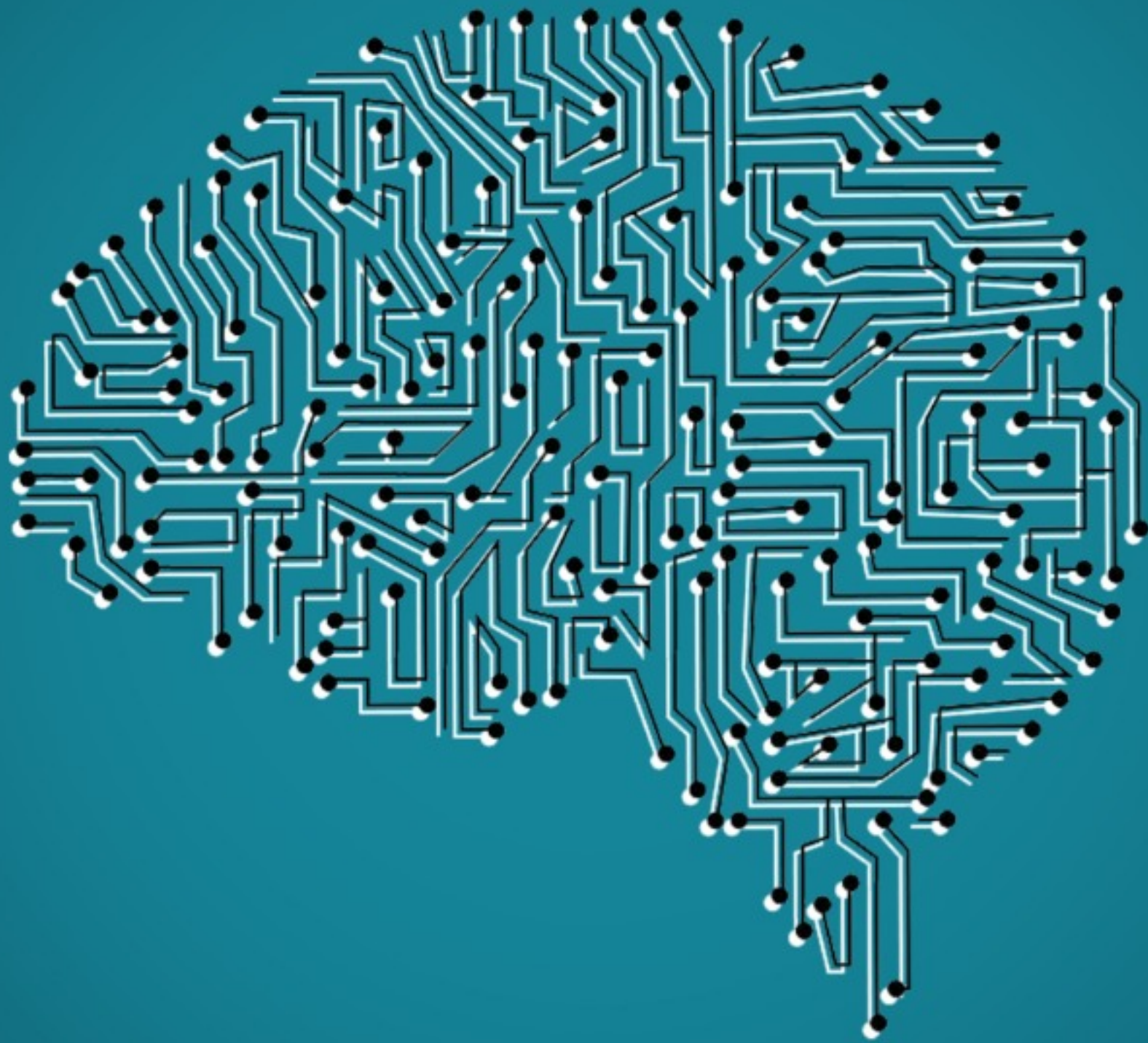




INDIAN INSTITUTE OF MANAGEMENT KOZHIKODE



DOCTORAL SYMPOSIUM CONFERENCE PROCEEDINGS

JANUARY 10-11, 2020 | IIM KOZHIKODE

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First Impression: 2020

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IIM Kozhikode Doctoral Symposium 2020

ISBN: 978-93-5437-613-9

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Conference Proceedings Edited by

Prof. Mohammed Shahid Abdulla & Prof. Ram Kumar P. N

Published by:

Indian Institute of Management Kozhikode

IIMK Campus PO

Kunnamangalam

Kozhikode – 673 570

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Understanding Leadership Claiming as a Negotiation Process impacted by Expected Future Negotiation Interaction

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Abstract

Leadership claiming has been researched as a relational and social process that establishes a leader-follower relationship through granting and claiming of authority (DeRue & Ashford, 2010). Yet, no research has looked into how an expectation of future negotiations (the anticipation of fairness, friendliness, and cooperativeness) within the context of negotiating for leadership positions impacts negotiator's subjective or objective value outcome (SV & OV) (Curhan & Brown, 2011). The primary aim of this research is to answer the following questions. First, when future negotiations during leadership claiming process are expected to be (or not) fair, friendly and cooperative then how does it impact SV and OV outcome?. Second, how does this impact change when a negotiator is a man or a woman?.

Keywords: leadership, negotiation, women, subjective value outcomes, future interaction

Introduction

Leadership claiming has been researched as a relational and social process that establishes a leader-follower relationship through granting and claiming of authority (DeRue & Ashford, 2010). Given that negotiating for a leadership position is a long term repetitive relational exercise between followers and leader, it is a surprise that expectations of future negotiations and the effect of quality of those expected future negotiations (fairness, friendliness and cooperation) impacting subjective or objective value outcomes (SV or OV) (Curhan & Brown, 2011) has not yet been thoroughly explored. This becomes even more relevant from a gendered perspective of a woman since the onus of decreasing number of women in leadership positions has been repeatedly put on women's non-competitive and relational approach that leads to her opting out of leadership positions willingly (Belkin, 2013; Kesebir, Lee, Elliot, & Pillutla, 2019). If aspiring for leadership positions is not merely restricted to claiming assertively but is also consequential for impacting leader-follower claiming-granting cyclical process which can reduce the probability of attaining and make functioning as a leader difficult in future, then women do not appear to opt out simply because they care for their relationships or are non-competitive. Contrarily, this paper contends that due to the cyclical leadership claiming-granting process and effect of pre-negotiation behavioral influences (like expectations from future negotiations) women trade off between negotiation outcomes that give her a greater chance and merit of being recognized as a leader in the long run (circuitously) than immediately.

Bowles (2012, pg 38) too calls for future research into understanding how using this leadership claiming-granting process allows some women to “get away” with even self-advocacy, and proposes to delve into “quality of women’s relationships and reputations that moderate self-advocacy”. Using the theoretical lens of Conservation of Resources (COR) (Hobfall et. al, 2018) our argument proposes that men and women approach the negotiation process of leadership claiming and granting differently aiming to conserve and deploy different resources that enhances the value (SV or OV) they associate with climbing the leadership ladder. The research aims to answer conceptually using extant literature the following questions. First, when future

negotiations during leadership claiming process are expected to be (or not) fair, friendly and cooperative then how does it impact SV and OV outcome in individuals?. Next, how does this impact change when a negotiator is a man or a woman?. Also, what trends do SV and OV outcomes show when compared between men and women?. The research aims to contribute to existing leadership and negotiation literature; by enhancing our understanding of what kind of outcomes are produced during leadership negotiation and why do men/women choose to navigate their way to leadership positions through these evaluations.

Role of Gender in Leadership claiming

DeRue and Ashford (2010) express attaining leadership position as a social identity creation process through claiming-by means of taking assertive action to reinstate leader or follower identity, and through granting-by bestowing leader or follower identity to another. This they claim can be an explicit or an implicit process between the leader and the follower, and develops into an established relation when mutually accepted.

Women have been blamed to shun away from leadership positions due to their individual choice (Belkin, 2013) such that these hierarchical positions are attainable but not desirable by them (Gino, Wilmoth, & Brooks, 2015). The leadership literature on women typically have explored her leadership journey as negotiating transactionally a “one time affair”, so her decisions appear as a time slice when she is not claiming leadership assertively. But, DeRue and Ashford (2010) propose that leadership is not simply a hierarchical process rather a long term relational or social process, in which women need to establish their legitimacy (Bowles, 2012). Attaining this legitimacy Bowles (2012) claims is co-dependent on “*legitimizing agents* who can lend social capital and credibility to their ascent” (pg. 9) like followers. The negotiation literature also points to how important followers are to women as women fear social backlash when advocating for self (Exley et. al, 2016) but not when advocating for others (Amanatullah and Morris, 2010). Inevitably this signifies multiple leader-follower interaction over a long period that requires women to establish leader identity or legitimacy at different levels of “individual internalization, relational recognition, and collective endorsement” (DeRue and Ashford, 2010, pg. 629), this is akin to a negotiation that involves multiple future interactions with others. Therefore, the fear of facing social backlash when advocating for self not others, the cyclical nature of leadership claiming and granting as a relational process, and the co-dependency on legitimizing agents for social capital to bend or shape organizational norms leads to what we call “an interaction effect” that renders women to “objectively value subjective outcomes” of leadership negotiations (Curhan et. al, 2010)

Expectation and Non-Expectation of Future Interaction in Leadership Claiming process (EFLCNI & Non-EFLCNI) Roering, Slusher, and Schooler (1975) stated that irrespective of bargaining or non-bargaining situations, parties involved in one-time vs multiple-time negotiation interaction approach negotiation differently and expect different outcomes from negotiation due to their differing commitment to future interactions. Roering et. al (1975) further explained future interactions commitment based on two competing pressures a) the desire to maintain a strong image that discourages “future exploitation by counterpart” and b) desire to avoid “social disapproval” (pg. 387).

In this paper, we are drawing from literature on expectations of future interactions in negotiation (Patton & Balakrishnan, 2010; Roering et. al, 1975) and extrapolating it within the context of negotiation for leadership claiming and granting. Adapting from Patton and Balakrishnan’s (2010) four stage negotiation process (pre-negotiation behavioral influences, negotiation process, negotiation outcomes and post negotiation dispositions), we anticipate that expectations of a fair, friendly and cooperative leadership claiming negotiation interaction (EFLCNI) vs non-expectations (non-EFLCNI) will affect the individual’s behavior differently

during negotiation process in accordance with their gender (male or female), and subsequently affect the negotiation outcomes as well.

Subjective and Objective value outcome Recently, negotiation research has begun focussing on subjective indicators of performance (Bendersky & McGinn, 2010; Curhan, Elfenbein, & Xu, 2006). While OV such as more compensation, authority, monetary value, economic benefits, gaining a leader's position and so on are obvious benefits. In leadership negotiations which are relation-based to a large extent (refer LMX theory), SV holds significant benefits too.

For the purpose of this paper, we adopt our understanding of SV from Curhan, Elfenbein, & Xu (2006, pg 579). It is defined as "social, perceptual, and emotional consequences of a negotiation, comprising the negotiator's feelings about the instrumental outcome, feelings about him- or herself, feelings about the process, and feelings about the relationship". It is to note here that subjective value outcome or objective value outcome are feelings associated with these outcomes post negotiation.

Conservation of Resources Theory (COR)

COR's (Hobfall et. al, 2018) basic premise is that individuals invest effort to "obtain, retain, foster, and protect" (pg. 102) resources that are meaningful for them. This theory points to the fact that individuals' perceived appraisals of future anticipated events play a crucial role in understanding their behavior. In other words, COR theory eliminates the need for an event to occur in order to induce stress that consequentially leads to behavioral change in the victim. Either the fear of loss of key resources or the possibility of not being able to gain key resources for future need is enough to propel an individual to take some action. Other tenets of COR theory emphasize how the degree of loss or gain of resources increases desperation in behavior. Principles of COR state that the momentum (speed, impact and duration experienced) of loss of resources is evaluated as significantly more important than gain of resources. And the greater the momentum of resource loss experienced makes resource gain even more valuable. For which individuals do not just invest more resources, but under extreme circumstances act "defensive, aggressive, and irrational." (Hobfall et. al, 2018, pg. 106). In alignment with COR theory it is safe to assume that negotiating for leadership position also becomes an act of balancing, preserving and gaining further resources that enhance negotiators chance of survival in the long run.

Interaction between EFLCNI/Non- EFLCNI, SV/OV, and Gender (male/female)

In leadership claiming and granting an obvious end outcome for the negotiator is to achieve the desired leader's position. When individuals enter negotiation either with their gatekeepers or supporters with EFLCNI, then SV for them serves as an insurance or commitment of upholding the deal (Curhan & Brown, 2011). From COR we know individuals sustain and foster their centrally valued resource. Under EFLCNI negotiators are also expected to adopt a more problem-solving approach with lower aspiration (Patton and Balakrishnan, 2010), since they expect the cooperativeness to be carried forward even in the future, leading to actual objective gains and a win-win outcome for both parties. But when future interactions are not expected to be fair, friendly, or cooperative then higher aspirations are met with efforts of resistance by the counterpart, in order to protect individual resources. Individuals have to struggle to sustain and foster the expectations of higher objective aspirations, eventually building up stress. Thus, we propose this approach diminishes SV and OV for individuals post negotiation. Overall, we propose that:

Proposition 1: When future interactions in leadership claiming are (or not) expected to be fair, friendly and cooperative in nature, then both SV and OV of leadership claiming negotiation enhances (or diminishes).

We also know highly aspirational competitive negotiators achieve their objective outcomes at the expense of loss of future cooperation and likability (Lai et. al, 2013) as they are not bothered about “post negotiation compliances” (Curhan et. al, 2010, pg. 704). But for women negotiation literature points to how anticipated stress due to social-backlash expected for self-advocacy causes them to become less competitive and more concession oriented (Amanatullah & Morris, 2010) than when negotiating for others (like followers). In cases where women were forced to negotiate assertively they lost more important resources than had they acted otherwise (Exley et. al, 2016). And therefore, worried about post negotiation consequences even when women do negotiate persistently they do so indirectly (Bowles & Flynn, 2010), or through “impression management techniques” (Amanatullah & Morris, 2010, pg. 257).

Extrapolating COR theory “gain paradox principle” and “interaction effect” of social-backlash, co-dependency on others, and concern for cyclical leadership claiming process, causes women to consider SV outcomes (feelings about self, counterpart, process) as objectively more important. Under Non-EFLCNI the fear of loss of SV as a resource (thereby also fear of loss of OV or leadership position in future) is significantly higher than under EFLCNI for women, but that is not the case for men due to absence of “interaction effect”. Therefore we propose that:

Proposition 2: For women, when they expect future leadership claiming negotiations to be fair, friendly and cooperative then their SV increases more than that of men.

In EFLCNI a woman is aware of being evaluated for competence and capability, and not her gender. Conversely in non-EFLCNI, when women are aware of being evaluated through a “gendered lens” implying gender stereotypes (Bowles, 2013; Ely, Ibarra & Kolb, 2011) then it leads to self-fulfilling prophecies (Bowles, 2013) leading to loss of leadership position as well as SV. In alignment with COR fourth “desperation” principle due to severe loss of resources and no sight of any gain of resources, women act in irrational and defensive ways of opting out of leadership race, displaying concession behavior in negotiation or feeling relief at non-negotiation of salary offer. Thus we propose that:

Proposition 3: For women, when they expect future leadership claiming negotiations not to be fair, friendly and cooperative then both SV and OV decreases, and remains lesser than men.

As stated earlier under non-EFLCNI fear of resource loss propels relevance of resource gain even higher. As a result, we know post negotiation OV and SV outcomes (feelings of relationships, reputation or process) for women decreases more than men, and desire to gain these resources while stemming its loss increases. In SV, “feelings for self/reputation” deserves special relevance. Given that research shows us how women are inclined towards subjective satisfaction more than objective satisfaction in career outcomes (Judge et. al, 1995), and that being satisfied with subjective outcomes is a prescriptive stereotypical behavior that can lead to “identity-costs” if women do not follow in-role behavior (Heilman 2001; Heilman & Okimoto, 2007). Under these circumstances, for women triggers “desperation principle” and “resource loss cycle” of COR theory, whereby the more women are dissatisfied by SV and OV outcomes post negotiation the more they increase role-incongruities further imposing self-doubt, lower self-confidence, and her resources spiral downwards increasing in momentum with each iteration leading finally to desperation. Hence

Proposition 4: For women, when they expect future leadership claiming negotiations interaction not to be fair, friendly and cooperative then OV and SV (especially feelings for self) decrease more than that of men.

Table 1: Implications of EFLCNI/Non- EFLCNI, SV/OV, and Gender (Male/Female)

	EFLCNI	Non-EFLCNI
Men	SV & OV increases OV-men > SV-men OV-men > OV-women	SV and OV decreases except SV (feelings for self) SV-men > SV-women & OV men > OV-women
Women	SV and OV increases SV-women > SV-men	SV and OV decreases SV (feelings for self) diminishes more than that of SV men

Women are damned if they do and doomed if they don't. As under desperation (COR principle 4) women act in irrational and defensive ways of opting out of leadership race, displaying concession behavior in negotiation or feeling relief at non-negotiation of salary offer. These irrational actions are the most rational decisions from her point of view in order to stem resource loss immediately and use existing SV resources to gain OV in future. Thus, proposition 4 points to the fact that given the interaction effect faced by women, investing in SV resources is a strategic and competitive approach. This is in tune with how some women "navigate" self-advocacy (Bowles, 2012) and research that finds women "as savvy impression managers navigating the environment" (Amanatullah & Morris, 2010, pg. 257) hedging negative outcomes by strategically investing in subjective resources.

The case for men remains completely different. In absence of interaction effect men do not gain in as much as women do by giving relevance to SV. Hence in comparison to SV, OV (leadership position) remains primary. Consequently, in non-EFLCNI, men experience reduced OV and dissatisfaction in feelings of SV. But do not suffer dissatisfaction in as much as women do. In EFLCNI when they expect to be treated fairly and dealt cooperatively then men reap more objective benefits than women. Because usually fair, friendly and cooperative ambiance for men is a sign of competence evaluation without politics and accommodating authority or supportive network. They do not face the resource loss spiral due to role-incongruities that women face while negotiating for leadership positions. Thus, we propose that:

Proposition 5: For men, when they expect future leadership claiming negotiations not to be fair, friendly and cooperative even then their OV and SV though diminishes but shall remain greater than that of women.

Proposition 6: For men, when they expect future leadership claiming negotiations to be fair, friendly and cooperative, then their OV is greater than their SV; and their OV is more than that of OV of women with similar circumstances.

Conclusion

The relevance of this research is to primarily develop a conceptual idea around essential components (EFLCNI and non-EFLCNI, SV/OV and gender) that allow us to understand negotiation within leadership claiming context better. Fulfilling the research aims stated at the beginning of the paper, this research proposes that Leadership negotiation as a claiming and granting process has different implications (table 1) for men and women for their SV and OV outcomes post negotiation. In the backdrop of COR theory, men and women value different negotiation outcomes OV and SV respectively. This they do given the degree to which they either face or do not face interaction effect of fear of social backlash, co-dependency on "legitimizing agents" for change, and cyclical leadership negotiation process. Due to this interaction effect,

women value SV outcomes more than men and use it as a strategic resource that enables them to gain “objective value in negotiations” (Curhan et. al, 2010) in future over long time. From these propositions, the research aims to add to negotiation and leadership literature by answering Bowles (2012) call on how “quality of women’s relationships and reputations” allows women to reach leadership position (Amanatullah & Morris, 2010). Thus, we are able to draw attention of the researchers to the fact that given the realities of social backlash/negative expectancies in negotiation process, choosing SV outcome is a strategic, competitive and rational approach for women, and not because they are non-ambitious or non-competitive, emotional or relational in nature.

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‘GREAT’ model of non-monetary levers to enhance employee engagement in Indian software services industry

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Introduction

Indian software services (IT Services) companies have had spectacular growth over the past three decades and have always been an employer of choice for the millions of people working in this sector (NASSCOM, 2019). This sector has been the crown jewel for many decades – employing over three million people (directly), and five times that number through indirect employment – earning billions of dollars of revenue for these companies and precious foreign exchange for the country. However, the employee engagement levels are dropping across sectors and across countries including in Indian software services companies (Gallup, 2017). Literature shows that highly engaged employees are critical to an organizational success. The Indian IT sector, which was once famous for its liberal usage of monetary levers (high salaries, bonuses) are cutting costs due to tough business environment. HR practitioners have to now use non-monetary levers, such as job design and accelerated growth opportunities to keep their workforce engaged. However, there has been limited research undertaken to study the impact of non-monetary levers to enhance work engagement of Indian IT services employees. This study bridges the gap. The authors identify 20 non-monetary variables, that can enhance employee engagement; collect data from 403 employees working in this sector, conduct factor analysis to reduce these 20 variables to five factors – growth, renewal, enabling, aspirational and transparency levers – which forms the acronym ‘GREAT’ – and used these factors as independent variables in a binary logistic regression to predict their impact on employee engagement. All the five factors aided employee engagement with three of them – growth, enabling and renewal levers – contributing significantly

Review of Literature

A highly engaged employee is a sine qua non to an organizational success (Authors, 2019) with several additional benefits including increased productivity, lower employee turn-over and reduced absenteeism (Authors, 2020). Kahn (1990) explained engagement across three dimensions – Meaningfulness, safety and availability. Schaufeli & Bakker (2004) argued that engagement is characterised by three levers of vigour, dedication and absorption. Engagement was thought to be opposite state of burnout manifested by the core dimensions of exhaustion, cynicism and inefficacy. However, Schaufeli & Bakker (2004) explained that employee engagement is much more than the mere opposite end of the burnout spectrum. Another seminal work by Saks (2006) identified the key antecedents (Job characteristics, perceived organizational support, perceived supervisor support, rewards & recognition, procedural justice and distributive justice) and the ensuing consequences (job satisfaction, organizational citizenship behaviour and intention to stay) of employee engagement. Demerouti et al (2001) developed the Job-demands resources (JD-R) Model which spoke of two categories – Job demands (Stressors) and resources (positive factors) that have a bearing on burnout and performance. Bakker & Demerouti, (2014) highlighted the need for renewal, on the need for work-life balance, (Ahuja, 2007) on the stress and burnouts of IT services employees because of ‘boundaryless’ work environment, the criticality of career growth, work-life balance, meaningful work, autonomy and learning opportunities (Ahuja, 2007). Factors routinely used for studying employee engagement include meaningful work, autonomy, flexibility, procedural justice, coaching accelerated career path, leadership, work environment, recognition

and rewards among others as per Authors (2020). Personal resources like optimism, resilience, active coping style and self-efficacy have influence on employee engagement thereby reinforcing the importance of personality traits and engagement (Xanthopoulou et al., 2009).

Research Methodology

Variables identified in the literature

The following 20 non-monetary variables (table 1) were found to predominantly appear in literature survey and exploratory research.

Table 1: List of non-monetary variables identified from literature review and focus group discussions

Variables	Variables
Meaningful and purposeful work	Brand
Flexible working arrangements	Work-life balance
Appreciation /Recognition	Co-worker relations
Work Environment	Generous vacation policies
Accelerated career growth	Fully funded training
Coaching	Individual social responsibility (ISR)
Culture	Feedback
Autonomy	Procedural and distributive justice
CSR	Sabbatical
Leadership	Supervisor relations

Sampling, Sample size and Data collection

Stratified Random sampling was used in the study. The questionnaire was administered to 450 respondents. 403 entries were received that were complete in all respects. The reliability of the instrument was found (Cronbach's alpha) to be 0.846. Multivariate analysis, factor analysis (Data reduction and underlying structure) and logistic regression (to develop a model) were used in the study. Data was analysed using SPSS software to establish the relationship between dependant and independent variables.

Factor analysis

Factor analysis was used to determine whether the 20 variables can be reduced to a smaller set of factors and also to check the underlying structure of variables. Both Bartlett test and KMO give the confidence to proceed with factor analysis as shown in Table 2.

Table 2: KMO and Bartlett test scores

KMO and Bartlett's test	
Kaiser-Meyer-Olkin (KMO) Measure of sampling adequacy	0.825
Bartlett test of sphericity Approx Chi square	4252.252
df	190
Sig.	0.000

The extraction method adopted was principal component analysis. The varimax rotation distributes the variables evenly across the 5 factors. The variables that load on the five factors are in table 3.

Table 3: Rotated component matrix with factor loadings

Rotated component matrix

Variable	Component/Factors				
	1	2	3	4	5
Accelerated growth	0.854				
Feedback	0.839				
Training programs	0.808				
Coaching	0.788				
Meaningful work		0.773			
Flexible work arrangement		0.763			
Appreciation		0.715			
Autonomy		0.681			
Work-life balance		0.639			
Sabbatical			0.859		
Vacation Policy			0.783		
ISR			0.701		
Brand				0.796	
Culture				0.767	
CSR				0.692	
Leadership				0.637	
Procedural and distributive justice					0.860
Work environment					0.849
Co-worker relation					0.680
Supervisor relation					0.605

The five factors are named *Growth lever* (components that aids the employee to grow in the job and also as a person – coaching, training programs, feedback and accelerated career path), *Renewal self* (the components that help employee to recharge themselves including sabbatical, generous vacation policies and ISR), *Enabling self* (having an enabling environment which includes meaningful work, flexible working arrangement, appreciation, autonomy and work environment), *aspirational lever* (that builds pride in the employee including brand, culture, leadership and CSR) and *transparency lever* (that provides transparency and fairness in dealing like Procedural and distributive justice, co-worker relations, supervisor relations and work environment) – which forms the acronym ‘GREAT’ as shown in Figure 1.

Hypothesis 1: Growth lever has positive impact on employee engagement

Four variables load on growth as shown in figure 1. They are accelerated career growth, fully funded, tailored training programs, feedback and coaching.

Hypothesis 2: Renewal lever has positive impact on employee engagement

There are three variables that load on the renewal lever. They are sabbatical, generous vacation policies and ISR/time off for Volunteering

Hypothesis 3: Enabling lever has positive impact on employee engagement

There are five variables that load on the enabling lever. They are meaningful and purposeful work, flexible working arrangements, appreciation, autonomy and work environment.

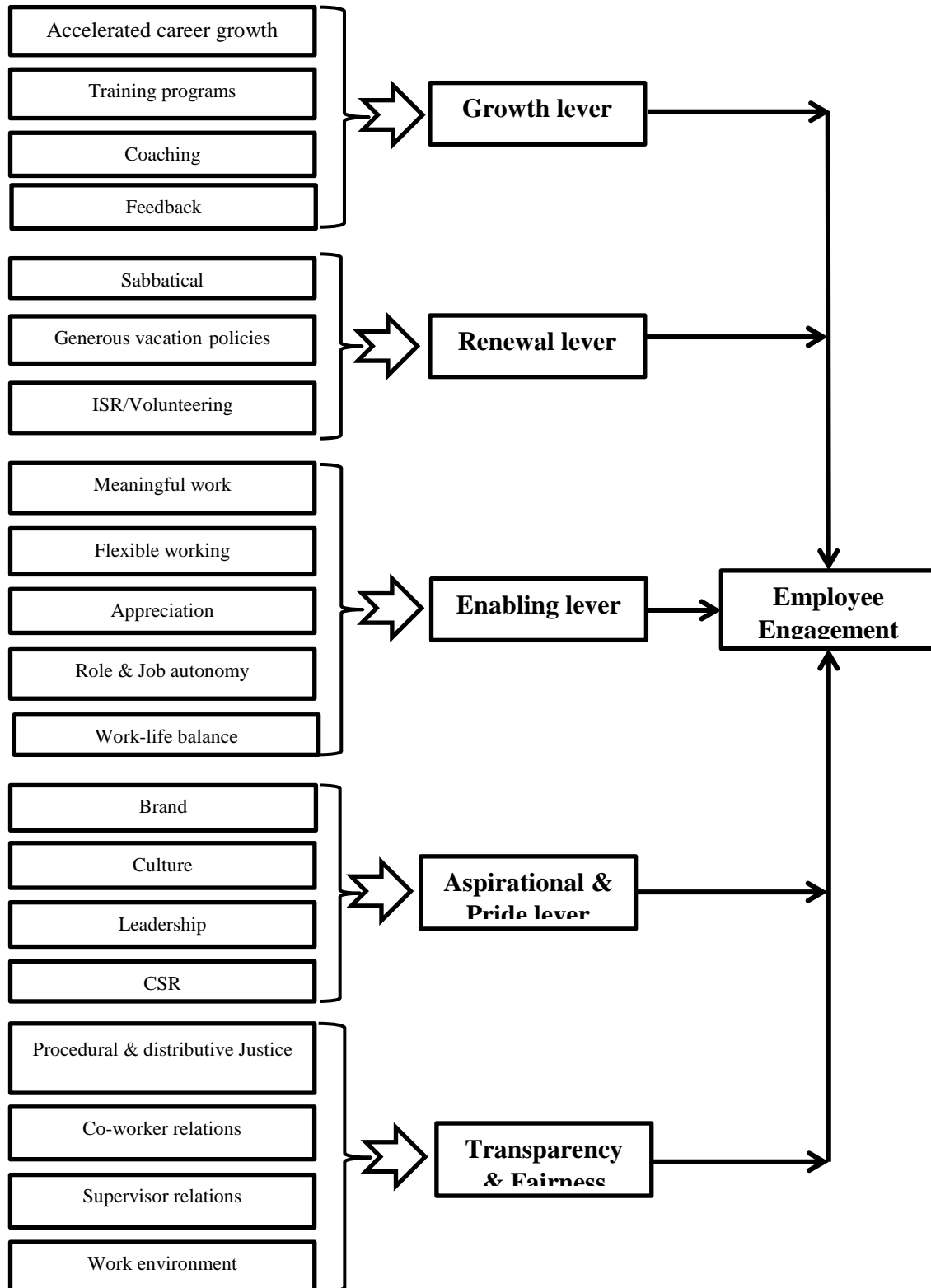
Hypothesis 4: Aspirational lever has positive impact on employee engagement

There are four variables that load on the aspirational lever – brand, culture, leadership and CSR.

Hypothesis 5: Transparency lever has positive impact on employee engagement

There are four variables that load on the aspirational level – Procedural & distributive justice, co-worker relations, supervisor relations and work environment.

