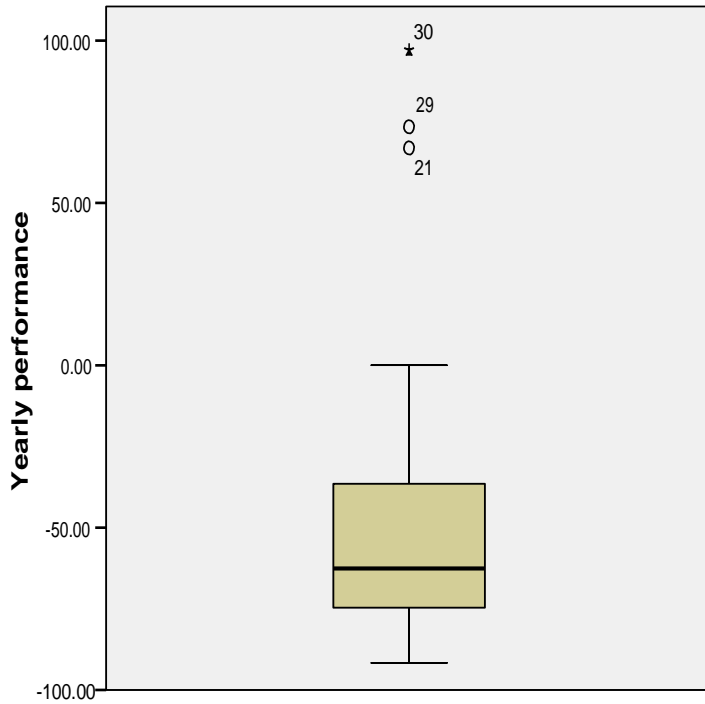
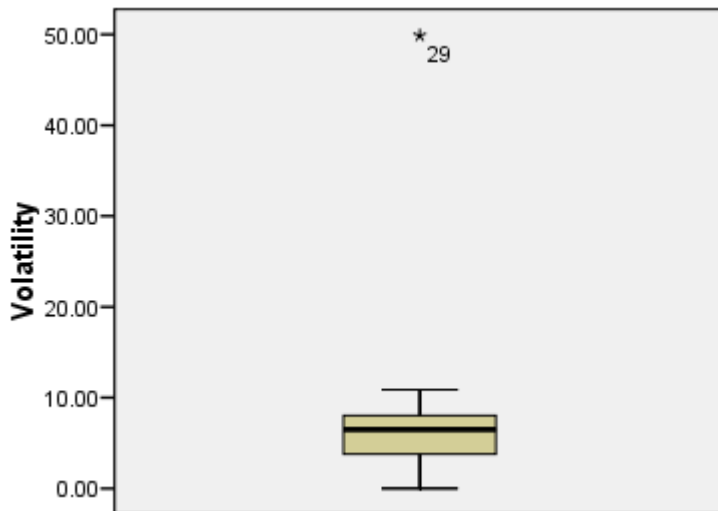


Figure3. Volatility of the Coins



As compared to the larger box plot for returns the data set is less dispersed for volatility. The volatility of the sample is more towards the median. Only Chain is an outlier. This box plot is an indication of movement of the cryptocurrencies. As the median is close to the top of the box hence it is negatively skewed.

## Results and Discussion

The differences in the mean returns are further put to test with Welch's ANOVA. The tool ANOVA has been applied by comparing the significant difference in mean differences between the three monthly with yearly performance. Also the significant difference between, three monthly, six monthly and yearly performances is put to test with Welch's One Way ANOVA which is superior to the traditional ANOVA.

**Table 3 Welch ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Three month performance	Between Groups	38347.586	28	1369.557	10.958	.235
	Within Groups	124.978	1	124.978		
	Total	38472.564	29			
Six month performance	Between Groups	45295.817	28	1617.708	244.190	.051
	Within Groups	6.625	1	6.625		
	Total	45302.442	29			
Yearly performance	Between Groups	69835.349	28	2494.120	29.156	.146
	Within Groups	85.543	1	85.543		
	Total	69920.892	29			

The results reveal no statistical significant difference between three, six monthly and yearly performances. However the three monthly and year performances show too much variability and is proved statistically insignificant. The enormous variability in the data the assumptions of the One Way ANOVA may be violated and hence two other non parametric tests are applied. Friedman's test is used as it fulfils the assumption of measurements of performance with same coins with different timeframes.



**Table 4 Friedman Test Ranks**

The hypothesis for the test is that there is no statistical difference between the variables.

**Ranks**

	Mean Rank
Three month performance	2.95
Six month performance	1.97
Yearly performance	1.48
Volatility	3.60

The means ranks are not equal which means the distributions are not equal.

**Table 5 Test Statistics Friedman Test**

N	30
Chi-Square	49.646
df	3
Asymp. Sig.	.000

The results of the Friedman's Test indicate that the difference in the performances along with volatility in the coins is highly statistically significant. There are strong reasons to conclude that the performance of the coins varies in the periods. More than the coins itself it is the entire market being affected with the vulnerability in performances.

**Conclusion**

The cryptocurrency market is also another investment avenue for the investors. But the performance of these coins involves an elevated degree of risk. In their greed to get wealthy quickly, the resort by investors to these assets has been without the foundation of a fundamental analysis and market prediction. From the viewpoint of the investors, it is pertinent for them to understand the inherent risks in relation to investment with constant updating of information and acceptance and willingness to face losses in tandem with profits. An effort should be made for understanding on its operation and the various platforms they function. Currently, cryptocurrency courses are offered online and some are also available for free. For those with higher investment potential, Day trading in cryptocurrencies can be engaged to

receive the benefit of the price swings. The high volatility of the market provides enormous opportunities for earning profit through day trading. For this reason progress for creating and adoption of more Crypto trading strategies would be helpful as a guide for the investors. Another strategy to mitigate losses is portfolio diversification around several countries and markets and also industry. This would comparatively reduce losses as a high investment is not locked in individual coins. Like all assets, this new asset class needs its time for establishment, hence patience is required on the part of the investors.

### **Managerial Implications**

Efforts to boost the coin performance include Initial Coin Offerings (ICO) management, which make available funds for the creating cryptocurrency technology and blockchain development. This would enable the raising of huge amount of funds for the companies in a short span of time as digital tokens are provided which enable the access of technology to the investor. Also higher education and awareness on cryptocurrency potential, adoption of development of incubator programs and greater disclosures could pave the way towards revival of the market. The next generation ecosystems are being empowered with Gamefi Defi and Metaverse which enable the investors to receive passive income without lock in regulations. The CEOs of these firms need to act more responsibly more disclosures remove unconstructive advertising and build a supportive environment. Countries such as Germany, United Kingdom and Japan have reclassified these currencies as private money with tax exemptions. More Government support and less stringent taxation laws could help in the revival of the sector. The expectation of future regulations affecting the market also affects the movements. As the crypto assets go beyond nationwide boundaries the global outlook for the market could recover only when standard regulations are agreed and implemented for investor protection and development and adoption of blockchain. The technology that has supported the sector can provide significant employment opportunities besides ample cost reduction. The innovation today in the financial system is sustained with digital transformation with improved process, payments, customer experiences, business models ensuring efficiency and security in business and trade. Metaverse helps banking companies operate in a virtual world in similarity to services in the real world. From now onwards, digitalisation is the key for the country's growth and GDP. The blockchain technology is here to stay for its competitive advantage and it's certain to reap benefits for the market. With the introduction of the digital rupee by the RBI, the possibility of a Crypto payment system is still an unrealised dream in India. The repercussions on payment systems, markets and business and for both these can be a subject of future study. Also extensive

investigation can be performed to study the connection between returns and volatility. The impact of global factors, inflation, stringent tax regulations have together contributed to the Crypto crash. But the stage has been set rolling for more advancement with research in cryptocurrencies and digital assets. The Crypto crash has been perceived to be a winter and the markets would recover rewards in the days to come.

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## **Chatbots and humans – how we fare on a daily interaction**

### **A qualitative study on chatbots in daily life**

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#### **Abstract**

#### **Introduction**

A Chatbot is an excellent example of how artificial intelligence (AI) is slowly but surely being incorporated into daily human life. It is also an excellent example of the use of human-computer communication or interaction (HCI) (Bansal, H., & Khan, R. (2018)). Current human life has been filled with the internet of things and artificial intelligence supporting us as we humans navigate day-to-day work and home life. We have, in all our devices – from our laptops (Microsoft's "Cortana") to phones (Siri – Apple's iPhone) a personal assistant, which is essentially an artificial intelligent agent. While it has been helpful in some ways to have these artificial assistants, it is time we rethink and understand the human side of the relationship with an artificial intelligent agent, the support they provide, and human reactions to the AI agents. In many instances, we find that the artificial agent and the human have formed a "relationship" of sorts (Brandtzaeg, P. B., Skjuve, M., & Følstad, A. (2022)). We are aware of the friendships humans have created with social chatbots, which have been communicating with humans in a friendly manner, e.g., Replika – the chatbot which is a chat friend to humans who require someone to talk to.

The human assistant, either as a personal assistant or health care, is always a person to confide in and share parts of life that otherwise are not in the public eye. The time has come that we might all have uses for an AI-based personal assistant. Humans have become more used to technology and the ease of using a phone which is equal to having the work table in front of each of us. While we agree that the bot assistant would not be able to do that, it might be able to do the schedule and manage communication with others. In the healthcare scenario, while care bots are available (Hans, M., Graf, B., & Schraft, R. D. (2002)) and have lent some support to patient care, chatbots are still at the nascent stage, given the trust required is very high and studies still report that humans struggle to make sense and navigate the online chat support (

Brandtzæg, Skjuve, Dysthe, K. K., & Følstad (2021))

Hence managing chatbots as assistants are becoming imminent. We understand that chatbots will be indispensable in certain areas of work and life as we integrate them into our lifestyles. Are we, humans, comfortable with chatbots being handy, around, and taking out information? What are our feelings towards it? This study explores 1) how people in India have taken to chatbots as assistants, specifically in day-to-day life and 2) whether they have trusted it enough to rely on it more than or equal to a human, and 3) what made them rely on it or what would make them rely on it.

## Literature Review

### Chatbots

The field of research that studies human interaction with computers and technology and design associated with computer programs that help in such communication is called human-computer interaction (HCI). Within the field of HCI, Chatbots are very important as they are designed to interact with humans at the intellectual and supposedly social/ emotional levels. In the dictionary, *chatbots* are defined as "A computer program designed to simulate conversation with human users, especially over the Internet." Technically they are defined as a computer program that is like an intelligent being that understands human languages and can hold a continuous conversation to some extent using the technology called Natural Language Processing (NLP) (Khanna et al.; (2015)).

Chatbots, also known as Smart Personal assistants (SPA), has been a well-researched variable for the last few years (Adamopoulou, E., & Moussiades, L. (2020, June)). All SPAs have the same basic technological framework and interface. Some have been programmed to have a personality and behave like a social chatbot (e.g., Microsoft's Xiaoice). The point here is that while there are intelligent chatbots that have character and are supposed to have an emotional quotient (EQ) ( Skjuve et al.; (2022)), the need to study the phenomena further and explore how the relationships are formed and sustained is imminent. This kind of study will help to make the chatbots more familiar, especially for people who require their use. E.g., people who are old or infirm, as in healthcare and also for people residing in remote places where healthcare is difficult to reach and people who need a constant companion where humans are not available irrespective of the reasons. In India, there are many places where healthcare is remote and available in sporadic timelines. This research studies how Indians (primarily based in south

India) relate to chatbots.

### **Human communication and Artificial intelligence**

Chatbots have been around since Joseph Weizenbaum introduced ELIZA in 1960. Technology has allowed computers to communicate through text using natural language, which became a technological trend later in 2016 (Shawar & Atwell(2007)). Research on human-AI interaction has been divided into two AI-mediated communication known as AIMC (Hancock et al., 2020) and human-AI interaction identified as HAI (Sundar, 2020) and the more commonly known computer-mediated communication (CMC) and human-computer interaction (HCI). Communication researchers have preferred to be optimistic about socio-emotional exchanges (HCI) between robots and humans, or in this instance, between humans and machines/computers in the same footsteps of the CASA – "computers are social actors" paradigm (Lee & Sundar (2009), (Nass & Moon (2000))). On the other hand, researchers in the field of CMC have become more optimistic about the capacity of machines to understand and work on the social signals that make human communication unique. Adding AI to this machine mix has brought out the personal assistants, as we have seen with SIRI, Google Home, Alexa, etc. AI-aided personal assistants intend is to help human life better, such as in customer experience in client service.

Several studies have mentioned that while technical aspects of the chatbot are just the tip of the iceberg. The deeper facets of user acceptance of the chatbot lie in the social aspects and behavior where the style of interaction is essential (Dobrowsky, 2020). Studies claim that at least 40% of the conversations humans have with chatbots are more of emotional nature (Dobrowsky, 2020).

### **Methodology and Data Refinement and Analysis**

Interpretative Phenomenological Analysis (IPA) emphasizes the "convergence and divergence of experiences." IPA looks into a particular person's life and how they have interpreted it for themselves. Then, it helps the researcher give detailed interpretations to others to help them understand the experience (Tuffour, I. (2017)). IPA is accepted as more beneficial for studying and understanding "existential experience" (Finlay L (2011); Tuffour, I. (2017)).

Here we are trying to understand how the experience of using the chatbot resonated with the humans who use them. The main aspects of interest were the emotional experience of using a chatbot to help daily tasks and being a confidant. As IPA is used to interpret the experiences, this is the ideal methodology to begin the study.

The semi-structured interviews conducted with 9 participants who were selected for their understanding and use of chatbot assistants were analyzed using the IPA process. The themes were identified, and clusters were formed. The researcher conducted each interview, and transcripts were read repeatedly to extract each interviewee's words to support the developing themes. Finally, from the identified themes, after crosschecking, the master themes have been set.

### **Results and discussions**

The IPA theme analysis gave recurrent themes of two aspects– issues in trusting the bot due to news and experiences of either self or gained through the news, peer conversations, and discussions. The other is the effectiveness or usefulness of the bot as the PA. It seemed ineffective when the commands were broader or in accents challenging to follow – e.g., "what are Navratri colors" was a question to Google home, which replied, "I do not understand" especially if the speaker had any colloquial lilt in the spoken language. One of the reasons for the reduced trust was also the fact that they had little or not much instances to create trust as well because due to the low trust which was caused by influences of the people and other channels, they denied themselves the chances to test and develop the trust.

### **Conclusions**

It would seem that refinement to understand and work with different cultures and accents is vital for the success of chatbots as PAs, but the major issue that the chatbot might face in the Indian (south) subcontinent would be that of trust. It is important for the chatbot engineers or organisations that uses chatbot for their business to find the way to work around the low trust and see how they can develop a relationship between the chatbot and the human to bring out at least a minimum trust level where certain information will be shared – for eg: the current symptoms the patient is going through, what are the clients feelings to particular situation etc

### **Managerial Implications**

Many businesses like hospitals, clinics, and others plan to implement chatbots for first-level client or user interaction. For them, it is crucial to figure out how to generate trust towards the chatbot (in humans) and create a comfort level where the human is willing to speak or share relevant information with the bot.



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## Comparative Performance of Baseline Machine Learning Classifiers for Denial-of-Service Intrusion Detection

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### Abstract

Machine learning techniques are being used for intrusion detection. These techniques focus on detecting network intrusions and physical process anomalies using data from network packets. This paper discusses supervised machine learning methods to discriminate between hostile and benign sources of cyberattack in the case of DoS and DDoS using the Kitsune NIDS dataset. Resampling was used to balance the unbalanced data. By fine tuning the hyper-parameters based on rule of thumb and experience, it is found that all models yield equivalent AUC and accuracy. Accordingly, we choose the most significant properties, i.e., the channels that discriminate between malicious and benign requests.

**Keywords**— Machine Learning, DoS/DDoS attack, Resampling, Hyper-parameters

### Introduction

We need to thoroughly protect the privacy and security of networked system because the emerging IoT based technologies will be widely deployed to connect both physical and digital worlds. Attacks such as “intrusions”, “DoS”, “DDoS”, “jamming”, “eavesdropping”, “malware” plague IoT based systems. In such systems, the limited memory, radio bandwidth, and battery life make it either difficult or impossible to deploy computationally intensive and latency-sensitive security mechanisms [1].

Artificial intelligence (AI) has proven to be effective in securing such systems. In addition to identifying malware, this technique may also be used to mitigate “DoS” attacks [1]. There are also issues like data availability [2] with the current intrusion detection systems, which makes the choice of ML very obvious.

A Denial-of-Service (DoS) attack disrupts the network and prohibit a server from serving genuine requests. Flooding a server with inaccurate data or sending requests with an invalid or forged IP address may be used to slow it down. Pin-Of-Death, TCP-SYN-Flood, and Distributed Denial of Service (DDoS) attack are three common denial of service attacks [3].

The objective of this study is to test if various ML classifiers can classify benign or malicious IPs that cause DoS and DDoS. This will help us identify the most susceptible channels and take appropriate precautions for requests received through them.

This work makes of the Kitsune dataset [4], a plug-and-play NIDS (Network Intrusion Detection System) that can be trained to identify local network attacks online efficiently

without supervision. It uses only ANN model which is usually very complex and does not use any baseline model. The accuracy is ranging from 95 to 100%.

To accomplish the same result, we used a variety of machine learning “baseline” classifiers. In order to get such high accuracy and AUC-ROC scores, we used appropriate classifier hyperparameters. Based on this, the most critical aspects (channels) for DoS and DDoS assaults were identified.

## METHODOLOGY

### Dataset

The data used in this study is from the Kitsune NIDS [5]. It’s available in UCI Machine Learning repository<sup>1</sup>. It contains the following nine datasets (Table 1).

Table 1: Kitsune NIDS datasets

Sl. No.	Name	Category
1	OS Scan	Recon.
2	Fuzzing	Recon.
3	Video Injection	“Man-in-the-middle”
4	ARP Spoofing	“Man-in-the-middle”
5	Active Wiretap	“Man-in-the-middle”
6	SSDP flood	DoS
7	SYN DoS	DoS
8	SSL Reneg.	DoS
9	Mirai	DDoS

### Proposed Framework

The proposed framework is shown in the following figure (Fig. 21) which is quite similar to the one used in [5]:

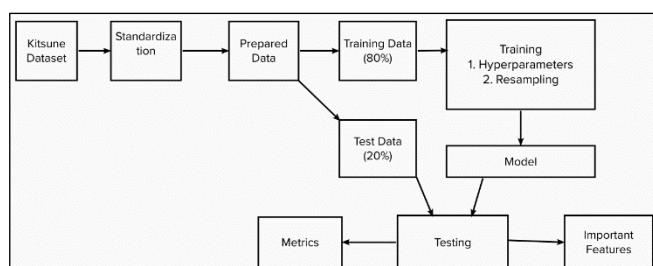


Fig 21: Framework

## Models Applied

We applied the following baseline models:

### ❖ Artificial Neural Network:

ANN models have the distinct benefit of being “universal approximators”, capable of approximating a “large class of functions” with high accuracy over a broad range of parameters.

[6] describes the mathematical equation:

$$y_{tt} = ww_0 + \sum_{jj=1}^{QQ} w_{jj} g(w_{0jj} + \sum_{ii=1}^{PP} w_{iij} y_{tt-ii}) + I_{tt} \quad (1)$$

where “ $w_{i,j}$  ( $i=0, 1, 2, \dots, P, j=1, 2, \dots, Q$ ) and  $w_j$  ( $j=0, 1, 2, \dots, Q$ ) are model parameters often called connection weights;  $P$  is the number of input nodes, and  $Q$  is the number of hidden nodes and  $g$  is the activation function”.

### ❖ Decision Tree:

Many prominent classifiers build class models using decision trees, which are then fed into other classifiers. To increase accuracy and minimize "overfitting," these classifiers first build a "decision tree" and then "prune subtrees" from it [7].

### ❖ Naïve Bayes:

To classify data using probabilistic methods, a basic Bayes classifier applies Bayes' theorem to each row. Here,  $C$  represents the instance's class, and  $X$  the attribute values. Let  $c$  represent a class label and  $x$  represent an observed attribute value. According to the independence assumption, qualities  $X_1, \dots, X_n$  are conditionally independent. The independence theory states as such. The mathematical equation is as follows:

$$\theta_{iij} = PP(XX = I_i | CC = c_j) \quad (2)$$

For each class in the Bayes' theorem, the probability of each class may be calculated given a test case  $x$ :

$$pp(CC = cc | XX = II) = \frac{pp(CC = cc) pp(XX = II | CC = cc)}{pp(XX = II)}$$

then guessing which class will occur. Because the event is a collection of attribute-value assignments, and the conditional independence assumption holds, the following equation holds:

$$P(X = I | C = c) = \prod_{i=1}^m P(X_i = I_i | C = c) \tag{4}$$

For training and test data, this is a simple computation [8].

❖ **Support Vector Machine:**

With SVMs, the greatest generalisation ability is achieved by maximising the margin, reducing training error, while avoiding overfitting [9]–[11].

❖ **Logistic Regression:**

In statistical modeling, logistic regression (LR) links a category's probability to a set of explanatory factors [12].

$$z = a_0 + \sum_{i=1}^m a_i I_i$$

$$P(z) = \frac{e^z}{1 + e^z} \tag{5}$$

Where  $x_i$  s are explanatory variables.

## EXPERIMENTATION AND RESULTS

With appropriate hyperparameters, we employed all 5 classifiers. Malicious IPs are labeled "1" while benign IPs are "0". Every dataset has 115 features. These hyperparameters are chosen based on practical experience and rule-of-thumb [13]. The hyperparameter specifications are as follows:

- ❖ An input, a hidden layer, and an output layer were employed in the ANN. The input layer contains 115 nodes, the hidden layer has 75% of the input layer's nodes, and the output layer has just 1 node with "tangent hyperbolic" for input and hidden layers and a "sigmoid" activation function for the output layer.
- ❖ For the Decision Tree, we used maximum depth as 8 and impurity measure "Gini".
- ❖ For Logistic Regression, we used maximum iteration as 10,000.
- ❖ For Naïve Bayes, we used Gaussian Naïve Bayes, as the number of inputs is too high and continuous as well.
- ❖ For SVM, we used RBF kernel and maximum iteration as

1000. The resampling technique is shown below:

Table 2: Resampling strategy

<b>Dataset</b>	<b>Total No. of Instances</b>	<b>No. of benign IPs</b>	<b>No. of malicious IPs</b>	<b>Resampling Technique</b>
<b>SSDP Flood</b>	40.8 Lakhs	26.3 Lakhs	14.4 Lakhs	Down-sampled the benign to 14.4 L
<b>SYN DoS</b>	27.7 Lakhs	27.6 Lakhs	10 thousand	Down-sampled the benign to 10 thousand
<b>SSL Reneg.</b>	22 Lakhs	21.15 Lakhs	92 thousand	Down-sampled the benign to 92 thousand

<b>Mirai</b>	7.64 Lakhs	1.21 Lakhs	6.42 Lakhs	Down-sampled the malicious to 1.21 L
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### Performances:

The performances of all the classifiers in each resampled dataset are as follows:

#### ❖ SSDP Flood:

Table 3: Performance comparison on SSDP dataset

<b>Model</b>	<b>Accuracy</b>	<b>F1-score</b>	<b>AUC-ROC score</b>	<b>Confusion Matrix</b>
<b>ANN</b>	100%	100%	100%	Fig. 1
<b>Decision Tree</b>	100%	100%	100%	Fig. 2
<b>Logistic Regression</b>	100%	100%	100%	Fig. 3
<b>Naïve Bayes</b>	100%	100%	100%	Fig. 4
<b>SVM</b>	100%	100%	100%	Fig. 5



## ❖ SYN DoS:

Table 4: Performance comparison on SYN DOS dataset

<b>Model</b>	<b>Accuracy</b>	<b>F1-score</b>	<b>AUC-ROC score</b>	<b>Confusion Matrix</b>
ANN	98%	98%	99%	Fig. 6
<b>Decision Tree</b>	100%	100%	100%	Fig. 7
<b>Logistic Regression</b>	91%	91%	91%	Fig. 8
<b>Naïve Bayes</b>	62%	56%	62%	Fig. 9
<b>SVM</b>	77%	77%	77%	Fig. 10

## ❖ SSL Reneg.:

Table 5: Performance comparison on SSL Reneg. dataset

<b>Model</b>	<b>Accuracy</b>	<b>F1-score</b>	<b>AUC-ROC score</b>	<b>Confusion Matrix</b>
ANN	100%	100%	100%	Fig. 11
<b>Decision Tree</b>	100%	100%	100%	Fig. 12
<b>Logistic Regression</b>	100%	100%	100%	Fig. 13
<b>Naïve Bayes</b>	93%	93%	93%	Fig. 14
<b>SVM</b>	96%	96%	96%	Fig. 15

## ❖ Mirai:

Table 6: Performance comparison on Mirai dataset

<b>Model</b>	<b>Accuracy</b>	<b>F1-score</b>	<b>AUC-ROC score</b>	<b>Confusion Matrix</b>
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<b>ANN</b>	96%	96%	98%	Fig. 16
<b>Decision Tree</b>	96%	96%	96%	Fig. 17
<b>Logistic Regression</b>	95%	95%	95%	Fig. 18
<b>Naïve Bayes</b>	94%	94%	94%	Fig. 19
<b>SVM</b>	45%	43%	45%	Fig. 20

### Important Features:

#### ❖ SSDP Flood Dataset:

Table 7: Important features of SSDP dataset

<b>Classifier</b>	<b>Important Features</b>
<b>Decision Tree</b>	<ul style="list-style-type: none"> <li>• “MI_dir_L0.01_variance”</li> <li>• “HH_jit_L3_weight”</li> <li>• “H_L0.01_mean”</li> <li>• “H_L1_weight”</li> <li>• “H_L0.01_weight”</li> </ul>
<b>Logistic Regression</b>	<ul style="list-style-type: none"> <li>• “MI_dir_L1_weight”</li> <li>• “MI_dir_L0.1_weight”</li> <li>• “MI_dir_L5_weight”</li> <li>• “H_L1_weight”</li> <li>• “MI_dir_L3_weight”</li> </ul>
<b>Naïve Bayes</b>	<ul style="list-style-type: none"> <li>• “HpHp_L0.01_weight”</li> <li>• “MI_dir_L5_variance”</li> <li>• “MI_dir_L3_variance”</li> <li>• “MI_dir_L1_variance”</li> <li>• “MI_dir_L3_mean”</li> </ul>

#### ❖ SYN DoS Dataset:

Table 8: Important features of SYN DoS dataset

<b>Classifier</b>	<b>Important Features</b>
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<b>Decision Tree</b>	<ul style="list-style-type: none"> <li>• “HH_L0.01_radius”</li> <li>• “MI_dir_L0.01_variance”</li> <li>• “HH_L0.1_pcc”</li> <li>• “HH_L0.1_magnitude”</li> <li>• “HpHp_L0.1_std”</li> </ul>
<b>Logistic Regression</b>	<ul style="list-style-type: none"> <li>• “HpHp_L0.1_std”</li> <li>• “H_L0.01_weight”</li> <li>• “MI_dir_L0.01_weight”</li> <li>• “HpHp_L0.1_weight”</li> <li>• “HpHp_L1_radius”</li> </ul>
<b>Naïve Bayes</b>	<ul style="list-style-type: none"> <li>• “HH_L0.01_covariance”</li> <li>• “HH_jit_L5_mean”</li> </ul>

❖ **SSL Reneg. Dataset:**

Table 9: Important features of SSL Reneg. dataset

<b>Classifier</b>	<b>Important Features</b>
<b>Decision Tree</b>	<ul style="list-style-type: none"> <li>• “H_L0.01_mean”</li> <li>• “HH_L0.01_magnitude”</li> <li>• “H_L0.01_weight”</li> <li>• “HH_L3_magnitude”</li> <li>• “H_L1_mean”</li> </ul>
<b>Logistic Regression</b>	<ul style="list-style-type: none"> <li>• “MI_dir_L0.01_variance”</li> <li>• “H_L0.01_variance”</li> <li>• “HpHp_L0.1_radius”</li> <li>• “HH_L0.01_radius”</li> <li>• “HH_L0.01_pcc”</li> </ul>
<b>Naïve Bayes</b>	<ul style="list-style-type: none"> <li>• “HH_L0.01_radius”</li> <li>• “HH_L3_radius”</li> <li>• “HH_L5_radius”</li> <li>• “HH_L1_radius”</li> </ul>

- 
- “HH\_L0.01\_std”
- 

❖ **Mirai Dataset:**

Table 10: Important features of Mirai dataset

<b>Classifier</b>	<b>Important Features</b>
<b>Decision Tree</b>	<ul style="list-style-type: none"> <li>• “MI_dir_L0.01_mean”</li> <li>• “HH_L0.01_mean”</li> <li>• “MI_dir_L0.01_weight”</li> <li>• “HH_jit_L0.01_variance”</li> <li>• “H_L0.01_weight”</li> </ul>
<b>Logistic Regression</b>	<ul style="list-style-type: none"> <li>• “HpHp_L0.1_magnitude”</li> <li>• “HpHp_L0.01_magnitude”</li> <li>• “MI_dir_L1_weight”</li> <li>• “H_L1_weight”</li> <li>• “HpHp_L1_weight”</li> </ul>
<b>Naïve Bayes</b>	<ul style="list-style-type: none"> <li>• “H_L0.1_weight”</li> <li>• “MI_dir_L0.1_weight”</li> <li>• “H_L0.01_weight”</li> <li>• “MI_dir_L0.01_weight”</li> <li>• “MI_dir_L1_weight”</li> </ul>

## CONTRIBUTIONS AND IMPLICATIONS

The contributions and implications of the work are the following:

- ❖ To the best of our knowledge, no preceding research has shown the critical features. They are identified in this work. Using this, we can clearly pick the most essential channels to concentrate on. All classifiers found “MI dir” in SSDP dataset. Similarly, “MI dir” for SYN DoS, “HH” for SSL, and “MI dir” and “H” for Mirai. For anyNIDS, concentrating on these channels would be the most cost-effective and beneficial for identifying the benign and malicious IPs.
- ❖ All datasets and models can have almost similar AUC ratings by choosing suitable hyper-parameters. Classifiers and regressions need tunable hyper-parameters. Picking the appropriate hyper-parameters is crucial as they impact all models. [13]
- ❖ With an unbalanced dataset, re-sampling is one of the key techniques as it improves the classifiers' performance [14]. Initially, our datasets were all quite unbalanced. Before and after balancing, classifiers' performance is measured. In some cases, the classifier performance has been improved noticeably, for example, the accuracy score of ANN SVM and LR models in SYN DoS dataset. Therefore, our classifiers may not be “learning” well. However, resampling improves the accuracy. So did all Mirai dataset classifiers.
- ❖ Some papers such as [8] used PCA and LDA to reduce features. We use PCA and LDA when the number of features exceeds the number of instances in the dataset. This is known as the “Curse-of-Dimensionality”, which causes data sparsity and overfitting [16]. Overfitting reduces test accuracy. However, for all datasets, the number of instances is much more than the number of features. Therefore, the “Curse-of-Dimensionality” does not apply here.
- ❖ Simple baseline classifiers gave us high accuracy and other metrics. So, we don't need ensemble models because they increase computational complexity [17], which makes the system inefficient.

## CONCLUSION

We were able to distinguish between the malicious and benign IPs in case of DoS attacks, with the help of Machine Learning baseline classifiers by choosing appropriate hyper-parameters and identify the most important features. Possibly, in future, one can validate our methodology and result for other types of cyber-attacks.

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## APPENDICES



Fig.1

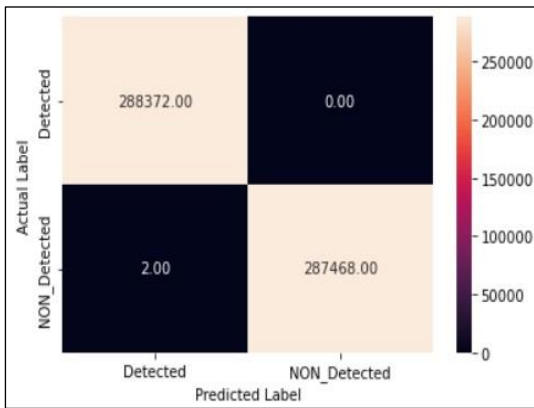


Fig. 2

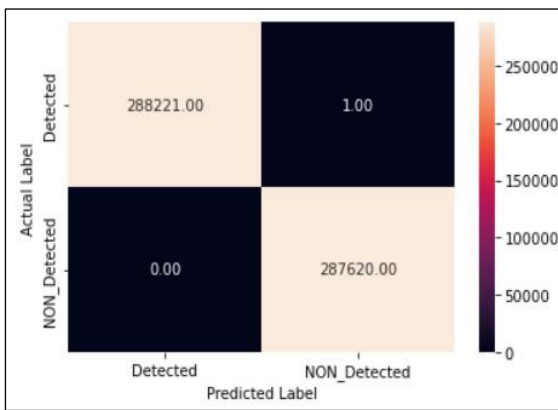


Fig.3

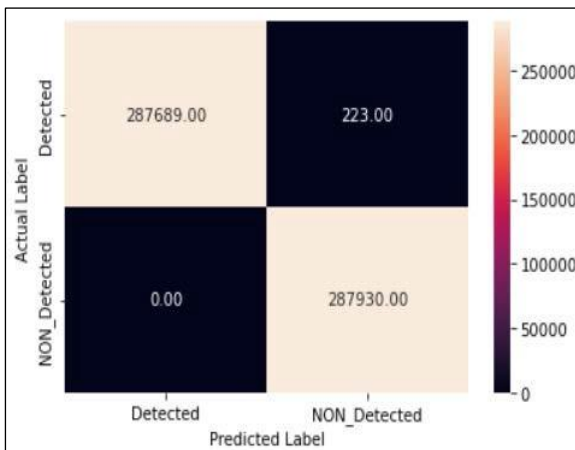


Fig.4



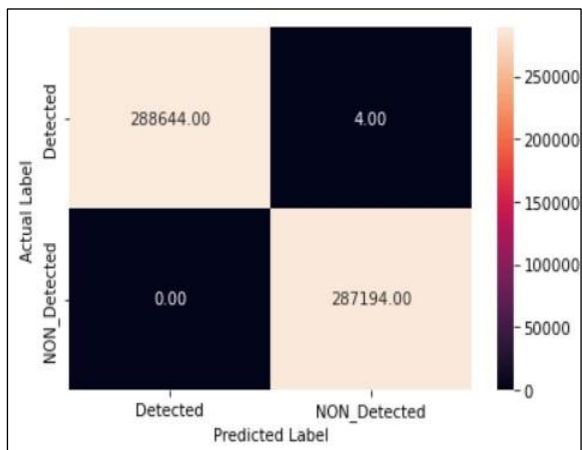


Fig.5

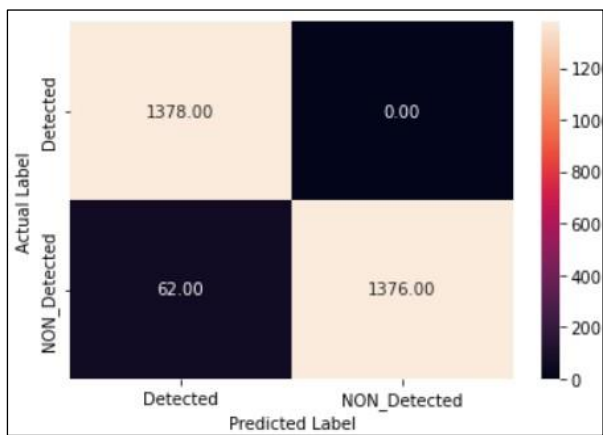


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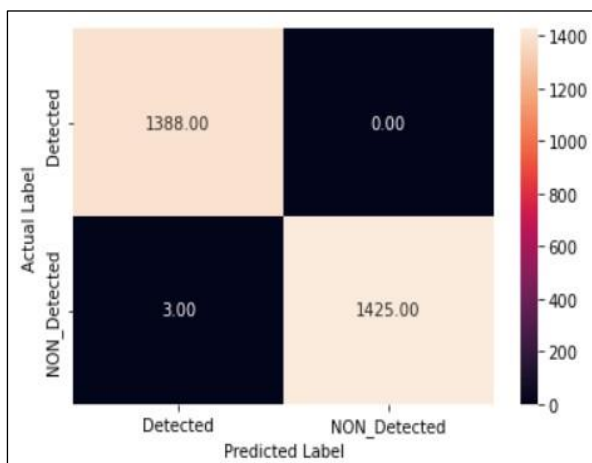


Fig.7

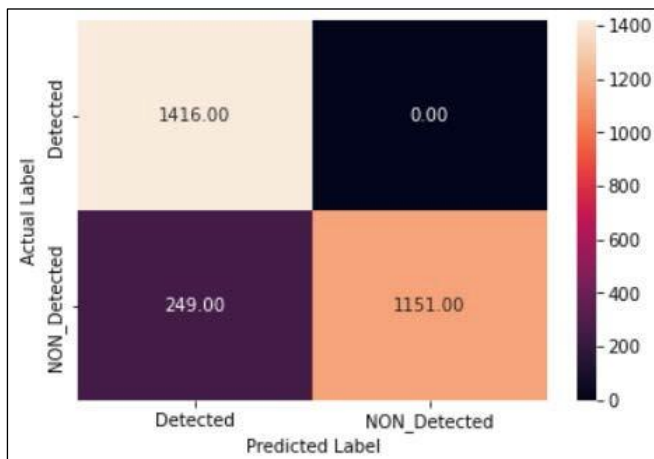


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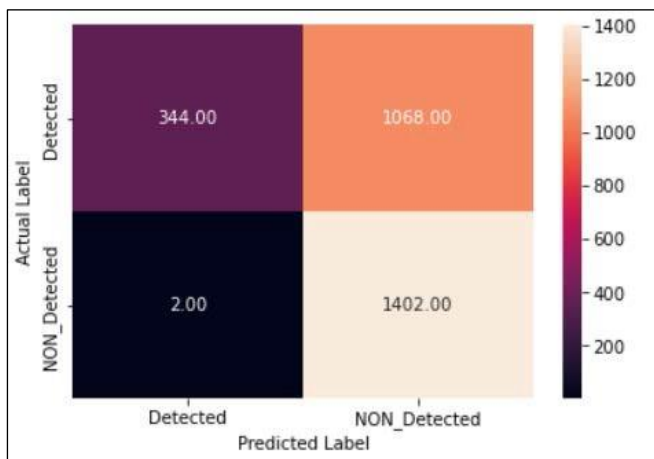