Figure 1: Details of variables that load on factors



Data Analysis and Results - Logistic Regression

Logistic regression was used to study the impact of multiple independent variables (can be metric or categorical) on the dependent variable (that is dichotomous). In this study the independent variables are the five factors (*Growth, Renewal, Enabling, Aspirational and Transparent levers*) and the dependent variable was the Employee Engagement (Yes/No). The first output of the model is the null model with no predictors as shown in table 4. The element ‘no effect on employee engagement (EE)’ is coded as “0” and the element ‘aids in employee engagement (EE) is coded as “1”

Table 4: Classification table showing null model

Classification table

Observed	Predicted		
	Growth		Percent correct
	0	1	
Step 0 EE 0	0	101	0
1	0	302	100
Overall percentage			74.9

Overall test for the model, including the predictors, is given in the table 5 titled omnibus test of model coefficients. Chi-square value of 371.09 with significance value of 0 indicates that the model as a whole fits better than a model with no predictors as shown earlier. Nagelkerke R² value of 0.89 indicates a good relationship between prediction and grouping.

Table 5: Predictors introduced in the equation have significant impact than constant only model

Omnibus test of model coefficients

Step	Chi-square	df	Sig
Step1 Step	371.09	5	0.000
Block	371.09	5	0.000
Model	371.09	5	0.000

Model summary

Step	-2 Log likelihood	Cox & Snell R ²	Nagelkerke R ²
1	82.701	0.602	0.891

The overall prediction value of 94% as shown classification table in table 6 is acceptable. In the table titled variables in the equation the coefficients, the standard errors, wald test statistics with associated degrees of freedom is shown. Factors 1, 2 and 3 (*Growth, Enabling and Renewal levers*) are statistically significant while factor 4 (*Aspirational lever*) and factor 5 (*Transparency lever*) also aids employee engagement, although to a lesser extent.

Table 6: Classification table with predictors included and below gives the ‘b’ coefficients

Classification table

Observed	Predicted		
	Growth		Percent correct
	0	1	
Step 1 EE 0	87	14	86.1
1	9	293	97
Overall percentage			94.3

Variables in the equation

	B	SE	Wald	df	Sig	Exp(B)
Step 1 ^a Growth	2.551	0.434	34.532	1	0.000	12.826
Enabling	3.654	0.474	59.504	1	0.000	38.614
Renewal	1.380	0.448	9.510	1	0.002	3.975
Aspirational	0.898	0.289	9.656	1	0.002	2.456
Transparency	0.847	0.317	7.147	1	0.008	2.332
Constant	3.376	0.485	48.522	1	0.000	29.265

Logistics regression equation for employee engagement in Indian software services companies is given by

$$\text{Log}(p/1-p) = 3.376 + 2.551 F1 + 3.652 F2 + 1.380 F3 + 0.898 F4 + 0.847 F5$$

$$\text{Log}(p/1-p) = 3.376 + 2.551 \text{ Growth lever} + 3.652 \text{ Enabling lever} + 1.380 \text{ Renewal lever} + 0.898 \text{ Aspirational lever} + 0.847 \text{ Transparency lever}$$

The probability that employee engagement can be enhanced is given by

$$e^{(3.376 + 2.551 F1 + 3.652 F2 + 1.380 F3 + 0.898 F4 + 0.847 F5)} / 1 + (e^{(3.376 + 2.551 F1 + 3.652 F2 + 1.380 F3 + 0.898 F4 + 0.847 F5)})$$

The results from the logistic regressions supports hypothesis 1, 2, 3, 4 and 5.

Discussions, managerial implications and limitations of the study

Our study has shown that while all the five levers have positive impact on employee engagement, three of them (growth, renewal and enabling levers) have significant influence. Statistically speaking, a one unit change in '*growth lever*' has **2.5 times** positive impact on engagement, while '*enabling lever*' has more than **3.6 times** positive impact and '*renewal lever*' has **1.3 times** positive impact on employee engagement scores. In practical terms, this means that companies and HR managers would see significant benefits by leveraging the underlying variables of these three factors. It supports hypothesis 1, 2 and hypothesis 3. *Aspirational lever* and *transparency lever* also contributes to employee engagement thereby supporting hypothesis 4 and 5 respectively. Engagement constructs have to be context specific to be meaningful. The priority list of intervention needed to enhance engagement levels in companies have been shown by the regression output. HR managers in Indian IT services companies who hitherto leveraged monetary levers have, now, an empirically tested model of non-monetary levers available to enhance employee engagement in their companies. The survey is a self-reported instrument and like all self-reported instruments this too may suffer from personal biases. A cross sectional study like the one conducted for this paper may suffer from 'recency' biases and is a snapshot at one point in time. A longitudinal study conducted over a period of time will probably give more accurate scores.

Conclusion

Indian software services companies will have to adopt non- monetary rewards to motivate their workforce. There is also no consensus on the preferred ingredients of the basket of non-financial levers for employees of this sector. This paper attempts to bridge that gap by identifying 20 non-monetary incentives, built a model of its constituents and identified five factors that can positively impact employee engagement. These five factors - *Growth lever, Renewal lever, Enabling lever, Aspirational lever and Transparency lever (GREAT) model* - can be used to boost morale and create an engaged workforce in Indian IT services firms. These Indian IT firms are synonymous with Brand India, globally and are country's crown jewels. There is too much at stake here.

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An Empirical Investigation of the Job Satisfaction of Indian Expatriates: The Mediating Role of Cultural Adjustment

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Abstract

The purpose of this study is to empirically examine the relationship between perceived organizational support (POS), cultural adjustment, and job satisfaction. Structural equation modeling (SEM) was used to test the hypothesized relationships. Using data collected from 220 Indian expatriates working in different countries, we found that POS was significantly related to cultural adjustment and job satisfaction. Support was also found for a partially mediated model where cultural adjustment partially mediated the relationship between POS and job satisfaction.

Keywords: Indian expatriates, perceived organizational support, POS, job satisfaction, cross-cultural adjustment.

Introduction

Internationalization has become a strategic business decision for organizations to thrive in a highly competitive and volatile business environment. With MNCs relying heavily on expatriates to fulfill their strategic goals, the role of expatriate management has become more critical than ever (Riaz *et al.*, 2014).

However, a significant body of research points to the high failure rate of these assignments (Dowling, 2008), which leads to costly consequences not only for the expatriate but also for the employing firm. Considering the expensive nature of these assignments, it becomes essential for expatriates to perform well in their job in the host country. While the literature has a plethora of studies on adjustment and performance of expatriates, relatively little attention has been paid to job satisfaction, which happens to be a strong predictor of performance and retention of expatriates (Bhaskar-Shrinivas *et al.*, 2005). If an employee is satisfied with the job, he/she is more likely to perform well and remain in the assignment, which contributes to the overall success of the assignment. Therefore, it is imperative to understand what contributes to the job satisfaction of employees on expatriate assignments. Perceived organizational support (POS), in this regard, has been found to be positively related to the work attitude and well-being of employees (Bader, 2015). It has also been researched for its effect on adjustment, organizational commitment, and employee turnover intentions on foreign assignments (Kraimer *et al.*, 2001; Shaffer *et al.*, 2001). Hence, it would be worthwhile to study its impact on the job satisfaction of expatriates.

Hence, the purpose of this study is to empirically examine the role of POS in determining adjustment and job satisfaction of expatriate employees. Our study contributes to expatriation literature in several ways. Firstly, we add to the literature by testing the effect of POS on job satisfaction through the mediating effect of cultural adjustment. Next to this, we apply organizational support theory to explain how POS influences the expatriates' job satisfaction. Lastly, we test our model in the Indian context, a country that is a dominant source of expatriates due to its large pool of skilled and English-speaking labor force (Vijayakumar and Cunningham, 2016).

The next section presents the theoretical background of our study and hypotheses development. Figure 1 summarizes the hypothesized relationships.

Theoretical background and hypotheses development

Perceived organizational support (POS), cultural adjustment, and job satisfaction

Perceived organizational support (POS) is a core construct of organizational support theory which posits that employees' perception of supportive organizational climate leads to an increase in overall well-being of employees, such as happiness, psychological adjustment, job satisfaction, and self-realization (Kraimer *et al.*, 2001). POS refers to the extent to which employees believe that their organizations care about their general well-being and values their contribution in achieving organizational goals (Eisenberger *et al.*, 1986). Prior research indicates that employees who have this feeling of care and support from their organizations tend to exhibit greater citizenship behavior and are more committed to their organization (Rhoades *et al.*, 2001). Likewise, favorable and positive support from the organization is believed to enhance employees' adjustment and job satisfaction. In particular, people with strong POS may be more adjusted to cultural differences and can be expected to be contented and satisfied with their jobs. Based on these arguments, we propose the following hypothesis:

H1. Perceived organizational support (POS) is positively related to expatriate cultural adjustment.

H2. Perceived organizational support (POS) is positively related to expatriate job satisfaction.

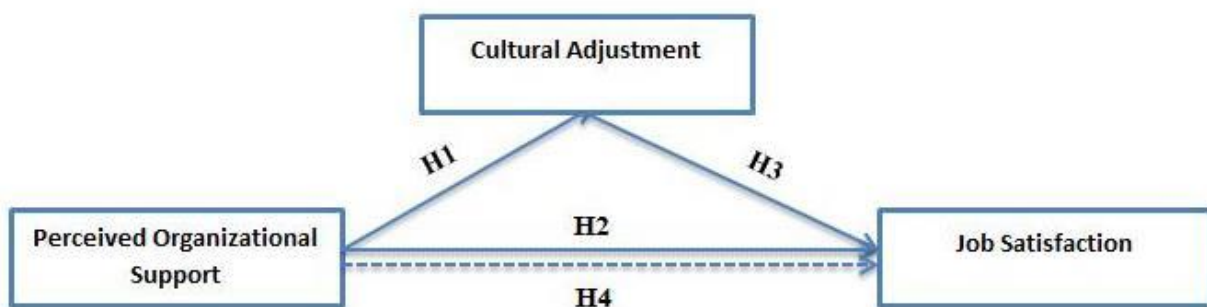
The mediating role of cultural adjustment

Being in a foreign nation, Expatriates tend to depend a lot on the receptivity of the host nation society and the host workplace to become adjusted to the new culture and be effective at work (Toh and DeNisi, 2007). Empirical studies have shown a positive relationship between POS and expatriate adjustment (Kraimer *et al.*, 2001). Not only this, but the adjustment has also been found to be related to performance, withdrawal cognitions, organizational citizenship behavior, and organizational commitment- all of which have been established as the consequence of job satisfaction (Barakat *et al.*, 2015). Hence, expatriate adjustment can be expected to be positively related to job satisfaction as well. Additionally, the organizational theory suggests that help and support will be available from the organization when needed to effectively carry out one's job and deal with stressful situations (Kraimer and Wayne, 2004). Thus, it can be established that POS is an incredibly valuable source of social support that helps expatriates adjust to the foreign culture, which, in turn, facilitates an increase in job satisfaction. Based on the above discussion, the following hypotheses are proposed:

H3. Cultural adjustment is positively related to expatriate job satisfaction.

H4. Cultural adjustment mediates the relationship between perceived organizational support (POS) and expatriate job satisfaction.

Figure 1. Proposed conceptual model



Methodology

Sample and procedure

The data for this study were collected through a structured questionnaire developed in English. The participants were obtained through convenience and snowball sampling. Employees who were currently on expatriate assignments were selected through multiple sources. Firstly, email invitations were sent out to expatriates from the MBA program alumni list and researchers' personal contacts, asking them to answer the questionnaire. Next, the respondents were asked to send the questionnaire to expatriates from their personal contacts. Additional participation was also solicited through online networks of expatriate associations and Facebook groups tailored to expatriates. A total of 220 usable questionnaires were collected. Respondents were Indian nationals expatriated to thirty-one countries. The majority of the sample consisted of male (73.6 %) lying between 30-40 years of age (48.6%). 61.8 % of the respondents were married, and 33.1% had children. The respondents were working in a wide range of sectors (e.g., IT (45.9%), science & technology (16.4%), education (5.5%), media & entertainment (1.8%), banking and financial services (6.8%), and others (23.6%).

Measures

POS was measured using a four-item, five-point scale, adopted from Kraimer and Wayne (2004). Respondents were asked to indicate their perceived support from the organization on a scale ranging from 1= "strongly disagree" to 5= "strongly agree". Sample item include: "I feel that (company) cares about my career development". *Cultural adjustment* was measured by a four-item scale adopted from Black (1988). An item from the measure included "how adjusted are you to the food in foreign?" A five-point scale ranging from 1 = "not adjusted at all" to 5 = "very well adjusted" was used. *Job satisfaction* was measured using West *et al.*'s (1987) four-item post-transition satisfaction scale. Expatriates rated their satisfaction from the job on a five-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". Sample item is "I'm satisfied with my work duties".

Analysis and Results

We used two-stage procedures to test the theoretical framework (Anderson and Gerbing, 1988). The first stage involves testing the measurement models to assess the distinctiveness of the measures. Therefore, confirmatory factor analysis (CFA) was performed to assess convergent and discriminant validity. In the second stage, the structural model was tested to examine the hypothesized relationships between the constructs. The descriptive statistics, i.e., means, standard deviations, and correlations, are presented in Table 1.

Measurement models

The measurement model was evaluated through CFA to check if the three measured variables (i.e., perceived organizational support, cultural adjustment, and expatriate job satisfaction) were distinct. The overall model fit was analyzed based on the chi-square (χ^2) value and other global fit indices like GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), RMR (Root Mean squared Error), RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), and TLI (Tucker Lewis Index). The χ^2 /degree of freedom (CMIN / df) of 2.36, and the goodness-of-fit indices (GFI= 0.91; AGFI= 0.87, RMR= 0.03; RMSEA = 0.07; CFI = 0.94; TLI = 0.93) indicate that the values are within the prescribed limit and the data adequately fit the model (Byrne, 2001; Cheng, 2007). Furthermore, convergent validity has been established as the variance explained by each construct is greater than 0.50 and the composite reliability for each construct is also greater than 0.70 (Hair *et al.*, 2010). Additionally, the average variance explained (AVE) of constructs being greater than the maximum shared variance (MSV) establishes the discriminant validity (Hair *et al.*, 2010). For reliability, we have used Cronbach's α as the measure

of internal consistency. In the present study, α value greater than 0.80 for all constructs indicates good reliability (Nunnally, 1978). Table 2 presents measures for validity and reliability analysis.

Table 1. Descriptive statistics and correlations among constructs

Construct	Mean	SD	POS	CA	JS
POS	4.00	0.67	1		
CA	4.04	0.47	0.47	1	
JS	4.07	0.53	0.66	0.72	1

Notes: N=220. Correlations are significant at $p < 0.01$ (two-tailed). POS = Perceived Organizational Support; CA= Cultural Adjustment; JS = Job Satisfaction.

Table 2. Reliability and validity analysis

	CR	AVE	MSV	Cronbach α
POS (4 items)	0.85	0.58	0.35	0.84
CA (4 items)	0.82	0.53	0.42	0.81
JS (4 items)	0.88	0.66	0.42	0.88

Notes: CR = Composite reliability; AVE = Average variance extracted; MSV = Maximum shared variance; POS = Perceived Organizational Support; CA= Cultural Adjustment; JS = Job Satisfaction.

Structural models

We used structural equation modeling (SEM) to test the proposed hypotheses. The present study analyses the relationship between perceived organizational support, cultural adjustment, and job satisfaction through the imputation method in AMOS.

To assess the direct relationship between variables, we first analyzed the impact of POS on cultural adjustment, which is significant ($\beta = 0.48$, $p < 0.001$). Hence, H1 stands accepted. We then analyzed the relationship between POS and job satisfaction, which was also significant ($\beta = 0.67$, $p < 0.001$). Therefore H2 stands accepted as POS positively influences job satisfaction. Next to this, we assessed the impact of cultural adjustment on job satisfaction, which was also significant ($\beta = 0.73$, $p < 0.001$), making H3 accepted.

To test the mediation hypothesis (H4), we entered the mediating variable, i.e. cultural adjustment between POS and job satisfaction. We used a bootstrap approach with 95% bias-corrected confidence interval and 2000 bootstrapping resamples to estimate the indirect effect. Results revealed a significant indirect effect of POS on job satisfaction through cultural adjustment ($\beta = 0.25$, $p < 0.001$). Further, cultural adjustment partially mediates the relationship between POS and job satisfaction as the direct effect of POS on job satisfaction remained significant ($\beta = 0.41$, $p < 0.001$). Thus, the results showed support for all four hypotheses.

Discussion and implications

Drawing on organizational support theory, this study develops a conceptual model of relationships among perceived organization support, cultural adjustment, and job satisfaction of the Indian expatriates. The results of statistical analyses help in concluding that POS is positively related to the job satisfaction of Indian expatriates. Expatriates, who feel that their organization cares about them and values their contribution, tend to be more satisfied with their work duties and job responsibilities. Additionally, job satisfaction was also found to be influenced by the cultural adjustment of expatriates. Thus, employees who can adapt to cultural differences and handle them tactfully are more likely to be satisfied with their jobs. It was also found that POS is positively related to cultural adjustment. This can be explained by the fact that the sense of

support from the organization helps expatriates deal with the adjustment difficulties in the host country. This helps expatriates acclimatize to the host nation society and workplace because they believe that help will be available from the organization if they need anything or find anything difficult. This study also checked the indirect effect of POS on job satisfaction through the mediating effect of cultural adjustment. Support was found for partial mediation of cultural adjustment on the relationship between POS and job satisfaction.

The results of inferential statistics helped us suggest various practical implications that can help organizations achieve successful cross-cultural assignments. The positive association between POS, cultural adjustment, and job satisfaction suggests that organizations should work on strengthening the relationships with expatriating managers so that they are able to adjust well to the host country and contribute to the success of assignment. This support should come from both the parent country organization and the subsidiary. Also, help and support should be extended to the families of expatriating managers to make them comfortable in handling the logistical issues, such as housing, transportation, schooling of kids, spousal employment. This may help expatriates overcome the stress and anxiety experienced during the adjustment phase and focus more on their job responsibilities.

Limitations and directions for future research

The study has certain limitations that might affect its contributions. However, at the same time, these limitations provide venues for future research. Firstly, our study sample consisted of Indian expatriates only, which may prevent the generalization of results to other settings. However, it would be interesting to see if the proposed model could be applied to expatriates of different nationalities. Secondly, the study has involved only one outcome variable, i.e., job satisfaction. Further studies on POS could involve other criterion variables such as performance, organizational commitment, and withdrawal cognitions. Finally, the use of self-reported measures in the study may increase the possibility of common method bias. Hence, it is suggested that future researchers should include assessments from multiple sources, such as superiors, subordinates, and peers.

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Organizational Citizenship Behaviour: Evidence from the Indian Armed Forces and Call for Discussion on a Broader Definition

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Abstract

Correct understanding of Organizational Citizenship Behaviour (OCB) plays a key role in developing and nurturing OCBs, which helps improve the efficiency and effectiveness of organizations. OCB is a phenomenon deeply embedded in culture: what comprises OCB would vary across cultures or contexts. Hence, it is important to contextualize theories pertaining to OCB. A ground-up study on OCB in the context of the Indian Armed Forces has indicated the need to review the definition, dimensions and related theories of OCB, as applicable in the Indian context. The study suggests the need for a broader definition of OCB (in line with the definition suggested by Organ in the year 1997) and inclusion of additional dimensions which have typically been kept outside the purview of OCBs (like 'Diligence and Professional Competence' and 'Leadership'), in order to reflect the correct understanding of OCB for the Indian context.

Keywords: Organizational Citizenship Behaviour, Good Soldiers, Indian Armed Forces

Introduction

The term 'Organizational Citizenship Behaviour' (OCB) was coined by Prof. Dennis W Organ, from Indiana University in USA, in his paper entitled "Job Satisfaction and the Good Soldier: The Relationship between Affect and Employee", published in The Academy of Management Journal, in the year 1983 (Bateman, & Organ, 1983). The term good 'Good Soldier' has been used in the Organizational Theory literature to refer to individuals who display high levels of OCB.

Prof Organ's work drew tremendous interest amongst scholars, leading to proliferation of research on OCB. However, scholars have often differed in their conceptualization of OCB. Off late, it has been agreed that OCB is a phenomenon deeply embedded in culture – what comprises OCB would vary across cultures or contexts. An indigenous, ground-up study on OCB in the context of the Indian Armed Forces, as discussed in this paper, suggests the need to re-discuss the definition (and the dimensions) of OCB, in favour of a wider definition.

Literature Review

Literature review suggests that concepts which underlie OCB have been recognized by scholars much before than the term 'OCB' was coined: Barnard (1938), Roethlisberger & Dickson (1939) and Katz & Kahn (1966) had already spoken of concepts like informal systems in organizations, spontaneous contributions etc. However, the subject drew tremendous response from researchers after the year 1983, when Prof Organ published his seminal work on OCB (Bateman, & Organ, 1983). Till 2016, close to 2500 papers have been published on OCB (Martinez, & Podsakoff, 2016); but scholars have conceptualized OCB in a number of different ways (Bateman, & Organ, 1983; Organ, 1988; Organ, 1997; Organ, Podsakoff, & MacKenzie, 2006; Organ, 2017; Williams & Anderson, 1991). There is little congruence amongst researchers regarding concepts and model for OCB (Yen et al., 2008; Khan et al., 2017).

Issues: Definition of OCB

The definitions of OCB have been debated and vary greatly among scholars (Ball, 2013).

In Organizational and Behavioral Sciences it is not uncommon to have differing views amongst scholars, but in the case of OCB, the differences were incisive and Prof Organ – 'the father of

OCB' had to change the definition of OCB on multiple occasions (Organ, 1988, 1997; Organ et al., 2006).

The most widely accepted definition of OCB, published in Organ's textbook in 2006, is: "Individual behavior that is discretionary, not directly or explicitly recognized by formal reward system, and that in the aggregate promotes efficient & effective functioning of the organization" (Organ et al., 2006). Interestingly, Organ himself had questioned this definition way back in 1997 in these strong words: "Accumulated empirical evidence, some telling criticisms, & even the most cursory glance at the business press compel us to rethink the defining character of OCB. It no longer seems fruitful to regard OCB as extra role, beyond the job, or unrewarded by the formal system." Even while formalizing this definition in 2006, Organ mentioned in his book, "In truth the way we should define OCB is not crystal clear" (Organ et al., 2006, pp 36).

Issues: Dimensions of OCB

As per Podsakoff et al. (2013), even though researchers have suggested that there are at least two primary second-order dimensions of OCB, but there is disagreement amongst them on what those dimensions are. LePine et al. (2002) identified over 40 measures of behaviors that had been qualified as OCBs in the available literature. The seven most widely recognized dimensions of OCB as proposed by Organ et al. (2006) are: helping behaviour, sportsmanship, organizational loyalty, organizational compliance, individual initiative, civic virtue and self-development.

Whether presence of all dimensions is necessary for considering manifestation of OCB, or whether presence of few dimensions and absence of balance dimensions would also be considered as manifestation of OCB is an open question. OCB and CWB (Counter-productive Work Behaviour) are affect-driven phenomena that exhibit considerable within-person variation (Dalal et al., 2009). Thus there is a possibility of same person showing OCB and CWB simultaneously. Can we conclude that a person is a 'Good Soldier' or an 'Organizational Citizen' if he displays certain OCBs, and doesn't display the others, or worse - shows deviant behavior in some other cases?

Whether OCB is an Aggregate Construct or a Superordinate Construct is a question that has not been answered conclusively by researchers (Rosen et al., 2018; Podsakoff et al., 2018). Whether the various dimensions of OCB are to be looked separately and in isolation with each other, or whether the different dimensions can be aggregated together to assess the overall OCB profile of an employee, is an important issue which needs to be answered. The present classification of dimensions of OCB helps in identifying whether a particular behavior can be seen as OCB or not, however there is nothing much to suggest as to when can a person be identified as a 'Good Soldier' or an 'Organizational Citizen'. Another question that needs to be answered is that whether OCBs are only about 'behavior', or are they about the underlying 'feelings' and 'emotions' as well?

To summarize, considerable differences and open issues exist regarding the dimensions of OCB – right from what the dimensions are, to whether OCB is an Aggregate construct or a Superordinate construct, and whether OCBs include the underlying feelings and emotions as well.

Reason for Differences on Theories Pertaining to OCB: Context and Culture

Scholars have acknowledged that the context in which an organization operates is likely to impact even the basic understanding of OCB (Paine, & Organ, 2000; Podsakoff et al., 2018). Scholars have agreed that most concepts related with OCB, which have been theorized in the western context, may not be applied across different cultures/ context in the same form (Chen et al., 2011; Gupta, & Singh, 2012; Wang, 2016).

Need for Context Based Ground-Up Studies on OCB

Ideally OCB study should start ‘ground-up’ in a different culture (Organ et al., 2006, pp 38). Literature Review suggests that for correct understanding of OCB, contextualized, ground-up study on OCB is necessary. To the best of our knowledge, very few studies have been undertaken in Indian contexts with the aim of indigenous theory development on OCB - using ground-up approach and qualitative techniques.

Grounded Theory Research on OCB in the Context of the Indian Armed Forces

A Grounded Theory research was conducted (Jul 2018 – Oct 2019) to study how OCB is understood and perceived in the context of the Indian Armed Forces. The Indian Armed Forces are the largest employers of the country, with over 15 Lakh employees, having pan India presence. They have a strong value system which lays emphasis on aspects like loyalty, organizational compliance, ‘esprit de corps’, ‘service before self’, etc – which are reflective of OCB. There is need to study OCB in the context of the Armed Forces also because with changing societal values in the macro Indian culture, there is pressure to change and adapt on the time tested culture, traditions and values of the Armed Forces as well, some of which have conventionally been perceived as pivotal to aspects related with OCB in the organization.

Data collection and analysis was undertaken using Charmaz’s constructivist grounded theory methodology, wherein one group discussion and 19 in-depth interviews were conducted – with participation of a total of 23 officers of the Indian Army, Indian Navy, Indian Air Force and the Indian Coast Guard, belonging to different cadres and having rich field and staff experience.

Findings

Participating officers came up with 56 different stories of ‘Good Soldiers’, bringing out various facets of OCB in the Armed Forces. Analysis revealed that ‘Good Soldiers’ can have many different qualities, and they contribute to the organization in many different ways.

Definition of OCB

OCBs Are Not Discretionary. An important finding regarding the definition of OCB is that: In the Armed Forces, OCBs are not discretionary. Almost all the interviewees made very strong statements like, “...for a soldier the first and the foremost thing is loyalty,” “a soldier should be loyal, a soldier should be honest, dedicated to duties...These are lacking in you then you better don’t be in this system.” OCBs emerged as a basic aspect of soldiering, and the core part of the value system and culture of the organization.

OCBs Are Rewarded. It also emerged that OCBs do get recognized and rewarded in the Armed Forces. While sharing the motivating factors for the ‘Good Soldiers’ of their stories, some interviewees mentioned that these ‘Good Soldiers’ were getting rewarded regularly. In fact, there is a formal mechanism to reward OCBs in the Armed Forces, and that apart, OCBs usually become the differentiating factors for most rewards and appraisals. If OCBs are not getting registered, it only reflects disconnected leadership. Connected leaders register OCBs, and reward it – any which way.

Good Soldiers ‘Contribute’ to Teams and Organization. The study revealed that while there can be many good qualities that may define a good soldier, but no single soldier can have all the good qualities – in fact most employees have one or the other shortcoming. The common theme that emerged across the interviews was that - despite whatever shortcomings that they may have, good soldiers contribute to their teams and the organization - they compensate for their shortcomings by performing in other areas, and ensure that they are not a liability, and that their net contribution to the team and the organization is positive.

Interviewees gave examples of soldiers, who proved themselves as assets despite lacking on more than a few fronts. For example, a sailor was on leave when a big militant attack happened in a northern state. Anticipating correctly that the ship would sail out for operational deployment, he reported back to duty on his own, paying expensive airfare. The interviewee remembered him as a ‘Good Soldier’ – even though he was an average performer, because he had contributed by his attitude – his act had a positive psychological impact on everyone. The interviewee believed that, if ever the ship’s gun was to misfire, then this sailor had the mettle to risk his life - to remove the live shell from ship’s deck, for saving the ship. Only by his attitude, he was an immense asset.

Apt Definition for OCB. Based on study, it was apparent that the present definition of OCB – which suggests that OCBs are discretionary, or not recognized by formal reward system, may not be tenable. The study suggested that the definition of OCB should be broad – to cater for many different ways ‘Good Soldiers’ contribute to their teams and organization - the definition should hinge on contributions made by ‘Good Soldiers’. Accordingly, the definition of OCB proposed by Organ (1997) is recommended as the apt definition of OCB in the context of the Indian Armed Forces: “OCB refers to contributions to the maintenance and enhancements of the social and psychological context that supports task performance.”

Dimensions of OCB

This study revealed over 40 categories related to dimensions of OCB, which mapped with the seven most widely recognized dimensions of OCB discussed earlier. For example, an interviewee remembered a ‘Good Soldier’, who had cut his leg in an accident during the operation of loading armoured vehicles on trains, “...he had cut his leg...I told - just send him to hospital right away but he said, Sir I will not move from here till the time the last vehicle is loaded.” Coding and theoretical analysis mapped this behavior of the protagonist to OCB dimensions of Organizational Compliance, Loyalty and Sportsmanship. Another interviewee remembered another good soldier: “In this exercise when we had shortage of water, he was the one who suggested we will clean our plates with sand...”; theoretical analysis mapped this to OCB dimensions of Sportsmanship and Initiative.

New Insights. Apart from confirming the seven dimensions of OCB, this study led to new insights, as mentioned below.

New Dimensions of OCB. Existing literature limits OCB to non-formal activities and doesn’t recognize undertaking formal duties with ‘Diligence and Professional Competence’ as a type of OCB. With a broader understanding of OCB as suggested by this study, undertaking formal duties with ‘Diligence and Professional Competence’ was also identified as a new dimension of OCB, which has tremendous positive effect on social and psychological context of organizations. Also, studies on OCB have traditionally focused on lower level employees, and not emphasized on leadership as a dimension of OCB. This study revealed importance of leadership across all levels in the organization, and suggested ‘Leadership’ as another new dimension of OCB. All interviewees emphasized upon ‘Leadership’ and ‘Diligence and Professional Competence’ as important qualities of ‘Good Soldiers’.

Most Important Dimensions of OCB. ‘Loyalty’ and ‘Passion with Positive Attitude’ emerged as the most significant qualities of ‘Good Soldiers’, as interviewees suggested that those who have these can be guided to develop other dimensions of OCB.

OCBs Include the Underlying Feelings. It also emerged that OCBs are not just about the visible behavior or actions, but OCBs also include the feelings and intentions underlying those actions - which get exposed quickly in the eyes of discerning leaders, and eventually in everyone’s eyes.

Discussion

Definition

The finding from the context of the Indian Armed Forces, which suggests that the definition of OCB should hinge around ‘contributions’ made by Good Soldiers, is consistent with the works of scholars like Barnard (1938), Roethlisberger & Dickson (1939), Katz (1964), Katz & Kahn (1966) or Podsakoff (2013), where emphasis on the keyword ‘contribution’ can be seen. Barnard argued, “it is clear that the willingness of persons to contribute efforts to the cooperative system is indispensable” (Barnard, 1938, pp 84). Roethlisberger & Dickson’s (1939) details on the Hawthorne studies referred to sentiments within the informal organization which contribute to the functioning of the formal system. Katz & Kahn (1966) referred to spontaneous contributions not explicit in job descriptions or managerial directives, while conceptualizing organizations as open systems. Podsakoff (2013) has argued on the advantages of the definition of OCB given by Organ in 1997 (which has been recommended as the most apt definition of OCB in this study). It is a broad definition with wider applicability, which doesn’t limit OCBs to behaviours not rewarded or tasks not a part of formal role.

‘Diligence and Professional Competence’ as Dimension of OCB

Even though scholars have spoken of including the elements of job dedication related more directly to the task as a dimensions of OCB in the past as well (e.g., Coleman, & Borman, 2000; Scotter, & Motowidlo, 1996), however this did not gain sufficient traction over the years. As a result, existing literature limits OCBs to non-formal, non-task related activities and doesn’t recognize undertaking formal duties with ‘Diligence and Professional Competence’ as a type of OCB. With a much broader understanding of OCB as suggested by this study, doing formal duties with ‘Diligence and Professional Competence in formal tasks’ was also identified as a new dimension of OCB, which has tremendous positive effect on social and psychological context of organizations. In fact undertaking of routine duties (and Diligence and Professional Competence in formal tasks) should not be taken for granted. Positive contribution to the organization by way of Diligence and Professional Competence in formal tasks would definitely be a manifestation of OCB - by his Diligence and Professional Competence, not only an individual contributes to the organization directly and formally on his own, but indirectly and informally as well - by impacting the social and psychological context in a positive manner – by inspiring, motivating and training others. Initial definition of OCB (Bateman, & Organ 1983; Smith, Organ, & Near 1983; Emily et al., 2013) talked of OCBs as ‘above and beyond the routine duties’, which implies that OCBs are ‘over and above’ routine duties, and perhaps without routine duties OCBs may not count at all. This premise also suggests that OCBs do encompass routine duties as well, and hence Diligence and Professional Competence in undertaking routine or formal duties should count as a dimension of OCB.

Leadership as Dimension of OCB

Studies on OCB have traditionally focused on lower level employees, and not emphasized on leadership as an independent dimension of OCB. Amongst the most widely recognized dimensions of OCB suggested by Podsakoff (2000), ‘individual initiative’ relates closely with leadership. Similarly, ‘voice’ as dimension of OCB suggested by few scholars (LePine, & Van Dyne, 1998, 2001) also reflects aspects of leadership. However leadership is a much broader construct, encompassing many other qualities as well. This study revealed importance of leadership across all levels in an organization – so much so that it is suggested that ‘Leadership’ be recognized as an independent dimension of OCB. Leadership is about all such things which relate directly with OCB – whether it is about performing ‘above and beyond’ routine duties, or about ‘Contributions to the maintenance and enhancements of the social and psychological context that supports task performance’.

Most Significant Dimensions of OCB

This research work has also brought out that while all OCBs are desirable, but some forms of OCBs are more desirable than others. Depending on context, preference that managers/ officers and leaders place on various forms (manifestations) of OCB may vary. In this research work it has clearly emerged that in the context of the Indian Armed Forces, 'Loyalty' and 'Passion with Positive Attitude' emerged as the most significant qualities of 'Good Soldiers', as those who have these, can be guided to develop other dimensions of OCB.

Loyalty as an Attitude

This study also revealed a broader understanding of Organizational Loyalty – Loyalty extends not only to the organization, but also to superiors, colleagues and subordinates. As the context of research in this study were the Indian Armed Forces, where personnel are transferred every two to three years - resulting in frequent change in the set of superiors, colleagues and subordinates, yet most personnel display loyalty so it can be inferred that loyalty is not related to tenure. Loyalty is more an attitudinal variable, which would continue if antecedents exist, despite change in the set of superiors, colleagues and subordinates (or the organization itself).

No Case for OCBs with Ulterior Motives

Few researchers have suggested that employees can indulge in OCBs with ulterior or self-serving motives as well (Spector, 2013; Taber, & Deosthali, 2014). However, this study revealed that the real feelings and real intentions underlying the behaviour and actions of an employee are more important, which get exposed quickly in the eyes of discerning leaders, and eventually in everyone's eyes. This is consistent with observations of scholars like Donia et al. (2016). Inside an organization OCBs do get measured over a period of time and the measure does include the underlying feelings and intentions as well. If we apply the filter of underlying feelings of 'Trustworthiness and Loyalty' and 'Passion and Positive Attitude' to identify OCBs, then behavior and actions of employees with ulterior motives shall not count as OCB in the first place. In the long run, any behavior with ulterior or self-serving motives shall get revealed as selfish behavior, as against genuine OCB. Hence 'OCBs with ulterior motives' is an oxymoron, and the case of OCBs with ulterior motives doesn't exist.

OCB: An Aggregate Construct

Rosen et al. (2018) have mentioned that OCB, if viewed in light of Organ's (1997) definition, would count as an aggregate construct. It has been emphasized in this research work that Good Soldiers shall be identified on the basis of net positive contribution to the organization, wherein they overcome their shortcomings by over-performing in other areas. This implies that aggregate of reflective measures determines OCB, whereas individual reflective measures in isolation alone do not determine OCB; which also suggests that OCB is an aggregate construct

Missing OCB Dimensions, Behavioural Variations and Good Soldiers

The study has also given insights into the question raised in the Literature Review Section: Can we conclude that a person is a 'Good Soldier' or an 'Organizational Citizen' if he displays certain OCBs, and doesn't display the others, or worse - shows deviant behavior in some other cases? Scholars have also talked of short duration affect variations leading to changes in behavior displayed by personnel (Spence et al., 2014). This study has suggested that personnel would always be good on some dimensions, and 'not so good' on others, and there would be variations in their performance when measured across all the different dimensions of OCB. However whether they are 'Good Soldiers' or not, would depend on the aggregate and in the long run – overall whether they are contributing positively, overall whether they are an asset or a liability.

Conclusion

This study on OCB in the context of the Indian Armed Forces has given new insights, which call for a broader definition of OCB (in line with the definition suggested by Organ in the year 1997) and inclusion of additional dimensions (like ‘Diligence and Professional Competence’ and ‘Leadership’) which have typically been kept outside the purview of OCBs. In addition, the study has rendered clarity on quite a few issues pertaining to OCB. While the context of the study were the Indian Armed Forces, but the findings do indicate a need to review the definition, dimensions and related theories of OCB, as applicable in the Indian context. As scope for future research, similar studies on OCB, using a ground-up approach, is recommended in civilian organizations in India as well, to verify the findings and carry forward and complete the process of indigenous theory development on OCB. Correct understanding of OCB shall play a key role for academicians, leaders and employees in developing and nurturing OCBs, which in turn shall help improve the effectiveness and efficiency of organizations, and lay the path for sustainable development.

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Sustainability in Business and Management: A bibliometric based integrative review and future research agenda

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Abstract

This paper explored the sustainability domain using both performance analysis and science mapping tools for the last 20 years and have characterized the conceptual, intellectual, and social structure of this domain using 7588 bibliographic records of published articles for “business” and “management”. The findings reveal that early literature in this multidisciplinary domain was derived from environmental issues of business and strategy where the focus was on defining the construct itself. Later work moved its focus towards the strategic impact of relevant sustainability issues and its impact on the performance of business firms. This study will primarily help researchers working in this domain to get a quick start for further contributions and policymakers to devise methods to enhance research and collaboration in this area.

Introduction

This paper aims to explore the sustainability knowledge domain in the subject categories of “business” and “management” fields based on bibliometric analysis for the last 20 years, given that we have seen an explosion of literature around this topic. Sustainability is a multidisciplinary construct, but the focus of this analysis is to comprehend the sustainability landscape in the corporate world, and hence the study was restricted for these subject areas only. We have conducted this analysis by taking an inductive approach to perform bibliometric performance analysis on the various unit of analysis namely articles, journals, and authors followed by science mapping based on co-citation, co-word, and co-author analysis to uncover the intellectual, conceptual and social structure respectively. The systematic literature review has been done to not only uncover the underlying paradigms of this domain but also to explore the epistemological characteristics, emerging trends, thematic patterns to highlight the historic areas of developments.

This study aims to address the following research questions:

1. How has the field of sustainability progressed in the last two decades?
2. Which entities (journals, authors, institutions, and countries) are most influential in contributing to the field of sustainability in “business and management”?
3. What are the underlying paradigms, primary research themes, and social networks in this knowledge domain?

Research Design and Methodology

This paper followed the PRISMA guidelines (Moher et al., 2009) for various steps in conducting a literature review. Once the final list of articles was finalized using citation data from Web of Science, we followed the steps suggested by Cobo et al. (2011) for conducting bibliometric analysis in this paper. This study deployed both performance analysis and science

mapping methods at different levels using various tools for conducting research. We used different units of analysis namely journals, documents, cited references, authors, and words during this study. Content analysis of top document abstracts and “aims and scope” of top journals was conducted to interpret the findings and identify the clusters in this study. The detailed steps for the research design and methodology are shown in Figure-1. We have summarized our major findings for the overall analysis in Table-1.

Research Findings and discussions.

The findings have been explained in terms of Descriptive and Trend Analysis, Source analysis, Author analysis, and document analysis, the details of which are provided in Table-I and Figure 1 to Figure- 7. Further, the conceptual structure of the knowledge domain as identified using co-word analysis (see Figure-6(4)), intellectual structure of the domain was identified using co-citation analysis and social structure of the domain was identified using co-author analysis (See Figure-7). The source distribution follows the Bradfordian characteristics which help to identify the most important journals for this domain (See Figure-3). The author analysis helped us to create a list of highly cited documents from top authors working in different areas of sustainability namely, sustainability and environment (Sarkis J, 2001; Boiral O, 2012, 2014; Gupta S, 2016; Frey M, 2013, 2018), corporate sustainability models and issues (Svenssen G, 2012; Gupta S, 2013; Jabbour Cjc, 2008, 2011; Kolk A, 2010; Geels FW, 2010; Pinkse J, 2014, 2015; Searcy C, 2011; Bansal P, 2013, 2014), sustainable supply chain (SSC) management (Sarkis J, 2014; Svenssen G, 2007; Seuring S, 2014; Pagell M, 2009; 2011), sustainability reporting and accounting (Schaltegger S, 2010; Kolk A, 2010; Searcy C, 2015) and lastly sustainability entrepreneurship and innovation (Schaltegger S, 2011; Geels FW, 2005; Wagner M, 2010, 2011).

As we analyze the documents based on global citations (figure-6(3)), Carter CR (2008) at first rank is focused on SSC management whereas the next one from Christmann P (2000) is dedicated to best environmental practices for achieving cost advantage. We find that though these papers focus on different fields of research, all of these references are at the core of establishing the foundational theories of business and management that are used by the multidisciplinary knowledge domain of sustainability as the scholars try to analyze this domain from different perspectives.

Our attempt to uncover the conceptual structure of the domain through different periods in the alluvial diagram (figure-5(5)) shows that overall, the domain is converging from many diverse topics in T1 that were part of the academic discourse at the equivalent level e.g. “performance”, “environment”, “framework”, “resource-based-view” etc. In T2, many of these topics were merged into a lower number of topics as some were derived from the combination of earlier topics or few completely lost their existence as a prominent topic. Till T2, “Model” and “environment” were completely merged into “management”, and RBV was merged to “firm” as a prominent topic. “Business” and “firm” appeared as new topics in T2. Thus, from T1 to T2 most of the focus of this domain shifted from multiple aspects to the role of business management in sustainability. In T3, sustainability itself became the leading concept derived from management, framework, and sector. “Performance” and “framework” also remained relevant topics during T1 to T3, but they kept changing their constituents during the period. CSR, composed of earlier concepts like “firm”, “framework” and “business” were a significant and new topic during this period and behavior as an independent concept also started showing up in this context. In T4, the focus shifted to “sustainability”, “management”, and impact derived from various topics from T4. The conceptual clusters identified in this research are primarily along the dimensions of “framework and models”, “strategic impact”, “behavior and values”, and “drivers and determinants” of sustainability. Scholars can use one of these themes for doing a deep dive for their research or can find a new dimension based on these clusters as a gap for further research. The cultural or value aspect of sustainability seems to be less researched as reflected by the content of this cluster, which can be

picked as one of the areas to be investigated. Yet another area of research can be along with the differences of dimensions in developed vs. developing countries and its relevant impact on business and management. Another prominent topic to be covered in further research can be sustainability and its relationship with and applications in different areas of business and management e.g. human-resources, behavioral finance, trade policies, etc.

The three clusters based on the network of articles in intellectual structure analysis provide the primary focus areas for the sustainability domain and it seems that now this domain has sound theoretical background but the focus of existing research has primarily been from supply chain management area or production technologies with a focus on environmental management. This further means that there is ample opportunity for other areas of the business to contribute to this domain primarily keeping the social aspect in the center of the academic discourse for business and management. Cluster identified based on the network of authors reinforces the co-citation results of articles that the domain has well-developed foundational theories but from an application perspective, the domain is dominated by supply chain management or environmental-related studies, providing an opportunity for scholars to bring other dimensions of business and management in this domain. Cluster analysis based on journal network reinforced the multi-disciplinary aspect of sustainability; however, we can also see that the domain doesn't have many dedicated journals for contribution in this area. Having a few dedicated journals focused on the sustainability issues in different areas of management may increase the rigor of contributions for sustainability increasing the depth of this entity as an independent knowledge-domain. The historiographic analysis suggests the early focus of this domain on the environmental aspect and recent focus on SSC and entrepreneurship.

The network analysis done for unraveling the social structure of this domain reveals a lack of strong author or institutional networks. Given that sustainability is a multi-disciplinary domain, it might be possible that scholars engaged in business and management subject-category may not be doing research in sustainability as a mainstream discipline and hence different entities are working in niches without the need for collaboration. Countries, on the other hand, have some existing collaboration which also has a strong potential to increase. One of the reasons for this lack of collaboration in this field may be the absence of incentives or policies focused on research in this field or the absence of established institutions and regular conferences where most of such collaboration initiates.

Conclusions

This paper explored the emergent trends, epistemological attributes, and thematic patterns in this field while conducting the analysis at the level of the journal, documents, and authors independently. Using a blend of co-citation, co-word, and co-author analysis followed by content analysis of top entities, this paper identified the intellectual, conceptual, and social structure of this domain. The findings of this study revealed that the domain is multidisciplinary and is still in the growth phase, however there is a significant lack of collaboration between researchers among institutions and countries. This domain has foundational theories coming from strategy and social responsibility domain and latest research has been focused on SSC and analytical methods to be used in this domain. Sustainability field is geographically well diversified though dominated by contributors from Anglo-American and European nations. This study may help both expert and novice researchers working in the sustainability domain to understand the historical trajectory and current state to position their research questions and enhance the research paradigm using emerging technologies. This research will also provide an exposure to the scholar community working in sustainability to conduct systematic literature review and meta-analysis using bibliometric methods and tools. Apart from the research community at different levels, the findings from this study will also help policymakers in various countries and institutions to re-

orient their research activities in this area, so that contextual policies and practices can be adopted in this research through cross-collaboration.

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Carbon Emissions & Ecological Business Conscience of Coal, Oil & Gas Businesses in India

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Abstract

Carbon emissions from various industries are causing ecological imbalance - a substantial proportion of these emissions are due to energy-producing businesses that use fossil fuels like Coal, Oil, and Natural Gas for extraction and processing. Growth in the world economy over the past few decades has been powered by increased usage of energy that has led to an increase in carbon footprint & intensity globally. In this paper, an Ecological Business Conscience (EBC) Index has been developed to score the various initiatives undertaken by the Coal, Oil & Gas businesses in India for reducing and managing their intensity of carbon footprint. This index will act as an indicator, informing organizations and its various stakeholders of their present level of EBC, while also highlighting areas that need to be addressed for further improvements to reduce their carbon footprint and intensity for achieving corporate sustainability.

Keywords: Ecological Business Conscience Index; carbon footprint; corporate sustainability; ecological imbalance; carbon emissions

Introduction

The Earth is the only habitable planet in our galaxy based on our knowledge today. What it means is that - Earth has finite space, finite resources, and an environment that has to be protected so that an ecological equilibrium can be maintained for the survival of all living beings. Any imbalance caused can have severe implications on life in general and the survival of living beings in particular. The world is experiencing climate change driven ecological imbalance as the Earth is getting warmer due to changes in the climate faster than expected as a consequence of rapid industrialization across the globe. An expected 2-degree centigrade rise in the world's average temperature in the next decades will make India's summer monsoon highly unpredictable (India Energy Outlook - World Energy Outlook Special Report, 2015). Shifting rain patterns will leave some areas underwater, and others without enough water for irrigation, water for drinking, and water for power generation will become scarce (Schultz & Williamson, 2005). This ecological imbalance will impact the businesses, and hence the means of livelihood for millions will be at risk. With the impact of climate change becoming more marked in recent years, governments, businesses, and individuals are more concerned about the contributions of their actions to climate change and are making a conscious effort to manage climate variation and measure their carbon footprint or greenhouse gas (GHG) emissions caused from goods or actions, to diagnose tactics to diminish these effects (Huang et al., 2009).

In this study, the objective is to develop an Ecological Business Conscience (EBC) Index to score the various initiatives undertaken by the Coal, Oil & Gas businesses in India for reducing and managing their intensity of carbon footprint. Carbon emissions comprise Green House Emission (GHG) gases & CFCs (Chlorofluorocarbons) which trap heat and deplete the ozone layer - hence these emissions can have catastrophic consequences on the global environment by causing severe ecological imbalances. Increased usage of energy has led to an increase in carbon footprint & intensity globally with energy-related activities contributing to more than 70% of global GHG's with India being the world's third-largest emitter of greenhouse gases (Timperley, 2019). Therefore, the index developed in this study will act as an indicator, informing organizations and its various stakeholders of their present level of EBC, while also highlighting areas that need to be addressed for further improvements to reduce their carbon footprint and intensity for achieving corporate sustainability.

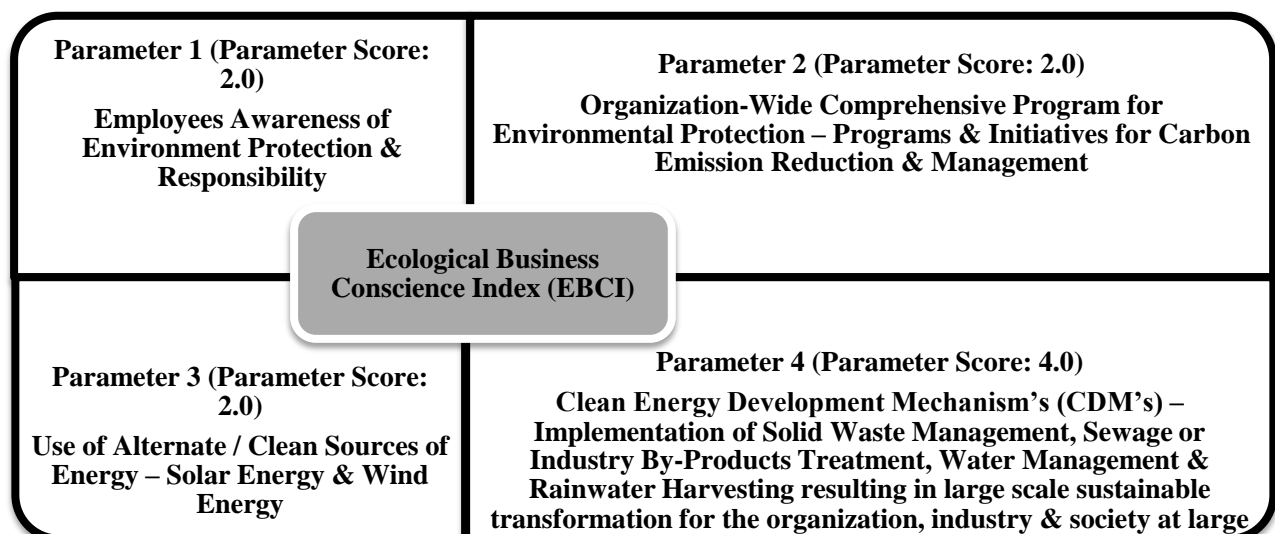
1. Climate Change and the Business Organisations

Climate change caused by carbon emissions is a crucial driver of ecological imbalance that can manifest in several ways, namely: a) Impact to country investment risk caused by climate change influencing political and security conditions; b) Changes in customer requirements that impact businesses which are linked to weather & resource availability; c) Supply chain issues triggered by weather, infrastructure constraints (inventory levels, logistics including transportation); d) Risks to capital locked in inventories due to sea-level rise and impact to infrastructure as a consequence of weather change, and e) constraints on access to water resources and its use due to climate change. Further, ecological imbalances impact businesses in several ways, key amongst them are - a) Governments imposing limits on greenhouse gas/carbon emissions; b) Carbon emission caused climate change will directly impact certain businesses & their overall operational environment, and c) Public perception & their understanding of the corporation's behavior will directly impact the firm's bottom line (Lash & Wellington, 2007; Schultz & Williamson, 2005).

Organizations have become major participants in global environmental governance (Jones & Levy, 2009; Levy, 2015), as stockholders, pacesetters, specialists, producers, activists, proprietors become vital players in conservational issues. This credit to the corporate potential has arisen, at a time of increasing alarm of a 'governance deficit' at the global level (Haas, 2006). Transposing the description of sustainable development given by the Brundtland committee, 1987 to the firm level; corporate sustainability can thus be defined as fulfilling the needs of all stakeholders of the organization (such as owners, staffs, customers, pressure groups, local community, etc.), without losing its capability to meet the requirements of future stakeholders (Dyllick & Hockerts, 2002). Therefore, firms need to develop and implement strategies for reducing energy consumption and carbon emissions and adapt their businesses to seize new opportunities while doing it better than the rivals to sustain competitive advantage.

2. Ecological Business Conscience Index (EBCI) – A Composite Index

The business case for sustainability has advanced in several diverse ways to demonstrate or refute the comprehensive economic rationale for Ecological Business Conscience (Bleda & Shackley, 2008) that can be defined as “a calculated and profit-driven business response to ecological and societal problems triggered by the organization's primary and secondary activities” (Salzmann, 2008). The Ecological Business Conscience Index (EBCI) developed in this study comprises of the following four parameters:



Each parameter has components that are critical to the understanding of the parameter and its significance to the EBCI. The weightage given to each of the four parameters varies basis the relative importance of each parameter on the overall EBCI. The scores for each of the parameters is proposed on a numeric scale of 1 to 10, 1 being the lowest & 10 being the highest score. This study proposes that the components that constitute the four parameters of the Ecological Business Conscience Index (EBCI) are:

Components of Parameter	Detailed Explanation of Component	Maximum Possible Component Score	Maximum Possible Parameter Score
PARAMETER 1 - Employees Awareness of Environment Protection & Responsibility			
Understanding	Employees have a good understanding of individual responsibility & obligation as corporate citizens to protect the environment.	0.75	
Engagement	Employees are engaged routinely in Environment protection tasks or initiatives.	0.5	
Contribution	Employees are contributing in significant measure to the organization's environment protection goals and are recognized for the same.	0.75	
			2
PARAMETER 2 - Organization-Wide Comprehensive Program for Environmental Protection – Programs & Initiatives for Carbon Emission Reduction & Management			
Targets	Organization has stated goals & objectives - a commitment has been made to reduce carbon emissions & intensity. There is a published roadmap for this program.	0.5	
Projects	Concerted Efforts for Carbon Emission Reduction & Management - Investment in R&D Center, Green Belt Development, Environment Management Programs integrated with CSR Initiatives & Plans for ISO 14001 Certification.	0.5	
Results	Published audited results on plan (commitment) Vs actual in terms of reduction in Carbon Emission.	1	
			2
PARAMETER 3 - Use of Alternate / Clean Sources of Energy – Solar Energy & Wind Energy			
Initiatives to Harness Solar Energy	Programs, Projects & Initiatives announced & implemented with audited results evidencing progress and in alignment with overall organization's environment roadmap.	1	
Initiatives to Harness Wind Energy		1	
			2
PARAMETER 4 - Clean Energy Development Mechanism's (CDM's) – Implementation of Solid Waste Management, Sewage or Industry By-Products Treatment, Water Management & Rainwater Harvesting resulting in large scale sustainable transformation for the organization, industry & society at large			
Solid Waste Management	Use of technologies & tools for converting solid waste to fuel or fuel grade substitute (liquid fuel) that is cleaner and reduces carbon emission & intensity significantly.	1	

Sewage or Industry by-Products Treatment	Use of technologies & tools for treating sewage and organization generated by-products using technologies, tools & practices for reducing carbon emission & management.	1	
Water Management including Rainwater Harvesting	Recycling Water and harnessing the power of Rainwater Harvesting to ensure that the organization & industry is water positive as an imbalance can have consequences on the planned energy conservation objectives.	1	
Transformation as a consequence of Environment Protection / Energy Conservation	Transformation that is evidenced in results and has a bearing not only on the organization but on the industry and society at large.	1	
			4
		10	10

This EBCI proposed in the study is built on the typical responses and decisions made by the organizations to reduce and manage their intensity of carbon footprint (Dyllick & Hockerts, 2002; Jones & Levy, 2009; Levy, 2015; Salzmann, 2008; Schultz & Williamson, 2005). This EBCI will act as a critical indicator, and when studied in detail can reveal patterns & valuable insights about business responses to ecological imbalances. A high score on each of the four parameters will mean that the organization has above-average levels of EBC & that the organization and its employees understand the obligations of being ecologically friendly and act accordingly at all times. With this EBCI developed in this study, the three major Maharatnas in the Coal, Oil & Gas industry - a) Coal India Ltd.; b) Indian Oil Ltd.; and c) Oil and Natural Gas Corporation (ONGC) have been scored on each of these parameters to indicate their present level of EBC, while highlighting the areas wherein these organizations have scope for further improvement for achieving corporate sustainability.

3. Ecological Business Conscience (EBC) Scores for three Maharatnas in the Coal, Oil & Gas industry

In 1997 nine public sector undertakings (PSUs) were awarded additional financial autonomy as compared to other central public sector enterprises (CPSEs). These firms called the Navaratnas were PSUs that had comparative advantages and with greater autonomy, could compete in the world market to become global giants. The government also established the higher Maharatna category, which raises a company's investment ceiling from Rs. 1,000 crore to Rs. 5,000 crore followed by Navaratna companies, could invest up to Rs 1,000 crore without explicit government approval and the two categories of Miniratnas that have less extensive financial autonomy (Rediff Business, 2010). Presently, there are 10 Maharatnas, 14 Navratnas and 74 Miniratnas (List of Maharatna, Navratna and Miniratna CPSEs, 2020). In this section, the three major Maharatnas in the Coal, Oil & Gas industry - a) Coal India Ltd.; b) Indian Oil Ltd.; and c) Oil and Natural Gas Corporation (ONGC) have been scored on each of the four parameters based on the secondary data sources of newspaper articles, press release reports and information on the company website, to indicate their present level of EBC while highlighting the areas wherein these organizations have scope for further improvement.

Coal India Ltd.

Coal India Limited (CIL) is a state-owned coal mining corporation formed in November 1975. As of 2020 CIL is the single largest coal producer in the world and is one of the largest

corporate employers. CIL is a Maharatna company functioning through its subsidiaries in 84 mining areas spread over eight states of India and is involved in extraction and refining of coal (Coal India Ltd., n.d.). The Ecological Business Conscience (EBC) Scores on each of the four parameters are indicated below.

Individual Parameter scores	Detailed Findings	EBC Score
Parameter 1 – 1	<ul style="list-style-type: none"> • Clean Green Program – Year on year tree plantation drives for ecological restoration as employees take an oath to protect the environment 	6
Parameter 2 – 1.5	<ul style="list-style-type: none"> • Increasing the number of ISO-certified units • Mine closure decisions undertaken based on detailed land assessment reports • Reduced power consumption during coal excavation and production • High wattage conventional lighting replaced with low power consuming LEDs resulting in huge energy saving potential 	
Parameter 3 – 1	<ul style="list-style-type: none"> • Installed and utilized kilo-watt scale rooftop solar plants • Rainwater harvesting adopted to recharge groundwater through boreholes and wells 	
Parameter 4 – 2.5	<ul style="list-style-type: none"> • Strategies adopted for improved waste management, waste disposal and water conservation • Installation of continuous air quality monitoring centers for air pollution control in all mines using mobile and fixed sprinklers • Water pollution control measures implemented with the installation of effluent treatment plants for cleaning wastewater and prevention of sediments • Undertakes noise pollution reduction through modern equipment with prescribed standards, blasting with delay detonators and personal protective equipment provided to workforce • Habitat and Biodiversity protection activities initiated across all mine locations 	

Indian Oil Ltd.

Indian Oil Corporation Limited (IOCL) is an Indian government-owned oil and gas company started in the year 1959 and is the largest commercial oil company in the country. It controls nearly half of India's petroleum products market share, 35% national refining capacity, and 71% downstream sector pipelines capacity. Its business interests include the entire hydrocarbon value-chain from exploration and production of crude oil, natural gas, and petrochemicals to refining, pipeline transportation and marketing of petroleum products. Indian Oil has also ventured into alternative clean energy sources and globalization of its operations, becoming one of India's most profitable state-owned companies (Indian Oil Ltd. - Who We Are, n.d.).