Fig. 9

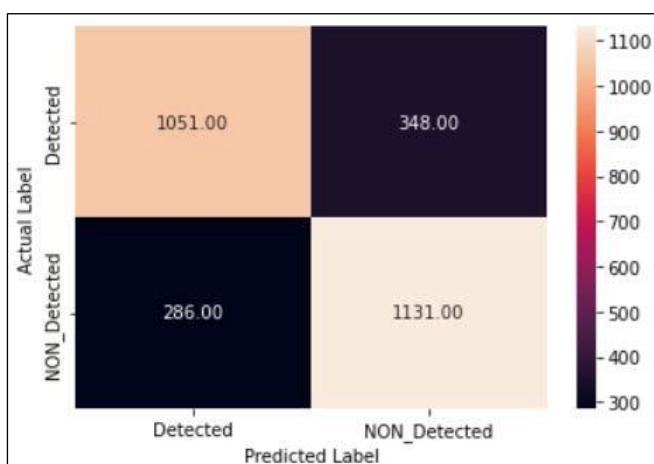


Fig. 10

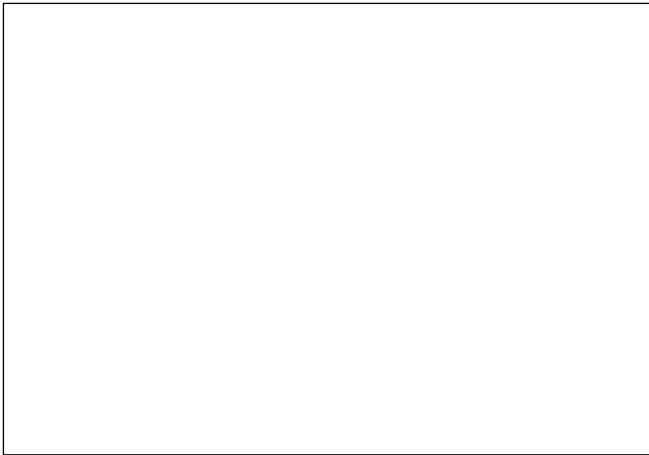


Fig. 11

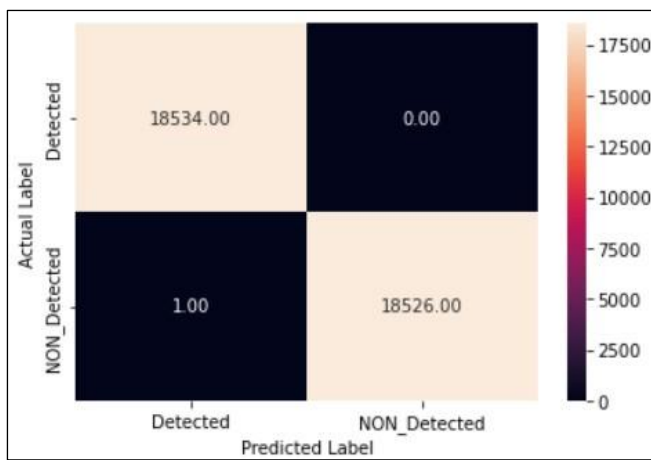


Fig. 12

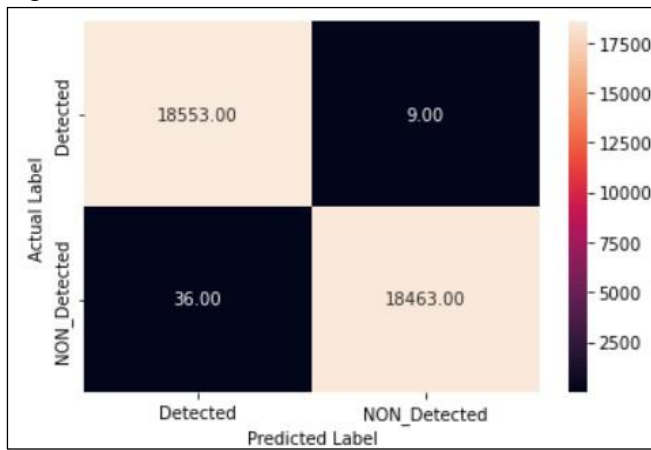


Fig. 13

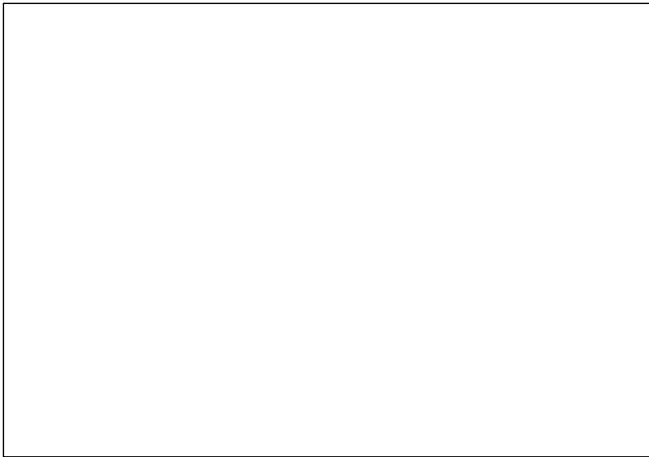


Fig. 14

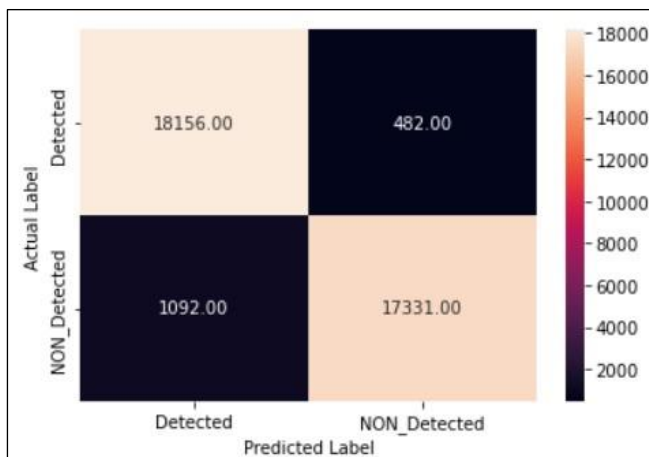


Fig. 15

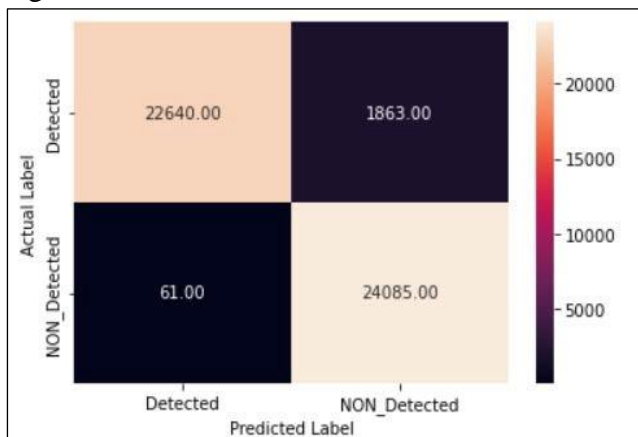


Fig. 16

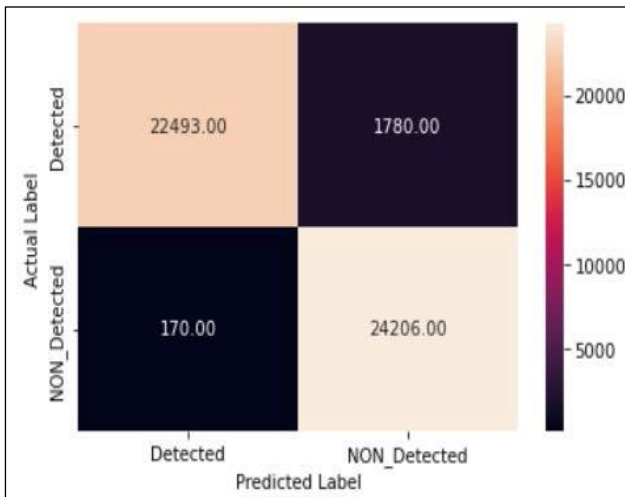


Fig. 17

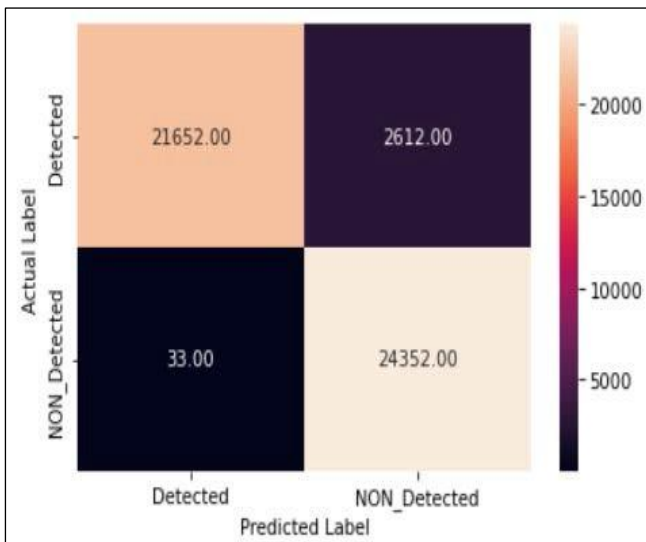


Fig. 18

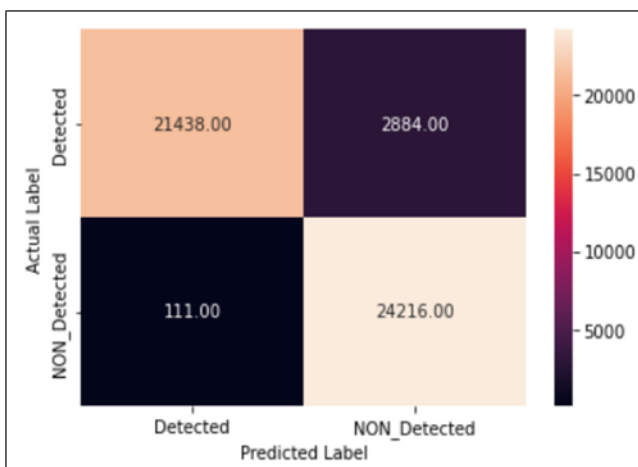


Fig. 19

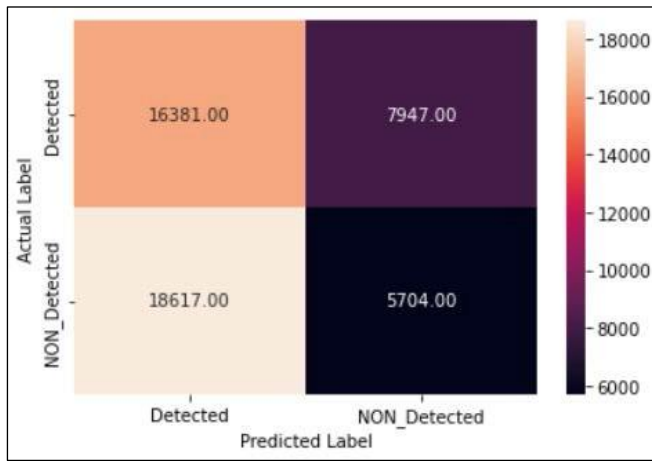


Fig. 20

## **Synergy between digital transformation and sustainability – An exploratory study in the container shipping industry**

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### **Abstract**

Most organizations have taken both digital transformation and sustainability as part of their core strategy and have started various initiatives to address these challenges. But in most cases, these are run as separate initiatives with no or limited synergy between them. This has become even more important in the container shipping industry as it is a major player in ensuring environmental sustainability by limiting green gas emission and by improving ocean health. The objective of this study is to explore this synergy by triangulating insights from multiple research methods such as computational text analysis and qualitative content analysis. The result of the analysis shows that the synergy between DT and environmental sustainability is at the very initial stages in container shipping companies; and there is not significant difference on these between Europe based companies and Asian based companies. As a result, container shipping companies are losing an opportunity to use advancements in data and technology for achieving their environmental sustainability goals. The authors feel that container shipping industry will gain significantly if they can bring more synergy between DT and environmental sustainability efforts and proposed a conceptual framework for bringing DT-sustainability synergy.

**Keywords:** Digital transformation, sustainability, decarbonization, data, container shipping, topic modelling, text mining

## **1. Introduction and Literature Review**

Corporate leaders around the world are responding to the challenges and opportunities offered by digitalization by adapting their organizations to the digital world, in a process commonly referred to as digital transformation (DT); which is also of adaption of the organizations to respond to digitization (Westerman, et al, 2014). When organizations started digitizing more to meet fast changing customer demands, they started accumulating data on their customers activities and interactions through multiple channels (Auriga, 2016). They started using these to create other benefits in the through technology innovation for cost reduction and efficiency improvements (Hess et al., 2016). These helped them to transform all components of their operating model and to create new ways of value delivery by producing new value propositions. People, data, things, business, and cloud are essential components of an organization that has undergone a digital transformation (Blaschke, et al, 2017). Vial conducted a thorough analysis of the DT literature and created a detailed framework of its nature and effects and identified ethical and sustainable dimensions of DT as areas which need further research (Vial; 2019).

Sustainability is a strategy that allows a company to "meet present demands without jeopardizing its potential to fulfil future needs." There is a growing consensus in the academic literature about the three dimensions of sustainability, which include economic, social, and environmental dimensions (Crittenden, Ferrell, Ferrell, & Pinney, 2011; Elkington, 1998; Melville, 2010), even though researchers frequently interpret sustainability in terms of environmental issues. While a company's ability to turn a profit is referred to as having an economic dimension (Hill, 2001), a company's ability to give back to the community is referred to as having a social dimension (Dyllick & Hockerts, 2002), and a company's initiatives to conserve natural resources while providing services are referred to as having an environmental dimension.

### **What is synergy between DT and sustainability?**

Most organizations have taken both DT and sustainability as part of their core strategy and have started various initiatives to address these challenges. But in most cases, these are run as separate initiatives with no or limited synergy between them. The synergy between DT and sustainability presents both opportunities and problems, within and across organizational boundaries. DT-sustainability synergy can be defined as the 'interaction or cooperation between DT and sustainability initiatives in an organization which can make significant



improvement and benefits to the organization as a whole and the society in which it operates.’ DT-sustainability synergy is achieved when data and technology solutions are used effectively by the organization to create long term sustainability value for its stakeholder and society at large. It is also achieved when data and technology is used in a sustainable manner. Some examples of DT-sustainability synergy are given below:

- Digital technologies are being used to map their environmental footprint and analyze the impact of environmental changes on their operations.
- Electronic waste associated with the technology revolution is destroyed or recycled without creating any environmental impact
- Investors use digital assessment tools that connect ESG (Environmental, Social and Governance) performance with corporate performance to make smart sustainability-oriented investment decisions
- Data and digital technology solutions are used effectively to improve sustainable living conditions at reduced costs to manage growing populations and increased urbanization.

A significant amount research has already been done on both DT and sustainability separately on how each of it will change management practice; but integration of these two trends remained as an unexplored territory. Feroz, et al. partially addresses this gap by doing a systematic literature review to map DT in the environmental sustainability domain and presents a on DT strategy regarding environmental sustainability and suggests further research on the impact of DT on social and economic aspects of sustainability (Feroz, et all, 2021). Ukko, et al studied how sustainability strategy is acting as moderator between financial performance and digital strategy (Ukko; et al, 2018); but literature review did not reveal any studies DT-sustainability synergy.

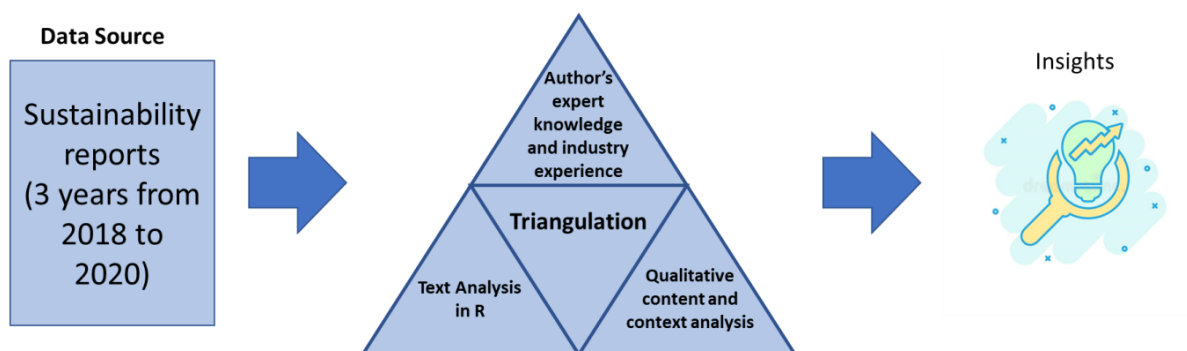
This study aims to address this gap by doing an exploratory analysis of synergy between DT and sustainability in container shipping industry with focus on environmental sustainability. This industry is responsible for more than 3% of global carbon dioxide emissions, and if it were a country, it would be the 6<sup>th</sup> largest producer of greenhouse gas emissions; and the industry is growing rapidly. These companies have adopted DT and sustainability as part of their core strategy in recent years and have started initiatives to address them separately. Since both these initiatives are in the initial stages, it is ideal to explore the DT-sustainability synergy now and embed it from the start to reap maximum benefits. This study will be primarily answering the below research questions.

- **RQ 1:** Are container shipping companies using data and digital solutions for their environment sustainability initiatives?
- **RQ 2:** Is there difference in the EU based companies Vs Asia based companies in the way they use digital technologies for improving their environmental sustainability efforts?
- **RQ 3:** What is the best approach for bringing synergy between DT and environment sustainability initiatives in container shipping industry?

## **2. Methodology**

This study uses a corpus-based methodology which is a combination of qualitative discourse analysis approaches with quantitative tools and procedures, particularly keywords, to capture themes from textual data (Gabrielatos and Baker, 2008; Jaworska and Nanda, 2016). When data is large such as the text corpus used in this study, manually doing this will need significant effort (Gabrielatos and Marchi, 2012) and to mitigate this we used computational text analytics techniques such as topic modelling. Topic modelling is a Natural Language Processing (NLP) technique that has been widely used to decipher a corpus's hidden thematic structure. Latent Dirichlet Allocation (LDA) model was used for topic modelling as this method produce a combined sample from two underlying distributions: one that reflects the fraction of topics for each document and other that indicates the probability distribution of topics across the words in the corpus (Blei, 2012).

Computer text analysis methods may sometimes lack context and fail to give meaningful results. To address this problem, it was supplemented with qualitative content analysis and author's expert industry knowledge using triangulation. It is a qualitative research strategy to evaluate validity through the convergence of information from various sources by employing multiple methods (Patton, 2002). The research methodology for this study is depicted in Figure 1 below.



**Figure 1** – Research methodology

### **Scope of the study.**

The following companies were identified for this study as together these eleven companies control 86.5% of the whole container shipping market and covers a wide range of geographies and cultures. Due to this, these companies can be considered as a representative sample of the whole container shipping industry.

Rank	Company Name	Headquarters	Total TEU	Ships	Market Share
1	Maersk Line	Denmark	41,21,789	708	16.90%
2	Mediterranean Shipping Company (MSC)	Switzerland	39,20,784	589	16.10%
3	CMA CGM	France	30,49,743	557	12.50%
4	COSCO	China	30,07,421	498	12.30%
5	Hapag-Lloyd	Germany	17,89,399	256	7.30%
6	Ocean Network Express (ONE)	Singapore	16,00,531	221	6.60%
7	Evergreen Marine Corporation	Taiwan	13,45,537	202	5.50%
8	HMM Co. Ltd.	South Korea	7,52,604	75	3.10%
9	Yang Ming Marine Transport Corporation	Taiwan	6,28,463	89	2.60%
10	Zim Integrated Shipping Services	Israel	4,09,810	95	1.70%
11	Wan Hai Lines	Taiwan	3,71,037	134	1.50%
<b>Total Market Share</b>					<b>86.50%</b>

**Table 1** – Top 11 container shipping companies





**Figure 3** – Word cloud

The analysis of the word cloud indicates the presence of ‘data’ and ‘information’ in the word cloud but with less prominence compared to other words. The word frequencies in the corpus were further analyzed using R and the results are given below in Table 2.

Total Words in the Corpus	945970	
Digital keyword	Frequency	%
information	3015	0.32%
data	1838	0.19%
technology	1293	0.14%
digital	745	0.08%
website	562	0.06%
platform	548	0.06%
online	395	0.04%
privacy	389	0.04%
cyber	219	0.02%
automation	207	0.02%
analytics	199	0.02%
smart	188	0.02%
artificial intelligence	177	0.02%
phone	165	0.02%
computer	149	0.02%
internet	85	0.01%
blockchain	49	0.01%
IoT	33	0.00%
chatbot	24	0.00%
sensor	15	0.00%
Facebook	12	0.00%
algorithm	12	0.00%
robot	10	0.00%
<b>Total DT words</b>	<b>10329</b>	<b>1.09%</b>

**Table 2** – DT keyword frequency

This indicates the DT related keywords in the corpus is only around 1% of the total words which indicates less prominence of DT in sustainability reports. To look at how each company is using DT, a word frequency analysis was done on the latest sustainability report (2020) of each company using R and the result is given in table 3 below.

Rank	Company Name	Headquarters	Total Words frequency	Total digital words frequency	% of Digital words
1	Maersk Line	Denmark	23922	245	1.02%
2	Mediterranean Shipping Company (MSC)	Switzerland	20567	135	0.66%
3	CMA CGM	France	20157	129	0.64%
4	COSCO	China	22665	186	0.82%
5	Hapag-Lloyd	Germany	29082	375	1.29%
6	Ocean Network Express (ONE)	Singapore	12630	157	1.24%
7	Evergreen Marine Corporation	Taiwan	42090	344	0.82%
8	HMM Co. Ltd.	South Korea	29896	310	1.04%
9	Yang Ming Marine Transport Corporation	Taiwan	31978	493	1.54%
10	Zim Integrated Shipping Services	Israel	18936	277	1.46%
11	Wan Hai Lines	Taiwan	47421	319	0.67%

**Table 3** – DT keyword frequency by companies

This analysis reconfirms the whole corpus analysis that digitalization related words account for only 1% of the total word frequencies. To analyze whether there any difference between European based companies and Asian based companies, these companies were grouped together and analyzed separately as below.