Individual Parameter scores	Detailed Findings	EBC Score
Parameter 1 – 1.5	<ul style="list-style-type: none"> • Sustainability workshops organized across the divisions and operating locations to enhance awareness about sustainability among the employees at all levels • Conducts Carbon footprinting exercises in its various locations to account for its GHG emissions, identifying areas of improvement and 	8

	implement emission mitigation measures	
Parameter 2 – 2	<ul style="list-style-type: none"> From 2020 launched BS-VI (Bharat Stage VI) fuels in all its retail outlets based on world’s cleanest standards GHG emissions mitigation through pipeline transport over transportation by rail Implemented energy efficient lighting with 4.5 Lakh energy efficient LED lights replacing conventional luminaires Energy Conservation (ENCON) projects initiated across refineries having huge energy conservation potential to promote sustainability initiatives in supply chain, encourage sustainable consumption, and reduce its ecological footprint. All refineries have undertaken certification of their GHG emissions under ISO-14064 and Environment Management practices under ISO-14001 standards while complying with various government regulatory norms Was conferred Sustainability 4.0 Award 2018 jointly by Frost & Sullivan and TERI in recognition of its comprehensive sustainability initiatives as a Leader in the Mega Large Business Process Sector Initiated various projects in energy conservation and efficiency, renewable energy, switching to green fuels and tree plantation to reduce its GHG emissions Focused on investing in new technologies for clean fuels for all user segments: industry-transport-homes-commercial establishments etc, a SATAT (Sustainable Alternative Towards Affordable Transportation) initiative, aggressively leveraging its R&D expertise to move into horizon technologies like 2G & 3G ethanol, bio-fuels, coal gasification, H-CNG, Hydrogen fuel cells, battery technologies, etc Has formed an ‘Alternate Energy & Sustainable Development’ Group at the corporate level to implement action plans for addressing the environmental issues viz. climate change, global warming, etc 	
Parameter 3 – 1	<ul style="list-style-type: none"> Has commissioned 216 MW of renewable energy projects, which includes 167.6 MW of Renewable Energy wind power and 48.6 MW of solar 14173 retail outlets solarized to make its supply chain more socially and environmentally responsible, along with installation of floating Solar Panels 	
Parameter 4 – 3.5	<ul style="list-style-type: none"> Green belts and Eco-parks developed at its operating locations to conserve the flora & fauna by undertaking extensive tree plantation. As a green initiative, e-portals have been launched, and payments, data transfer are done using the electronic media resulting in considerable saving of paper and hence preventing cutting of trees. Hazardous and toxic product waste that are not recycled in operations are disposed off as per the Central & State Pollution Control Board (CPCB & SPCB) norms. Online analyzers, mobile vans, and fixed monitoring stations installed in refineries to monitor ambient air quality. Measures like use of low sulphur fuel in boilers and heaters, use of low NOx burners, flare gas recovery systems are used to minimize air emissions from operations. Water and quality of effluent discharged are carefully monitored with the refineries equipped with various wastewater streams subject to precise treatment in well-designed effluent facilities. These treated effluent streams are reused for various purposes in refineries leading to substantial reduction in freshwater consumption. Facilities of Oil Spill Response (OSR) are well developed to handle 	

	<p>all possible sources of oil leaks</p> <ul style="list-style-type: none"> • e-Waste Management ensures e-waste disposal by way of buyback against new procurements or through government approved trading agencies • Regular maintenance of machines, use of low noise machines and sound absorbing material is carried out to control noise at source 	
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Oil and Natural Gas Corporation (ONGC)

The maharatna Oil and Natural Gas Corporation (ONGC) is an Indian Multinational Crude Oil and Gas Corporation, a state-owned enterprise of the Government of India that was established in 1955. ONGC is the flagship integrated National oil company involved in a multitude of business ventures from the exploration of Hydrocarbon to its production, refining, and distribution. It has a global presence with 41 projects in 20 countries through its overseas arm ONGC Videsh Limited and is ranked as the largest profit making PSU in India (About ONGC, n.d.)

Individual Parameter scores	Detailed Findings	EBC Score
Parameter 1 – 1.0	<ul style="list-style-type: none"> • Cleaning drive of Sabarmati Riverbank collecting 579 tons of garbage along with planting 50000 saplings. 	7
Parameter 2 – 2.0	<ul style="list-style-type: none"> • Conforms to requirements of ISO 9001, OHSAS 18001 and ISO 14001 across all its operational units to achieve and sustain the best environmental management practices • Established a dedicated Carbon Management & Sustainability Group (CM&SG) - ONGC Energy Centre Trust (OECT) with a specific mandate to position ONGC as the leading organization in sustainable development (SD) and to synergize all business activities with sustainable development goals like improving and developing commercially viable alternate energy like clean and renewable energy options. • Implemented technological upgradation to reduce Fugitive methane emissions from oil and natural gas systems and made the installations leak-free - National Gas Star program • Works towards reducing its carbon footprint by carrying out organization wide GHG inventory that covers both direct and indirect energy that would enable to identify carbon emission mitigation opportunities • The Federation of Indian Petroleum Industry (FIPI) conferred ONGC the “Environmental Sustainability – Company of the year Award and it also bagged the “Energy and Environment Foundation Global Environment Award 2018” in the 9th World Renewable Energy Technology Congress 	
Parameter 3 – 1.5	<ul style="list-style-type: none"> • First PSU in the country to lead in the area of Clean Development Mechanism (CDM) having 15 registered CDM projects having a total emission reduction potential of about 2.1 Million ton CO2 equivalent every year – including solar, wind and hydro power projects 	

Parameter 4 – 2.5	<ul style="list-style-type: none"> • Ensures environmental sustainability by protecting the flora and fauna through conservation of natural resources and maintaining quality of soil, air and water by conducting the following activities: Tree plantation programmes, rain water harvesting, promotion and installation of environment-friendly technologies (solar energy systems, improved cook stoves, water recycling unit, etc.); • Carrying out initiatives aimed to reduce, recycle and reuse waste in an innovative manner adopting various measures like water foot-printing, rainwater harvesting, sewage treatment plants and seawater desalination for conservation and sustainable use of fresh water • Waste like e-waste, plastic waste, and metal waste generated at site are safely disposed-off as per the applicable regulations while ensuring minimization of waste disposal and reducing the release of waste into the environment 	
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Conclusions

The key message in this study is that Ecological Business Conscience (EBC) Levels should increase exponentially in organizations so that it drives actions that ensure the reduction of carbon footprint and its intensity enabling effective carbon containment. The three businesses examined in this study show that these firms are becoming “green” in terms of their operations, products & services - all of them are aggressively using renewable energy in addition to advanced tools & technologies to reduce their carbon footprint as evidenced by observations & findings based on available information in secondary data sources detailed in this paper. The EBCI scores of these companies clearly indicate the potential that each one of these firms has to reduce their carbon footprint and intensity to contribute meaningfully to ecological balance.

Further, the EBC Index proposed in this study will be useful and can be applied without any particular industry bias as a diagnostic tool. First, in our country – the fossil (Oil, Coal & Gas) based state-owned and private corporations need to aggressively build on their current carbon containment activities. Second, it is clear that renewable energy – both solar & wind will play a crucial & significant role not only in reducing carbon footprint & intensity but will provide game-changing cost leverage. This will make organizations competitive in their respective industries as carbon controls & its management will reduce the overall cost of business operations. The bottom line is that carbon controls & its effective management should be considered a business imperative in today’s economic environment, hence more investments need to be made to increase EBC levels in organizations on a priority basis. This study will provide a framework for firms to understand their present standing in the path to corporate sustainability and will act as a guide for organizations to decide on their way forward towards achieving their corporate sustainability goals.

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The resource-based view guided sustainable development: a co-citation analysis

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Abstract

The conundrum for sustainable development between exploiting resources now and conserving those resources later may be suitably addressed by the resource-based view (RBV). However, there is a shortage of studies that systematically inspect the exertion of RBV on the existing literature on sustainable development. The present study tends to bridge the literature gap with a co-citation analysis of 595 articles on RBV-guided sustainable development from quality journals. We identified four major thematic areas, namely eco-friendly firm initiatives, corporate social responsibility, green supply chain management, and green product manufacturing from the co-citation analysis. Content analysis of these thematic areas adds significant insights to the extant literature, whereas a discussion about the evolution of these thematic areas may be appealing to the practitioners.

Keywords: Corporate social responsibility, eco-friendly firm initiatives, green product manufacturing, green supply chain management, resource-based view, sustainability, sustainable development

Comparison of Regression, ANNS and SVMS methods for Prediction of The Indian Stock Market

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Abstract

Focusing on Indian context, this paper draws attention towards predicting the movements in stock markets. It locates and maps the future position of the index, which is portrayed as a benchmark of the entire economy. For the analysis, NSE was tested for 5 years with techniques of econometrics & soft computing to efficiently predict the index and safeguard the funds invested by the investors.

For this study, a number of tests were applied and data has been analysed. This study found that SVMs has the best prediction and outperform in minimising the error while the ANN's model sets back in front of SVMs and Regression.

Keywords– Stock Market, Regression, Artificial Neural Networks (ANNs), Support Vector Machines (SVMs), Nifty, India

A. Index Data Set

For this study, there has been identification of 26 crucial features, which affects the Nifty in India. These factors consist of 9 broad areas from Index, companies, currencies, commodities market, financial markets, economy, global indices, banking notifications and an outlier – Demonetization. All these features are transcribed into various variables $\{x_1, \dots, x_{26}\}$ for numeric calculations and modelling of the data. The financial data of 5 years from 1st April 2014 - 31st March 2019 is broken into 261 weeks' duration to access data space and larger quantity of data for accurate prediction model.

In this set of 261 weeks, 183 weeks (70%) will be treated as *Training set* to feed into the data and rest 78 weeks (30%) is considered as *Training set* to verify the prediction accuracy and locating residuals. The objective of larger proportion for training set is due to feeding of larger data set for supervised learning and model accuracy purpose.

B. Multiple Regression Model

The regression model applies the given equation for the analysis:

$$y = a_0 + \sum_{i=1}^{26} a_i x_i \quad (16)$$

The values of the features shall be equated using least square estimation to generate optimal results. The model results are represented using chart, which are given below.

Figure (3a) and (4a) are the set segmented data set for the prediction purpose. The training data has been fitted to the model and testing in the next phase with the real or actual data.

The difference in the training case is showcased in Figure (3b), which depicted the mismatch



in fitting the data. Figure (4b), depicts the error of difference in the actual and predicted data set.

Figure 3: (a, b) (L-R) Regression: Actual and Predicted Nifty Index values in Training Case

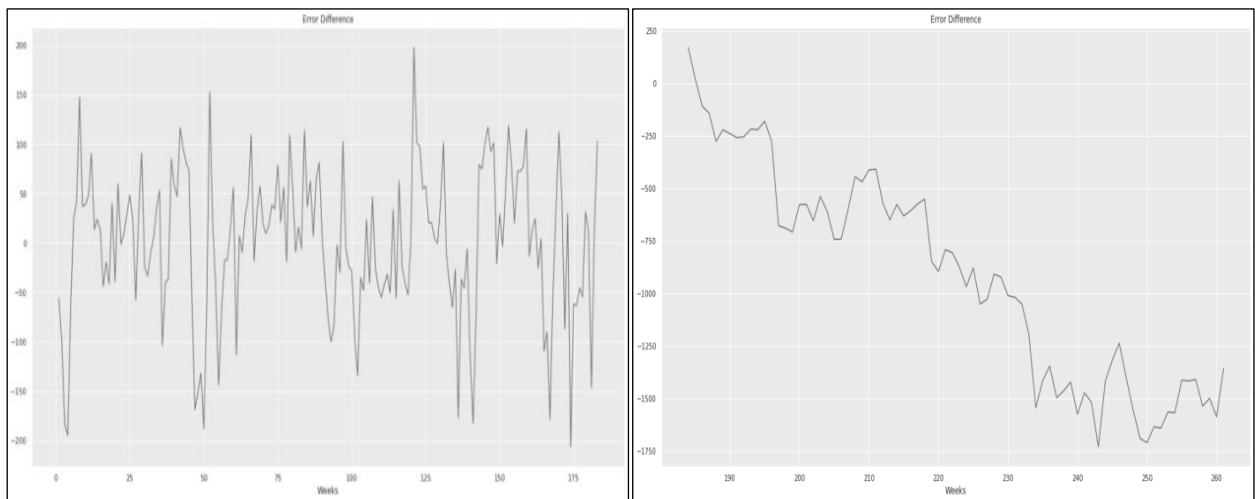
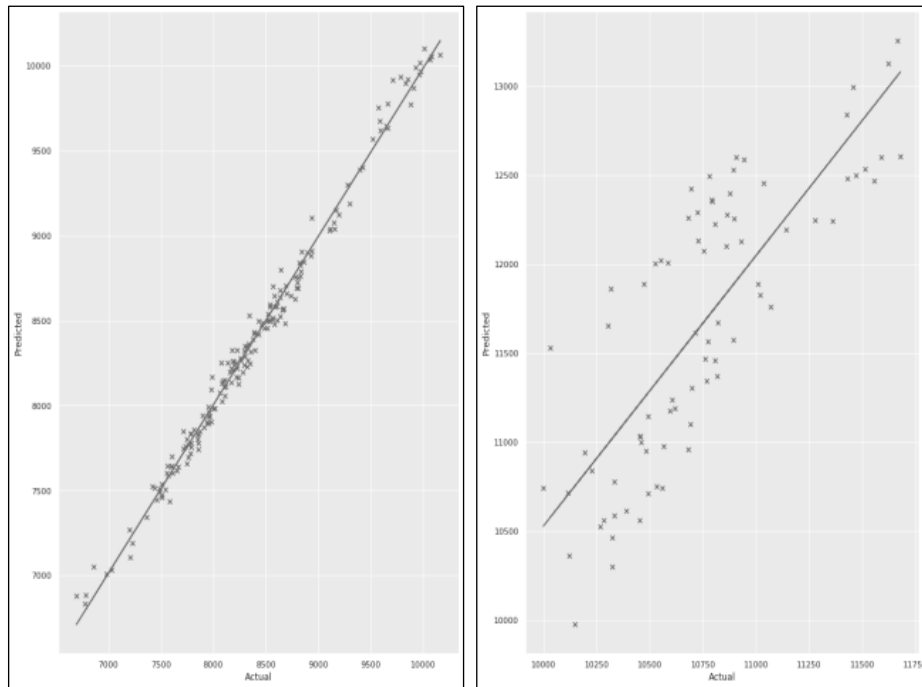


Figure 4: (a, b) (L-R) Regression: Actual and Predicted Nifty Index values in Testing Case



R for Training Data – 0.9948

R for Testing Data – 0.8043

Figure 5: (a, b) (L-R) Regression Scatter Plot

TABLE 1: A REGRESSION MODEL WITH INDEPENDENT VARIABLES: x_1, \dots, x_{26}

$$\begin{aligned} \hat{y} = & (5330.27) + (-533.84 * x_1 + 269.62 * x_2 + 77.45 * x_3 + 1351.88 * x_4 + 1658.89 * x_5 \\ & + 1726.96 * x_6 + 975.77 * x_7 + 740.01 * x_8 - 2117.05 * x_9 + 2305.67 \\ & * x_{10} - 199.33x_{11} + 224.36 * x_{12} + 382.67 * x_{13} + 61.08 * x_{14} - 8.54 * x_{15} \\ & + 928.50 * x_{16} + 8.36 * x_{17} + 488.24 * x_{18} - 30.27x_{19} + 153.38 * x_{20} \\ & + 291.87 * x_{21} + 342.27 * x_{22} + 211.32 * x_{23} + 38.22 * x_{24} + -408.74 * x_{25} \\ & + 0 * x_{26}) \end{aligned}$$

TABLE 2: LIST OF VARIABLES WITH p-VALUE

	Variables	Field	Constant	SE	Beta	t value	p value	R
	Constant		5,330.27					
<i>x1</i>	Nifty Open	<i>Index</i>		0.09	0.40	4.63	-	- 533.84
<i>x2</i>	Trading Volume			-	- 0.04	- 1.95	0.06	269.62
<i>x3</i>	ICIBK	<i>Companies</i>		1.08	0.10	2.68	0.01	77.45
<i>x4</i>	RELI			0.40	0.09	1.08	0.29	1,351.88
<i>x5</i>	HDFCB			1.07	0.19	1.01	0.32	1,658.89
<i>x6</i>	HDFC			0.47	0.13	1.10	0.28	1,726.92
<i>x7</i>	INFY			0.61	0.11	2.67	0.01	975.77
<i>x8</i>	USD/INR	<i>Currency</i>		-	0.36	0.10	0.92	740.01
<i>x9</i>	AED/INR			98.70	- 0.13	- 1.89	0.07	- 2,117.05
<i>x10</i>	GBP/INR			11.36	- 0.05	- 0.91	0.37	2,305.67
<i>x11</i>	Oil	<i>Commodities markets</i>		0.05	- 0.01	- 0.15	0.88	- 199.33
<i>x12</i>	Gold			0.53	- 0.01	- 0.41	0.69	224.36
<i>x13</i>	GILT	<i>Financial Market</i>		135.77	0.13	0.42	0.68	382.67
<i>x14</i>	Corp Bond (%)			180.80	0.03	0.35	0.72	61.08
<i>x15</i>	GDP	<i>Economy</i>		4,075.03	0.05	1.63	0.11	- 8.54
<i>x16</i>	IIP			886.87	0.01	0.67	0.51	928.50
<i>x17</i>	WPI			1,727.54	0.01	0.18	0.86	8.36
<i>x18</i>	FTSE	<i>Global Indices</i>		0.15	0.10	1.84	0.07	488.24
<i>X19</i>	Nikkei 225			0.04	0.01	0.16	0.88	- 30.27
<i>X20</i>	NYSE			0.14	- 0.01	- 0.10	0.92	153.38
<i>x21</i>	SSE			0.07	- 0.05	- 1.82	0.08	291.87
<i>x22</i>	SLR	<i>Banking</i>		6,963.26	- 0.01	- 0.17	0.87	342.27
<i>x23</i>	Repo Rate			7,636.93	- 0.01	- 0.31	0.76	211.32
<i>x24</i>	CRR			-	- 0.01	- 0.17	0.87	38.22
<i>x25</i>	Foreign Exchange Reserve (Rs. Cr)			0.00	0.01	0.10	0.92	- 408.74
<i>x26</i>	Demonetisation		<i>Outlier</i>		- 246.00	199.81	- 0.10	- 1.23

C. DESIGNED ANN MODEL

He proposed the structure of the MLP Network consists of three layers (input, hidden layer and output layer). The model has 26 nodes, which are connected to one hidden layer, which produced single node for the output layer. The Back Propagation (BP) algorithm is used to train the data set. Table IV is giving all the technical details applied for testing.

TABLE 3: THE SETTINGS FOR MLP

Epochs	5000
Number of Hidden Layer	1
Number of neurons in hidden layer	1000
Optimizer	Adam
Loss of data	MSE

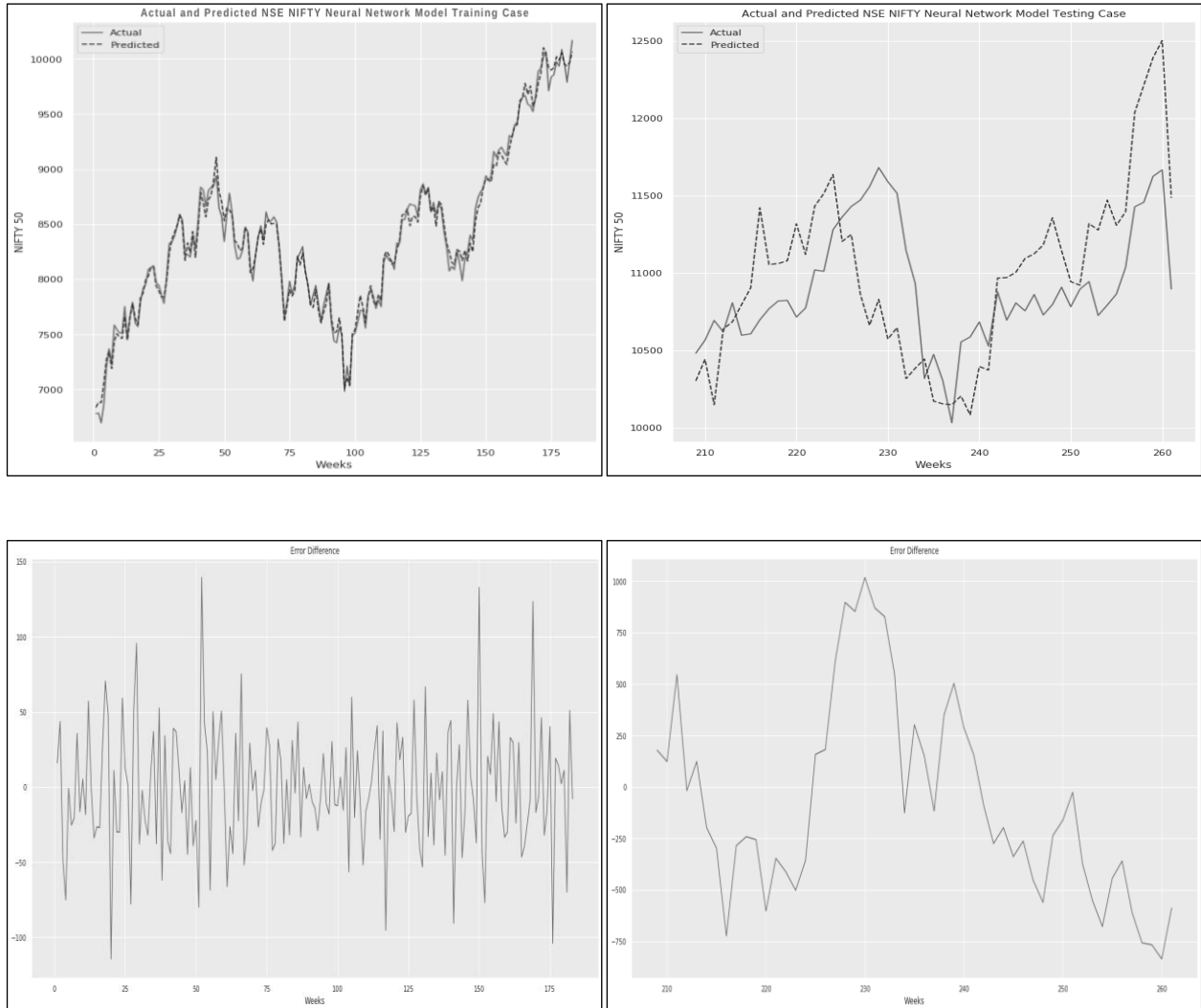
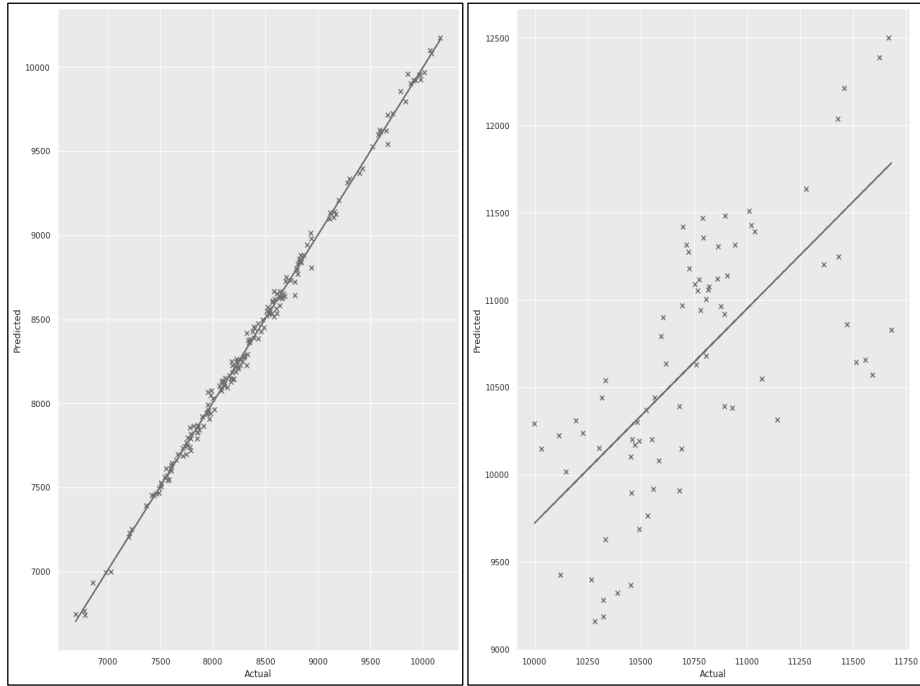


Figure 6: (a, b) (L-R) ANN - Actual and Predicted Nifty Index values in Training Case

Figure 7: (a, b) (L-R) ANN - Actual and Predicted Nifty Index values in Testing Case



R for Training Data – 0.9906

R for Testing Data – 0.7692

Figure 8: (a, b) (L-R) ANN – Scatter Plot

D. DESIGNED SVM MODEL

SVM is trained with RBF kernel to develop the Nifty index model. RBF function has the potential to plot non-linear function to ease implementation [7]. The values of C (*Width of Support Vector*) and σ have high affect the accuracy of the model. The top of the line results was achieved with $C = 10^{-4}$ and $\sigma = 0.01$. Figure 9 and 10 shows the training case and testing case with error of difference. Figure 11 shows the scatter plot with the coefficient of correlation (R).

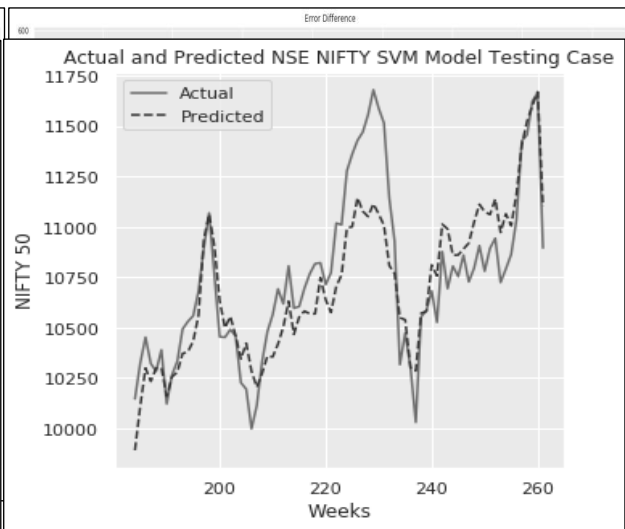
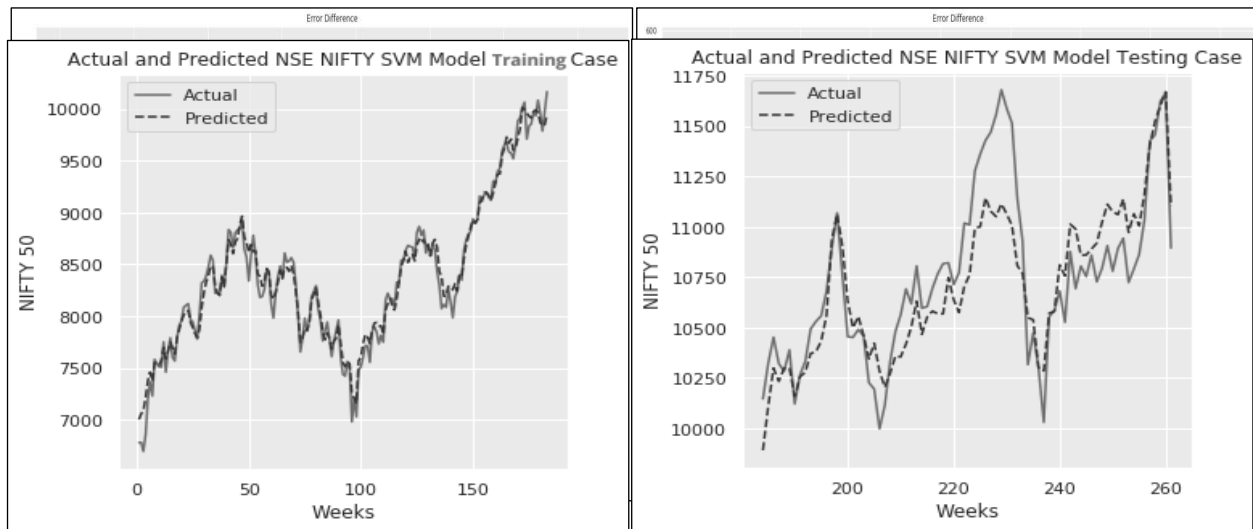
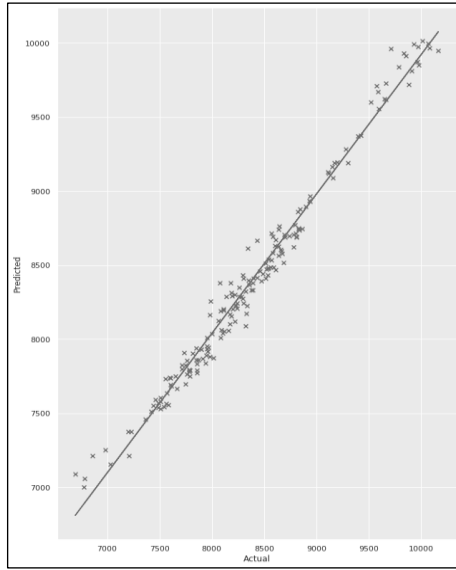
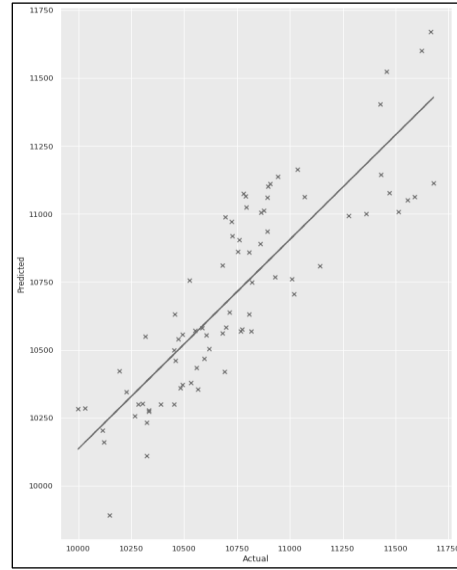


Figure 9: (a, b) (L-R) ANN - Actual and Predicted Nifty Index values in Training Case



R for Training Data – 0.9906



R for Testing Data – 0.8627

Figure 11: (a, b) (L-R) SVM – Scatter Plot

E. RESULTS & OUTCOME

The computed evaluation criterion of the regression, ANNs (MLP) and SVMs (RBF) model for training and testing cases are displayed in Table IV. Based on the outcomes it can be observed that SVM model outperformed between MLP and MLR class of models. SVM has the advantage of least loss of estimation between predicted and actual values. The second-best alternative is MLR, which outperformed MLP model in both accuracy and data loss with minimum value of 168.29.

TABLE 4: EVALUATION SCHEME FOR THE MODELS

Criteria	Regression Model		ANNs		SVMs	
	Trainin g	Testing	Trainin g	Testing	Trainin g	Testing
1. Coefficient of Correlation (R)	0.995	0.804	0.991	0.769	0.991	0.863
2. Coefficient of Correlation Square	0.990	-5.497	0.979	-11.980	0.973	0.736
3. Mean Absolute Error (MAE)	58.900	921.090	78.690	1,113.26 0	78.690	168.29 0
4. Root Mean Squared Error (RMSE)	74.829	1,047.08 0	106.450	1,479.93 0	106.45 0	211.13 0
5. Relative Absolute Error (RAE)	0.319	1.700	0.369	2.028	0.369	0.727

F. CONCLUSION AND FUTURE WORK

In this paper, we scrutinized and analysed data set on the different prediction models – Regression, ANNs and SVMs for the prediction of Nifty. Using these models, we produced Training and Testing results. Based on these results it is observed that these 26 features of economic and market movement significantly affect the market movement for the specified during the study.

The data was bundled on a weekly basis to mitigate any event loss. Between the generated models, SVM models outperformed in predicting the stock market movement with minimised loss of data function. All the results are verified using the evaluation criterion set.

For future work, there should be more focus on new and developing soft computing and machine learning techniques to forecast and build a more robust model that emphasise on increasing the accuracy even more.

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A Comprehensive Framework for Assessment of e-Government Services

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Abstract

Standardised approaches to assess e-Government services are rare in the prior literature. This study identified key themes of mature e-Governance following a meta-ethnography approach. The study findings suggests that online presence, facilitating interaction, integrated ecosystem, online payments, and participatory e-Democracy are key themes of a mature e-Government system. Subsequently, we developed an assessment framework using these themes. Furthermore, the framework is validated by assessing an Indian e-Government service. The framework may help practitioners in assessing e-Government services using a simple yet efficient framework, which may potentially emerge as a powerful tool for rating such services.

Keywords: Assessment Framework, BHIM app, E-Governance, Meta-ethnography, Online services, Service rating.

Impact of Co-creation in the practice of developing IoT solutions

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Abstract

Co-creation happens whenever companies interact with customers right from conception, design, customization, promotion or selling. Companies turn to co-creation to share resources, knowledge, risk and develop new solutions. This article studies co-creation in the context of the Internet of Things (IoT). In an IoT ecosystem, physical things are interconnected through the internet and interact to solve broad range of requirements. IoT offers immense potential by a number of use cases and requires coordination between various stakeholders. This article analyses the penetration of co-creation in IoT and of IoT companies' involvement in co-creation. The study analyzes secondary qualitative data consisting of literature, media interviews of IoT leaders and partner listing on company websites using “R” and google gvis utility. The article proposes that co-creation can be used to develop a portfolio of customers and solutions.

Keywords : Internet of things, Co-creation, Ecosystem, Open Innovation, Business, Innovation, network, platform

Introduction

Information technologies have drastically reduced the cost of coordination and this has led to the innovation ecosystem as a core element of growth strategies by firms in a wide range of Industries. Co-creation happens whenever companies interact with customers right from conception, design, customization, promotion or selling (Chen, Ou Yang & Leo, 2017). This has led to the importance of co-creation in the IoT ecosystem. IoT is a highly distributed system where devices are connected to themselves and to human beings via embedded systems, components of processing and connectivity (Woodside and Sood, 2017). IoT devices are communicating for various purposes such as sensing, communication and data collection.

IoT is opening up a large number of use cases, services, and value which were not imaginable earlier (Murray et al., 2016). IoT offers immense potential to virtually all sectors by enabling innovative applications to consumers, firms and governments. Existing literature discussed co-creation in general and its application in IoT but they have not analyzed penetration and level of involvement of IoT companies in co-creation.

This article will address the following objectives of understanding co-creation in the context of IoT.

- Understanding the involvement of IoT companies in practicing co-creation

To address the objective, we have undertaken two studies—first, literature review and word analysis of literature. Second, word analysis of media interviews of TOP IoT leaders across the world. We have analyzed the number of partners on the websites of various IoT companies. This would help to understand the actual practice of co-creation in developing solutions and reaching customers.

The article will lead to further research scope of qualitative interviews and quantitative analysis to address the research gap regarding the portfolio of solutions and portfolio of customers

Literature Background

Co-Creation

Marketplace now have a more significant interdependence and connectedness among the actors and value creation is increasingly taking place through networks and less dependent on the firm's value proposition (Prahalad & Ramaswamy, 2004). Co-creation allows creating values that no single firm can produce on their own (Adner, 2006). Co-creation helps companies to understand how customers experience their resources and integrate them. This experience helps in unique innovation and thus, competitive advantage (Lusch et al., 2007). As value is co-created with the customer, it is unique and determined by the customer (Gannage, 2014).

Co-creation leads to the expansion of organizational boundaries, so firms need to manage new and different relationships (Sawhney & Prandelli, 2000). A company can also reduce the risk while introducing a new product or service through co-creation process (Maklan, Knox & Ryals, 2008).

The stages of value co-creation and co-capture include research, technology, products, systems, and service (Iivari et al., 2016). Firms can enable developers to create products and services by coupling components together firm (Westerlund et al., 2014). This will also help the firm learn from market experiences in designing business models (Westerlund et al., 2014).

Importance of ecosystem in IoT implementation

IoT ecosystem depends heavily on external partners such as hardware providers, app developers, data analysts and other outsourcing partners (Dijkman, Sprenkels, Peeters & Janssen., 2015). The presence of external partners increases the complexity of IoT systems (Ikävalko et al., 2018). In IoT networks, economic value is generated through dynamic exchanges between companies, customers, and all other stakeholders, including society and users firm (Westerlund et al., 2014).

IoT is a system of systems. It consists of a platform of things, a community of people, and an ecosystem of economic actors (Muegge, 2013). Successful IoT implementations are not just about technological solutions, but also involves the intelligently coordinated innovation of products, services, and business models (Iivari, Ahokangas, Komi, Tihinen & Valtanen, 2016).

In IoT, a great business model can make use of mediocre technology better than mediocre business model make use of great technology (Chesbrough, 2010). IoT is driven by business models of ecosystems over the business model of a firm (Westerlund et al., 2014). Therefore, the business model is essential for IoT based products and services (Dijkman et al., 2015).

The larger companies are building innovation labs, incubators and setting up venture investments to cope up with start-ups as they have realized that they cannot keep up with this trend on their own (Hartmann & Halecker, 2015). The role of innovation labs, incubators, and venture investment has become crucial in speeding up business model creation and implementation.

Methodology

In consideration of the research objective one, an essential element of understanding penetration of co-creation in IoT is to understand what the existing literature discusses about co-creation in IoT. And complement the literature with the thoughts of IoT leaders.

Three studies were undertaken to understand the penetration of these parameters of co-creation in IoT. And we utilized “R” to qualitatively analyze the information available.

1. Analysis of Empirical Literature
2. Analysis of media Interviews of TOP IoT leaders
3. Analysis of Partners on the website of major Technology companies

The studies are explained below:

1. Analysis of Empirical Literature

To understand the penetration and motivation for co-creation and its associated terms in IoT, we analysed articles which discussed co-creation, open-innovation or ecosystem in IoT context. Total of 20 pieces of Literature was analysed. Literature was published from the year 2011 to 2019, but most of the Literature is from 2014 to 2019 only. This may explain that phenomenon of co-creation in the context of IoT is relatively new as most of the relevant Literature were relatively new.

We extracted the most frequently used keywords in the literature. This analysis was done using "R" on the literature chosen. From the analysis, we have generated most relevant codes shown below:

RANK	WORD	FREQ
1	Business	1550
2	Innovation	1136
3	Co-creation	643
5	Ecosystem	627
8	Services	488
10	Network	459
16	Platform	408

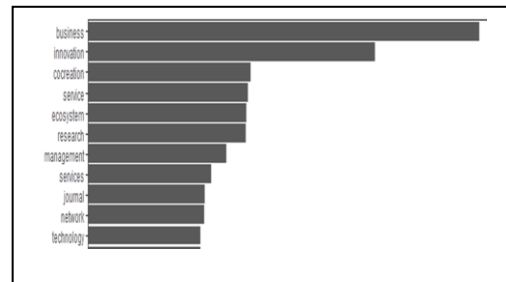


Table 1: Mostly used relevant co-creation words in IoT literature extracted using "R"

Once we finalized the codes, articles were utilized individually to validate the presence of the codes in those articles and searched for supporting documents. This analysis was done using “R” and google gvis utility.

The abridged result of the analysis is listed in the table below

Authors	Supporting arguments
Perks et al., 2012	<ul style="list-style-type: none"> ▪ Co-creation occurs in service innovation. ▪ Our study suggests that network actors need to show commitment.
Papert & Pflaum., 2017	<ul style="list-style-type: none"> ▪ Smart sub-ecosystem integrator firms develop a business model approach. ▪ Within an IoT ecosystem, the platform role acts as a broker, ▪

-
- | | |
|----------------------------------|---|
| Janteng & Tan., 2017 | <ul style="list-style-type: none"> ▪ It is crucial to understand how technical bonds of value co-creation line with innovation capability in organizations ▪ Value co-creation is crucial for the transformation of the relationship between firm |
| Leminen et al., 2018 | <ul style="list-style-type: none"> ▪ Evolutionary paths of new business model emergence: opening up the ecosystem for collaboration, replicating the solution in multiple services |
| Rong et al., 2015 | <ul style="list-style-type: none"> ▪ The relationship among partners in the business ecosystem is no longer that of supplier-customer ▪ The IoT-based business ecosystem is not just a supply network with connected items |
| Romero & Molina, 2011 | <ul style="list-style-type: none"> ▪ Value co-creation is the new trend in open-business |
| Lacerda et al., 2019 | <ul style="list-style-type: none"> ▪ A high-tech B2B market has three types of business relationships (supplier–customer mutual, supplier-centric and network-based business) |
| Dong-Hee & Yong, 2017 | <ul style="list-style-type: none"> ▪ Co-creation helps the industry and government to build a sustainable IoT ecosystem from the ground up, accounting for users, industry dynamics and context |
| Heim et al., 2018 | <ul style="list-style-type: none"> ▪ Intra-organizational relationships, and the differentiated network view, provide the basis for the development |
| Ikävalko et al., 2018 | <ul style="list-style-type: none"> ▪ Open standard enabled several paths for scalability and increased profitability through network externalities and access to new partners/customers |
| Hein et al., 2019. | <ul style="list-style-type: none"> ▪ To develop a scalable infrastructure that explains how platforms enable value co-creation within their ecosystem. |

The result of the analysis clearly establishes that existing literature gives a strong emphasis on the role of co-creation in developing IoT Innovation and network.

Media Interviews with Senior executive in IoT Companies

To understand the impact of co-creation and its role in the IoT organization, we gathered media interviews of senior executives and Managers of IoT companies. The interviews were published in various online magazines and news portals and publicly available on the internet. We assume these interviews as an authentic source of great information on those companies' viewpoints. We collected 43 key such interviews from various domains on IoT.

In the first stage, word frequency analysis of collected Interviews was done in "R". This was done to get the sense of most popular keywords that would reflect what is in the minds of IoT leaders. This exercise will also validate the findings of similar exercise using a literature review.

After the relevant nodes were identified the word tree for each node was made by embedding google gvis API in "R". This API will make the word tree picture on the website using the script loaded in "R".

Following is the summary of Keyword analysis from the word tree

Keywords	precedent phrases	Antecedent Phrases
Innovation	“Open Innovation”	“innovation service providers”, “innovation facilitator”, “innovation partners”
Partners	“together with partners”, “ecosystem partners”	"partners collaborating."
Companies	“more collaborative companies”, "collaboration with more start-ups”	“companies called open innovation” "companies looking to connect"
Ecosystem	“IoT ecosystem”	“ecosystem partners”
Community	“development community”, “R&D community”	
Collaboration	“innovation collaboration”, “value of collaboration”	“collaboration potential”, “collaboration across stakeholders”, “collaboration of Industry”.

It was evident from these interviews that IoT companies look forward to co-creation, collaboration, and open innovation as the engine of growth for their IoT business. They expressed strong willingness and need to work together to develop solutions to enhance their value,

Understanding the involvement of iot companies in practicing co-creation

Companies in the IoT domain develop solutions with the help of other companies who are mid-size companies and start-ups in most of the cases. Then they bring those solutions to their broader customer base. They do so by listing the partner companies and their solutions on their website and other communication media. We have used the information to understand the practice of co-creation in IoT companies. Partners program is a crucial indicator of co-creation in IoT

Data Collection

We explored the websites of major players in the technology domain and identified their partners' listing on their website. The definition of partners may vary across companies, and the listing is also dynamic, but the analysis will give us a holistic view.

Type of Solution	Company	Type of company	Corporate Location	No. of Partners
Cloud	IBM	established	USA	9811
Cloud	AWS	established	USA	8316
Cloud	Alibaba	Start-up	China	109
Device maker	Honeywell	established	USA	4
Device maker	LG	established	Korea	0
Device maker	Samsung	established	Korea	0
Device maker	Xiaomi	Start-up	China	144
Devices, Cloud	Apple	established	USA	75
Embedded design	ARM mBED	established	UK	76
Enterprise software	Oracle	established	USA	1850
Enterprise software	SAP	established	Germany	4758

Network	LoRa Alliance	Start-up	France	577
Network	Sigfox	Start-up	France	696
Network	Airtel	established	India	0
Network	Vodafone	established	UK	97
Network devices	HP Enterprise	established	USA	70
Semiconductor	STMicroelectronics	established	Switzerland	221
Semiconductor	Texas Instruments	established	USA	369
Semiconductor	NXP	established	Netherland	280
System Integrator	Hitachi Vintara	established	Japan	39
System Integrator	Huawei	established	China	140

Table 1: Analysis of Partners on the website of major Technology companies

Data and Results

- a) **Cloud and Enterprise software companies have a large number of partners.** Cloud and Enterprise companies need several unique devices to connect to their platform, so they need partners who develop unique solutions to make their solution more attractive to end customers.
- b) **The partner ecosystem is prevalent in the Americas and Europe:** Most of the Cloud and embedded software companies originate from the Americas and Europe, and so co-creation is commonplace in those regions.
- c) **Asia is yet to adopt co-creation in a significant way:** Asian companies still do the business in traditional methods and try to develop the whole solution in-house.
- d) **Start-up companies have adopted co-creation in a big way:** Start-up companies lack internal resources and aim to reach the scale in no time. The possibility to enroll co-creation partners helps them increase the attractiveness of their platform and attract more end customers.

Conclusion

As initially planned, we undertook a qualitative study of literature and secondary data to address our objective. Analysis of empirical literature highlight keywords such as Business, Innovation, Co-creation, Ecosystem, Network, Platform and Customers. Study of media interview of IoT leaders highlighted keywords such as Innovation, Partners, Companies, Ecosystem, Community and Collaboration. Media Interview also confirmed findings of literature review. The words are synonymous and put a strong emphasis on the need and importance of co-creation in this area.

We also analyzed the actual practice of Co-creation by analysing the Partner listing on IoT Companies website. We identified that Co-creation is practiced by many IoT companies. It is more prevalent in Europe and USA. Startups companies have adopted co-creation in a big way.

A company may develop a portfolio of customers not only on direct business expectation and geographical reach but also to develop solutions for a broader customer base. It can set different expectations from a different set of customers. Every customer will not give the same level of business or commitment to the company.

Co-creation can help to bring solutions customized to a wide range of use-cases. Companies may enable a basic solution and allows customers to co-create solutions. The co-created solutions become part of solutions that companies can offer to other customers. In this way, they can make the solution attractive.

We also feel the need to analyze further if companies can create a positive force for themselves among the customer community once they have started co-creating projects with a bunch of customers. As co-creation is emerging a strategic tool in IoT space, it should be researched how many companies use co-creation as a strategic tool to align key performance indicators of their manager to the extent of successful co-creation executed by them.

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Product Differentiation Dominance in an Oligopolistic Market: A Bibliometric Study

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Abstract

Oligopoly as a form of market is making a comeback through the emerging markets of Online Connectivity and Communication which is making the research related to Oligopoly more-and-more relevant. The main aim of this paper, through Bibliometric Analysis, is to guide researchers and market players who are willing to explore the area of Oligopoly so that they know what is the trend in the research, which journals, countries, keywords and authors to refer when studying this concept and which are the key areas that have been researched thoroughly. The tools used for our Bibliometric Analysis are VosViewer and Citespace. The findings will work as a roadmap for future research by illustrating the evolution of research over time, areas of research interests and potential future directions.

Keywords– Oligopoly, competition, bibliometric analysis, price war, product differentiation, cournot model, bertrand model, trend analysis, citespace analysis, VOSviewer, citation analysis

INTRODUCTION: *A new era of Oligopoly is emerging in the market such as mobile and computer operating systems and cellular networks which makes the functioning of the Oligopoly market a relevant field of research in the coming years. The way in which business is conducted in an Oligopoly is unorthodox as the suppliers have more power than the market and can change the whole market set-up with their single decision. Crude and gas industry was once known as the most valuable market because all the other markets were dependent on it. The connectivity industry is the new crude and gas industry. While crude and gas have been an oligopoly from ages, all the markets under the connectivity industry are trying to be one. Substantial research in the domain of Oligopoly has been done in the past but new scopes are emerging to analyse how the new oligopolies function. Our research has identified 1290 research papers published in the last decade, from 2011 to 2020. The focus of this research is to do bibliometric analysis of the research papers identified to map the trends and key areas related to Oligopoly and Product Differentiation and strengthen the research in the domain of Oligopoly.*

This paper can be used as fertile soil for any crop that a researcher wants to grow in the field of Oligopoly. It is a single-window from which the researchers and practitioners can extract all the significant information related to Oligopoly and production and service differentiation to support their research or use it in their field of practice.

REASON FOR STUDY: *The purpose of the Bibliometric Analysis is to trace out the growth and development of Product and Service Differentiation in an Oligopoly market. The analysis was also intended to draw inferences about the collaboration among authors, references, countries and keywords. This paper also led to significant importance in computing high-yield authorship, countries, keywords and references and the nature of relationship between the cluster and the yield generated. This paper also intends to analyze the intention behind the*

research papers and articles that are published and to find out whether there has been any shift in the intent throughout the course of research.

RESEARCH METHODOLOGY: For the purpose of Bibliometric Analysis, Citespace, a Co-citation Analytical tool and VOS Viewer, a Bibliometric Network visualization tool have been utilized.

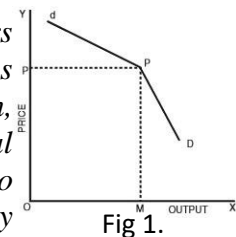
A. Citespace: Co-citation Analysis was performed on 1274 open access papers dated between 2011- 2020(10 years) indexed in scopus database referring to Product and Service Differentiation in an Oligopoly market. In order to assess the growth of research in the mentioned period; data on pattern of literature growth, authorship pattern, linkage of references, number of references cited in the articles, frequency of keywords usage and geographical contributions were computed. After importing the WOS file of the data, a detailed analysis on the Clusters associated with the Country, Author, Keywords and References were computed. Further, the visual clusters and narratives generated for each of the clusters and their combinations were analyzed.

B. VOS Viewer: In order to analyze the Bibliometric Network using a VOS viewer, CSV file of 1274 research papers were imported in VOS Viewer. For the purpose of analysis two criterions were considered-

1. Bibliographic Coupling: The Bibliographic Coupling was computed on the bibliographic information about the Journals, authors, documents, keywords and the source country of the research papers. The purpose of performing a Bibliographic coupling was to find the papers of which Journals, Authors and Articles were cited the most. It also shows which country's papers contributed most to the study on the topic of Research.

2. Co-occurrence Analysis: The purpose of running a Co-occurrence Analysis was to ascertain which keywords and research papers were cited for the most number of times. This helps in understanding the Theme of the articles and serves the purpose of running a Thematic Analysis on the research papers.

LITERATURE REVIEW: Oligopoly Market is one where few producers cater to the demand of many buyers (Livesey, 1998). The firms use variations of Cournot and Bertrand Model in the oligopoly market (Judd & Institution, n.d.). Cartels are formed when firms catering to the demand of identical markets decide the price at which they will sell a particular product to maximize the total profit (Stigler, 1964). The firms compete on price. They usually set the price closer to the marginal cost of the product so as to earn maximum market share. When the firms form collusion, it will not matter whether they set prices close to marginal cost because the customers will not shift to another seller (Bresnahan, 1987). The Kinked demand curve demand curve of firms in oligopoly market is shown by Fig 1. Product differentiation in the oligopoly market shows how firms' product type decisions and how competitors react depending on the product types (Mazzeo, 2002). Consumer preferences change among the differentiated products, as the consumer preferences increases, the equilibrium prices rises (Perloff & Salop, 1985). As the player becomes more homogeneous, hike of average cost adds pressure and thus, leads to price fluctuation (Singh & Ru, 2019). When competition becomes intense, the cost of research and development rises (Theilen, 2012). Bibliometric is the application of mathematical and statistical methods. Bibliometrics is an important field of information science as it represents a unique set of techniques (Patra et al., 2006). Bibliometrics can be defined as the quantitative study that measures research relating to the number of publications, bibliographic citations, references of the paper, etc. in a systematic



manner. (Broadus, 2005). Stages of Bibliometric Analysis: Sample selection and citation analysis which helps in profiling the literature. Document co-citation analysis which helps in identifying sub domains in the research area. Text analysis helps to understand shift in the literature and identify future research directions (Kumar et al., 2020). Bibliometric analysis is a widely applied method for evaluation which acts as a key indicator to give valuable insights that build up the contribution of study that the scholar tries to pursue for producing meaningful studies. Thus, as a partial indicator of overall R&D output it is a useful tool (Hicks & Melkers, 2012).

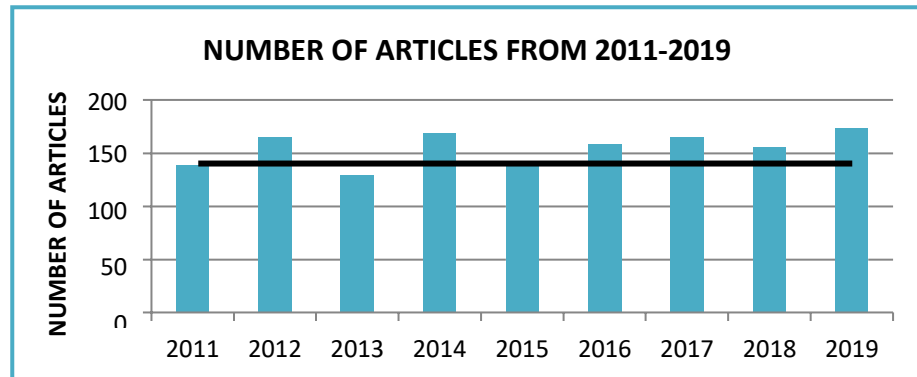
TREND ANALYSIS

Journals	Number of Articles	Percentage of total articles
International journal of industrial organization	29	2.01%
Journal of economics	25	1.73%
Energy economics	18	1.25%
Economic Modelling	17	1.18%
European journal of operational research	15	1.04%
Review of industrial organization	14	0.97%
European economic review	13	0.90%
Economics letters	12	0.83%
Journal of economic behavior and organization	12	0.83%
Journal of economic dynamics and control	11	0.76%
Energy policy	11	0.76%

After a detailed analysis of 750 journals, we found that there are total 11 journals with 11 or more articles published on our research theme (Table 1). From 2011 to 2020, there are 29 articles published in the International

Table 1. Journals having more than 11 articles on the research topic.

Journal of Industrial Organization which forms 2.01% of total articles published. The *Journal of Economics* has 25 articles published in the given timeline which forms 1.73% of the total articles published.



Graph 1. Number of articles published from years 2011-March 2020.

Over the years, the maximum number of articles were published in 2019 i.e. 12.06% of the total articles

published, which shows that the research on the topic has increased in the recent years. The rate of publication was high during 2014, i.e. 11.71% of total articles published, whereas it was low in the year 2013, i.e. 8.94% of total articles published. As we can see in (Graph 1), the number of articles published on the research topic have been fluctuating from 2011- 2020, but an upward trend has been observed which is shown using a linear trend line from the years 2011-2019. We can therefore say that the research on the topic is increasing and it justifies the need for the analysis.

ANALYSIS OF JOURNALS

The International Journal of Industrial Organization has a maximum percentage of total articles published. In order to check the importance of the journal in terms of number of citations, citation analysis using bibliographic coupling function of VOS viewer is conducted which links the documents that provide the same set of cited documents (Fig. 2). It identifies the importance of the journal in terms of citations of its articles and it provides details of journals which are closely related by co-citation. In

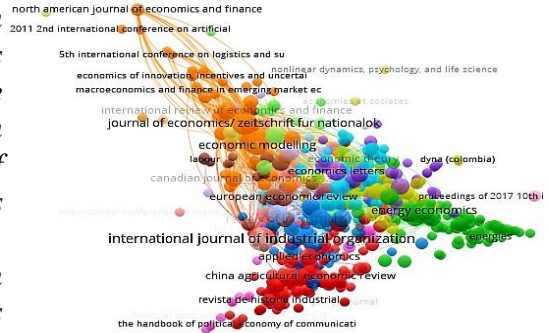


Fig 2: Bibliographic coupling based on the total journals

Source	Documents	Citations	Total link strength
journal of economics/ zeitschrift fu...	25	240	5020
economic modelling	17	328	3384
international journal of industrial o...	29	129	2401
manchester school	10	52	2185
international review of economics ...	10	84	1656
european journal of operational res...	15	119	1625
bulletin of economic research	10	29	1608
energy economics	18	235	1513
european economic review	13	116	1270
b.e. journal of economic analysis a...	10	19	1249
journal of economic dynamics and...	11	82	1215
journal of economic surveys	4	46	1214
journal of economic behavior and ...	12	79	1173
b.e. journal of theoretical economics	6	1	1111
journal of public economic theory	6	34	1084
journal of industrial economics	9	55	1071
an economic theory of managerial ...	1	7	1068
australian economic papers	6	10	1047
revue d'economie politique	5	2	1017
management science	10	222	997

Table 2: Total link strength of the journals.

the figure the size of the circle shows the importance of the journal. We can observe that the International Journal of Industrial Organization is the most important journal followed by the Journal of Economics. The colors of the circles indicate the journal clusters. There are a total nineteen clusters in the figure.

The distance between the circles show the outcomes of the journals which are cited in the same paper. In order to understand the analysis in a better manner, we conducted the bibliographic coupling on the journals that have more than 11 articles published and have more than 35 citations. Fig. 3 shows that the International journal of Industrial Organization is the most important followed by the Journal of Economics as the size of the circle is big. The three clusters in the figure show that the journals in those respective clusters are related to each other. This means that the articles of the International Journal of Industrial Organization and the Journal of Economics are cited frequently in other articles. The articles of Journal of Economics and the Economic Modelling are cited in the same set of articles frequently. In table 2, we can see that the total link strength of Journal of Economics and the Journal of Economic Modelling is maximum which shows that there are highest number of citations of these journals.

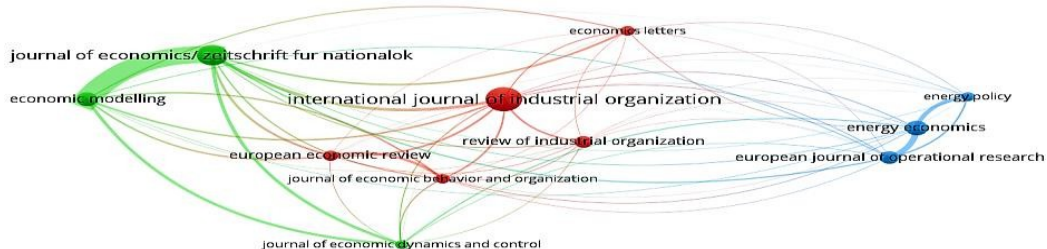


Fig 3: Journals having more than 11 articles and has more than 35 citations on the topic.

ANALYSIS OF AUTHORS

We have conducted analysis to find the links between the documents published by the authors. There are a total 2493 authors among 1274 papers published. Fig. 4. shows the bibliographic coupling of the authors in terms of documents and citations. There are total 38 clusters in Fig 4., which shows the citations shared by the articles of these authors. The size of the circle represented by the author Matsumura. T

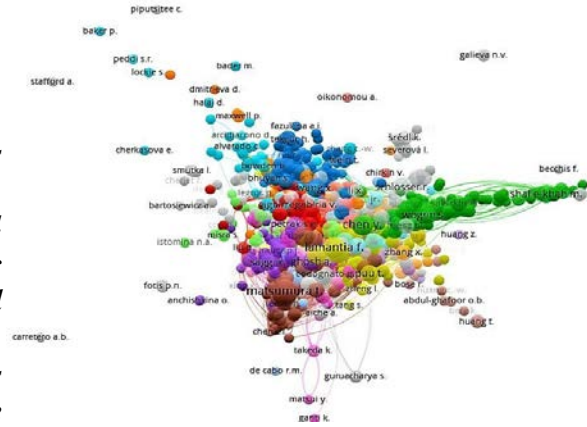


Fig 4: Bibliographic coupling of the authors in terms of shared articles and citations.