Rank	Company Name	Headquarters	Total Words frequency	Total digital words frequency	% of Digital words	Market Share
<b>Europe based companies</b>						
1	Maersk Line	Denmark	23922	245	1.02%	16.90%
2	Mediterranean Shipping Company (MSC)	Switzerland	20567	135	0.66%	16.10%
3	CMA CGM	France	20157	129	0.64%	12.50%
5	Hapag-Lloyd	Germany	29082	375	1.29%	7.30%
<b>Average % of DT words</b>					<b>0.90%</b>	
<b>Total Market Share</b>						<b>52.80%</b>
<b>Asia based companies</b>						
4	COSCO	China	22665	186	0.82%	12.30%
6	Ocean Network Express	Singapore	12630	157	1.24%	6.60%
7	Evergreen Marine Corporation	Taiwan	42090	344	0.82%	5.50%
8	HMM Co. Ltd.	South Korea	29896	310	1.04%	3.10%
<b>Average % of DT words</b>					<b>0.93%</b>	
<b>Total Market Share</b>						<b>27.5%</b>

**Table 4** – Comparison of DT keywords between Asian & Europe based companies

This shows that there is no significant difference between the top 4 Asia based companies (which control 27.5% of the market share) with the top 4 European based companies (which control 52.8% of the market share) in adopting digital technologies. To put context around the above results, a detailed qualitative content analysis was done on the sustainability reports of all 11 companies. Based on the qualitative content analysis of the sustainability reports, we have compared how each of the container shipping companies is aligned with UN SDG (Sustainable Development Goals) and the result is given below.

UN SDG	Maersk	MSC	CMA	COSCO	Hapag-Lloyd	ONE	Evergreen	HMM	Yang Ming	Zim	Wan Hai
1-No Poverty	NA	Low	Low	NA	NA	NA	NA	NA	NA	NA	Low
2-Zero Hunger	NA	NA	Low	NA	NA	NA	NA	NA	NA	NA	NA
3-Good Health & wellbeing	High	Medium	High	No	No	No	Medium	Medium	Low	No	High
4-Quality Education	NA	NA	Low	NA	Medium	Medium	High	NA	Low	NA	NA
5-Gender Equality	High	No	Medium	No	No	Low	Medium	Medium	Low	Medium	Medium
6-Clean water and sanitation	Low	No	Low	No	No	No	No	Low	No	No	No
7-Affordable and clean energy	High	No	High	No	No	High	Medium	Low	High	Medium	Medium
8-Decent work and economic growth	High	High	High	No	High	High	High	Medium	High	High	Medium
9-Industry, innovation, and infrastructure	Low	Medium	Medium	No	No	High	No	Medium	No	Medium	No
10-Reduced inequalities	High	High	Medium	No	No	Medium	No	Medium	No	Medium	No
11-Sustainable cities and communities	NA	NA	Low	NA	NA	NA	NA	NA	NA	Low	NA
12-Responsible consumption and production	Low	Low	High	No	No	Medium	High	Medium	Medium	No	High
13-Climate action	High	No	Medium	No	High	High	High	Medium	High	High	High
14-Life Below Water	High	No	High	No	High	High	High	Medium	High	High	Medium
15-Life on land	NA	NA	Low	NA	NA	NA	NA	NA	NA	NA	NA
16-Peace, justice, and strong institutions	Low	Low	Low	No	Medium	High	No	Medium	No	No	No
17-Partnerships for the goals	High	Medium	Medium	No	High	High	High	Medium	High	High	Medium

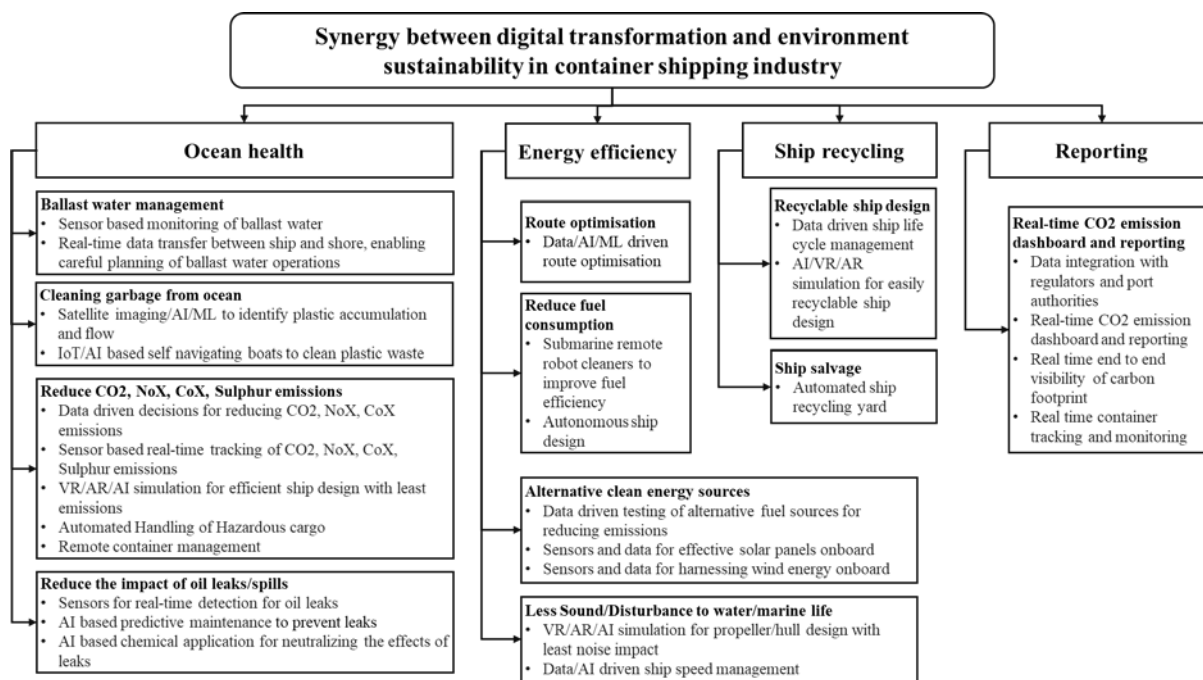
*High – high alignment to SDGs, Medium – Medium alignment to SDGs, Low – Low alignment to SDGs, No – No alignment to SDGs, NA – Not applicable*

This manual qualitative content analysis of the sustainability reports helps in providing context to the findings from the computational text analysis in R and helps to reconfirm the findings from the computation text analysis. The author has used his more than five years of experience in the industry to validate the findings from both the analyses. The author has also consulted with a few industry experts from his professional network to validate findings. The author has combined the insights from these to draw the following conclusions:

- Container shipping industry is still at the very nascent stages of DT
- The major environment sustainability efforts by container shipping companies are focused on decarbonization of shipping and achieving net zero carbon shipping by 2050. There is also focus on overall ocean health and effective ship recycling.
- Since the container shipping industry is still at the nascent stages of DT, the use of digital technologies for achieving sustainability goals is limited.
- The opportunities offered by digital technologies and solutions are much higher and will help these companies to achieve their sustainability goals faster.

To address this, we are proposing a conceptual model (Figure 4) which helps these companies to leverage various digital solutions for achieving their sustainability goals faster with much less cost.





**Figure 4** – Conceptual model for synergy between digitalization and sustainability

Given below is a summary of the comparative analysis of the container shipping against DT-sustainability synergy framework (Table 5).

Comparison of container shipping companies against the DT-Sustainability framework				
	Ocean Health	Energy Efficiency	Ship recycling	Reporting
<b>Maersk</b>	None	Use AI/ML for effective route optimisation and speed management	None	Use data, IoT and ML for a real-time emission dashboard
<b>MSC</b>	None	None	None	None
<b>CMA</b>	None	None	None	None
<b>COSCO</b>	None	None	None	Has a primitive online carbon emission calculator
<b>Hapag-Lloyd</b>	None	Use digitalisation for ship utilisation and port and terminal efficiency management	None	None
<b>ONE</b>	None	Data driven analysis of fuel consumption in the main engine, generator engines and auxiliary boiler.	None	None
<b>Evergreen</b>	None	None	None	None
<b>HMM</b>	None	Vessel Insight, a deep learning system that analyses the optimal route through AI	None	None
<b>Yang Ming</b>	Smart ship speed reduction to protect marine life	None	None	None
<b>Zim</b>	None	None	None	None
<b>Wan Hai</b>	None	None	None	None

**Table 5** – Comparison against DT-Sustainability model

To avoid bias and to increase the validity of the findings and the above conceptual framework, the author has discussed the findings with independent industry forums such as Digital Container Shipping Association (DCSA; <https://dcsa.org/>) and MMM Center for Zero Carbon (MMMCZC) shipping (<https://zerocarbonshipping.com/>).

#### **4. Conclusion**

Most studies on sustainability neglect the role of digital solutions in achieving sustainability goals and this study helps to address that gap. The results of the analysis show that the synergy between digitalization and environment sustainability is at the preliminary stages in container shipping companies. The author feels that container shipping industry will gain significantly if it can bring more synergy between digitalization and sustainability effort and proposed a conceptual framework for bringing synergy between digitalization and environment sustainability in container shipping industry. The author expects that DT-sustainability synergy framework will make significant contributions to both practitioners and researchers. As this study was done in a single industry with publicly available data, there might be some limitations related to the generalizability of this study. But it offers an opportunity for future researchers to validate the findings in this study by applying the same approach to other industries or by using secondary data for the same industry.

Findings of this study will help companies to adjust the focus of their DT and environmental sustainability strategies to improve business performance by bringing synergy between them. The managers for these strategies should work together to leverage digital technologies to save cost and time for achieving sustainable shipping through virtual simulation, testing, etc. The DT-Sustainability synergy conceptual model developed in this study can be extended to other industries and offers an opportunity for future research. The findings of this study can be validated and enhanced further through other quantitative or qualitative research methods or by collecting primary data.

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## **Determinants and Impact of ICT Investment among Service Sector Firms:**

A Systematic Literature Review

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### **Abstract**

While there is an abundance of studies related to Information and Communication Technology (ICT) usage in manufacturing firms, such exercises have received limited attention in the context of *service sector* firms.

This paper analyzes the significant determinants of and barriers to ICT adoption among service sector firms. Given this objective, a systematic literature review of 93 studies was undertaken using the PRISMA framework.

The results show that firm-specific features such as 1) size, 2) education of employees, and 3) top management support are major determinants of ICT adoption. The major inhibitors of ICT usage are found to be 1) technological complexity, 2) security concerns and 3) informational asymmetry. These key findings are likely to have important managerial implications for the firms operating in the service sector. This should aid managers to take prudent decisions in terms of ICT investment while assessing the expected benefits versus the explicit and implicit costs.

### **Keywords**

ICT, PRISMA, investment, enablers, constraints

## Measuring mobile app engagement for e-commerce users

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### Abstract

The plethora of mobile apps influence the way consumers interact with the brands. Past research shows a growing interest in the users of branded mobile apps. Surprisingly, no standardized instrument exists to measure brand engagement through a mobile app. Therefore, we propose a unified conceptualization of the literature on mobile app engagement (MAE) and scale for MAE. Across a series of studies, the scale items were validated, and reliability was checked for more accurate measurement for the MAE scale. A parsimonious instrument for measuring the MAE is suggested which suites in different research settings and contexts. . The proposed scale comprises three dimensions; cognitive processing, enthused participation, and intention to browse, with twelve items for measurement. The MAE scale can help marketers to create an MAE index to identify the engagement effectiveness of the mobile apps. Further, we furnish the theoretical and managerial implications of this research.

**Keywords:** Mobile app engagement, E-commerce, Scale development, engagement scale.

## MALL SHOPPING VALUE AND ITS MEDIATION EFFECT ON WORD OF MOUTH, PURCHASE AMOUNT AND REPATRONAGE INTENTION: A STUDY ON MALL SHOPPING EXPERIENCE

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### Abstract

Shopping Malls offer a wide array of stores, events, leisure, and entertainment services. The quality of shopping experience influences the perception of shoppers on value either through successfully accomplishing its intended goal or by providing enjoyment and /or fun. The resulting impression of mall in terms of pleasant and meaningful experience of value will facilitate purchase amount, word of mouth and returning behaviour. The cross-sectional empirical research examines the impact of mall attributes on shopping value, repatronage intention, word of mouth and purchase amount of the shoppers. Within S-O-R theory, the constructs were linked and the indirect mediation effect of shopping value was proposed. By adapting relevant scales, a questionnaire-based research instrument was developed for data collection and testing. Through convenience sampling method, the primary data was collected using online Google form between August, 2020 and November, 2020. Using statistical software's like IBM SPSS 23 and SmartPLS 3, the results were generated. The study establishes the positive influence of mall attributes and shopping value on the repatronage intention, word of mouth and purchase amount. The significant indirect mediation effect of shopping value on the impact of mall attributes on repatroange intention and the significant mediation effect of shopping value on the impact of mall attributes on word of mouth, and on purchase amount establishes the strategic importance of the study to design shopping value proactively in terms of utilitarian value and hedonic value. Hedonic value was seen relatively influencing better than utilitarian value. A strategic allocation of tenant mix in terms of unique emotional and pleasant shopping experience will significantly influence the shoppers to generate favourable shopping behavior in terms of word of mouth, repatronage intention and purchasing.

**Keywords:** Mall Attributes, Shopping Value, Hedonic Value, Utilitarian Value, Repatronage Intention, Word of Mouth, Purchase Amount

### Introduction

The shopping mall as a large and attractive marketplace is known for its unique superior experience offered from its wide variety of stores, entertainment services and leisure facilities. The overall architecture design and décor of the mall determine the hedonic and utilitarian value (Bellenger et al. (1977) to generate favorable shipping outcome.

The recreational and economic value derived will then positively impact the behavioral intention of shoppers and the pleasurable shopping will lead to re visiting behavior (Bitner, 1992 ; Donovan and Rossiter, 1982; Mano, 1999; Wakefield and Baker, 1998; Tai and Fung, 1997). Shoppers with utilitarian motivations seek instrumental value, such as saving time and effort or completing specific tasks (Babin

et al., 1994). Whereas, Hedonic consumption offers multi-sensory, fantasy, and emotive aspects of one's experience (Hirschman and Holbrook, 1982a).

Previous research also confirms Word-of-mouth has an important role in shaping a consumer's attitudes and behaviors in the retail context and refers to a personal communication where the sender is independent of the commercial source (Herr, Kardes, & Kim, 1991; Hигie, Feick, & Price, 1987). Articles in trade journals also suggest that shopping mall is a lucrative venue and the mall experience needs to be exciting in order to attract and keep customers. The retailers and marketer realize the importance of comprehending the key determinants of purchase to position the channel (Roy, 1994). The cross-sectional empirical study investigates how the mall attributes impacts the favourable shopping behavior in terms of repatronage intention, word of mouth and purchase amount. Given the managerial challenge of increasing competition from other channels like discount stores and online retail formats, the mall managers look for unique strategy to position the mall as a destination for delivering superior value in their offerings. The study examines the indirect effect of shopping value on the impact of mall attributes on the shoppers repatroange intention, purchase amount and word of mouth. The significant result reinforces the strategy of effectively allocating the tangible and intangible benefits while allocating space for the mall tenants.

### **Literature Review**

The long term success of a service provider is from the consistent provisioning of desired value for its target segment (Sweeney & Soutar, 2001). Designing shopping experience in terms of intrinsic and extrinsic will reward the shopping mall by generating the repatronage intention. (Swinyard, 1993 and Wakefield et.al.,1998).

Dick and Basu (1994) suggest brand loyalty as an outcome of customers positive emotional mood and affect. Hedonic shoppers are intrinsically motivated towards shopping and looks for fun, amusement, fantasy and sensory stimulation. Whereas, utilitarian shoppers are extrinsically motivated and more task-related and rational (Babin, Darden, and Griffin 1994; Batra and Ahtola 1991).

Previous research also indicate that creation of positive word of mouth will assist the marketers to relationally position the experience for brand communication (Wilson, 1991). In view of all the above, one may suppose that superior shopping value will mediate the impact of mall attributes on repatronage intention, purchase amount and word of mouth.

### **The Model/Conceptual Model**

The proposed conceptual framework within the Stimulus-Organism-Response theory (Mehrabian and Russell 1974) considers the mall attributes as a stimuli impacting the perception and behavior responses of the millennial shoppers. The organism in the S-O-R paradigm is represented by the perception on shopping value. And, finally the response of the shopper is the explained as the final decision of the shopper in terms of Approach or Avoidance behavior (Donovan and Rossiter 1982; Sherman, Mathur,



and Smith 1997). Approach behaviors, in terms of favorable shopping outcome is the focus of the study, and is represent by mall repatronage intention, purchase amount and word of mouth of the millennial shoppers.

The following are the proposed direct and indirect path relationship in terms of the effect of Mall Attributes on Millennial Shoppers:

H1- Mall Attributes significantly impact Shopping Value

H2 - Mall Attributes significantly impact Word of Mouth

H3 - Mall Attributes significantly impact Repatronage Intention

H4 - Mall Attributes significantly impact Purchase Amount

H5 – Shopping Value significantly mediate the impact of Mall Attributes on Word of Mouth

H6 – Shopping Value significantly mediate the impact of Mall Attributes on Repatronage Intention

H7 – Shopping Value significantly mediate the impact of Mall Attributes on Purchase Amount

### **Methodology**

The cross-sectional survey based quantitative research is explanatory and descriptive in nature. The researcher identified and adapted relevant scales from the previous literatures and developed the questionnaire-based research instrument. The response for the construct was measured using existing scales available in literature. Mall Attributes was measured using the 23 items scale reported in Tsai(2010), shopping value is adapted from the work of Babin et.al (94)with two dimensions and twenty items measured in five point Likert scale; Word of Mouth with two items measured in five point Likert scale is adapted from the work of Lloyd et.al. (2014); Repatronage Intention with semantic differential scale is adapted from the work of Wakefield et.al (98) and Purchase Amount with one item measured in five point Likert scale is adapted from the work of Tsai, (2010). All scales were analyzed in five-point Likert scales, where 1 represent ‘Strongly Disagree’ and 5 representing ‘Strongly Agree’.

Through convenience sampling method, the sample represented by university / college students was approached to collect using web-based Google form of questionnaire. The size of the sample was calculated using GPower software and based on IBM SPSS 23 and SmartPLS statistical software, the instrument was forwarded for data collection.

### **Data Analysis**

The primary data was analyzed in two stages: firstly, descriptive statistics describing the demography and the perception of shoppers on individual constructs. It was done using frequency, percentage, mean and standard deviation. From a sample size of 476, all the sample of the age between 20 -25 years, gender of the sample includes 70.4 % (335) of female respondents and 29 % (141) of male respondents. The education qualification of respondents include 79% (376) of Bachelors Students, and 21% ( 100) of Masters Students. Since they are students from different parts of Kerala, the location was also identified and found 6.9 % (33) of them as residents of Southern Kerala, 53.8% (256) of the respondents

from Central Kerala, and 39.3 % (187) of them residing in Northern Kerala.

The structural equation modeling was conducted using PLS approach. Firstly, PLS measurement model and then structural model was interpreted. As in Table 1, reliability, convergent validity, and discriminant validity of the measurement model were found to be satisfactory. Reliability measure of Cronbach Alpha was between 0.76 – 0.95). Composite reliability measures of all variables were also found to be acceptable. Convergent validity of each of the constructs was checked using average variance extracted (AVE). AVE values above 0.50 indicated the convergent validity of the model at the construct level (Hair et.al 2018). Moreover, all item-factor loadings were above 0.70, indicating convergent validity at the indicator level. Discriminant validity of the model was evaluated using the Fornell and Larcker (1981) criteria. The result showed acceptable as the shared variance between factors were lower than the AVE of the individual factors confirming the discriminant validity.