Author	Documents	Citations	Total link strength
matsumura t.	16	321	1747
wang l.f.s.	12	89	1208
cato s.	5	91	830
kopel m.	6	155	647
lee j.-y.	5	44	605
lambertini l.	9	92	556
lamantia f.	10	127	543
matsushima n.	7	121	411
marini m.a.	6	35	337
fanti l.	7	50	182
ma j.	10	84	114
sircar r.	5	46	89
chen y.	9	83	82
wogrin s.	6	106	25
shafie-khah m.	6	80	2

is the biggest which shows that the author has maximum documents and citations (Table 3: 16 documents and 321 citations). The total link strength is also highest in case of Matsumura. T which

Table 3: Total number of shared documents, citations and total link strength of the authors

shows that the articles of the author are shared and cited the highest amongst all other authors.

The top- ranked item by citation counts is T MATSUMURA with citation counts of 12. The second-ranked is F LAMANTIA with citation counts of 7. The third-ranked is A GHOSH with citation counts of 6. The fourth-ranked is JMA with citation counts of 6. The fifth-ranked is LFS WANG with citation counts of 5. These are the most cited authors in the field of oligopoly and citing them in any research paper will increase its reliability. Studying the papers of these authors will provide extensive knowledge about Oligopoly and bring more clarity and better understanding of the market.

ANALYSIS OF DOCUMENTS/ARTICLES

We have conducted Bibliographic Coupling in VOSviewer to find the shared citations in the 1290 articles used for research. 1274 articles out of 1290 articles that have been cited at least once in other articles. In total, there were 477 clusters found in 1274 articles. We also found that (Lambertini, 2017) [An Economic

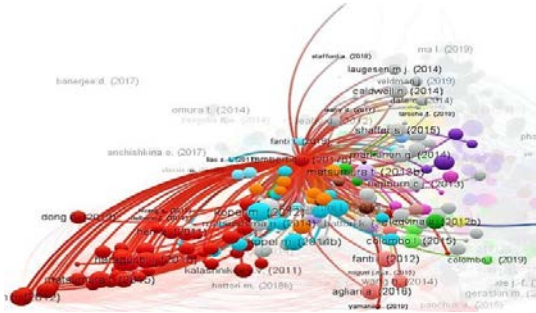


Fig. 5: Figure showing the links of (Lambertini, 2017) [Links: 353, Total link strength: 1068, Citations: 7]

Document	Citations	Total link strength
lambertini l. (2017b)	7	1068
lee s.-h. (2018)	19	643
correia-da-silva j. (2018)	4	585
tabacco g.a. (2016)	0	554
sato s. (2019)	10	549
tremblay c.h. (2019)	1	507
ghosh a. (2015)	9	498
wang l.f.s. (2011)	30	491
haraguchi j. (2016)	41	489
yang y.-p. (2014)	0	483
encaoua d. (2015)	2	481
lin m.h. (2012)	54	468
haraguchi j. (2018)	4	463
sato s. (2015)	21	462
matsumura t. (2015)	44	437
tudenberg d. (2015)	1	425
weyl e.g. (2013)	142	423
matsumura t. (2017)	1	413
xu l. (2017)	15	398
behzad b. (2015)	4	396

Table 4: Table showing the total citations as per the link strength of the articles

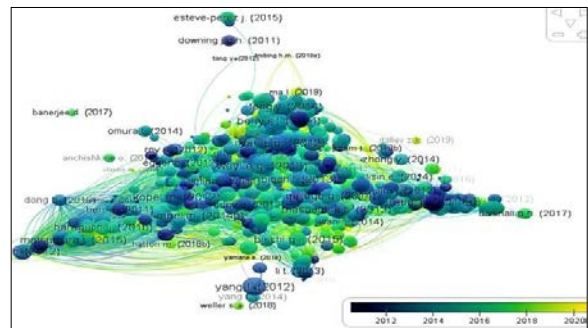


Fig 6: The timeline of articles being published.

Theory of Managerial Firms : Strategic Delegation in Oligopoly] has most of the shared citations as its total link strength is maximum amongst all other articles (table 4). The shared links of (Lambertini, 2017) are shown in Fig. 5, where we can see that the articles where it has been cited are only 7 out of total 1290, but it has the highest shared citations with other articles. It means using it for research is equivalent to using all its shared articles. Fig. 6. shows the timeline of the publication of the articles on the research topic. We can observe that most of the articles with highest shared citations are published between 2012-2014.

ANALYSIS OF KEYWORDS

We have done Co-occurrence analysis on keywords used in 1290 articles using VOSviewer. There are a total 5664 keywords used in 1290 articles relating to the topic. We have selected the keywords which are repeated for more than 30 times in these articles. As shown in Fig. 7, keywords like oligopoly and competition are used more as they have big circle sizes. We can also see words like cournot oligopoly, product differentiation, price dynamics being used which show us that these words are related to each other and have been used in the articles. Here we can also in table 5 that words like price dynamics, product

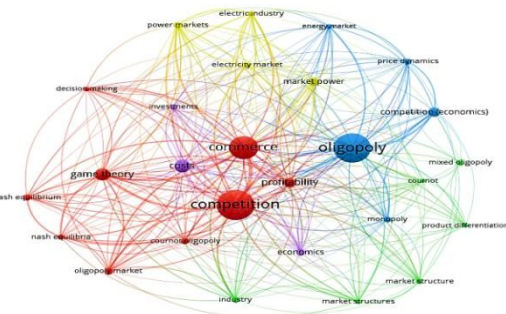


Fig. 7: Network Visualization of Co-Occurrence Analysis of Keywords which are used for more than 30 times in the articles.

differentiation and cournot model are used which shows that they have some kind of dominant impact in the oligopoly market. Also we can observe that there are keywords like game theory and Nash equilibrium used in the papers which show that in future if any research is conducted on the topic, these keywords can be used as methods or base for the research. The top-ranked item by citation counts is ‘Oligopoly’ with citation counts of 448. The second one is ‘competition’ with citation counts of 431. The third is ‘commerce’ with citation counts of 289. The fourth is ‘cost’ with citation counts of 129. The fifth is ‘game theory’ with citation counts of 113. These are the core areas around which most of the

Keyword	Occurrences	Total link strength
oligopoly market	57	215
economics	58	198
electric industry	37	193
competition (economics)	85	190
market power	74	190
investments	45	183
nash equilibria	41	181
electricity market	43	179
nash equilibrium	51	167
industry	46	159
price dynamics	45	141
energy market	31	131
market structures	33	120
monopoly	46	114
cournot oligopoly	49	112
decision making	32	98
market structure	41	88
cournot	30	68
product differentiation	30	46
mixed oligopoly	45	16

Table: 5 Total link strength and occurrences of keywords

research is done in the field of Oligopoly. The role of product and service differentiation in Oligopoly markets is a less attended area which shows that the research fraternity believes cost-cutting and price war are the primary tools for an oligopoly player.

ANALYSIS OF COUNTRIES

We have used Bibliographic Coupling in VOSviewer to analyze the research conducted in different countries on the topic. Fig. 8 shows the density visualization of total 85 countries from which total 1290 articles have been selected. From the figure we can see that countries like the United States, United Kingdom and China are major places from where the articles have been published. We can also see the groups of the countries whose articles are linked with either other i.e. they are co-cited in the articles. Table 6 shows the number of documents and the citations from each country as well as the total link strength. We found that the United States has the highest written and cited documents amongst all the countries. The top-ranked country

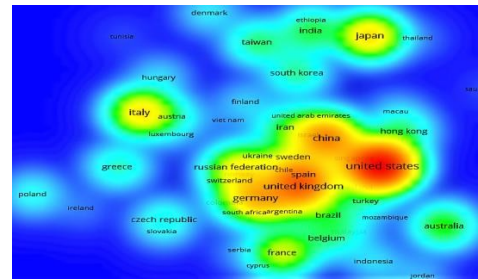


Fig. 8: Density Visualization of the bibliographic analysis of Countries and the groups of countries

Country	Documents	Citations	Total link strength
united states	322	2416	30318
united kingdom	132	699	19160
japan	105	730	15705
italy	96	668	15105
china	167	553	14610
germany	117	796	14561
canada	70	504	8722
france	68	221	8115
netherlands	44	297	6781
spain	66	410	6715
taiwan	33	153	5690
australia	48	286	5489
russian federation	59	189	4176
south korea	29	110	4025
belgium	21	83	3460
austria	17	207	2907
portugal	25	159	2661
hong kong	28	299	2660
greece	26	97	2644
sweden	19	42	2630

Table 6: Documents, Citations and total link strength of the countries

Reference Analysis: The cluster analysis showcased 4 major clusters. "Bertrand Model" was the largest cluster of all and was referred to in 29 papers. MH (2012) Presence of foreign investors in privatized firms and privatization policy was the most active citer. Thus, it can be deduced that the direction of research is more skewed towards the "Bertrand Model" and less towards the generic terms of Product Differentiation and Oligopoly Market.

CONCLUSION

The purpose of this study was to bring significant research done for product and service differentiation in oligopoly and its impact on pricing decisions between 2011 to 2020 under one roof. We conducted the research through bibliometric analysis and text mining. This paper has four major offerings. First, it outlines major authors, countries, keywords and references that our research represents. It can work as a database for the researchers willing to dig further in the field of Oligopoly. Second, the analysis shows other domains that are connected to oligopoly along with the strength of their association showing all the perspectives through which the field of oligopoly can be assessed. Third, it works as a map for the seekers of information related to oligopoly. The analysis provides major literature, authors and journals that can be considered reliable for research on product and service differentiation in oligopoly and its impact on pricing decisions. Finally, it imparts the trend analysis by indicating the major areas on which the research is happening and are getting more relevant in the field of oligopoly. This paper will help companies to know the trend of oligopoly in the upcoming years in different domains. It will serve as a research tool to help them identify the scope and extent of a particular domain in the wide field of oligopolistic market. They will be able to select Bertrand or Cournot pricing model in a product or service differentiated oligopoly-market.

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ICT Adoption and Insurance uptake in India

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Abstract

This study analyzes whether ICT adoption is related to improved insurance uptake at the household level in India. Using the Indian Human Development Survey- 2011-12 (IHDS-2) we find that access to the internet is related to higher insurance uptake by the households. Internet access generates twin benefits of improving awareness related to the benefits of insurance products and help in reducing transaction costs for the insurers. The study highlights the role of ICT in improving development outcomes in India. Further, we find that the access to internet increase the insurance uptake of urban households more than rural households. Finally, we find that the ICT adoption not only affects the insurance uptake decision but also the quantity purchase of the insurance as well.

Keywords: Insurance, ICT, internet, India, Premium, households

JEL classification codes: G52, O16, O53, R22

1. Introduction

Insurance is a risk management product that can reduce vulnerability of households from health, weather and income shocks especially in developing economies. Given the backdrop of less than fully developed capital markets and under-developed social security system, insurance products can play a dual role of reducing impact of major events on households as well as long term savings instrument. Several empirical studies have found that more years of schooling are related to higher consumption of insurance (Arun et. al., 2012; Shi et. al., 2015). Higher education is related to a better understanding of complex products, and education is also related to improved financial awareness regarding the need to insure uncertain life events.

In the digital era, the adoption of information and communication technology (ICT) can act as a channel of information dissemination. Several papers have analyzed the role of ICT for improving welfare outcomes of households such as income diversification (Leng et al., 2020), access to credit (Pellegrina et al., 2017); women empowerment (Pei and Chib, 2020) and nutrition (Sekabira and Qaim, 2017). In this study, we examine whether the adoption of ICT is related to insurance uptake in India. To the best of our knowledge, no study in India has analyzed the role of ICT adoption on insurance demand using nationally representative household data.

In 2018, the penetration of insurance in India was less than 4%, which is well below the average of 8.9% for the OECD countries (Source: OECD Statistics). Since the launch of the PMJDY (2014), the ownership of accounts among households has increased manifold, but insurance penetration did not exhibit any significant improvement. Despite supply-side interventions, insurance penetration is well below desirable levels.

One plausible reason contributing to low insurance penetration in developing economies like India is the fairly complex nature of insurance instruments. In the digital era, the adoption of information and communication technology (ICT) can act as a channel of information dissemination. The access to ICT can help in reducing search costs; improve product related awareness among consumers through internet marketing initiatives of the insurance companies and circulation of awareness videos by regulators. Further, access to internet can reduce the shoe-leather costs associated with visiting the nearest office for paying regular premiums. In this study we intend to analyze whether adoption of ICT is related to insurance uptake in India. To the best

of our knowledge no studies in India have analyzed the role of ICT adoption on insurance demand using nationally representative household data.

This study contributes to two specific strands of literature. First, we contribute to the literature on the role of ICT for development. Second, there is a large body of literature that has examined the macro factors that affect insurance penetration focused like per capita income, financial development, institutional quality, inflation, life expectancy and dependency ratio (Outreville, 1996). This study contributes to the emerging field of studies analyzing the micro determinants of insurance in the context of developing economies.

The access to internet is crucial for access to digital awareness campaigns and improving the understanding of benefits related to complex financial products like insurance. Furthermore, access to internet also reduces the costs of buying insurance as the regular premium payments can be paid digitally.

2. Data and methodology

The data for the analysis is based on the second round of household survey conducted by Indian Human Development Survey during 2011-12 (IHDS-2). It is a nationally representative survey of 42,152 households (14,573 urban households and 27,580 rural households) covering 34 states and union territories in India. This survey is conducted by the National Council of Applied Economic Research (NCAER) and in collaboration with the University of Maryland. IHDS-2 provides data regarding the socio-economic characteristics of the households.

The dependent variable in our analysis is *Insurance* dummy that takes the value of one for households owning either life or health insurance and zero otherwise. The interest variable is ICT adoption which is captured access to internet. The ICT measure is given by *Internet* dummy which takes the value one for the household having access to internet connection and zero otherwise. The measure of ICT adoption will capture all the channels through which ICT adoption can affect insurance uptake. Additionally, we control the socio-economic and demographic characteristics of the households like, life events, income shock, number of dependents, ownership of farm land, educational status, debt, asset ownership, age, expenditure, sex of household head, occupation, social network, caste, religion and area of residence.

The *ICT* measure in the above specification may not be exogenous. There may be factors like innate ability or motivation of the household that can affect ICT adoption. The households having members with a higher innate ability or motivation are more likely to adopt ICT and may be better placed to understand the benefits related to insurance.

The identification variable employed in the first stage should be a variable that is highly correlated with the *ICT* measures, but unrelated to the dependent variable. We expect that the PSU level internet connections will positively affect the ICT adoption of a household through peer effect.

3. Results

In our sample, only 36 percent of the households have insurance, and 1.3 percent of total expenditure is spent on paying insurance premium. Around 19 percent households have an internet connection at home. We find that 60 percent of the households that have either *Internet* access have insurance. However, the ICT adopters are socially more connected, have more educated adult members, have lower indebtedness, and belong to higher asset quintiles.

We employ a treatment effect model to address this endogeneity and consider *PSU-Internet* (internet access at PSU level) as identification variables. The coefficients of *PSU-Internet* is positive and significant (columns 3 and 5 of Table 1) indicating that higher values of *PSU-Internet* is likely to have a positive spillover effect on the *Internet* access and at household level respectively either by the virtue of availability or peer effect. The probit model second stage of

both the IV probit and bivariate model suggest the coefficient of *Internet* is positive and significant which indicates a positive effect of access to *Internet* on *Insurance* uptake at the household level (columns 1,2 and 4).

In addition to the ICT adoption variable, we find larger social connection is not related to reaping the benefit of internet for higher insurance uptake. We find that that similar to the findings in literature households, with more expenditure, asset endowments, higher kids ratio, and higher educational attainment have higher probability of buying insurance(Arun et al., 2012). Additionally, families having regular income increase the likelihood of purchasing insurance. It is observed that Muslim and Christian households are less likely to have insurance compared to Hindu households.

4. ICT adoption and insurance premium

We analyze if the adoption of ICT improves the financial education of households and affects the consumption of insurance by households. We employ an instrumental variable tobit model and IV-Tobit where the dependent variable is *Premium* defined as the ratio of premium expenditure to household expenditure. Table 2 represents the result of IV-Tobit model on regressing *Premium* on *Internet* and other variables. We consider *PSU-Internet* access as the instruments to tackle the issue of endogeneity of *ICT* measure. Consumption of insurance is unlikely to be affected by the internet penetration, satisfying the instrument exogeneity condition. Table 2 suggests that there is positive and significant relationship between accesses to *Internet* with the quantity of insurance purchased by the household.

5. Conclusion:

Our study considers whether the adoption of ICT can improve insurance uptake in India by improving the financial awareness of the households. Using a treatment effects model, we find that households having an internet connection are more likely to participate in the insurance market. The results provide evidence in favor of the positive spillover effects of technology on development outcomes. The insurance companies and financial intermediaries should also fully embrace ICT to reach out to the end consumers in remote areas and create awareness regarding the need for insuring against future uncertain outcomes.

Moreover, we find that ICT adoption positively affects the amount of insurance purchased by the households. In India, financial Robo-advisory is still in nascent stages, and further investments in this domain can leverage the initial gains of ICT in affecting the demand for risk management products of Indian households.

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Table 1: Access to internet and likelihood of having insurance

The table below presents the coefficients of probit model, IV-Probit model and bivariate probit model of insurance on internet and other household factors. Weak identification test results are obtained using ivreg2 command in STATA. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Dependent Variable: <i>Insurance</i>						
	(1)	(2)	(3)	(4)	(5)	
VARIABLES	Simple Probit	IV-probit-stage2	IV-probit-stage1	Bivariate probit-stage 2	Bivariate probit-stage 1	probit-
<i>Internet</i>	0.184*** (0.019)	0.364** (0.142)		0.435*** (0.071)		
<i>Share_internet</i>			0.318*** (0.011)		1.117*** (0.051)	
<i>Debt</i>	0.167*** (0.015)	0.166*** (0.015)	0.005 (0.004)	0.165*** (0.015)	0.038** (0.019)	
<i>Asset quintiles: Base: Q1</i>						
<i>Q2</i>	0.313*** (0.023)	0.315*** (0.023)	-0.015*** (0.005)	0.317*** (0.023)	0.325*** (0.045)	
<i>Q3</i>	0.590*** (0.025)	0.585*** (0.026)	0.017*** (0.006)	0.585*** (0.025)	0.562*** (0.044)	
<i>Q4</i>	0.874*** (0.028)	0.851*** (0.034)	0.102*** (0.007)	0.844*** (0.029)	0.810*** (0.045)	
<i>Q5</i>	1.294*** (0.033)	1.225*** (0.066)	0.332*** (0.008)	1.198*** (0.043)	1.363*** (0.048)	
<i>Age Head</i>	0.117*** (0.032)	0.111*** (0.033)	0.033*** (0.008)	0.107*** (0.032)	0.162*** (0.041)	
<i>Education</i>	0.063*** (0.009)	0.055*** (0.012)	0.042*** (0.002)	0.051*** (0.010)	0.515*** (0.028)	
<i>Kids Ratio</i>	0.172*** (0.036)	0.217*** (0.051)	-0.249*** (0.009)	0.239*** (0.040)	-1.382*** (0.047)	
<i>Old Ratio</i>	-0.387*** (0.041)	-0.355*** (0.048)	-0.180*** (0.009)	-0.335*** (0.043)	-1.104*** (0.055)	
<i>Head Work: Base: Agriculture</i>						
<i>Small Business</i>	0.037* (0.020)	0.038* (0.020)	-0.008 (0.005)	0.039* (0.020)	-0.049* (0.029)	
<i>Professional</i>	0.361*** (0.024)	0.348*** (0.027)	0.059*** (0.006)	0.342*** (0.025)	0.158*** (0.030)	

<i>Others</i>	0.001 (0.025)	-0.003 (0.025)	0.016*** (0.006)	-0.004 (0.025)	0.052 (0.032)
<i>Farmland</i>	0.101*** (0.019)	0.104*** (0.019)	-0.003 (0.005)	0.105*** (0.019)	0.008 (0.025)
<i>Head Female</i>	Sex: -0.048** (0.023)	-0.050** (0.023)	0.013** (0.005)	-0.051** (0.023)	0.069** (0.029)
<i>Religion: Hindu</i>					
<i>Muslim</i>	-0.440*** (0.025)	-0.436*** (0.024)	0.000 (0.006)	-0.434*** (0.025)	0.009 (0.031)
<i>Christian</i>	-0.171*** (0.050)	-0.165*** (0.049)	-0.026** (0.012)	-0.162*** (0.050)	-0.094* (0.054)
<i>Others</i>	0.053 (0.041)	0.053 (0.042)	0.002 (0.010)	0.052 (0.041)	0.042 (0.048)
<i>Cast : Base: General</i>					
<i>SC</i>	-0.058*** (0.021)	-0.055** (0.021)	-0.007 (0.005)	-0.053** (0.021)	0.003 (0.027)
<i>ST</i>	-0.128*** (0.031)	-0.122*** (0.032)	-0.014** (0.007)	-0.119*** (0.031)	-0.137*** (0.046)
<i>Others</i>	0.033* (0.018)	0.036** (0.018)	-0.010** (0.004)	0.038** (0.018)	-0.021 (0.021)
<i>Urban</i>	-0.042** (0.020)	-0.049** (0.020)	-0.006 (0.005)	-0.052*** (0.020)	-0.012 (0.025)
<i>Income Shock</i>	0.070*** (0.018)	0.067*** (0.018)	0.016*** (0.004)	0.066*** (0.018)	0.098*** (0.024)
<i>Life Events</i>	-0.031** (0.014)	-0.029** (0.014)	-0.011*** (0.003)	-0.028** (0.014)	-0.054*** (0.018)
<i>Z-Score-SN</i>	0.135*** (0.008)	0.128*** (0.010)	0.038*** (0.002)	0.125*** (0.008)	0.138*** (0.009)
<i>Constant</i>	-2.115*** (0.139)	-2.112*** (0.142)	-0.065* (0.034)	-2.108*** (0.139)	-3.228*** (0.186)
<i>State fixed effects</i>	Yes	Yes	Yes	Yes	Yes
<i>Rho</i>			-0.061 (0.048)		-0.154*** (0.043)
<i>Wald chi-square</i>		1.620		12.865***	
<i>Observations</i>	41,711	41,707	41,707	41,707	41,707

Table 2: Access to internet and insurance premium paid – Full table

The table below presents the coefficients obtained from the instrumental variable tobit model and IV-tobit model of premium on access to the internet and other socio-economic factors. Robust Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Dependent Variable: <i>Premium</i>			
VARIABLES	(1) Tobit	(2) IV-tobit- stage 2	(3) IV-tobit- stage 1
<i>Internet</i>	0.118*** (0.022)	0.588*** (0.159)	
<i>Share_internet</i>			0.346*** (0.023)
<i>Persons</i>	0.001 (0.005)	-0.007 (0.006)	0.021*** (0.002)
<i>Debt</i>	-0.019 (0.020)	-0.016 (0.020)	-0.005 (0.008)
<i>Asset quintiles: Base: Q1</i>			
<i>Q2</i>	0.247*** (0.049)	0.271*** (0.050)	-0.049** (0.020)
<i>Q3</i>	0.361*** (0.048)	0.392*** (0.050)	-0.063*** (0.020)
<i>Q4</i>	0.572*** (0.050)	0.560*** (0.051)	0.019 (0.021)
<i>Q5</i>	1.023*** (0.054)	0.897*** (0.069)	0.237*** (0.022)
<i>Age Head</i>	0.116** (0.050)	0.129** (0.051)	-0.043** (0.021)
<i>Education</i>	0.050*** (0.017)	0.005 (0.023)	0.088*** (0.007)
<i>Kids Ratio</i>	0.278*** (0.056)	0.499*** (0.093)	-0.472*** (0.023)
<i>Old Ratio</i>	0.101 (0.070)	0.191** (0.078)	-0.202*** (0.030)
<i>Small Business</i>	-0.020 (0.031)	-0.021 (0.032)	0.003 (0.013)
<i>Professional</i>	0.160*** (0.032)	0.118*** (0.036)	0.080*** (0.013)
<i>Others</i>	0.060* (0.036)	0.041 (0.037)	0.038** (0.015)

Dependent Variable: *Premium*

	(1)	(2)	(3)
VARIABLES	Tobit	IV-tobit- stage 2	IV-tobit- stage 1
<i>Farmland</i>	0.119*** (0.026)	0.134*** (0.027)	-0.014 (0.011)
<i>Head Sex: Female</i>	-0.036 (0.033)	-0.058* (0.034)	0.044*** (0.014)
<i>Muslim</i>	-0.132*** (0.037)	-0.125*** (0.038)	0.002 (0.016)
<i>Christian</i>	-0.013 (0.061)	-0.008 (0.062)	-0.009 (0.026)
<i>Others</i>	0.031 (0.055)	0.044 (0.056)	-0.029 (0.023)
<i>Cast : Base: General</i>			
<i>SC</i>	-0.169*** (0.029)	-0.151*** (0.030)	-0.026** (0.012)
<i>ST</i>	-0.042 (0.049)	-0.020 (0.050)	-0.030 (0.021)
<i>Others</i>	-0.029 (0.023)	-0.014 (0.024)	-0.017* (0.010)
<i>Urban</i>	0.027 (0.026)	-0.007 (0.029)	0.014 (0.012)
<i>Income Shock</i>	0.029 (0.025)	0.014 (0.026)	0.033*** (0.010)
<i>Life Events</i>	-0.045** (0.019)	-0.029 (0.020)	-0.033*** (0.008)
<i>Z-Score-SN</i>	0.121*** (0.009)	0.102*** (0.011)	0.039*** (0.004)
<i>Constant</i>	7.201*** (0.214)	7.074*** (0.222)	0.219** (0.090)
State fixed effects	Yes	Yes	Yes
Wald test stat		8.96***	
Observations (uncensored)	10,913	10,913	10,913

Novelty and serendipity in recommender systems: a social choice theory perspective

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Abstract

Social Choice Theory talks about the combination of the individual preferences to reach to some decision in a collective sense. When employing the Collaborative filtering in the recommendations, we make the use of Social Choice theory. Using the past behaviour of the user, the Recommender Systems suggest items to the user. But sometimes the users get bored of these Recommendations. Novel items are those items about which the user was not knowing while Serendipity introduces the surprise element in the suggestions and helps increase the user satisfaction. But serendipity being subjective, there is no established way in which Serendipity is defined. There have been some discussions on some definitions of serendipity in this paper and also discussed some techniques like deep learning. We evaluate an algorithm on the Serendipity 2018 dataset that was released by the MovieLens research group. The results of the algorithm were compared with the results of other baselines algorithms.

Keywords : Social Choice Theory, Serendipity, Novelty, Recommender Systems, Deep learning, Unexpectedness, Root Mean Square Error (RMSE)

Introduction

There are a wide variety of products that are available to suit the needs of the users. But the plethora of information that is available, might lead to a lot of confusion. This is where the concept of Recommender system comes in. The Recommender system is the software which suggests item to the users. They help in a lot of value addition to the marketers. These are widely used across various online platforms to help the users in better selection. The concept of serendipity in recommender systems is not new. (Kotkov et al., 2016)

Working on the different components of serendipity like relevance, novelty and unexpectedness. Starting with the first parameter which is relevance, it means that the user has some liking towards that particular item and will rate that highly when compared to the other items that are there. The second concept around serendipity is novelty. Novel item are items that have not yet been rated by the users which basically is the cold start problem. These can also be some item that have been forgotten or are unknown. Here we take the novel item as an item that a user has never heard about. The third one i.e. unexpectedness is a concept which refers to the items that are striking very different from the user's profile.

Literature Review

(Kim et al., 2017) while explaining a new angle to the Recommender System algorithms, said that sometimes the Collaborative filtering and the Content Based filtering algorithm seem a touch unproductive, because they lack that human angle to it. Also, there is a need to ensure that the recommender systems need to evolve and ensure that better recommendations are provided to the users. The users are generally more satisfied when there is that emotional connection. Since if the recommendations are more personalized it goes one step further. Talking about the curators, they are generally other users or some algorithm or an expert. There are so many places like LinkedIn where the users curate their contact lists as to whom to connect to. The users in LinkedIn make recommendation about some contact that is there in their network. Social network support by the users are also very important because that generally acts like a catalyst. Now LinkedIn connects through social networks there are scenarios of a perfect recommendation going through to the users.

Talking about the accuracy, (Ge et al., 2010) has mentioned that when the serendipitous encounters are implemented then we are successful in avoiding some of the obvious recommendations in the case of collaborative filtering. It also solves the problem of over-specification that can sometimes be there in the case of the content-based algorithm

(Pandey et al., 2018) in his paper which involves the concept of transfer learning, talks about how the concepts of deep learning as well as transfer learning have not yet been explored in the field of recommender systems involving the concept of serendipity.

(Kaminskas & Bridge, 2016) have talked about the novelty and the diversity have an impact on the quality of the recommender system. Hence here there has been a lot of focus on the measures that are beyond accuracy in recommended systems. Talking about the concept of diversity and the relationship that it has with accuracy, it has been studied in the concept of information retrieval and economics.

Literature of some techniques (Deep learning and Graph based)

(Batmaz et al., 2019) has mentioned about the impact of deep learning in the Recommender Systems field. Talking about the active user who plays one of the most important roles in the Collaborative filtering recommender Systems, the past items that the user has rated will be used to recommend the items to the users who have a very compatible taste to the given user. So, there are users (say number of users is a) and items (say the items are b), then there will be a user item matrix which will be $a*b$.

(De Gemmis et al., 2015) have suggested a graph-based algorithm to solve the serendipity problem by having the background knowledge to solve the issues related to the recommendations. (Castells et al., 2011) talk about the concept of unexpectedness, diversity as well as some fusion based approaches to serendipitous recommendations.

Novelty and Usefulness

(Zuva & Zuva, 2017) talks about the importance of diversity apart from novelty, serendipity, unexpectedness and usefulness. The two types of diversity are the individual diversity and the aggregate diversity. The individual diversity is the mean dissimilarity between all pairs of items while aggregate diversity is the total number of distinct items. Techniques like ranking based technique, standard ranking approach where unknown ratings are predicted and then they are used to support the recommendations, item popularity-based approach, parametrized ranking approach and the graph theoretic approach are used to measure the diversity

Vargas and Castells (2011) proposed a component metric which measures novelty and neglects other components of serendipity:

$$nov(i, u) = 1 - \frac{\|U_i\|}{\|U\|},$$

where U_i corresponds to the set of users who rated item i , $U_i \subseteq U$.

(Kotkov et al., 2017) have talked about the cross-domain Recommender Systems where the items share attributes. Here the data is taken from two different domains and this helps in suggesting serendipitous items to the user. The source domain will be able to improve the accuracy of the target domain for both the approaches i.e the content-based filtering as well as the collaborative filtering algorithms.

Social Choice Theory

Social Choice Theory talks about the perspective of collective decision processes. This is not a single standalone theory but multiple models that deal with the aggregate level of the individual inputs like taking some decisions as a group or voting or on the basis of preferences, judgements or the welfare. So how do a group of people choose some winning outcome given the plethora of options at their disposal or how do we arrive at some preference that is coherent at a collective level?

So, this theory considers the problem of aggregate preferences of the given members to ensure that the final outcome is the preference that represents the totality of the society as a whole. Thus, this theory is concerned with finding of some optimal solution that helps in the aggregation of the preferences as a whole. The credits of this theory are given to Kenneth Arrow whose book has the specifications of the conditions that a society's choices should generally meet to reflect the opinion of each of the individual. This theory has some elements of voting theory in it.

There seems to be a correspondence between collaborative filtering (CF) and Social Choice theory. Both these frameworks are based on combining the preferences of a group into a single relation. Some properties that Social Choice theory advocates have found true are very much needed in the context of Collaborative filtering algorithms.

Unexpectedness

The content-based unexpectedness basically the dissimilar suggestions that are shown to the users. These metrics were first proposed in a paper by Vargas and Castells (Vargas and Castells, 2011) and were later adopted in other papers too. These authors evaluate the concept the serendipity into factors: these two are relevance and unexpectedness. The unexpectedness can be measured through these while there are accuracy metrics like Root mean square error (RMSE) or the mean absolute error to find the relevance component that is involved.

(Kotkov et al., 2018) has investigated the Serendipity based on the Real User Feedback. It was about serendipity and its variations on broadening user preferences and user satisfaction. The issue that the online available datasets is that there are quite a few assumptions that have been made as these datasets don't have the user feedback that is related to the serendipitous items. In this paper, there was a survey that was carried out with around 475 people who participated in the survey. The users were asked to rate eight statements using scales that varied from strongly agree to strongly disagree. The definitions of serendipity involved three components. These were

- Novelty
- Relevance
- Unexpectedness

Evaluation Metrics

(Patel & Amin, 2018) have written about how serendipity will ensure that the user will be getting the recommendations that are not monotonous. He talks about serendipity as a computational concept where the components of Serendipity have been talked about. The first of the lot is the Prepared Mind which represents the system's background knowledge base. The experience that the user derives with respect to the item here is the Prepared Mind. The second component is the Serendipity Trigger which includes the event or the phenomena. The next one is the bridge which being synonymous to its name, connects the trigger with the result. When there is a discussion on the field of information retrieval there are some metrics that are needed to measure the accuracy of the systems. These two metrics are based on the confusion matrix.

Based on precision and recall the F-Measure is then defined as:

$$F\text{-Measure} = 2 * (\text{Precision} * \text{Recall}) / (\text{Precision} + \text{Recall})$$

Methodology

We evaluate our algorithm on the Serendipity 2018 dataset.

Dataset

This dataset was released by the MovieLens research group. It includes the answers from users as to how serendipitous some movies were. This also includes the past ratings of these users along with some of the recommendations they received before answering the questions.

So, an experiment was conducted in MovieLens, where the users were asked as to how serendipitous some movies were to them. This dataset has the user answers to questions and some other useful information such as

- past ratings of these users
- recommendations they received before replying to our survey and
- movie descriptions.

The dataset is meant for research regarding serendipity in recommender systems, such as analysis of serendipitous movies or offline evaluation of serendipity-oriented recommendation algorithms.

The dataset was generated on January 15, 2018. The data are contained in the files `answers.csv`, `movies.csv`, `recommendations.csv`, `tag_genome.csv`, `tags.csv` and `training.csv`. Overall, there are 10,000,000 ratings (2,150 ratings stored in `answers.csv` and 9,997,850 in `training.csv`).

In this dataset, each selected user had rated at least 1 movie. No demographic information is included. Each user is represented by an id, and no other information is provided.

Metrics

These ratings given by the users to these recommended movies act like an appropriate measure for calculating the

- Root Mean Square Error (RMSE)

The Root Mean Square Error is the standard deviation of the residuals or the prediction errors. The residuals indicate as to how far from the regression line, the data points are.

$$RMSE = \sqrt{\frac{\sum_{i=1}^n (\hat{y}_i - y_i)^2}{n}}$$

$\hat{y}_1, \hat{y}_2, \dots, \hat{y}_n$ are predicted values

y_1, y_2, \dots, y_n are observed values

n is the number of observations

When we talk about the applications of RMSE in analytics, we use it to evaluate our models as to how accurate they are.

Since in RMSE the errors are squared before they are averaged hence RMSE gives a relatively higher weightage on large errors

Experiment analysis

The collaborative filtering method, deals with making predictions about the recommendations that should be given to a user based on the preferences of tastes and preferences of many other users who share similar preferences. But there is the problem of overspecialisation that is faced in Collaborative filtering technique.

Overspecialisation prevents the consumer to discover the new items and other options that could be available to him. This doesn't let the sales people reach their goals. Since diversity is always desirable in recommendations, so having a wide range of alternative helps. So, if the recommendations is only of those items that are having a high rating, then there is the problem of overspecialisation that happens. For example, a user who has no experience for a Thai cuisine will never get a recommendation for a Thai food even if there are some restaurants that are serving Thai food are available around the user.

There is a technique of similarity fusion that is used to solve this problem. Apart from this, there are some algorithms that have been used to ensure that features like diversity are incorporated while making recommendations to the user. Here we apply the concept of novelty along with the unexpected and the diverse recommendations to ensure that the problem of overspecialisation is solved along with suggesting the user with serendipitous recommendations. This algorithm takes the concept of novelty and then we compare the RMSE and the MAE values obtained from this algorithm to some of the other standard algorithms.

Here we use the Jaccard Similarity formula as under

$$J_sim(L_u, S_u) = \frac{|L_u \cap S_u|}{|L_u \cup S_u|}$$

Then we define the unexpectedness as

$$Unexpectedness = \frac{1}{|U|} \sum_u 1 - J_sim(L_u, S_u)$$

Here, U is defined as the set of target users for whom recommendations are generated. Lu is list of movies recommended for "U" without considering serendipitous clusters and Su is the list of movies recommended to user "U"

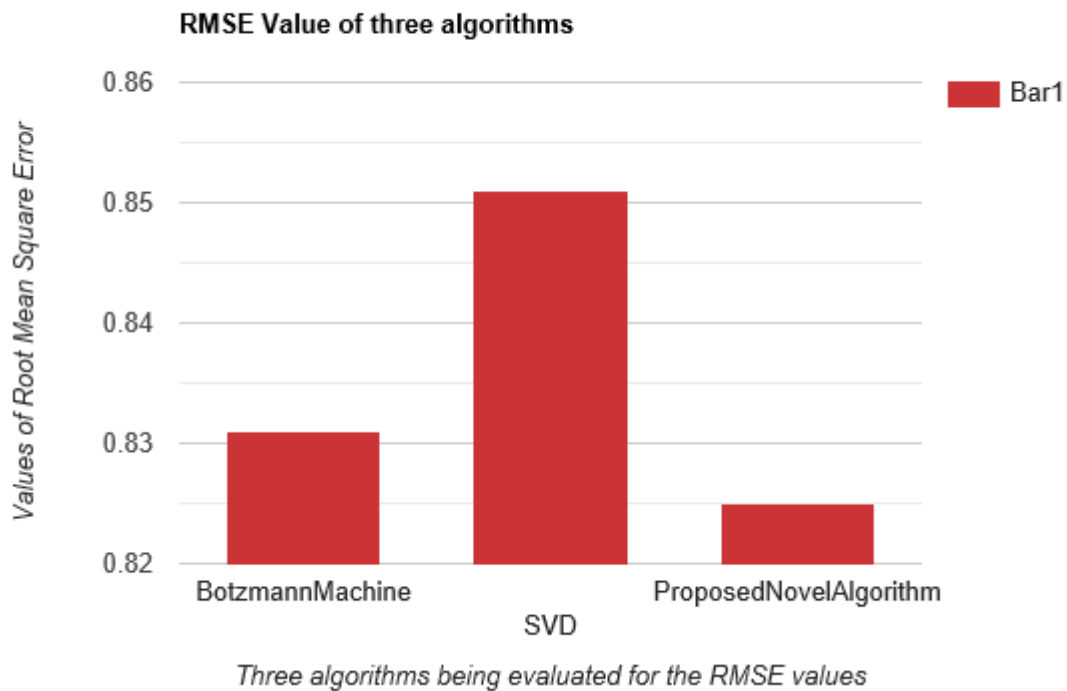
$$Diversity = \frac{1}{|U|} \sum_u \frac{1}{|S_u|} \sum_{i \in S_u} \sum_{j \in S_u, j \neq i} Hammm(i, j)$$

The diversity here is captured by using only the Hamming distance formula

Results

Now to investigate the performance of our recommendation algorithm, we analyse the results of some of the baseline algorithms. The first algorithm that we used as our baseline was the SVD++ (Kumar et al, 2014). This algorithm uses the Singular Value Decomposition (SVD) approach. This is our first baseline algorithm. The second baseline algorithm that we use is the Continuous Restricted Boltzmann Machine (CRBM) [Chen et al, 2003]. This is the second

baseline algorithm which involves Neural Nets. The training of the neural network models involves a large number of parameters.



The Root Mean Square Error Value of the baseline algorithms vs the proposed one

Limitations

Serendipity being a subjective concept which still has not got its exact definition, there is still a lot of work that needs attention in this area. Some pointers on which future research can be employed are

- Employing proper model-based approaches as well as techniques like deep learning or some graph-based techniques.
- Apart from this to find a proper balance between serendipity and the accuracy needs to be maintained to ensure that the recommendations result in maximum user satisfaction.

Future Scope

There is a scope to carry the future work

- To improve the suggested Serendipity metrics that have been mentioned by applying algorithms to enhance the recommendation accuracy of the system
- The application of deep learning techniques like auto encoders or the recurrent neural networks is an area which has lot of scope for further research.
- By including the low similar items or the items that are available at the long tail to be included in the top listings to enhance the recommendations to the users.
- To conduct some experiments that involve the real users to make sure that the suggestions that are being given to the user satisfies his needs.
- By investigating the influence that diversity will have on the recommender systems and to suggest serendipitous items with more accuracy to enhance the experience of the users

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Can Online Product Sales be Increased by Ordering a Positive Review before a Negative One?

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Abstract

Online shopping has created a paradigm shift in the purchasing behaviour of the customers as they interact with businesses for buying products. Previous research has shown the effect of volume, valence and content on online customer behaviour ([Cheung & Thadani, 2012](#)). This paper investigates the effect of ordering of the positive and negative online reviews in ecommerce platforms on the customer purchase decisions. The authors also propose a solution through which the opportunity loss due to this ordering effect can be converted into potential sales for the ecommerce organizations.

Keywords: Consumer Purchase Decisions, Electronic Word of Mouth, Consumer Decision Manipulation, Review Sentiment Polarity, Cognition, Cognitive Linguistics.

1. Introduction

With the spread of digitalization and the increasing availability of online shopping platforms, the new trend of electronic transactions is gradually dominating all aspects of our daily life. The increasing number of internet users have boosted the growth of e-commerce businesses in India as well as in other countries of the world. Online shopping platforms, also known as E-commerce platforms, have become an important and integral part of our lives. This disruptive form of innovation has created a paradigm shift by radically changing the way of doing business in traditional terms. Thus, in order to understand this phenomenon and bring further growth and development in the sector, it is necessary to understand e-commerce business models on one hand, and the buying patterns and consumer choices on the other.

To the consumer, the entire event of shopping for a product is an experience which is realized in the cognitive domain. While buying a product from a brick and mortar shop, the consumer takes into account various inputs apart from the product description and price before making a purchase decision- these include non-verbal cues like the haptic sensations of touching and feeling a product for gauging its quality or to assess the degree of comfort in using the product, the social interaction between the consumer and the other buyers in the shop, the body language of the other consumers who have recently bought a similar product in presence of the consumer, as well as various verbal cues like pitch and loudness of voice of the salesperson who is selling the product (Otto and Chung, 2000). Since these factors are not present in online shopping platforms, the reviews provided by customers, by virtue of expressing positive and negative sentiments, play a major role in finalizing a purchase decision.

Our paper aims to understand this pattern of consumer behaviour which depends on the sentiment polarity reflected in the reviews made by consumers, and particularly investigate whether the order in which these reviews are presented has a significant effect in influencing and manipulating the purchase decisions.

2. Research Objectives

This paper aims to investigate the interaction between the sentiment associated with review comments on e-commerce platforms and their ordering in influencing the purchase decisions of consumers. Further details regarding the research methodology have been elaborated in section 4.

The main research questions of this study are as follows:

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- (a) Whether the ordering of online reviews bearing opposite sentiment polarity has an effect on customer purchase decision,
 - (b) If the ordering as stated in (a) plays a role, then to what extent does it influence the purchase decision,

In order to investigate these questions, the following hypotheses have been tested for validity:

Hypothesis 1: Ordering of opposing sentiments in the review has an effect on the purchase decision.

Hypothesis 2: Negative review presented before positive review (N-P ordering) has a stronger effect on customer's purchase decision than the case when positive review is presented before negative review (P-N ordering)

3. Literature Review

In this section, we briefly review the work which has been done in this domain based on the existing literature. The discussions pertaining to the ideas discussed in this paper are presented in the following subsections.

3.1 Cognition, emotion & sentiment

The basic assumption of Cognitive Linguistics is that language and cognition interact (Croft and Cruse, 2004). (Damasio, 1994) mentions that cognition also interacts with emotion. Thus, language reflects conceptualization of emotion and expresses emotion (Foolen 1997, 2012). This conceptualization is given a form in language using construals, which consist of a conceptual content structured through syntactic organization.

Sentiments are the words or sentences that represent a view or opinion that is held or expressed (Sahayak et.al., 2015). Thus, sentiments are linked to the emotions that a person feels towards a particular event or an object, and indicates a very complex dispositional idea of the object (Broad, 1954). (Feldman, 2013) states that sentiments can be investigated mainly in three levels such as document level, sentence level and aspect level. In our work, we focus our attention to sentence-level sentiments. Sentence level sentiments help us to understand whether the sentence expresses any negative, positive or neutral opinion. When the sentence indicates a positive opinion, the sentiment is classified as positive (positive polarity), whereas a negative opinion expressed through the sentence expresses a negative sentiment (negative polarity). For the current study, the neutral sentiments are not taken into consideration. Usually, there are sentiment-bearing keywords which tend to indicate the polarity status—however, in relation to sarcasm-bearing opinions, the sentiment-bearing words may give a wrong classificatory sense. Thus, in our work, the sense conveyed by the entire sentence has been taken into account keeping in mind the pragmatic uses of language.

3.2 Buying patterns on E-commerce platforms

Internet shopping has been a rapid development in the recent past. However still there is a big difference in the acceptance rate of internet shopping among people especially in consumer goods compared to the brick and mortar shopping. The magnifying differences which can be noted are accounted to a number of factors like the range of information which can be simulated by the third-party systems like e-commerce platforms, the extent of familiarity of a technology in the individual, using an open medium for the transactions and the newness of that particular medium (Pavlou, 2002).

3.3 The importance of reviews in E-commerce platforms

There are three important attributes of the Electronic Word of Mouth (EWOM) that affect the online purchase intention of the customer which are volume, valence and content (Cheung & Thadani, 2012). The volume of EWOM refers to the number of online reviews which have been posted by users per product/service (King et al., 2014). The valence of EWOM indicates whether

the review posted by the customer is positive, negative or mixed in nature. The content of the EWOM constitutes the actual review (textual, photos or videos). These three constructs have differential importance depending on the purchase goal of the customer and the product type in question (Zhang et al., 2010). For example, the review valence comes into the picture in the greater sense when the product is a high involvement one and the goal is risk aversion. Also the positive, negative or mixed EWOM (PWOM, NWOM or MNWOM) has different effects on the customer decision making process based on the context of the purchase and the product. Studies in the past have posited that when the product is at the nascent stage in the development cycle and the users are more internet savvy, the valence and volume of the EWOM takes primary importance (Zhu & Zhang, 2010). It has been also seen that while both volumes of PWOM and NWOM have important influences on the customer's decisions, the NWOM is more impactful in the cases of higher priced products than PWOM (Park & Lee, 2009).

4. Research Methodology

4.1 Questionnaires

Structured questionnaires were employed for data collection regarding the purchase choice and manipulation of the choice through online reviews. These questionnaires were sent over the email to the participants. The questionnaire was divided into two parts. The first part captured the demographic details of the participant like the name, age, gender, highest level of education and the city from where they are responding. The second part of the questionnaire consisted of two pages- the first page had the product description along with the photo and the price. It was made sure that the product was a contemporary one and the details were taken from an e-commerce website. However, it was ensured that no detail regarding the particular brand to which the product belongs was revealed, and any trace of brand information was removed from the product image and product description to avoid any form of bias in the participant's mind. On the same page, it was asked whether the respondent would want to purchase the product (based on the product appearance and the technical description accompanying the image). On the next page, the positive and negative review pair was presented (constructed by following the methodology explained in section 4.3), followed by the question whether the respondent would want to change their purchase decision (taken in the previous page) or stay with it. It was taken care of that the respondent does not go back to the previous page to change the purchase decision by restricting their page movements.

4.2 Product

The product selected was a laptop (worth Rs. 39,999 ~ 546 USD). The prices have been quoted based on the currency exchange rate of US \$1 = Rs. 73.35 (Indian Rupee) as on 5th October, 2020. The reason behind choosing the laptop was that it is well-known to the general public and it is widely used. Also, since it is a search good, it can be easily evaluated prior to the purchase on the basis of the description and price.

4.3 Review Polarity Constructs

For the purpose of studying ordering effects of opposite polarity reviews, it was decided that a compound sentence would be constructed as a consumer review - each compound sentence would contain two clauses, one of positive sentiment polarity and the other having a negative sentiment polarity. A total of ten (10) single-sentence reviews were collected from various web pages, the set having five (5) negative sentiment reviews and five (5) positive sentiment reviews. The sentiment strength of these reviews was evaluated based on scores in a pre-test conducted among twenty (20) participants who were not part of the main survey. The respondents for this pretest had an age range from 23 years to 35 years (Mean = 27.44 years, SD = 3.32 years). The respondents were asked to assign a sentiment (positive or negative) to each of the sample single-sentence reviews, and they were asked to indicate the level of valence (on a scale of 1 to 5, with 1 having the least valency and 5 having the most valency) to understand the degree to which they

perceive a certain review as positive or negative. The most negative (mean sentiment score = 4.11) and the most positive (mean sentiment score = 4.11) reviews were selected based on the average of the scores assigned by the respondents of the polarity judgement test. Different combinations of reviews were now obtained by changing the order of presentation of the positive and negative reviews, and accommodating suitable conjunctions in order to retain the continuity and the holistic sense conveyed by the compound sentence.

4.4 Sample

The sample of 80 respondents was divided into two equal groups. All the respondents were chosen at random and throughout the age groups, geographies and genders. The respondents were of sound mental health and their consent was taken before conducting the survey. The initial part of the questionnaire remained the same for both groups. One group was exposed to the review with positive-negative sentiment ordering (PN review) and the other group to the review having negative-positive sentiment ordering (NP review). The responses were collected for each group and the analysis has been presented in Section 5. It may be noted that initially there were 90 respondents out of which 80 respondents were considered finally for the study. The 10 respondents were excluded at random to balance the number of 'Yes' and 'No' initial purchase decisions in each group of 40 respondents. The decision change was then observed on the responses based on the second part of the questionnaire.

4.5 Demographics

The age of the respondents were spread across a wide range, the minimum being 21 years and the maximum being 55 years (Mean = 27.95, SD = 1.62). More than half (52.5%) of the respondents were from the tier 1 cities of India like Delhi NCR, Kolkata, Bangalore, Mumbai and Chennai. The respondents consisted of a predominantly male proportion (76.25%). Most of the respondents had either a graduate (45%) or a masters (41%) degree.

5. Data Analysis

As mentioned earlier, the respondents were subdivided equally in the two parts and their decision change was measured based on the variation of the answers before and after reading the reviews. The variation was coded as “Yes to No” and “No to Yes”. Further to keep the probability of the variation balanced, the respondents have been equally divided into 2 halves (20 saying Yes initially and 20 saying No) among the 40 in each part. The Table 1 shows the details about each variation.

PN reviews (40)			NP reviews (40)			Overall (80)		
Change Direction	Total	Percentage	Change Direction	Total	Percentage	Change Direction	Total	Percentage
Yes to No (20)	7	35	Yes to No (20)	16	80	Yes to No (40)	23	57.5
No to Yes (20)	2	10	No to Yes (20)	1	5	No to Yes (40)	3	7.5

Table 1: Decision Variation according to Review Polarity Order

From Table 1, it can be clearly seen that there is a significant change in the decision of the customer after reading the review. This is also consistent with the Chi-Square results of the holistic test which gave us $X^2(3, N = 80) = 8.64, p = 0.03$. This result is statistically significant as $p < 0.05$. This confirms that the review polarity order has a significant effect on the customer decision manipulation which supports Hypothesis 1.

It can be seen from Table 1 that the effect is much stronger for the NP reviews than for PN reviews. More so, it is seen that the presence of the negative polarity in the mixed review construct hindered the customers from buying the product. Thus, both in the cases of NP reviews

and PN reviews, the predominant decision was Yes to No. For the NP reviews, the percentage (80%) was a lot higher than that of the PN reviews (35%). A Fisher's Exact test was also done to test the decision change according to the first purchase decision of the respondent (Yes or No) prior to reading the review. The results of significance are compiled in the table below.

Laptop(Initial Decision = No)			Laptop(Initial Decision = Yes)				
	No to Yes	No to No	Total		Yes to No	Yes to Yes	Total
PN	2	18	20	PN	7	13	20
NP	1	19	20	NP	16	4	20
Total	3	37	40	Total	23	17	40
P value =	0.385			P value =	0.004		

Table 2: Fisher's Exact Test Results

It can be seen from Table 2 that the effect of Review ordering on decision change is highly significant when the initial answer is Yes ($p = 0.004$) than when the initial answer is No ($p = 0.385$). Hence decisions are more inclined to change from Yes to No rather than from No to Yes. This supports Hypothesis 2 that the negative review presented before the positive review has a higher effect on the customer purchase manipulation.

6. Discussion

This study aimed to shed light on whether the ordering of review polarity has any effect on the customer decision manipulation and whether the negative effect is stronger than the positive effect. The data analysis reveals that ordering of reviews has an effect on the minds of the customer such that they change their decision. It was also shown that the negative effect is much higher than the positive effect, which is consistent with our literature (Park & Lee, 2009). Therefore the negative review placed before the positive review had greater change in the minds of the customer towards not purchasing the product than the positive review placed before the negative review. Hence, it is evident that people give more importance to negative reviews and show a risk aversion behaviour. It can be seen that, NP reviews had a much higher percentage (80%) of people changing their decision towards not buying than the PN reviews (35%). The analysis shows there is a decrease by 45 percentage points. This results in an opportunity loss for the seller and the e-commerce platform. It can be inferred that if 100 people who already decided to make the purchase, see the NP-ordered review rather than the PN-ordered review, then 45 people change their purchase decision. Thus, for the laptop worth Rs. 40000 (~ 546 USD), the opportunity loss amounts to Rs.18,00,000 (~24,540 USD). This is a striking problem which is required to be resolved in order to avoid the opportunity loss.

In order to resolve this problem and convert this opportunity loss into potential revenue, the authors suggest implementing an ordering restriction or constraint in the webpage section where reviews of other customers are displayed. The customer usually shares the feedback including both positive as well as negative sentiment statements in the provided textbox, and there is no restriction in the ordering, which leads to the problem of opportunity loss as discussed in this paper. It is being suggested by the authors that the e-commerce platforms incorporate two text boxes for review submission instead of one, each for positive and negative feedback. The e-commerce platform should display the positive customer review positioned before the negative review, thereby negating the ordering effect which causes the decision manipulation to turn from Yes to No as discussed previously. This in turn shall prevent the opportunity loss and convert the same into sales for the product.

7. Limitations & Future Scope

There are a few specific limitations of this study which leave room for scope of future research. Firstly, the product which was chosen here was search good. Hence, future research must focus on the experiential goods as well for studying this effect. Secondly, the demographics of the respondents were not taken into consideration here as an independent variable having an influence on the decision manipulation effect. There may be future studies which can relate attributes like gender and income to the importance given to online reviews. Lastly, the authors had chosen the highest positive and highest negative reviews for the study. Other review combinations of different polarity strengths may be investigated in future.

8. Conclusion

The study contributes towards the theoretical and the practical aspects of consumer cognition and buying behaviour based on the sentiment polarity of online reviews. The study has examined that the customer decision can be manipulated by ordering positive and negative online reviews or E-WOM. This adds to the three factors provided by past researchers (Cheung & Thadani, 2012) namely, volume, valence and content. In this paper, the authors add a fourth dimension, namely, the ordering of review polarity which affects the decision change in the minds of the customer. Thus, the authors show that a simple change in ordering of reviews can help the e-commerce businesses tap the untapped volume of sales which was earlier getting counted as an opportunity loss for the organization.

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Factors affecting acceptance of mobile payment: A vendor's perspective

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Abstract

The purpose of the study is to explore various factors that affect the acceptance of m-payments by vendors. A total of 200 responses were used for analysis. Confirmatory factor analysis (CFA) was performed to validate the measurement model. Path analysis using covariance-based structural equation modeling (CB-SEM) and PROCESS macro was used to examine the hypothesis. The results indicated that factors like transparency have a significant impact on the adoption of m-payments by vendors. In contrast, results indicate that Perceived Risk, Non-compatibility, and Cash preference are factors that significantly impact vendors' resistance to adopt M-payment services. The Initial Trust and Regret Avoidance mediate various factors and acceptance/resistance to m-payment systems. This study emphasizes the key factors that lead to either acceptance or resistance to m-payments.

Keywords: Mobile Payments, UPI, Convenience, Vendor Acceptance, Cash Preference, Perceived Risk

Introduction

Mobile payment has made a significant contribution to the growth of e-commerce. An M-payment is a money payable using a portable electronic device such as a mobile phone or a tablet for a good or service (Mallat, 2007). Mobile payments are often made in shops by scanning a bar code on your phone's application to allow payment to the small and big retailers and convenience stores. The payment information is encrypted during transmission, so payment is considered safer than debit or credit card payments. However, mobile payment is different from mobile banking. Banks are linked directly to mobile banking users, while a third party is obliged to complete the entire process when paying through the mobile payment option.

Very little research is done on the vendor's intention to use and adapt the mobile payment system level. This discrepancy in literature prompted the research. Therefore, our research's main objective is to evaluate vendors' and merchants' adoption level and intention to use mobile payment systems. The study expands the literature, showing the effect of numerous factors on the vendors, which lead to the adoption of a mobile payment system. Bloomberg reports that only 53% of Indians have a bank account, of which the majority of accounts have a null balance (Shankar and Datta, 2018). Nearly 80% of people use mobile phones. The figures suggest that in the Indian market, there is immense scope for M-payment (Shankar and Datta, 2018). Hence, this

research contributes to the literature by investigating the multiple factors influencing vendors and merchants' actions in the context of m-payments.

2. Literature Review

2.1 Payment Convenience (PC)

Convenience, versatility, and customer value leads to the adoption and growth of new technology. In developing countries, where financial and banking facilities are not readily available, M-payment is far more convenient for consumers. Based on the same, we are proposing the following hypothesis.

H1: Convenience of payment received has a significant impact on the seller for adopting m-payment

2.2 Ease of using m-payment (PEU)

Technology Acceptance Model (TAM) is popularly used in established studies exploring technology acceptance, which asserts the perceived utility and ease of use of new technology molds users' attitude to embrace the latest technology. Ease of use is an imminent factor in mobile application acceptance. (Pavel Andrew et al., 2012). Based on the same, we are proposing the following hypothesis.

H2: Ease of use of m-payment apps has a significant impact on the seller for M-payment adoption.

2.3 Transparency (T)

Transparency between various parties over a platform is essential for increasing the network effects of the platform. This helps in building up trust among vendors. Transparent policies and terms of the condition increase the platform's transparency among its various users. Based on the same, we are proposing the following hypothesis.

H3: Transparency is positively related to the vendor's adoption of m-payment.

2.4 Perceived Risk (PR)

Buyers' concerns regarding the privacy and protection of online payments are usually related to authentication and confidentiality and fears about secondary usage and unauthorized access to transactions and user data. (Lin and Wang, 2006). Based on the same, we are proposing the following hypothesis.

H4: Perceived Risk is positively related to sellers' resistance to m-payment apps.

2.5 Non-compatibility with m-payments app (NC)

Compatibility measures the coherence between an idea and the future adopters' beliefs, perceptions, and needs. (Mallat, 2007). Compatibility was found to be a major determinant of mobile technology and the adoption of services. Based on the same, we are proposing the following hypothesis.

H5: Lack of knowledge/ Non-Compatibility with M-payment apps is positively related to the seller's resistance to M-Payments apps.

2.6 Cash preference (CF)

Indrajit Sinha (2014) stated that E- payment system had shown tremendous growth in India, but there is still a lot to be done to increase its use. Nonetheless, 90 percent of transactions are done using Cash. Based on the same, we are proposing the following hypothesis.

H6: There is a preference for Cash among sellers, which has a significant impact on the seller on the adoption of m-payments.

2.7 Inertia (I)

In the context of Inertia, as consumer persistence and attachment in the use of an existing system, even when there are superior alternatives or opportunities for improvement. Individuals do not want to change their status quo because of the intrinsic essence of conservatism. Individuals tend not to use the existing system because new systems are considered potentially unsafe or stressful. (Shankar and Kumari, 2019). Based on the same, we are proposing the following hypothesis.

H7: Inertia is positively related to a vendor's resistance to adopting m-payment.