**Table 1 Result of Measurement Model**

<b>Construct</b>	<b>Cronbach's Alpha</b>	<b>rho_A</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>	<b>MA</b>	<b>PA</b>	<b>RPI</b>	<b>SV</b>	<b>WOM</b>
<b>MA</b>	0.87258	0.879107	0.904465	0.613285	0.783125				
<b>PA</b>	1	1	1	1	-0.13744	1			
<b>RPI</b>	0.904557	0.905686	0.933308	0.777813	0.557301	-0.24458	0.881937		
<b>SV</b>	0.812027	0.823276	0.913704	0.841142	0.604012	0.098224	0.466938	0.917138	
<b>WOM</b>	0.765899	0.768089	0.895118	0.810156	0.563686	-0.13503	0.51088	0.439393	0.900087

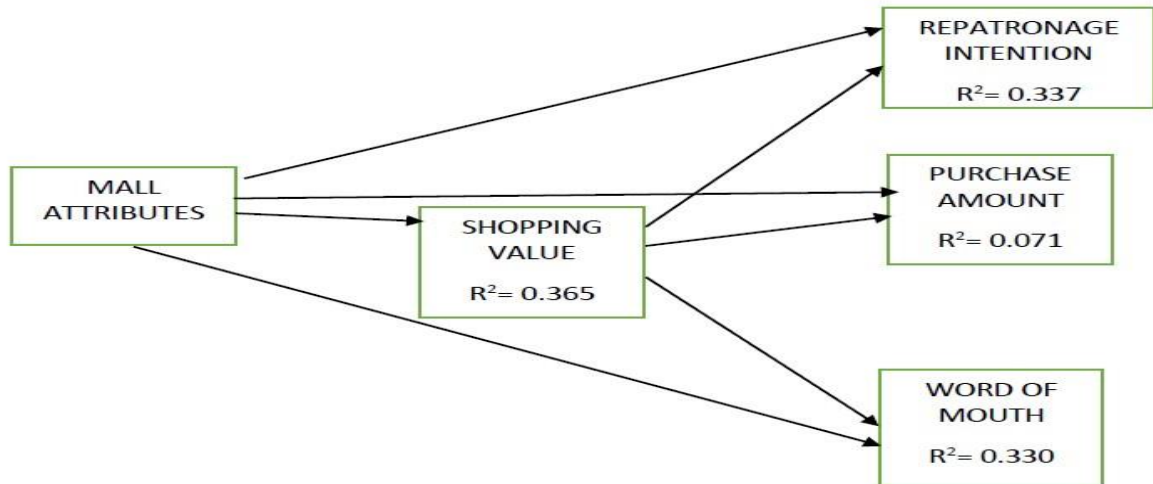
### Structural Equation Modeling and Testing of Hypotheses

The model was evaluated for structural path significance by using bootstrapping. Table 2 shows the path coefficients and the statistical significance of the paths. All hypotheses proposed in the research model except H6a and H10 were supporting.

**Table 2 Result of Hypotheses Testing**

<b>Path Relationship</b>	<b>Path Coefficient <math>\beta</math></b>	<b>t-value</b>	<b>P Values</b>	<b>Result</b>
H1: MA -> SV	0.604	21.436	0	Supported
H2: MA -> RPI	0.433	9.612	0	Supported
H3: MA -> PA	-0.31	6.402	0	Supported
H4: MA -> WOM	0.47	10.545	0	Supported
H5: MA -> SV -> RPI	0.124	4.407	0	Supported
H6: MA -> SV -> PA	0.172	4.681	0	Supported
H7: MA -> SV -> WOM	0.094	3.275	0.001	Supported

$R^2$  values for the constructs under study is reported as follows. Adjusted  $R^2$  value of Shopping Value was found to be 0.365 which is moderate in predictive relevance (Chin,1998). The R square adjusted value of Repatronage Intention is found to be 0.337 and the Word of Mouth is found to be 0.330 with moderate predictive relevance. However, the R square adjusted value of purchase amount was found to be 0.071 with weak predictive relevance.



**Figure 2 Structural Equation Modeling**

### Results & Discussion

The significant direct impact of mall attributes on the shopping value (H1) imply the strategic impact of generating value from the mall experience in terms of utilitarian value and hedonic value. The result supports the findings of previous literature (Belk 1987; Fischer and Arnold., 1990; Sherry,1990a and Wang et.al.,2000). Secondly, the significant direct impact of mall attributes on the repatronage intention reflects the ongoing managerial operations to deliver loyalty intention driven experience in the mall for the shoppers. Thirdly, the significant direct impact of mall attributes on word of mouth implies the marketing and relational positioning scope of experience for communication and promotional activity of marketers (Wilson, 1991). And the significant direct effect of mall attributes on purchase amount implies the rationale of influencing the sales through shopping experience management.

The result of testing the indirect mediation effect also saw positive results. Fifthly, the significant indirect mediation effect of shopping value on the impact of mall attributes on repatronage intention (H5) imply the strategic potential of value while designing shopping experience (Swinyard, 1993 and Wakefield et.al.,1998). Next, the significant indirect mediation effect of shopping value on the impact of mall attributes on purchase amount (H6) strengthen the relevance of value in shaping the sales and repeat sales of the shoppers .And, finally the significant indirect mediation effect of shopping value on the impact of mall attributes on word of mouth (H7) imply the managerial significance of positioning the shopping value and experience for reducing the perceived risk of the shoppers through WOM (Berry, 1980; Zeithaml, 1981; Zeithaml et al., 1985).

### Conclusions

The study established impression of the mall shopping experience from the unique tangible or functional factors and intangible or psychological attributes. A constant effort by the mall managers to monitor

the perception on value will facilitate favorable shopping behaviour to position as a preferred channel over other channel option. Thereby, shoppers who are less susceptible to competitors' appeal will remain loyal to repatronise, purchase more, and spread positive word of mouth.

### **Managerial Implications**

A continuous commitment of mall management to examine the real time perception of mall shoppers will facilitate in generating insights for designing an optimum mall shopping experience for favorable shopping behavior. Additionally, by linking those dimensions with other market segments and geographical locations will repeat better insights for the decision makers to leverage the mall operations for competitive advantage.

While the potential influence of word of mouth as a form of promotion is generally accepted for its effect on the receiver, future research shall also focus on the shopping behavior of the recipient of positive word of mouth. Mall Managers shall continue to strategically position their mall shopping experience for a superior value to resist competition from other retail channel.

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## **Influencing Factors of Willingness to Buy Country-of-Origin Brands Post COVID-19 Pandemic: An Empirical Study**

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### **Abstract**

The Corona virus-19 pandemic disrupted the lifestyle and purchasing habits of customers, which also has a harmful effect on the global economy. The GDP of a nation is significantly influenced by consumer purchases of domestically produced goods and nation's own brands, which also aid in the recovery of the nation's economy. The objective of the paper is to study the variables that affect decisions of consumers' purchasing and to model those variables with structural equation modeling (SEM) to find the causal relationship. Factors like consumer ethnocentrism, economic nationalism and Attitude towards foreign-brands (ATFB) were evaluated to examine significant impact on willingness to buy country-of-origin brands (WBCOB) and products.

The data was collected from 450 students of Sardar Patel University using convenient sampling with structured questionnaires using established scales. CFA and SEM using SPSS AMOS was applied to analyse the data.

The findings show that the COVID-19 pandemic has driven customers to motivate economic nationalism by purchasing Indian brands that supports the buying of Indian-made goods and encouraging others to do the same will positively affect and strengthen the Indian economy. This study shows that students' ATFB, such as rejecting foreign brands and endorsing Indian made products, has a favourable impact on purchasing patterns for goods made in India, reflects ethnocentrism, and demonstrates economic nationalism among Indians. It was determined that ATFB mediates the significant effect of consumer ethnocentrism on the WBCOB.

This finding can assist marketing specialists to articulate an effective promotion strategy to encourage ethnocentric tendencies, and they can give consumers clues to encourage feelings of economic nationalism when they purchase products or services.

**Keywords:** Consumer ethnocentrism, economic nationalism, attitude towards foreign brands (ATFB), willingness to buy country-of-origin brands (WBCOB)



## 1. Introduction

The coronavirus outburst was declared a "pandemic" by World Health Organization on 11<sup>th</sup> March, 2020 (WHO, 2020). Indian people faced undiscovered circumstances during the initial stage of the lockdown, which caused a historically unprecedented shift in consumer preferences. There was no need for lifestyle products, and things were divided into two groups namely basic and non-basic goods. Only necessary products were provided to people (Enormous, 2020).

People from all over the world expressed their feelings against China because they thought that China did not take necessary preventive actions to stop the epidemic spread. This was another unusual behaviour that was observed. Additionally, China was reopening its enterprises while India and other nations were compelled to implement lockdown, which had a negative impact on country's economy. Several nations around the world showed signs of nationalism. People began discussing the value of independence and decreasing reliance on China, which is regarded as the world's production center. The world appears to have started moving away from globalisation toward localized products and services even before this pandemic (Oba, 2020). Chinese government always adhered to the China First policy; similarly, the USA with America First policy caused other nations to begin turning internal and strengthening their economies which resulted into giving surge to nation-first policy. Noticeable variations in the type of products purchased, the location of purchases, and the usage of digital payments, particularly in developing nations like India, were witnessed amid the nationwide lockdown (Gigantic,2020). Therefore, it is essential to understand new consumer behaviour and novel marketing tactics in the post COVID-19 period and key elements affecting consumers when they buy post lockdown.

This study makes an effort to answer to questions based on two significant developments that occurred during the lockdown: The first sign of the economy's negative impact was the complete halt of economic activity. Therefore, it is important to research how the public feels about the economy and who they believe should be involved in its recovery. Second, if the economic effects were to occur, would customers still make impulsive buying or would they start making more deliberate decisions? Would consumers' ethnocentric behaviour lead them to be more willingness to buy the country-of-origin brands (WBCOB)?

## 2. Literature Review

It was noted through updates from various regions of the world that people began thanking medical professionals and neighborhood grocery or provision shops for supplying them with necessities for existence. The actions of the people revealed a sense of nationalism. The review of literature includes economic nationalism (EN), consumer ethnocentrism (CE), attitude towards foreign brands (ATFB), and willingness to buy country-of-origin brands (WBCOB).

### **Consumer Ethnocentrism (CE)**

Sharma et al., (1995) considered consumer ethnocentrism as an idea that is based on three perspectives: first, consumer anxiety about the economy damaging of his or her own nation by purchasing foreign brands; second, the ethics of purchasing imported goods and third, a personal bias towards imports. Consequently, customers with ethnocentrism have confidence in that foreign brands are not patriotic, harm the domestic economy and results in employment losses. Conversely, people who are not ethnocentric evaluate foreign brands depending on without taking into account where such things are from in made (Shankarmahesh, 2006). Baughn & Yaprak, (1996) and Shimp & Sharma, (1987) found that the consumers have positive and favourable attitude towards domestic or local brands while Bartsch et al., (2016) stated in his study that other consumers have a positive attitude towards foreign brands. Shimp and Sharma (1987) developed consumer ethnocentrism into measured construct through the use of consumer ethnocentrism tendencies scale (CETSCALE) with 17-item which is commonly and globally accepted. Consumers who liked domestic brands over foreign brands, the CETSCALE with 6-item was formed by Klein et al. (2006).

### **Economic Nationalism (EN)**

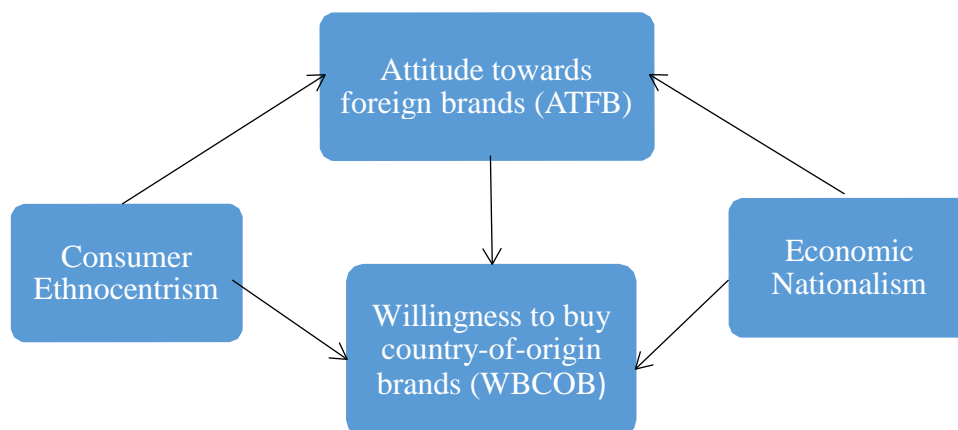
Economic nationalism can be considered as a 'Country first' stance and adopts a collective sentiment of prejudice over foreign brands. It is influenced by identity of nation, ethnocentrism and consumer nationalism (Baughn & Yaprak, 1996). People with nationalism started consuming nationalised goods and dressing in style goods that feature symbols or colours of nation; choose TV programmes with national flavour and favour purchasing locally made products (Castelló & Mihelj, 2018). Additionally, consumers closely look into the country-of-origin signs on the "Made in" or "Brand Origin" labels on packaging depending on their economic nationalism while making purchases disposition and attitude that is ethnocentric and economic nationalism (Cheah & Phau,

2006). Economic and socio-psychological factors are important when customers behave favourably in favour of domestic brands (Verlegh, 2007).

### 3. The Model/Conceptual Model

Many studies have been conducted on Consumer nationalism and consumer ethnocentrism before pandemic. Few studies focused on influencing factors for WBCOB but not in India. Only a handful studies were conducted on consumer willingness to buy Indian brands in which data was collected during the pandemic. Therefore an attempt is made to examine the crucial elements which affect consumer willingness to buy Indian brands post Covid-19 pandemic. Observations and literature indicate that because of the pandemic, consumers are keen to support the efforts put in by govt. to revive the economy of the nation and pay attention to "made in India" or "Indian origin" products while buying.

The study focuses on assessing customers' willingness to buy country-of- origin brands, which is influenced by ethnocentrism (indicating a choice or liking for domestic brands which is originated from home nation). The idea of economic nationalism will help boosting country's economy post pandemic. With this insight, theoretical framework was prepared by Verma and Naveen, (2021) which was partially used by researcher in this study (Figure-1). This frame also comprises the impact of attitude towards foreign brands on WBCOB after pandemic. **Figure1. Frame work for WBCOB**



The main objective of the study is to determine whether the compulsion to stay at home as a result of the COVID-19 crisis has affected consumer buying behavior and to

detect the elements that would influence decisions of consumers after lockdown, post economic activity resumption. The sub-objectives are as follow:

- To understand the consumer buying behaviour post Covid-19 situation
- To study the factors affecting consumer willingness to buy country-of-origin brands post Covid-19 pandemic
- To measure the impact of each influencing factors on willingness to buy country-of-origin brands post lockdown

Based on the available literature and objectives of the study, following hypothesis can be formulated:

H1: CE has a significant effect on WBCOB. H2:

ATFB affects WBCOB.

H3: EN has a significant influence on WBCOB.

#### 4. Methodology

This research study is descriptive in nature. The data is gathered by using structured questionnaire. The questionnaire comprises of five components. First component is for demographic profile of respondents, second section is for consumer ethnocentrism, third for economic nationalism, next components on attitude towards foreign brands and last section is on WBCOB. A Likert scale with 5 point was used to get responses for all the influencing factors and WBCOB through structured questionnaire.

A non-probability convenience sampling was used to collect the data from the students of Sardar Patel University covering UG, PG and PhD courses with 450 respondents. Structural equation modelling (SEM) which is regarded as being suitable for analysing complex cause-and-effect relationships is used for analysis. The measurement model covers influencing factors namely consumer ethnocentrism, economic nationalism; as “exogenous variables”. The WBCOB is an “endogenous variable”. The ATFB is taken as a mediating variable between exogenous variables and WBCOB. Mediation analysis is done to determine an indirect effect as the “mediating” variable, ATFB, on the relationship between the influencing factors as two exogenous variables and the endogenous variable (WBCOB).

## 5. Data Analysis

Out of 450 respondents, 63.3% were male and 36.7% students were female. The majority 62% students were in UG course, 34.2% in PG course and only 3.8% from PhD course. 61.8% students were having annual family income below Rs.2 lakhs and 18.7% students were having annual family income between Rs.2 to Rs.5 lakhs. In case of residing status of students 56% students are urban and 42% rural.

### SEM Analysis

Figure 2. Structural Model

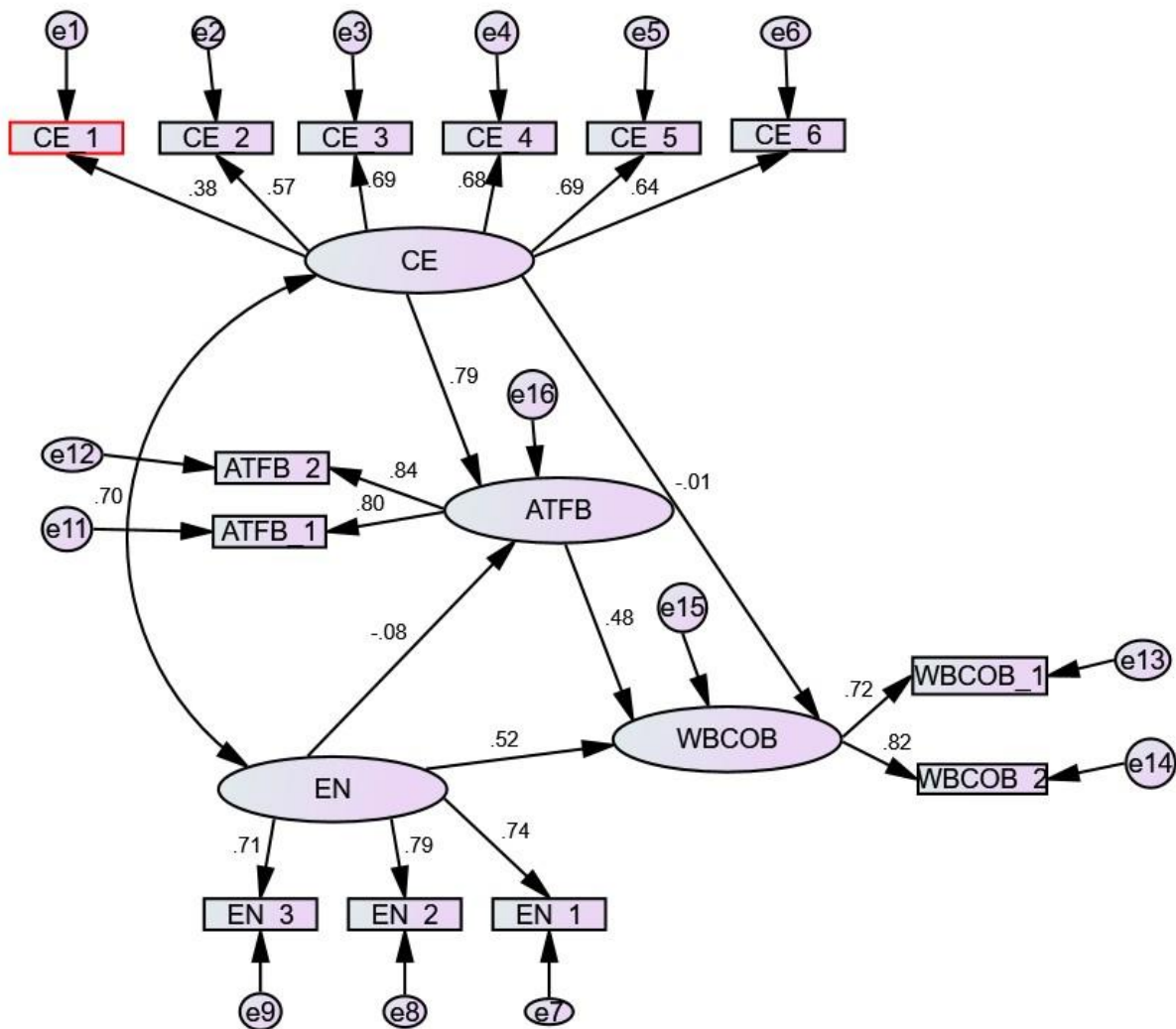


Figure 2 shows SEM measurement model with influencing factors like CE, EN as exogenous variables and WBCOB as endogenous variable. The factors of ATFB was depicted as mediating variable between influencing variables and WBCOB. Figure 2 shows the impact of exogenous and mediating variables on endogenous variable.

**Table1. Determining Reliability and Validity Scale**

<b>Construct</b>	<b>Cronbach's alpha</b>	<b>Composite Reliability</b>	<b>AVE</b>	<b>Square root of AVE</b>
CE	0.770	0.586	0.381	0.617
EN	0.786	0.676	0.555	0.745
ATFB	0.800	0.729	0.667	0.817
WBCOB	0.745	0.640	0.598	0.773

**Note.** AVE- Average variance extracted

Table 1 shows that the Cronbach's alpha for all the items is  $>0.7$ , which shows the acceptance level of scale. The composite reliability of all the latent variables were near to 0.7 except in case of consumer ethnocentrism which showed the internal consistence of constructs (Hair et al., 2006). The value of AVE for all constructs were  $>0.5$  except in case of CE, which establish the convergent validity. The values of square root of AVE of all latent constructs were higher than inter correlation of measured variables therefore, the discriminant validity was also established.

### *Model Fit*

**Table 2. Goodness of fit measures**

<b>Goodness of Fit Measures</b>	<b><math>\chi^2/df</math></b>	<b>GFI</b>	<b>NFI</b>	<b>CFI</b>	<b>TLI</b>	<b>RMSEA</b>
Measurement Model	6.218	.862	.840	.860	.788	.108
Structure Model	3.687	.929	.907	.929	.891	.077
Criterion (threshold values)	$<5.0$	$>.90$	$>.90$	$>.90$	$>.90$	$<.08$

**Note.**  $\chi^2/d$ =Relative Chi-square; GFI=Goodness of Fit Index; NFI=Normed fixed index; CFI=Comparative fit index; TLI=Tucker-Lewis Index; RMSEA=Root mean squared error of approximation;

Above Table-2 depicts the measures of goodness of fit for structural model.

Correlation between CE and EN has increased the model fitness to satisfactory level. All the goodness of fit measures are within the given threshold values. Thus it is finally determined that the given created structural model is a valid and right instrument.

**Table 3. SEM Assessment**

Regression Path		Estimate	S.E.	C.R.	P value	Hypothesis	
EN	→ ATFB	-0.066	0.11	-0.598	0.55	Not supported	
CE	→ ATFB	1.227	0.166	7.401	***		supported
EN	→ WBCOB	0.575	0.088	6.539	***		supported
ATFB	→ WBCOB	0.382	0.067	5.72	***		supported
CE	→ WBCOB	-0.033	0.134	-0.25	0.803	Not supported	

Note. \*\*\* $P < .01$

Table 3 depicts the relationship between exogenous, mediating and endogenous variables. Economic nationalism does not have impact on ATFB as per  $p$  value is  $>.05$ . Also, CE does not influence the WBCOB as its  $p$  value is  $.803$ . Remaining exogenous variable EN and mediating variable ATFB have impact on WBCOB in case university students as their  $p$  values are  $<.01$ . Factors loadings (Figure 2) clearly shows that consumer ethnocentrism has negligible impact ( $-.01$ ) on WBCOB but has significant impact ( $.79$ ) on ATFB. Economic nationalism has also negligible influence ( $.08$ ) on ATFB but significant impact ( $.52$ ) on WBCOB. Attitude towards has significant impact ( $.48$ ) on WBCOB.

**Table 4. Mediation Analysis**

	Standardised Estimates				
	EN→ATFB	CE→ATFB	EN→WBCOB	CE→WBCOB	ATFB→WBCOB
<b>Total Effects</b> ( <i>P</i> value)	-.085 (.415)	.786 (.001*)	.482 (.001*)	.368 (.001*)	.480 (.001*)
<b>Direct Effects</b> ( <i>P</i> value)	-.08 (.431)	.786 (.002*)	.523 (.001*)	-.009 (.888)	.480 (.001*)
<b>Indirect Effects</b> ( <i>P</i> value)	-	-	-.040 (.411)	.377 (.001*)	-

Source: own research, **Note.** \* 5% significant level

Table 4 states the mediation analysis through standardized total, direct and indirect effects of latent variables. In case of consumer ethnocentrism having conclusive impact on ATFB and WBCOB based on p value  $<.001$ . Economic nationalism is not having significant effect on ATFB ( $p > .005$ ) but solid direct significant effect to WBCOB ( $p <.001$ ). Thus, ATFB is playing a mediating role in case on CE but not with EN in impacting WBCOB.

## 6. Results & Discussion

According to the findings of the study, pandemic has driven consumers to motivate economic nationalism by purchasing Indian brands. When consumers feel a sense of nationalism, they begin to consume nationalised items. These results are in line with Castelló and Mihelj (2018) study. Additionally, they believe that supporting the buying of domestic brands and encouraging others to do the same will positively affect and reinvigorate the Indian economy. This study shows that students' ATFB, such as rejecting foreign brands and endorsing Indian made products, has a favourable impact on purchasing patterns for goods made in India, reflects ethnocentrism, and demonstrates economic nationalism among Indians. It was determined that ATFB mediates the impact of consumer ethnocentrism on the WBCOB. This shows that students are keen to purchase Indian-made brands when they have negative attitudes regarding foreign brands. Surprisingly, Castelló and Mihelj (2018) and Mishra and Naveen (2021) found that the impact of economic nationalism on WBCOB mediated by ATFB. In the present study, impact of EN on WBCOB is not mediated by ATFB. Besides, consumers' shopping habits before pandemic spread do not affect their purchases of domestic brands in the post-pandemic period, suggesting that the buying behaviour would be different and those consumers might be more likely to buy brands that would help the country to recover its economy.

## 7. Conclusions

The COVID-19 epidemic has presented the world with previously unheard-of issues and changed how people live. Most nations imposed a lockdown in order to stop the virus' spread, which resulted into joblessness, insecurity, and an economic depression. Countries began to consider domestic production of goods and services as a way to lessen their reliance on foreign nations. India started supporting the domestic production and



purchasing of products and services produced in India, showing that it is not an exception. This had a significant impact on how people behaved when making purchases. The current study comes to the conclusion that there is an increased WBCOB and that the lockdown caused by pandemic has ignited sense of economic nationalism among people of India and the pandemic-related ATFB was the main factor in this.

## 8. Managerial Implications

The Findings of this study can help marketing personnel to frame an effective promotion strategy to encourage ethnocentric tendencies, and they can give consumers clues to evoke feelings of economic nationalism when they buy goods or services. The results will be helpful to both managers of domestic brands and marketing managers of foreign brands in sustaining and maintaining their marker share.

## 9. Limitations and Future Scope

This study was conducted with the students of university and revealed the buying behaviour of students. Therefore, given results cannot be generalized for the entire population and for entire nation. The same study can be conducted with more diverse sample from entire nation and also with different consumers from different countries. Similar study can be done in future with more influencing factors to measure the tangible change in buying pattern.

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## THE DIFFERENTIAL EFFECT OF PRODUCT REVIEW TIME FOR EXPERIENTIAL VERSUS MATERIAL PURCHASE

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### **Abstract**

While consumers are increasingly using online reviews for sharing and reading feedback in regard to purchases, the specific cues in the reviews that impact consumer behaviour are a growing area of research. The current research presents product review time (PRT), the time for which a consumer uses a product before writing a review about it, as a cue that consumers may base their decisions on and as an effective content tool for shopping websites. Using automated review extraction and text analysis, the current research explores how consumer behaviour is influenced by product review time in case of experiential versus material purchases.

**Keywords** online reviews, consumer recommendation behaviour, review reliance, eWOM, product review time, automated text analysis

## **Digital India**

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### **Introduction**

One Nation: India, One Language: TCP/IP, One Defence: SSL/TLS, One Bank: BHIM. The objective of this paper is to make one appreciate that the concept of 'Vasudhaiva Kutumbakam', the whole world is one family, is possible, NOW. Digital India can move us from NOWHERE to NOW HERE; create a space within and we are there. Let's make it happen, digitally.

### **The Beginning**

“The Road Ahead” by Bill Gates published on 24 November 1995 created a landmark shift the way most countries started seeing communication landscape changing. Videsh Sanchar Nigam Limited (VSNL) rechristened as TATA Docomo and Satyam (which later became Tech Mahindra) were the first two services providers who started offering internet services to Indian consumers via the dial up modem-based TCP/IP. Remember the great excitement one felt, when we were able to access a global site sitting in the confines of our home. The advent of search engines viz. Yahoo, Google ... made us realise that information technology is changing in a way we had never visualized. The introduction of android technology changed the way we communicated. Long distance chats, voice and video calls all became a reality. The subsequent technological innovations brought down the costs to affordable levels and endeared it to masses.

### **The India that was/is**

In 2001, there were just 9 lakh internet users in India. In 2021, there are 825 million active internet users in India. More significantly, 346 million Indians are engaged in online transactions, which is greater than the USA population estimated at 331 million. Interestingly, the penetration of digital services in rural India is at par with that in urban India, though the rise is thanks to OTT services. But the foundation is laid and the platform is ready. The time is NOW, to lead the whole of India to e-commerce and e-banking, and ultimately to e-everything.

### **The changed Landscape**

The Unified Payment Interface, better known as UPI, is a global star now, processing over two-thirds of the estimated 260 million daily digital transactions in our payment systems; NPCI International has already made headlines in Europe, collaborating with M/s Worldline, thus becoming the first acquirer to offer UPI and Rupay to the merchants in the European markets. These successes are primarily thanks to RBI's well focussed and executed "Payments Vision 2021" a vision to empower every Indian to access the basic banking functions in a safe, secure, convenient, quick and affordable way. This very well facilitates small value digital payments in offline mode and feature phone-based payment services through USSD or better known as \*99#. Availability of NEFT, RTGS and NACH on 24x7x365 basis, waiver of charges on almost all digital transactions etc. have all helped RBI to achieve their vision.

### **Facilitating factors for Digitization**

India's digital journey shifted gear with the launch of JAM (Jan Dhan, Aadhaar and Mobile), linking a citizen's Jan Dhan account with Aadhaar and Mobile, facilitating Direct Benefit Transfers seamlessly. The journey became faster with cheaper mobile and data availability, through the all India fiber connectivity called National Optical Fiber Network. Imagine a network of 1.34 billion Aadhaar card holders, 1,500+ banks and the Government in the middle, through a seamless technology bridge called Aadhaar Payment Bridge System (APBS); Government to Citizens interface at its best, Added to this national network, the Aadhaar-enabled Payment System (AePS), connected every village, through a gadget called micro-ATMs, managed by retired teachers, post masters bankers etc. called Business Correspondents (BCs), assisting the mostly illiterate villagers, having only the Aadhaar card, to carry out their basic banking transactions like, cash deposits and withdrawals, balance inquiries, statement of account, small ticket overdrafts etc, with only the biometric reading. As of now, there are 18.44 lac BCs in the villages, technically each BC a bank branch, Financial Inclusion at its best. As per the TRAI statistics, there are about 1.14 billion mobile users in India, with 840 million of them using smart phones, and NPCI in full throttle, empowering even the basic/feature phones with the power of digitalisation (the latest being UPI123PAY), India is going to become a digital 'Vasudhaiva Kutumbakam'

### **Unique Identity**

The biggest strength we have is the Aadhaar card, issued to more than 99% of the population; 1.3471 billion cards have been issued till date. Moreover, any transaction, financial or

otherwise can be linked to the Aadhar - banking transactions, security checks at airports (to be implemented), ATM / micro-ATM transactions are all possible using just biometric reading - no cards, no PINs, no passwords, just the fingerprint or the iris. Security at its best.

### **Challenges & Conflicts**

The biggest challenges are, educating the illiterate users to read the basic words and amounts on the screen and to avoid the pitfalls, like phishing, sharing the userid, password, PIN, CVV etc. An earnest digital literacy drive can sort out these issues.

There were quite a few conflicts earlier, primarily because there were no separate authorities for each digital vertical. For example, RBI used to drive the complete digital drive, be it a Bank or an NBFC, through their various departments, each department having their own priorities. But now, RBI has created fully owned subsidiaries like ReBIT, IDRBT, NPCI, IFTAS looking into each well-defined digital vertical. Further, a few Associations like IAMAI, PCI, FCC have also been created to study, observe and raise the various digital transactions issues faced by the consumers, merchants, network operators, NBFCs, with solutions; 85% of the NBFCs in the digital business, like Amazon, Apple, Google, Airtel, eBay, Cred, Unicards etc., are all their members. Conflict resolution is at its best, NOW.

### **Two sides of the same Coin**

Every new discovery has its challenges and digitization is no exemption. The same digitization has also opened dark areas like Darknets, online betting, online frauds and crimes. But then this has also resulted in development of newer fire walls and fraud detection and prevention solutions.

### **Way forward**

"India is the primary destination for digital payments with the highest fintech adoption rate of 87%", as declared by our finance minister recently, while launching the Global Fintech Fest at Mumbai organised by GoI, RBI, NPCI, PCI and FCC partnered by every entity engaged in Financial Technology in India.

The Aadhar card ecosystem is ready, with the KYC of almost every Indian included in the system. RBI and its subsidiaries are technologically rearing to go, fully regulated. IAMAI, PCI, FCC are fully geared up, well connected with the Regulators. Additionally, initiatives like Mobile 10X by IAMAI, building India's mobile app ecosystem, and the exclusive online

publication "Thinking Aloud" from IAMAI announcing the technological breakthroughs are all precursors to the digital India.

The technology backbone is also fully ready. More than 1.18 billion wireless telephone subscribers and 825 million internet users are in the network already.

The regulatory entities and the associations controlling the various digital India verticals, being not for profit entities, the digital transactions cost is already at its lowest, be it banking transactions or merchant transactions, or on a micro-ATM with the Business Correspondent in the rural India; most of the transaction are at zero cost.

### **Beyond Banking**

National Payment Corporation of India (NPCI) has provided the backbone for digitization and more nations are knocking at us to replicate the technology and suite of products that ride over it. Meanwhile, the Government has been able to transcend its reach beyond the contours of The Payment and Settlements Act, 2007 by riding on the digitization drive to transform the direct tax administration system. When economies are staring at fear of contraction, India's direct tax collection is increasing. This validates the benefit of digitization in enhanced compliance and productivity. Similarly, in indirect taxes, the administration of GST is deriving higher compliance benefits from digitization.

The acceptance of Fastag by vehicle users for payment of Road Tolls is another benefit of digitization that the users and Government is enjoying. Similar benefits in effective reach and reduced cost can be seen in administration of Insurance, the Passport related governance issues and extensively in forensic science.

Block Chain is conveniently and ignorantly understood as cryptocurrency. Cryptos are one among the many applications running on blockchain. Financial services sector is sure to explode with more secure and seamless services flow that could disrupt several political hegemonistic moves like financial sanctions, WTO, SWIFT and beyond. Smart LCs have already been issued and ICC has to perforce relook at UCPDC guidelines to accept the products running on blockchain.

### **COVID 2019 and after**



Covid 2019 is bound to be one of more significant events which history will record throughout the world. The deadly impact it has had on mankind is something the current generation and this century will never forget. While Social Distancing, significance of basic cleanliness and hygiene and usage of masks are the more visible signs, the impact it had on digitization is something phenomenal. Though initially technology was used for tracking movements, identifying critical geographies, predicting surges and plateauing, over the next few months we saw how digitization can change and used effectively for facilitating vaccinations right from scheduling to certification. No other country in the world has used digitization to combat Covid disasters on such large magnitude like India. Benefits of digitization in our response to Covid, demonstrated the efficiencies in logistics management for vaccine supply, containing the epidemic and related measures.

Tele medicine which was till then a concept became a reality globally and Indians are one of the major beneficiaries. Today we have innumerable tele medicine platforms like the sophisticated “Practo” to poor man’s “WhatsApp” which enables patients to communicate with doctors over voice and video calls. Patients from Jharkand and Jammu consulting doctors in Bengaluru and Mumbai are very much a reality and not a hypothesis. Thanks to the extensive network coverage, people living in remote villages today have the benefit of consulting doctors over video calls across geographies.

Concepts like WFH (work from home) which were unheard of till then have now come to stay, thanks to digitization. The logistics and supply chain delivery mechanism underwent a great transformation benefiting millions in India e.g., Online Market Places like Amazon, Flipkart, Zomato, Swiggy, Dunzo.... Block chain also aided in enhancing the supervision of this. Online platforms ensured that students never were out of touch with learning and helped create innumerable Edtech platforms. Thanks to digitization, today India have created over 100 Unicorns in the Start Up arena with many more to follow waiting in readiness.

The significant rise in FY 2021-22 direct taxes collection is a result of the effective use of digitization by Govt of India. The introduction of Annual Information Statement (AIS) by Income Tax Authorities in 2022 wherein every financial transaction linking Aadhar and PAN gets captured, has made it mandatory for individuals, firms and Corporates to account all financial transactions and pay tax accordingly. The latest news appearing in media about

“MOONLIGHTING”, where culprits who were simultaneously working for multiple entities violating laws were caught, is yet another classic example of benefits of digitization

Let's make it happen!

### **Conclusion**

Let's make it happen, by each one of us going fully digital, using the smartphones and the feature/basic phone, having full faith in the technologies provided by the ecosystem. Let's educate the users at the bottom of the pyramid and pay them digitally only, convincing them on the ease of use and the advantages of going digital. Educate everyone around on the pitfalls of going digital, phishing, vishing, smishing etc.

Let no one be taken for a ride financially. May Digital India be the Saviour.

### **Abbreviations**

ATM	Automated Teller Machine
BHIM	Bharat Interface for Money
CVV	Card Verification Value
FCC	Fintech Convergence Council
GoI	Government of India
IAMAI	Internet and Mobile Association of India
IDRBT	Institute for Development and Research in Banking Technology
IFTAS	Indian Financial Technology & Allied Services
NBFC	Non-Banking Financial Company
NEFT	National Electronic Funds Transfer
NPCI	National Payments Corporation of India
OTT	Over the top
PCI	Payments Council of India

PIN	Personal Identification Number
RBI	Reserve Bank of India
ReBIT	Reserve Bank Information Technology Private Limited
RTGS	Real Time Gross Settlement
SSL/TPL	Secure Sockets Layer/Transport Layer Security
TCP/IP	Transmission Control Protocol/Internet Protocol
TRAI	Telecom Regulatory Authority of India
USA	United States of America

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## **Fintech 4.0 for digital transformation and a comparative analysis of digital payment indicators in India**

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### **Abstract**

Indian financial system has evolved at a rapid pace through digitization with Government initiatives in the payment system and overhaul of the financial sector. This paper attempts to explore on financial technology 4.0: the transformation in financial service and a comparative analysis of digital payment indicators through a two-dimensional approach. The first dimension gives an Insight into Fintech 4.0 which is analyzed qualitatively using a comprehensive thematic analysis of recent literature on financial technology and reports published by financial regulators in India. The second dimension specifically analyzed the core digital payment indicators like RTGS, NEFT, AePS IMPS, and UPI in India. The time series data from June 2020 to June 2022 of digital payment indicators are retrieved from NPCI (National Payments Corporation of India). Using multivariate VAR (Vector autoregression) and Granger causality test the data are analyzed and the results indicated that the transaction volume through traditional payment indicators has a significant effect due to UPI (Unified Payments Interface). The paper also recommends some implications in the findings and suggests a future research agenda.

### **Keywords:**

Digital Transformation, Fintech 4.0, Payment Indicators, Thematic analysis

## **Mobile App Engagement moderated by Brand Trust in Financial App: An Empirical Investigation in an emerging Economy**

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### **Keywords:**

Perceived Ease of use, Perceived usefulness, Perceived Risk, Continuance Intention, Brand Trust, M-App Engagement

### **1. Introduction**

Like many other businesses, financial services are now most effectively delivered to customers via the Internet and mobile applications. As a result, the banking industry has grown more competitive and its customers have raised their expectations (Shaikh & Karjaluo, 2015; Munoz-Leiva et al., 2017). Web apps have grown in popularity due to their advantages over conventional and online banking processes. Banking institutions benefit from web apps in terms of comfort, ease of client transactions, wider market reach, service quality, and cost-effective functionality (Laukkanen, 2007; Munoz-Leiva et al., 2017). If apps were clear and simple, users would use them more frequently (Hew et al., 2015). Finally, consumer opinions of the utility of apps would be directly impacted by how user-friendly they are (Harrison, 2015).

Our work provides a theoretical model that takes into account the key elements that affect user engagement behaviour in order to assist financial apps in adopting new technology. The article also models the behaviour of financial app users by looking at the links between key technological adoption-related variables using the partial least square method and PLS algorithm.

### **2. Theoretical underpinnings and research suppositions**

TAM Notion and the theory of expectation disconfirmation

To predict consumer acceptability of products tied to developing technologies, the technology acceptance model (TAM) is widely used (Davis, 1989; Davis, 1993). The goal for utilising a

system is the only component that can predict real system utilisation by terms of one's attitude toward using, according to research in psychology and TAM itself. Perceived usefulness (PU), which is the user's assessment of how much utilising a particular system would increase performance, and perceived ease of use (PEOU), which is the user's perception of how simple using a particular system will be, are the two criteria that affect this attitude (Davis, 1989; Davis et al., 1989). Due to how simple it is for customers to use mobile banking apps to access their accounts at any time and from any location, PEOU is fairly high (Leiva et al., 2017).

Due to a variety of reasons, including lack of bank distinctiveness, lack of system confidence, cruel treatment, and security concerns, many customers are unwilling to use such internet banking and app solutions (Munoz-Leiva et al., 2010). (2010) Munoz-Leiva et al. M-banking applications are a recent innovation that could evolve into one of the m-value-added commerce applications that solves all the issues that customers may experience (Lee et al., 2003). The expectation disconfirmation theory (EDT) study and TAM research are interrelated. For instance, the words "performance expectancy" and "effort expectancy" are constructs that, respectively, address TAM's perceived usefulness and perceived Ease of use in the unified theory of acceptance and use of technology (UTAUT—Venkatesh et al. 2003). A well-known marketing concept called EDT helps forecast and sheds light on consumer satisfaction with goods and services ( Spreng and Page 2003; Patterson et al. 1997; Oliver 1980).

According to the idea, users should first decide how likely it is for an attribute to occur. Later, they provide post-usage performance and expectation disconfirmation assessments that contrast the initial expectations with performance (Bhattacharjee and Premkumar 2004; Spreng and Page 2003; Oliver 1980). Early, famous scientists claimed that individuals have a natural tendency to trust other people more than technologies (e.g., Friedman et al., 2000; Lankton et al., 2016). This is due to the fact that, in contrast to technologies, people can be judged on moral qualities of trustworthiness such as goodness and honesty. On how artificial intelligence may be trusted in various service contexts, such as healthcare services, several guidelines offer conflicting guidance (Jobin et al., 2019; Gille et al., 2020). Thus, it implies that openness, knowledge, dependability, or accountability can also help to maintain confidence in financial app-based services. The following theory was formed using the logic described above:

H1: Perceived ease of use influences the intention of financial apps to continue in usage favourably.

H2: Perceived utility influences financial apps' intention to continue in use favourably.

H3: Perceived risk affects the financial app's intention to continue in a good way.

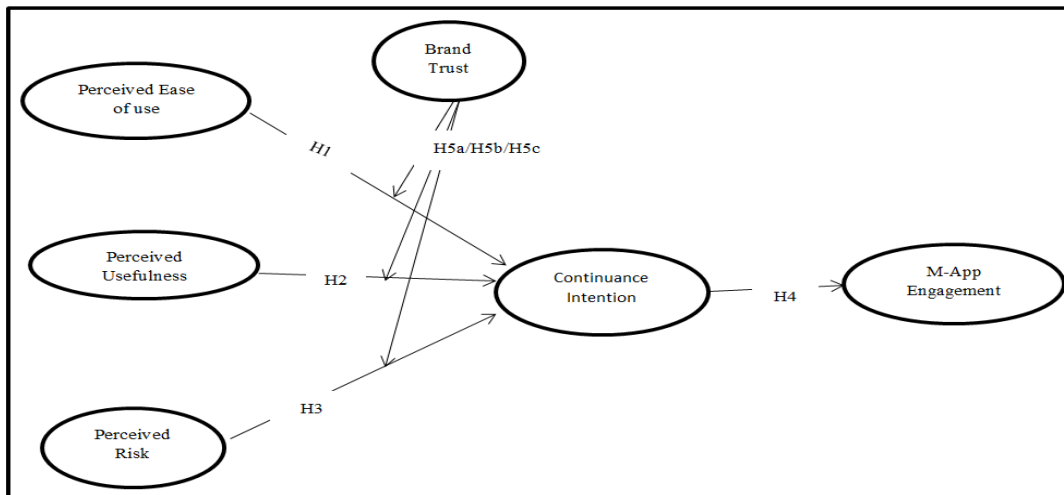
H4: Progression The financial app's intention has a favourable effect on the M-App engagement.

H5a: Depending on the level of brand trust, the link between perceived ease of use and continuing intention becomes greater (or weaker).

H5b: The association between perceived utility and continuing intention is moderated by brand trust, with higher (vs. lower) brand trust having a stronger (vs. weaker) influence.

H5c: Higher brand trust (vs. lower brand trust) has a bigger (vs. weaker) impact on the connection between perceived risk and continuation intention.

### Suggested Conceptual Model



## 3. Research Techniques

### Sampling

The investigation used a multi-stage stratified sampling strategy. We first identified the population of interest as Indians who have any financial APP on their mobile phone and who must use the App for financial transactions at least once per week in order to carry out this sample technique. In comparison to the year ending March 2017, the annual Financial Inclusion Index for 2021 is 53.9. India has the greatest percentage of inactive bank accounts in the world, at 48%, according to the Global Financial Inclusion Database or Global Findex Report 2017, which estimates that 80% of people (age 15+) have a bank account. India is the second-largest country in the world in terms of the number of adults without a bank account, after China, with around 190 million persons (Verma,2021). In addition, we separated the sample frame into four

groups in the second stage based on how heterogeneous it was, including the north and northeast, central, south, and western India, and we contacted customers in public, private, and foreign banks in diverse geographical areas.

### Data Gathering

We created the survey and filled out the form at [www.qualtrics.com](http://www.qualtrics.com). One of the most popular platforms for creating online surveys is this one. The survey URL was then forwarded to the selected participants via business emails. Everything in our survey was optional. A genuine response rate of 90.75% resulted from the 576 surveys we got in 60 days being discarded as worthless after 36 of them. The study concentrated on current and potential users of financial apps. Therefore, the 540 complete responses were used in the statistical evaluation.

### Instrument for Measurement

With a few minor alterations, all measuring elements are borrowed from older literature (See Appendix 1). Using a six-item Davis, 1989 scale, perceived utility and perceived usability are evaluated. Perceived danger was assessed using a seven-item scale from Lu et al. (2005). The three-item continuing intention measure was created by adapting Ashfaq et al. and Bhattacharjee, 2001. (2020). The five M-APP engagement strategies for financial apps proposed by Kim and Baek were changed (2018). Four items that were modified from Chaudhuri and Holbrook (2001) and Pagani et al. (2019) are used to measure brand trust. A five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), is used to rate each measurement item (5).

### Results

As a basic tenet of the data, we began by examining the variables' normalcy. By showing that all skewness and kurtosis calculations for the items were within acceptable bounds, the results proved that the items were univariately normal (Tabachnick & Fidell, 2007). Second, a prevalent issue is common method variance (CMV) (Meade et al., 2007). If CMV is not immediately treated, research results may be impacted (Podsakoff et al., 2003). We evaluated the potential risk of CMV using the whole collinearity test recommended by (Kock, 2015), where the Inner VIF value should be equal to or less than 3.3. Every Inner VIF value in the test results was below the cut-off value, demonstrating the model's freedom from CMV.

As shown in Figure 1, all first-order variables had considerable factor loading, with significant and above-recommended values ranging from 0.684 (PR4) for perceived risk to 0.895 (PU2) for perceived usefulness.50 (Hair et al., 2006). Two parts, PU6 and BT4, were dropped from the model due to insufficient loading. The average extracted variance, Cronbach's alpha, rho A, composite reliability, and reliability of the variables all above the prescribed criteria (See Table 2). The factors have higher reliability than the specified threshold levels, according to



Cronbach's alpha and composite reliability. respectively 70 and 80 ( Hair et al.,2006). This demonstrated that the internal consistency of the measurement model is enough. Convergent validity is attained when the average variance returned for each idea is higher than the cutoff value of .50 (Hair et al.,2006).

The method created by Fornell and Larcker (1981) was used to assess the discriminant validity. As seen in Table 4, the square root of the average variance extracted (AVE) for each construct was greater than the correlations it had with other constructs. In contrast to the correlation it has with other variables, perceived usefulness has a square root average variance retrieved of .864, which is greater. This property was shared by all constructs, achieving discriminant validity. The association between the HTMT and the Heterotrait-Monotrait Ratio Criterion (HTMT) was also explored (See Table 5). Discriminant validity was evident because the HTMT values were lower than 0.85. (Henseler, Ringle, & Sarstedt, 2015). Overall, the data support the reliability and validity of the scale used in this investigation.

#### Results of Hypothesis Testing (H1–H4):

To evaluate study concepts, PLS-SEM, or partial least squares structural equation modelling, was employed with SmartPLS 3.0. The PLS-SEM technique is suitable given the nature, complexity, and sample size of the investigation ( Hair et al.,2012). The endogenous variables that were used were M-App engagement and continuance intention. Perceived ease of use (PEOU), perceived usefulness (PU), and perceived risk (PR) were the exogenous factors used (PR). Q-square is used to evaluate how well your model can make predictions. The model's predictive usefulness was demonstrated by Q-square values greater than zero (Henseler et al., 2009). Results revealed that the Q square value for continuance intention is 0.137 and for M-App engagement is 0.024, both of which are higher than the cut-off value of 0. (Chin,2010; Hair et al.,2017). When an exogenous variable is removed from the model, the effect size (F square) shows the difference in the value of R square (chin, 2010; Cohen, 1988).

The value varies from 0.02 to 0.05 to signify a mild influence, and 0.35 to represent a severe one. Perceived usefulness and continued intention exhibit a moderate effect size in the current study, while all other components show a minor effect size. The variance in the endogenous variable explained by the external factors is expressed as a R square. The R Square for continuance intention in the current study is 0.198;  $P < 0.01$  and the R Square for M-app engagement is 0.041,  $P < 0.05$ , all of which are greater than 0.10 (Falk and Miller,1992). The hypothesis was significantly confirmed by perceived ease of use ( $= .133$ ,  $p < 0.01$ ), perceived usefulness ( $= .236$ ,  $p < 0.01$ ), and perceived risk ( $= -.133$ ,  $p < 0.01$ ). While perceived utility and simplicity of use have favourable impacts, perceived risk has a negative effect on continuance intention. Therefore, Hs 1, 2, and 3 are supported. Continued intention has an effect on M-app engagement ( $= -.203$ ,  $p < 0.01$ ), supporting H4.

### Test for Moderation (H5a-H5c)

In order to investigate the moderating impact of brand trust, we used a median split strategy to divide the construct into high and low brand trust groups. PLS-structural equation modelling (SEM) group comparisons might not be obvious until researchers demonstrate the invariance of their measurements (Henseler et al., 2016). Measurement invariance was tested using the MICOM technique, which examines measurement invariance across groups. A multigroup analysis was performed after validating the configural and compositional invariance in MICOM. The results showed that brand trust significantly influences perceived utility, perceived risk, and intention to continue using a product (CI).

### Discussion and Relevance

The research model shown in Figure 1 and the theories regarding the relationships between M-app engagement and brand trust toward financial apps in India and perceived ease of use, perceived utility, perceived risk, and continuance intention were both supported by the study's findings (CI). These findings were consistent with past studies (e.g., Roy et al., 2016; Munoz-Leiva et al., 2017). The proposed model, which expanded the TAM model by combining the EDT theory with it, proved that the TAM model's antecedents can be held responsible for a sizeable portion of the diversity in customers' adoption of mobile financial apps in India, a developing country. For academics and practitioners, this study has several important repercussions.

The marketing literature for theorists has benefited greatly from this study. The results firstly suggest that perceived risk hinders the intention to continue and reduces the adoption of financial applications, which is similar with earlier research by Munoz-Leiva et al. (2017). However, the perceived utility and usability of TAM variables exhibited greater predictive power. Compared to past studies, the new study has a more significant explanatory power.

Second, research implies that perceived risk has a substantial impact on customers' thoughts and perceptions, which in turn affect their continued intention and M-app engagement. Yadav et al.'s study did not uncover a significant correlation between perceived risk and intention in the context of internet banking, in contrast to Martin et al. (2014)'s conclusion.

Third, the TAM dimensions and trust have an impact on users' intentions to continue using the financial APP. If a reputable financial institution offers an app service, then customers may opt to utilise and engage with the App. From the viewpoint of a strategic practitioner, customers' adaption to financial Apps may increase if management attempts to reduce the customers' perception of risk by sufficient awareness and positioning strategy. The study may be broadened in the future to incorporate additional customer psychological aspects as mediators, such as attitude and perception. The generalizability of the research findings could be enhanced

by the extensive random sample collection.

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## **Thematic Analysis on Possibilities of Central Bank Digital Currency**

### **Implementation: An Emerging Research Agenda**

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#### **Abstract:**

CBDC has been gaining interest in recent years as central banks are exploring the possibilities of issuing their own digital currency, but the literature on CBDC is still fragmented. Aiming to narrow this gap, the objective of this study is to analyze the recent publication themes of CBDC and to point out future research directions in this field. The study comprises a review of 110 articles published in the SCOPUS database. The review finds emerging themes, including economic, monetary, and financial impact; concept and background; designs; and implementation of CBDC. However, the literature is lacking in important areas like security, risk, privacy, regulation, and legal aspects of CBDC. Finally, the study identifies research gaps and suggests areas for future research. The present work highlighted that use and application of CBDC are restricted to a few sectors only. Also, the review finds a dearth of empirical studies on CBDC adoption across a diverse range of samples. The study will help academic researchers, policymakers, and regulators (Central banks) know the nuts and bolts of CBDC and identify the relevant areas that need exploration.

**Keywords:** CBDC; Central Bank Digital Currencies; Designs of CBDC; Digital Currency; CBDC and Financial Inclusion

#### **Introduction**

A debate has been opened in recent years about the possibility of central banks issuing their own digital currency due to the presence of multiple virtual substitutes of cash in the digital payment system. With the launch of cryptocurrencies and stablecoins in the financial ecosystem, a major shift in the digital payment industry can be experienced. Cryptocurrencies are digital currencies with their own currency unit of account, issued privately, such as Bitcoin, Ethereum, Dogecoin, etc. (Boar & Wehrli, 2021). In recent years, the trend of using physical cash for transactions have been declined, and Covid-19 made a significant contribution to the shift of payment habits to contactless payment instead of cash. The increasing number of central banks of various countries are exploring CBDCs in

view of using them as their central currency. According to a BIS report (Feyen et al., 2021), 86% of countries are still investigating the use of CBDC, 60% are exploring the idea, and very few, only 14%, are involved in conducting pilot projects. Developing nations like China have already initiated the trial of CBDC in its

various cities, and The Central Bank of India (RBI) has been exploring the pros and cons of issuing CBDC and building a phased implementation strategy.

Developed economies have less motivation to establish CBDC (Bech & Garratt, 2017). They are more concerned about the safety and efficiency of cross-border payments. For emerging economies, reasons for establishing CBDC include increased rate of bank penetration, drop in cash usage, lower cost and greater efficiency of the banking system, and avoiding money laundering and terrorist financing (Alonso et al., 2020). (Bijlsma et al., 2021) suggested other factors such as payment efficiency, financial inclusion, and direct and easy access to central bank money by consumers of emerging nations. By reducing the cost of remittances, CBDC can contribute towards fulfilling United Nations (UN) sustainable development goals. However, countries also admitted that they need more investigation and security before establishing CBDC. (Alonso et al., 2020) **analyzed** reasons for and against the implementation of CBDC and concluded that defenders and critics have opposite tendencies to establish a CBDC. On the contrary, (Ozili, 2022) reviewed the motivations and benefits of issuing CBDC around the world. The study also highlighted that central banks are exploring the potential to issue CBDC globally due to its benefits. The literature on CBDC is fragmented despite the increasing interest and valuable insights from studies all over the globe. Review papers on CBDC are scarce in the literature (Ozili, 2022), and previous studies fail to provide a comprehensive picture of the recent developments and trends in CBDC. This paper adds value to the knowledge structure of CBDC by answering the following research questions:

RQ1: What are the recent publication themes in CBDC?

RQ2: What are the main research gaps in the literature and future pathways?

In order to answer the above questions, the study uses thematic analysis. The study analyzed 110 articles. Studies from both developed and developing nations are included to identify the recent developments and themes in CBDC. The review highlighted the prominent areas of study in the literature. Most of the studies focused financial and monetary impact of CDBC, followed by work related to the discussion of CBDC. Studies related to designs and approaches of CBDC have also been dominated in the literature. Literature on themes like security, privacy, risk, and volatility is limited. Also, the legal and taxation aspect of CBDC has attained less focus in the literature. Other aspects, such as optimal design and implementation of CBDC, factors affecting the adoption of CBDC, financial inclusion, and CBDC, are unresearched and need more attention in the literature.

The study suggested future research directions for further research. The development of CBDC, a term, is at a nascent stage, and there is limited understanding of the concept. The review also highlighted that users and applications of CBDC are restricted to a few sectors only. Also, there is a research methodology gap in the literature. Studies are dominated by cross-sectional and quantitative research, and no comparative analysis of CBDC design in an individual country and region-specific has been explored (Ozili, 2022). Hence, there is a scope for future research in comparative analysis and longitudinal and cross-culture research

### **Definitions of Central Bank Digital Currency (CBDC)**

The development of Central Bank Digital Currency (CBDC) is at a nascent stage. CBDC as a term is not well-defined yet (BIS, 2018). Recently, due to gaining interest in the advanced form of digital currency, CBDC has been defined from a variety of perspectives with growing literature. According to (BIS, 2018), CBDC is a digital form of money issued by central banks with a store of value and unit of account. (Ozili, 2022) defines CBDC as a currency in the digital form issued by central banks and comes under the liability side of the balance sheet of the issuing banks.

Table 1: Definitions of CBDC

Author	Year	Definition of CBDC
Bank of Canada (Engert & Fung, 2017)	2017	The monetary value stored electronically (digitally or as an electronic token) represents a liability of the central bank and can be used to make payments.
BIS (BIS, 2018)	2018	A CBDC is a digital form of central bank money different from balances in traditional reserve or settlement accounts.
IMF (Mancini-Griffoli et al., 2018)	2018	A new form of electronic liabilities in the central bank's balance sheet.
IMF (Bossu et al., 2021)	2021	A new form of money issued digitally by the central bank and intended to serve as legal tender.
RBI (Sankar, 2021)	2021	The legal tender is issued by a central bank in digital form.

Source: The author

However, the most accepted definition of CBDC is that it is a kind of digital legal tender (IMF). In other words, CBDC is a new form of electronic liability in the balance sheet of the central banks. (Ozili, 2022) concluded that there is consensus about CBDC being a liability of the central bank and having cash-like attributes.

Literature has studied various designs and approaches of CBDC depending upon their own assessment of CBDC objectives. The choice of technology is a significant factor in CBDC design and implementation. According to (Lee et al., 2021), central banks have to select between Distributed ledger technology (DLT) which is also known as blockchain technology and has emerged in recent years (Bossu et al., 2022), or Non distributed ledger technology (NDLT) which is a traditional bank infrastructure. In choosing the CBDC design, another important factor is the issuance and circulation

of digital currency. When the circulation of digital currency is limited to financial institutions only, this is called 'wholesale' CBDC, and when CBDC focuses on general purpose and is issued to households, this is known as a 'retail' or 'general purpose' CBDC (Deloitte, 2021). The report further classified the issuance and circulation of CBDC into two categories- one-tier and two-tier approaches. CBDC issued and distributed by central banks only is a one-tier approach, whereas, in a two-tier approach, the central bank only issues the digital currency, and distribution is done by other financial institutions like private banks. (S. Allen et al., 2020) supported hybrid two-tier CBDC design as banks already manage digital wallets for individuals and institutions, and it would be easy for them to easily meet the legal requirements of a hybrid two-tier model. Also, (Agur et al., 2022) **analyzed** the optimal design of CBDC and suggested that a CBDC design should have cash-like attributes and can be interest-bearing. (George et al., 2021) supported that interest-bearing CBDC improves social welfare among all segments of customers and helps central banks to gain monetary autonomy and **stabilize** exchange rates. In the Indian context, the introduction of CBDC would be an institutional change that will completely redesign the monetary as well as financial sectors of the country. This change is not a one-time alternation in the financial ecosystem but a gradual and continuous process (Priyadarshini & Kar, 2021). (Samudrala & Yerchuru, 2021) studies the risk and designs consideration for India and suggests that India must consider the challenges regarding financial stability, credit growth, and user experience and should design an appropriate solution to the CBDC needs. With the help of the above-mentioned literature, it can infer that CBDC is a relatively new concept (Ozili, 2022), and there are still open issues and challenges regarding the implementation and design of CBDC. Therefore, there are no universally accepted definitions and designs of CBDC yet (Bossu et al., 2021; Priyadarshini & Kar, 2021).

### **Research Methodology**

The study adopts a systematic methodology to analyze the various designs and approaches of CBDC. Further, the research aims to identify the opportunities and challenges in a CBDC rollout for financial inclusion in India. The methodology approach of this study is presented in this section through the following given steps:

1. Identifying the database (Scopus and Google Scholar)
2. Choosing the keywords and search criteria
3. Selecting and analyzing the papers and reports
4. Classifying and grouping the paper into a major theme

The articles were searched using the keywords: "CBDC" "Central Bank Digital Currencies," "Designs of CBDC," "Digital Currency," "CBDC and Financial Inclusion" in the title, abstracts, and keywords fields of the search engine. The papers indexed by Scopus were retrieved and analysed for high credibility, reports of prominent financial institutions such as BIS, IMF, and RBI for reliability, written in the English language for better interpretation and match the objective of the research as mentioned, while the rest of the papers were rejected.

This initial search yielded 335 records from Scopus. Out of 335 records, only 161 documents were selected after limiting the records on the subject area (Economics, econometry and finance, social sciences and business management and accounting only), document type (only articles), and publication stage (final). Further, 47 articles, including reports from prominent institutions like IMF, BIS, and RBI,

were retrieved from Google Scholar. Articles without "CBDC" and "Central Bank Digital Currency" in their title were not taken into consideration for the study. Hence, 79 articles were excluded, and this resulted in 120 articles for further analysis. After applying manual inclusion-exclusion criteria based on keywords and titles and thorough reading of the abstracts, resulted in a list of 110 papers for the final analysis of the study. The study flow diagram is represented in the figure below.

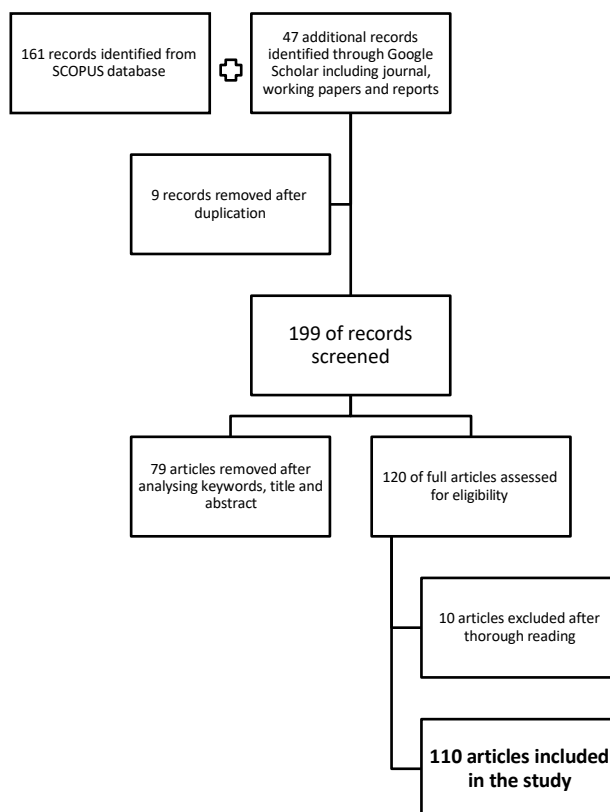


Figure 1. PRISMA Framework

Source: The authors

### **Thematic findings and discussion of CBDC**

This section outlines various themes of CBDC discussed in the literature. The themes include the literature on the monetary and economic impact of CBDC, its design and implementation, CBDC discussion and backgrounds, financial inclusion and CBDC, risk and volatility of CBDC, opportunity, challenges, and future research of CBDC.

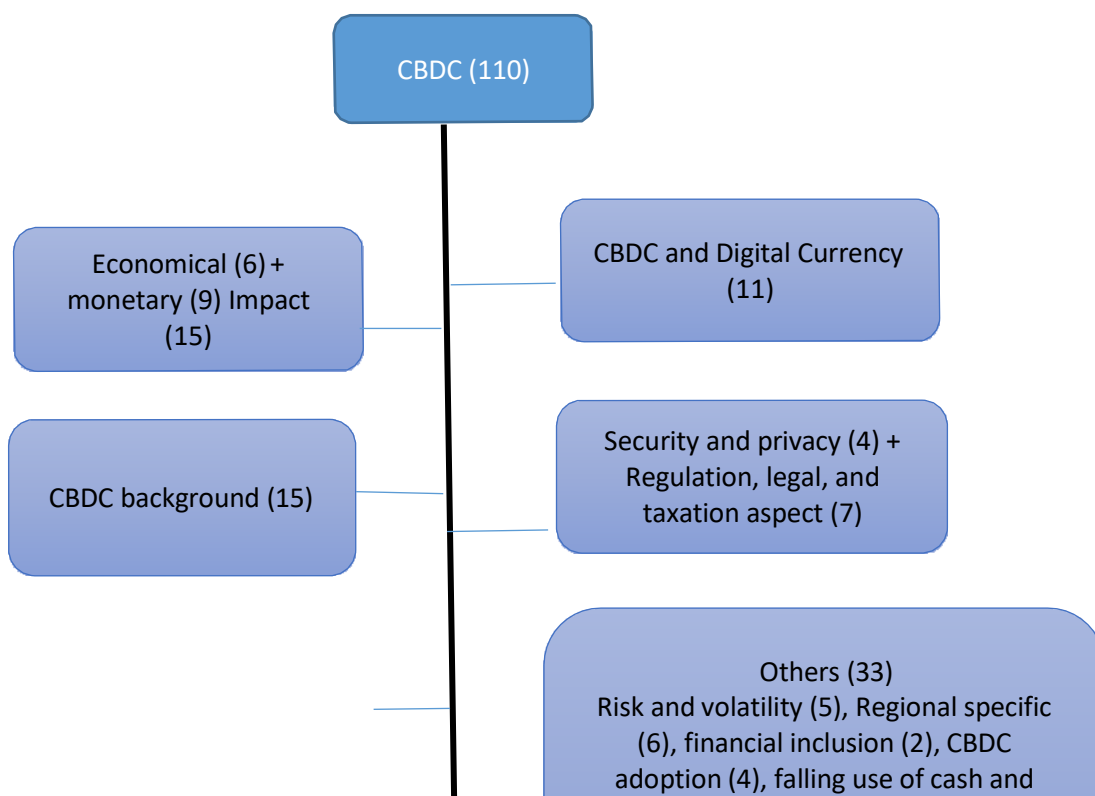
#### **Monetary and Economic impact of CBDC:**

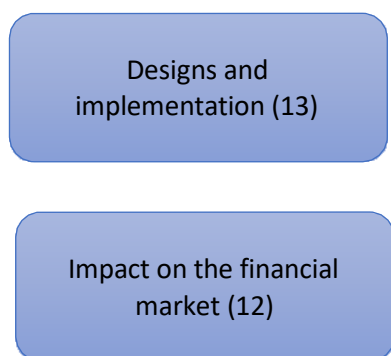
The international monetary system is facing fierce competition with the rise of cryptocurrency and blockchain technology (Fernández et al., 2021); hence many central governments are also planning to issue their own digital currency. The issuance of CBDC can reduce currency issuance and circulation cost and enhance the scope of a country's monetary policy (Jun & Yeo, 2021). China is most likely to issue its digital currency not to disrupt financial intermediaries, but still, there are unsolved concerns related to banks and their application. (Shen & Hou, 2021) proposed using interest rates as a policy solution to resolve bank-related issues and supported that market competition is a significant factor for



CBDC's success. (Fernández et al., 2021) analyzed a few digital euro cases and established a relationship between expansionary monetary policies of central banks and monetary variables. (Viñuela et al., 2020) proposed a three-pillar monetary financial framework for the assessment of the CBDC. The study further suggested future research on a phase-in basis in order to mitigate the structural risk. However, the positive impacts of monetary policy implications of CBDC are still unexplored (Bhowmik, 2022).

***Categorisation of CBDC based on various themes identified***





*Figure 2. Classification of CBDC themes*

*Source: The authors*

CBDC Background:

(Chorzempa, 2021) gives an overview of CBDC and examines the reasons behind the stark divergence of CBDC development about two leading economies, United States and China. CBDC competes with private financial intermediaries and allows central banks to engage in large-scale intermediations (Fernández-Villaverde et al., 2021). (van Oordt, 2022) discussed stability and information about CBDC with the help of the Keister-Monnet model in his article. (Fernández-Villaverde et al., 2021) supported that CBDC is more stable than the commercial banking sector. (Fung & Halaburda, 2017) proposed a framework to assess the reasons behind issuing a CBDC and its implementation to improve the efficiency of the payment system. However, (Minesso et al., 2022) critically commented that CBDC issuance could increase asymmetries in the international monetary system by reducing welfare in the economy.

Design and Implementation of CBDC:

Central banks have developed different CBDC approaches and designs and have defined their business, technology, and structure differently with more explorations of CBDC (Lee et al., 2021). China's CBDC pilot project, Digital Currency/Electronic Payment (DCEP), was tested in early 2021 and envisaged the distribution of digital currency via a two-tier system. (Li & Huang, 2021) explained the construction of China's digital currency, e-CNY, and discussed its implications. The study further supported that introducing e-CNY could transform China's financial landscape. (Zams et al., 2020) draws experts' opinions from various economic agents and proposes that a cash-like CBDC model is the most appropriate CBDC design for Indonesia with the help of the analytic network process (ANP) and the Delphi method. (Agur et al., 2022; Wilkins, 2022) studied the optimal design of CBDC and concluded that interest-bearing CBDC reduces the tradeoff between bank intermediation and the social value of maintaining physical cash. (Andolfatto, 2020) also supported that a CBDC does not impede an

ecosystem's financial stability if designed well. However, (Bossu et al., 2022; Koziuk & Ivashuk, 2022; Priyadarshini & Kar, 2021) concluded that there is no optimal CBDC design across countries.

Other domains:

This section covers all those articles that do not fall under any of the themes mentioned above. (Bijlsma et al., 2021; Solberg Söilen & Benhayoun, 2022) discussed the reasons for CBDC acceptance. (Oh & Zhang, 2022) supported that CBDC helps formalize an economy, but this benefit is not symmetric across countries. They further explained that a developed economy with a lower share of the informal sector could easily adopt CBDC, but it would be difficult for developing countries to issue and circulate CBDC due to the high share of an informal economy. (Ding et al., 2022; Rennie & Steele, 2021; Samudrala & Yerchuru, 2021) studied volatility and risk associated with CBDC; (Khiaonarong & Humphrey, 2022) discussed the falling use of cash; (Didenko & Buckley, 2021) discussed financial inclusion challenges of CBDC in the Asia Pacific region. Various authors have studied CBDC from a legal perspective and concluded that countries should consider legal challenges before the issuance of CBDC (Bossu et al., 2021; Dow, 2019; Fonseca, 2019; Xu & Jin, 2022).

## **Discussion**

It can be contended that research on CBDC is still fragmented despite the increasing interest of countries in the potential of digital currencies (Elsayed & Nasir, 2022). The study aims to narrow this gap by analyzing the recent publication themes of CBDC and giving future research direction. Various recent trends and themes are identified on the basis of the articles used in the study (figure. 2). In this paper, the authors reviewed 110 articles on CBDC, with the help of which different themes are identified, and research gaps are indicated. Then a transparent review technique is adopted in the methodology where papers are retrieved from the Scopus database and filtered according to the need of the study. Out of 110 studies, more than half of the papers focused on economic and monetary impact (15), CBDC background (15), designs and implementation (13), impact on financial market (12), CBDC and digital currency (11), security, privacy, taxation, legal aspect (11) and other themes (33).

Most of the studies in the literature have been focused on the financial and monetary impact of CBDC (Dow, 2019; Sakharov, 2022; Slawinski, 2019). Studies support that emergence of cryptocurrencies and blockchain technology is giving fierce competition to the international monetary system (Dow, 2019; Fernández-Villaverde et al., 2021). CBDC, as a new form of money, stimulates the digitization of the financial system and aids financial stability (Cullen, 2022). Also, it transforms the traditional financial system into an open and autonomous one. On the other side, few studies critically analyzed the negative impact of CBDC on financial stability and supported that digital currencies cannot replace the existing financial system (Ferrari Minesso et al., 2022; Slawinski, 2019). There is consensus in the literature about CBDC being a liability of the central bank and having cash-like attributes (Agur et al., 2022; Masciandaro, 2018). From the customers' point of view, CBDC reduces transaction costs and can be used as loan collateral (Chapman, 2021; Jun & Yeo, 2021). The introduction of CBDC would allow customers to use only legal tender issued by central banks even in difficult situations that prohibit them

from using cash or force them to use other privately issued money.

Studies related to the designs and approaches of CBDC have dominated the literature. Central banks have developed different approaches and designs according to their own assessment of CBDC objectives. The decision to select the appropriate design of CBDC varies from developed to developing nations. Developed economies consider "wholesale" CBDC with the purpose of safe and more efficient cross-border payments. On the other hand, developing or emerging nations select the "retail" CBDC approach with an aim to direct and easy access to central bank money to large segments of the population (Bijlsma et al., 2021). Other approaches to CBDC, such as token-based and account-based CBDC, distributed ledger technology (DLT), and non-DLT, interest-bearing, and non-interest-bearing, have been discussed in the literature (Andolfatto, 2020; Bech & Garratt, 2017; Koziuk & Ivashuk, 2022). Studies support that a well-designed CBDC can replace the real-time gross settlement system (RTGS) and improve the efficiency of the financial system. However, the literature agrees that there is no universally accepted design of CBDC yet (Bossu et al., 2022; Priyadarshini & Kar, 2021).

CBDCs offer a highly effective solution to the problems of high remittance cost and financial inclusion challenges (Lee et al., 2021; Mancini-Griffoli et al., 2018); for example, countries like China, Brazil, Ecuador, and The Bahamas aim to increase financial inclusion with various CBDC projects running on (Abraham, 2021). Authors have also studied CBDC from a legal perspective and supported that issuing CBDC by countries can face legal challenges that need to be considered before its issuance (Dow, 2019; Eichengreen & Viswanath-Natraj, 2022; Nabilou, 2020). Hence, central banks should focus on continuous regulation updating and keep a check on other innovations in the financial sector (Dow, 2019). Few studies have studied the welfare and political aspects of CBDC and concludes that CBDC has a welfare impact (Cukierman, 2020). However, the development of CBDC is at a nascent stage (BIS, 2018; Chapman, 2021), and more relevant research is expected in the coming years.

### **Future research agenda**

The result of the study highlighted that research on CBDC has been gaining interest, and the number of published articles has been increasing in recent years (Ozili, 2022). The future research gap is based on themes identified in the study.

First, the literature on CBDC is mainly concentrated on monetary and financial impact, economic impact, discussion, background, designs, and implementations of CBDC (Dow, 2019; Sakharov, 2021; Tong & Jiayou, 2021; Wang et al., 2022). CBDC is a new term, and the literature agrees that there are no universally accepted designs of CBDC yet. Hence, designs and implications of CBDC are a dominating area of research (Agur et al., 2022; Guo et al., 2021; Koziuk & Ivashuk, 2022; Wilkins, 2022; Zams et al., 2020), but literature is still lacking on the optimal design of CBDC for the countries (Ozili, 2022). Also, CBDC is nascent, and there is a limited understanding of the concept. Further research can focus on the areas such as financial and price stability, inflation, the risk associated with the technical implementation of CBDC (Sakharov, 2021), unconventional monetary instruments, the role of central banks as lenders, and forward guidance of CBDC. Other areas, such as ethics, privacy,

and environmental and technical issues, need to be explored (Elsayed & Nasir, 2022).

Second, this review also highlighted that use and application of CBDC are restricted to a few sectors only, such as the economic, banking, and financial sectors, and few works included CBDC as a payment method in the travel and tourism sector (Andolfatto, 2020; Jun & Yeo, 2021; Morgan, 2022; Radic et al., 2022). Hence, there is a shortage of sector-specific studies on CBDC in the literature. Other sectors, such as healthcare, education, logistics and transportation, manufacturing, etc., should be considered.

Third, acceptance of CBDC is another crucial area where literature is lacking. Most of the studies have focused on CBDC design choices, and no search on consumer needs of CBDC is there in the literature. (Solberg Söilen & Benhayoun, 2022) suggested that further studies should focus on reanalyzing the CBDC adoption once this currency is generalized to a large scale among households. Also, the review finds a dearth of empirical studies on CBDC adoption across a diverse range of samples (Ozili, 2022). It is crucial to know the factors that influence the adoption of CBDC among users. Widespread adoption is the key factor to the success of digital currencies (F. Allen et al., 2022).

Fourth, the literature agrees that financial inclusion is the key motivator for emerging economies to establish CBDC (Samudrala & Yerchuru, 2021). However, a study on financial inclusion and CBDC is lacking (F. Allen et al., 2022; Boar et al., 2020). Future research should examine the role of CBDC among unbanked or informal groups of the population. In emerging economies, China is leading with the largest number of studies on CBDC. India should explore the possibilities of implementing CBDC. A sizable amount of literature sheds light on security and privacy aspects. However, social and economic policy choices and their consequences for privacy have been studied. Few works on the Legal and taxation aspect of CBDC are available in the literature.

Fifth, there is a research methodology gap in the literature. Studies are dominated by cross-sectional and quantitative research, and no comparative analysis of CBDC design in an individual country and region-specific has been explored (Ozili, 2022). Hence, there is a scope for future research in comparative analysis and longitudinal and cross-culture research.

### **Conclusion and Limitations**

This review paper has made an early and significant contribution to the nascent literature on CBDC. The present review has a multi-fold contribution to the CBDC literature. First, this paper aims to find out recent themes and development of CBDC with the help of the literature and highlights the most dominated and under-researched areas of CBDC. Second, future research directions are provided on the basis of gaps identified as per the themes of CBDC. The review highlighted that the monetary and economic impact of CBDC has been studied in most of the articles. CBDC transforms the traditional financial system, stimulates digitisation, and aids financial stability (Cullen, 2022). Designs and approaches of CBDC are other dominating areas of research, and literature supports that a well-designed CBDC has the capacity to replace the real-time gross settlement system (RTGS) and improve the efficiency of the financial system. However, the literature agrees that there is no universally accepted design of CBDC yet (Bossu et al., 2022; Priyadarshini & Kar, 2021). Literature on themes like security,

privacy, risk, and volatility is limited. Also, the legal and taxation aspect of CBDC has attained less focus in the literature. Other aspects, such as optimal design and implementation of CBDC, factors affecting the adoption of CBDC, financial inclusion, and CBDC, are unresearched and need more attention. With the help of literature, it can be contended that the development of CBDC as a term is at a nascent stage, and more relevant research is expected in the coming years.

The study is certainly helpful in uncovering relevant literature on CBDC, but still, the study has some inherent limitations in the methodology part. Firstly, the study is limited to the research papers that are retrieved only from Scopus and google scholar databases. Future research thus can incorporate multiple databases for the diverse literature search. Secondly, the combination of keywords used may not be exhaustive and can be extended to include other terms associated with CBDC.

### **Implications of the Study**

From a practical perspective, the study reviewed theoretical concepts of CBDC used in the literature and analyzed recent themes, which would help practitioners and academicians gain insight into the recent development of CBDC. Central banks of various nations can pay more attention to the areas where research is lacking, such as privacy, risk, and security. Also, the review can give a direction to the central bank of India as literature supports that financial inclusion is the prominent motivator for emerging economies to implement CBDC. Overall, this review would generate useful results for researchers, practitioners, and central banks of the countries.