2.8 Stakeholder influence (SI)

Stakeholder Influence means the consumer's understanding of his confidence in technology by colleagues, family members, and other consumers. (Sivathanu, 2017). Vendors perceive a positive image of using technology to achieve social status and identity in their reference groups. (Venkatesh and Davis, 2000). Based on the same, we are proposing the following hypothesis

H8: *Stakeholder influence is positively related to the vendor's adoption of m-payment.*

2.9 Mediating Impact of Initial Trust

Trust is the vendor's confidence that other companies will not misuse their confidential data and money. If other people also trust the system, then vendors also develop trust due to stakeholder influence. The system is easy to use, and terms of condition kept transparent vendors find the system dependable and trustworthy. The following hypothesis is proposed:

H9: *Initial Trust mediates the relationship between a) Payment Convenience, b) Stakeholder Influence, c) Perceived Ease of Use, and d) Transparency and acceptance of M-payment by vendors.*

2.10 Mediating impact of Regret Avoidance

Unpleasant outcomes of past decisions cause regret among individuals. This creates a certain level of hesitation while adopting new technology. Factors like Risk and Non-compatibility with the system can further increase regret, which can lead to the development of resistance. Cash-Preference and a sense of maintaining the status quo are also potential factors that develop such resistance to new technology. The following hypothesis is proposed:

H10: *Regret Avoidance mediates the relationship between a) Perceived Risk, b) Non-Compatibility, c) Inertia, and d) Cash Preference and resistance of M-payments by vendors*

3. Research Method

3.1 Sampling and data collection procedure

This study's response was collected through a properly structured questionnaire at various wholesale shops, retail shops, manufacturing units, and service providers from 2 major cities, which are Visakhapatnam and Delhi. We selected various shops using the systematic sampling method. A total of 200 sellers were approached from various domains to participate in the survey, and 180 respondents took part in our survey. After deleting the incomplete/invalid responses, we analyzed a total of 167 responses.

4. Results

4.1 Reliability and validity of the Measurement Model

We performed confirmatory factor analysis (CFA) using AMOS 21 to test the input variables' reliability & validity, as presented in table 2. The results indicate that apart from 'Stakeholder Influence' and 'Inertia,' all other constructs have a Cronbach alpha value more than 0.7, establishing that the research constructs are reliable. Constructs 'Stakeholder Influence' and 'Inertia' being unreliable were removed from the further analysis model. Results also show that the Average variance expected (AVE) for the constructs is above .5, and composite reliability (CR) scores for all variables are above 0.7. This confirms the convergent validity of the scale.

Construct	Statements	FL
Payment Convenience	The e-payment system is easy to navigate and user friendly.	0.902
AVE (.76), CR (.9), α (.9)	The online payment system enables me to save time and money.	0.868
	Using an e-payment system is complicated.	0.843
Stakeholder Influence	Customers think that I should use Internet banking facilities.	0.629
AVE (.41), CR (.57), α (.579)	The bank staffs are helpful in the use of the Internet banking system.	0.647
Perceived Ease Of Use	It is easy to use the mobile payment apps	0.89
AVE (.64), CR (.84), α (.85)	Mobile banking provides sufficient information to identify different products.	0.72
	Mobile banking provides interactive interface by using icons, images, and moving pictures.	0.79
Transparency	It is easy to track sales using mobile payments	0.76
AVE (.55), CR (.7), α (.71)	I believe mobile banking companies are not hiding anything	0.72
Perceived Risk	I trust Mobile payment services are safe	0.58
AVE (.62), CR (.82), α (.81)	I don't feel confident that the use of mobile payment will not lead to my personal information being disclosed to unauthorized parties.	0.84
	I feel unsafe about losing my bank account password and PIN while using digital payments	0.89
Inertia	I am habitual to use digital payment systems	0.63
AVE (.32), CR (.57), α (.61)	I prefer going to bank for carrying out day-to-day transactions	0.39
	I will continue to use cash simply because I have done so regularly in the past.	0.63
Initial Trust	I would be free to give out my personal information when transacting online.	0.73
AVE (.42), CR (.58), α (.56)	It is important that others also trust the payment system I use.	0.55
Regret Avoidance	I regret using mobile payments	0.7
AVE (.6), CR (.84), α (.74)	I Feel using cash was far better option than m-payment	0.85
M-Payment Adoption	I intend to use mobile to M-Pay	0.84
AVE (.61), CR (.82), α (.83)	I consider it safe to use M-Pay when using mobile	0.71
	I advise others as well to adopt m-payments	0.77
Resistance to m-payment	I do not want to change selling process because of m-payment adoption.	0.93
AVE (.84), CR (.91), α (.92)	Overall, I do not want to change the current working methods because of m-payment adoption.	0.91

4.2

Path Analysis

The covariance-based structural equation model (SEM) using AMOS 21 was used to examine direct effects (H1-H8). The mediation effects were examined using the PROCESS macro. The result of the path analysis shown in table 4 indicates that 'Transparency' ($\beta=0.581$, $p<0.05$) has a positive effect on the vendors' acceptance of M-payments. Hence, **H3** was accepted. On the other hand, 'Payment Convenience' ($\beta=0.202$, ns) and 'Perceived Ease of Use' ($\beta=0.018$, ns) didn't significantly impact the 'acceptance of M-payment' by vendors. Hence **H1** and **H2** were rejected. Factors like Perceived Risk ($\beta=0.331$, $p<0.001$), Non-Compatibility ($\beta=0.234$, $p\leq 0.001$), and cash preference ($\beta=0.234$, $p\leq 0.001$) has a significant impact on resistance to M-payment systems by the vendors. Hence, **H4**, **H5**, and **H6** were accepted. Factors like Inertia and Stakeholder influence turned out to be unreliable. Hence hypotheses **H7** and **H8** are rejected straightaway.

The results of mediation effects are represented in table 5 indicate that Initial trust mediates the impact of Payment Convenience (indirect effect = 0.1311, LLCI = 0.0442, ULCI = 0.2188), Stakeholder Influence (indirect effect = 0.1915, LLCI = 0.0725, ULCI = 0.3189), Perceived Ease of Use (indirect effect = 0.1717, LLCI = 0.0847, ULCI = 0.2648) and Transparency (indirect effect = 0.1966, LLCI = 0.1062, ULCI = 0.294) on acceptance of M-payment by vendors. Hence, hypothesis **H9a**, **H9b**, **H9c**, and **H9d** were accepted. Regret Avoidance mediates the relationship of Perceived Risk (indirect effect = 0.2113, LLCI = 0.0898, ULCI = 0.2951), Non-Compatibility (indirect effect = 0.3551, LLCI = 0.2351, ULCI = 0.5045), Inertia (indirect effect = -0.3781, LLCI

= -0.5115, ULCI = -0.2264) and Cash Preference (indirect effect = 0.2182, LLCI = 0.0946, ULCI = 0.3559) on resistance to M-payment by vendors. Hence, hypothesis **H10a**, **H10b**, **H10c**, and **H10d** were accepted.

Path	β value	SE
Payment Convenience → Acceptance of M-payment	0.202(ns)	0.14
Perceived Ease of Use → Acceptance of M-payment	0.018(ns)	0.30
Transparency → Acceptance of M-payment	0.581*	0.23
Perceived Risk → Resistance to M-payment	0.331 ***	0.06
Non-Compatibility → Resistance to M-payment	0.234***	0.05
Cash Preference → Resistance to M-payment	0.234***	0.05

Notes : *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; ns= not significant 5.

Discussion

Increasing internet penetration and improvement in telecom infrastructure have facilitated the increase of adoption of these payment options by the Indian consumer and vendors alike. Vendors expect the platform to be transparent in terms of having complete information regarding revenue sharing clearly stated. Nothing must be kept hidden from them, which turns out to be a crucial factor. However, in the case of vendors, factors like Payment Convenience (PC), Perceived Ease of Use (PEU), Stakeholder Influence (SI) didn't have a significant impact on their acceptance for M-payments. Contrary to what was observed in the context of customers in various studies (Ozken et al. (2009), Al-Qeisi et al. (2014), Pavel Andreev et al. (2012)). Since all platforms ensure payment convenience and ease of use, they probably have less impact on vendors' intention to adopt m-payment. As far as Stakeholder Influence is concerned, we found that vendors who adopted m-payment did so by taping the current trends in payments and banking and not under their customers' influence.

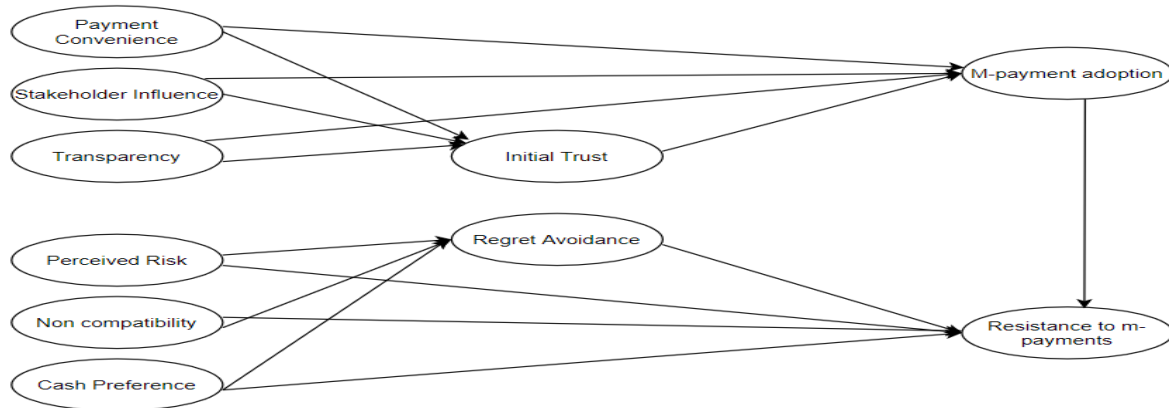
Further, results indicate that Perceived Risk, Non-compatibility, and Cash preference are factors that significantly impact vendors' resistance to adopt M-payment services. These results are consistent with previous research on a similar subject (Pavel Andreev et al. (2012)). Whereas factors like Inertia has no significant impact on the vendor's resistance to m-payments (Shankar and Kumari (2018)).

Initial Trust significantly mediates the impact of Payment convenience, Stakeholder Influence, Perceived ease of use, and Transparency on m-payment adoption intention. These findings are consistent with previous literature (Ozkan et al. (2009)). Regret Avoidance significantly mediates the impact of Perceived Risk, Non-compatibility, Inertia, and Cash preference on vendor's resistance to m-payment (Shankar and Kumari (2018)). Technology adoption is low in India, specifically rural areas. Vendors in India still prefer Cash as a primary means of transaction from customers.

6. Implication

6.1 Theoretical Implications

This study has several practical and theoretical implications. Theoretically, it contributes to M-payment literature by examining the different factors affecting adoption intention from the vendor perspective. Previous studies have been focused mostly on the consumer side of the M-payment ecosystem; this study describes the other side of the market and fills the gap. This study gives insights into how most commonly discussed factors like payment convenience and ease of use can vary significantly on the market's seller side. Since these two factors do not turn out to be significant compared to the customer side of the market. This study also explains why the adoption of M-payment is more on the customer side of the market and examines the resistance behavior towards m-payment from vendor perspective. Thus, enriching the trust literature.



6.2 Managerial Implications

Our study also provides important managerial implications for the M-payment systems. M-payments have a growing market in India. Furthermore, in a pandemic like situation caused by the COVID-19 outbreak where social distancing is required using Cash can be detrimental to public health because Cash needs physical contact, and it changes the hands of many people. Our study found that for the acceptance of M-payments, 'transparency' is a significant factor, whereas 'perceived ease of use' and 'payment convenience' are not. This can be explained by the fact that the simplicity of the interface and convenient payment are the inherent features of an M-payment system and are not a deciding factor in its adoption. In contrast, transparency is the benefit derived from those features. And, on the other hand, perceived risk, non-compatibility, and cash preference all are inhibitors. Meaning, there is a general lack of trust and understanding of the system among the sellers. There is also the issue of compatibility, i.e., digital infrastructure and digital literacy. The short-term solution to increase adoption is to incentivize them, like giving cashback, etc. But incentives can only be given to a limited number of people. To increase the adoption of M-payment among the sellers, the companies should focus on promoting transparency and other added benefits rather than focussing on the features. Increasing awareness is necessary to build trust among sellers in India.

7. Limitations and future research directions

Our study on M-payment adoption from the sellers' perspective has significant implications for management and academia. But there are certain limitations to our study. Firstly, our study is limited to the sellers in the Indian context only (both urban and rural). A study connecting the user (buyer) perspective & sellers' perspective may be needed to understand the payment ecosystem's full picture. Secondly, our study deals specifically with the Indian sellers, and the findings may not be entirely true for other economies. And the given model can be replicated for understanding M-payment systems in other developing and developed economies, which can help generalize the findings. Factors like 'stakeholder influence' and 'Inertia' were not reliable and hence were not examined. But, from an academic perspective, these factors might be important and needs to be re-examined. A multi-group analysis can be done between different education levels and type of seller to identify more specific models in terms of the demographic.

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Analysis of Green Supply Chain Power Structure Under Fairness Scheme

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Abstract

This paper studies a dyadic green supply chain with one manufacturer and one retailer where the manufacturer is subjected to fairness concern. The manufacturer produces a green product by investing in greening efforts. We develop two models where in one case the behavioural manufacturer is the Stackelberg leader and in another it is the Stackelberg follower. In both the models the manufacturer decides the wholesale price and greening expenditure while the retailer decides the retail price. The paper does a comparative study of the models and finds which model is better for the channel entities. The findings of the paper conclude that the total supply chain and the manufacturer having fairness concern is better off when the fairness concerned manufacturer is the channel follower.

Keywords: Behavioural operations research, fairness concern, power distribution, green supply chain.

Introduction

The rising of global warming and the changing biodiversity have put the future of the planet at imminent risk (Tseng et al. 2019). At the United Nations climate negotiations in Paris in 2015, countries promised to maintain the total global warming well below 2 degrees and agreed to “pursue efforts” to limit warming to 1.5 degrees (NY,2018).

To maintain the same, governments across the countries are putting different regulations on companies to control their day-to-day operations from an ecological perspective. Firms are thus putting in efforts to adopt Green Supply Chain by curbing carbon emission. Green Supply Chain Management (GSCM) includes integrating environmental thinking into (Srivastava 2007) : Product design, material sourcing and selection, Manufacturing processes, delivery of the final product to the consumers, end-of-life management of the product after its useful life.

Research Problem

Many empirical studies have shown that channel participants are not just bothered about maximizing their own profits but do care about fair allocation of the profit among all. The behaviour a channel member shows while caring about the fairness related to profit allocation is defined as FAIRNESS CONCERN which arises from inequity aversion. (Kaufmann and Stern 1988, Zhang et al 2019).

Contextual Literature Review

Paper	Fairness concern	Non linear demand	Behavioral channel leader	Greening efforts	Power distribution
Li et al (2018)	✓			✓	
Zhang et al (2019)	✓			✓	
Hu et al (2018)	✓		✓		
Liu et al (2020)	✓				
Qian et al (2020)	✓			✓	
Kirshner and Shao (2018)	✓				
Chakraborty et al (2018)		✓			✓
Liu and Chen (2019)	✓		✓	✓	
Liu et al (2019)	✓			✓	
Li et al (2018)					✓
Nielsen et al (2019)				✓	✓
Zheng et al (2019)					✓
Couzon et al (2019)		✓			
Yaghin (2020)		✓			
Our Paper	✓	✓	✓	✓	✓

Research gap

So far research has been focused mostly only on the scenarios where the channel follower is concerned about its fairness when the manufactured product is green. However, there might be scenarios where the channel leader is also concerned about its fairness. For example in the work done by Chakraborty et al. 2018 we see that by considering iso-elastic demand function the risk neutral channel leader ends up having less profit which might give rise to inequity aversion. Thus even though there is a possibility where the channel leader may face fairness concern not much work has been done on it. In our paper we try to fill this gap by considering the scenario where the channel leader faces fairness concern.

Models

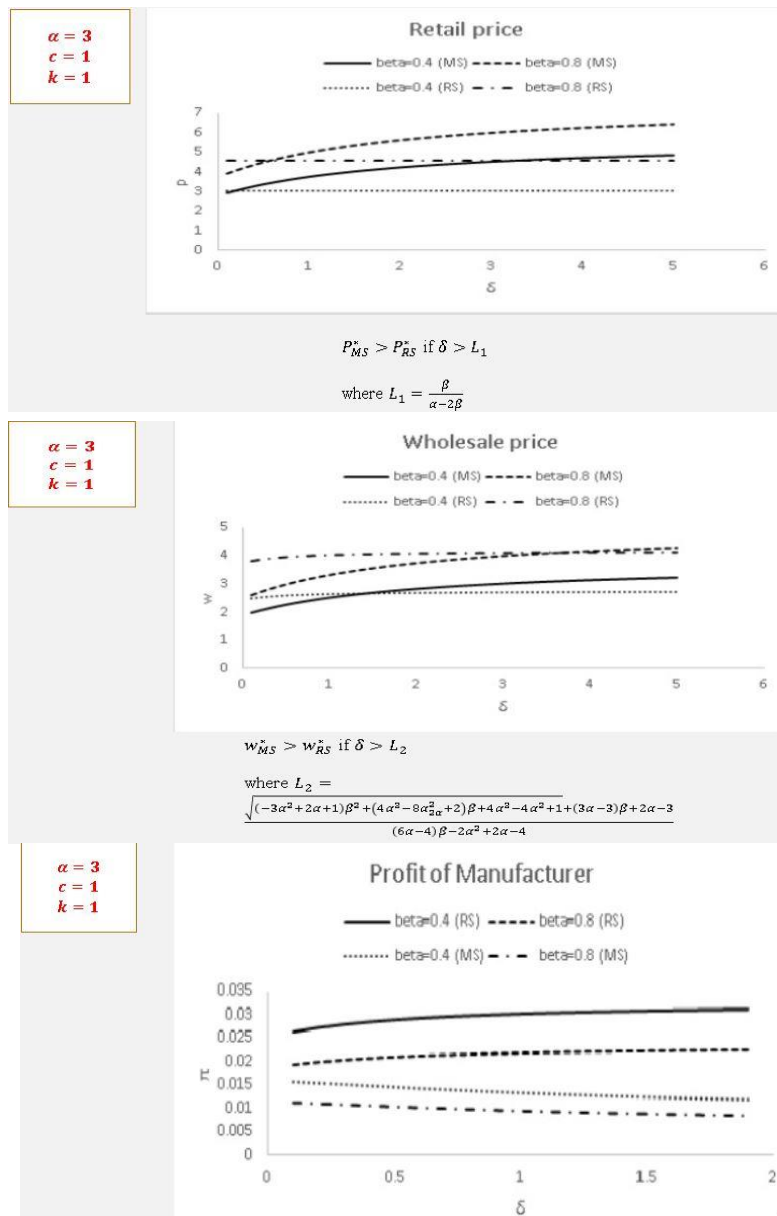
- CENTRALISED CASE: Both the retailer and the manufacturer take decisions jointly on the retail price and the greening expenditure
- MS MODEL: Manufcaurer (Stackelberg leader) :wholesale price and greening expenditure. Retailer (Stackelberg follower) : retail price.
- RS MODEL: Retailer (Stackelberg leader): margin. Manufacturer (Stackelberg follower): wholesale price and greening expenditure.

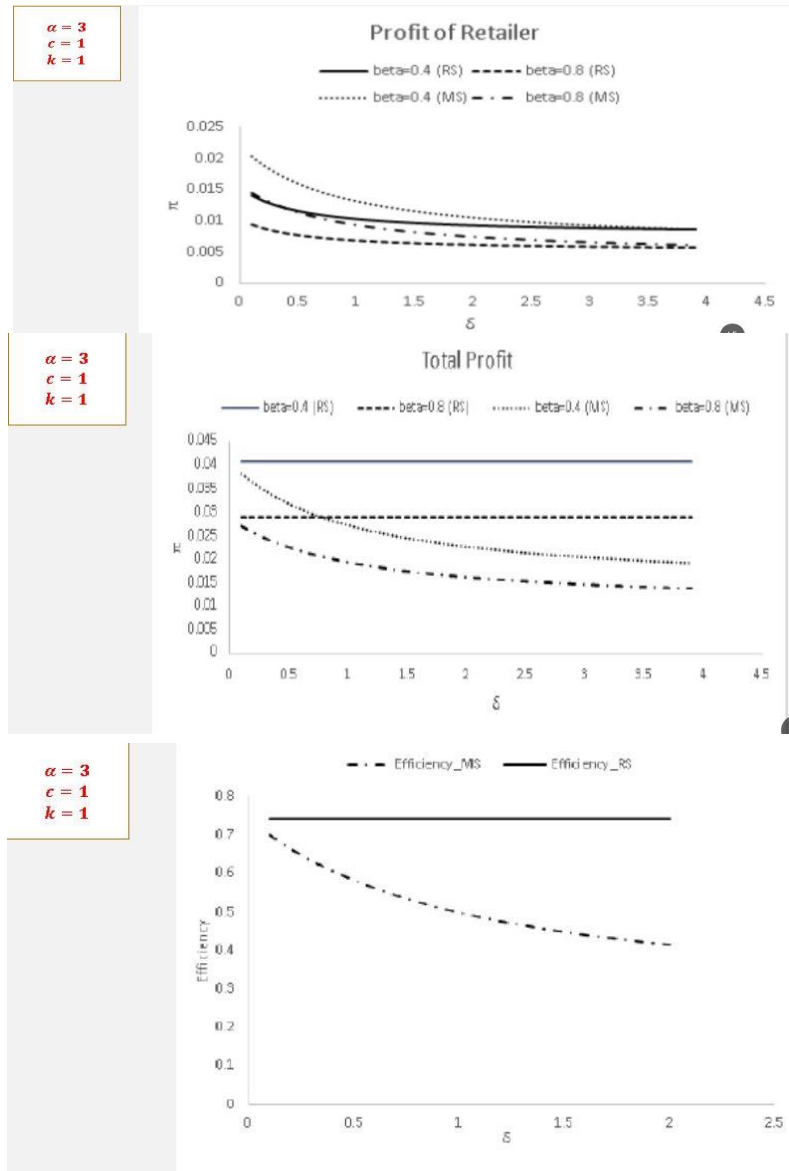
	CENTRALISED CASE	MS MODEL	RS MODEL
EQUATIONS	$D(P, G) = kP^{-\alpha}G^{\beta}$ $\pi_c = D(P - c - G)$	$D(P, G) = kP^{-\alpha}G^{\beta}$ $\pi_R^{MS/RS} = (P - w)kP^{-\alpha}G^{\beta}$ $\pi_M^{MS/RS} = (w - c - G)kP^{-\alpha}G^{\beta}$ $U_M^{MS/RS} = \pi_M - \delta(\pi_r - \pi_M)$	
LEMMAS	<p>If $\alpha > 2$ the profit function π_c is concave in P and G. The optimal values are given by: ($0 < \beta < 1$)</p> <p>a) $P_c^* = \frac{\alpha c}{z}$</p> <p>b) $G_c^* = \frac{\beta c}{z}$</p> <p>c) $D_c^* = k(\frac{c\beta}{z})^{\beta}(\frac{c\alpha}{z})^{-\alpha}$</p> <p>d) $\pi_c = k\beta^{\beta}\alpha^{-\alpha}(\frac{c}{z})^{-z}$</p> <p>where $z = \alpha - \beta - 1$</p>	<p>If $\alpha > 2$ the profit function is concave in P and utility function is concave in w and G. The optimal values are: ($0 < \beta < 1$)</p> <p>a) $w_{MS}^* = \alpha(\alpha - 1)X$</p> <p>b) $P_{MS}^* = \alpha^2 X$</p> <p>c) $\pi_R^{MS} = \frac{k\alpha(\frac{c\beta}{z})^{\beta}X^{1-\alpha}}{\alpha^{\alpha}z}$</p> <p>d) $\pi_M^{MS} = \frac{ck(\alpha-1)(\frac{c\beta}{z})^{\beta}(2\delta+1)X^{-\alpha}}{\alpha^{\alpha}zY}$</p> <p>e) $U_M^{MS} = \frac{ck(\frac{c\beta}{z})^{\beta}(\delta+1)X^{-\alpha}}{\alpha^{\alpha}z}$</p> <p>where $X = \frac{c(\delta+1)}{y}$ and $Y = z((\alpha - 2)\delta + (\alpha - 1))$</p>	<p>If $\alpha - \beta - 1 > 0$ the profit function is concave in μ (margin) and utility function is concave in w and G. The optimal values of the RS model are: ($0 < \beta < 1$)</p> <p>a) $w_{RS}^* = \frac{F(2\delta+1) - c\alpha(\delta+1)}{z^{\alpha}(2\delta+1)}$</p> <p>b) $P_{RS}^* = \frac{F}{z^{\alpha}}$</p> <p>c) $G_{RS}^* = \frac{F\beta}{\alpha z^{\alpha}}$</p> <p>d) $\pi_R^{RS} = \frac{ckG(\delta+1)}{F^{\alpha}z(2\delta+1)}$</p> <p>e) $\pi_M^{RS} = \frac{ckG((3(z+1)-1)\delta - (z+1))}{F^{\alpha}z(2\delta+1)}$</p> <p>f) $U_M^{RS} = \frac{ck(z+1)G(\delta+1)}{F^{\alpha}z^{\alpha}}$</p> <p>where $F = c\alpha(z+1)$ and $G = c\beta(z+1)\beta z^{2(z+1)}$</p>

Discussions

- PROPOSITION 1: In the MS model the wholesale price set by the manufacturer and the retail price set by the retailer increases with increase in the manufacturer's fairness concern. The profits of the manufacturer, retailer and the total SC all decreases with increase in the manufacturer's fairness concern.
- PROPOSITION 2: In the RS model The wholesale price set by the manufacturer increases with increase in the manufacturer's fairness concern, however the retail price set by the retailer is independent of the manufacturer's fairness concern. The profit of the retailer decreases with increase in the manufacturer's fairness concern. While the profit of the manufacturer increases with increase in the manufacturer's fairness concern and the entire supply chain profit is independent of the manufacturer's fairness concern.
- PROPOSITION 3 : In the MS model: $\pi_R > \pi_M$ if $\delta < \frac{1}{\alpha-2}$. In the RS model: $\pi_M > \pi_R$ for all δ .

NUMERICAL ANALYSIS





Conclusion

We conclude that the manufacturer having fairness concern is better off as a channel follower. The entire supply chain is also better off when the manufacturer is fairness concerned and is the channel follower.

Future research directions

Possible extensions of this work could be studying various contracts like whole sale price contract and revenue sharing contract under the same conditions and see if they coordinate or not. Come up with a new contract which coordinates the entire SC and makes the SC efficient.

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Creating Sustainable Practices using HRM Systems during Turbulence: Towards a Model for Green Culture Development

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Abstract

The need for organisations to operationalise sustainably has augmented in current times of expeditious changing climate and viral spread of Covid-19. Hence, this study attempts to explore the mechanisms through which HR systems can engender a sustainable outcome, especially in a turbulent environment. The research intends to formulate a model that establishes the relationship between Green Human Resource Management (GHRM) systems and environmental outcomes, such as, Green Innovation and Environmental Performance while mediated through organisational culture in a turbulent environment. To assimilate the rapidly changing demands, the study integrates absorptive capacity within the framework and uses the theoretical lens of institutional logics to explain the given linkage. The study provides managerial implications, theoretical contribution and future directions for the research in GHRM and sustainable outcomes.

Keywords: environmental performance, green human resource management, green innovation, turbulent environment

Introduction

The viral spread of Coronavirus disease 2019 (Anderson, Heesterbeek, Klinkenberg, and Hollingsworth, 2020) facilitated through an unorganised wet market (Roosa, Lee, Luo, Kirpich, Rothenberg, Hyman, and Chowell, 2020) has a profound socioeconomic impact on the world (Craven, Mysore and Wilson, 2020). Similarly, climate-change associated sea level-rise triggered through augmenting environmental pollution could engender an expected global loss of 0.15% of dry land by 2050 (Bosello, Roson, and Tol, 2007). Such events have intensified the debate on understanding the mitigative mechanisms for environmental damages and have developed an urgent need for adopting sustainable corporate practices (Gadenne, Mia, Sands, Winata, and Hooi, 2012). One of the ways of cultivating sustainable organisational systems that enhances firm's environmental performance is through establishing robust organisational culture via green human resource management (GHRM) practices (Roscoe, Subramanian, Jabbour, and Chong, 2019). Such pro-environmental organisations could alleviate systemic environmental abuse prevalent by various economies in the current times.

GHRM has been defined as human resource activities that have the potentiality to develop sustainable outcomes (Kramar, 2014). Few studies have shown that green human resource management (GHRM) systems can develop a pro-environmental culture for internal stakeholders to voluntarily increase organisational environmental performance (Pham, Tučková, and Jabbour,

2019). However, dynamically and rapidly changing environmental sub-dimensions such as, demand of customers, realigning of the suppliers, altering technology and changing socio-politics, defined as turbulence, (Conner, 1998) need to be addressed and accordingly the firm needs to adjust to ensure holistic development of pro-environmental organisational culture. The absorptive capacity of the firm (Zahra and George, 2002) influences the organisational tendency to subsume the impact of these environment dimensions to advance green organisational culture during turbulence.

Probing the linkage between GHRM systems and green organisational culture is extremely instrumental for the researchers to ensure sustainable development (Jackson, Renwick, Jabbour, and Muller-Carmen, 2011). Moreover, the literature on the development of sustainable organisational culture through GHRM practices for green outcomes, especially during the turbulent period is highly unde-researched (Daily, Bishop, and Massoud, 2012). Hence, our study intends to enrich the GHRM literature through the development of a framework entailing cultivation of green organisational culture via GHRM systems during turbulence to foster environmental performance and green innovations. Environmental performance (EP) refers to the measures that indicate pro-environmental outcomes of the organisation, such as, waste reduction, recycling performance, cost savings and continuous improvements (Montabon, Sroufe, and Narasimhan, 2007). The framework has been constructed through propositions that establishes the mediating role of organisational culture between GHRM systems and environmental outcomes (EP and Green Innovations). At the same time, the model features the moderating influence of absorptive capacity on the relationship between GHRM systems and green organisational culture during turbulence (refer figure 1).

The study adopts the theoretical lens of institutional logics to facilitate the understanding of the linkage between green employee behaviour and pro-environment organisational culture established via GHRM systems. Institutional Logics have been defined as a group of material practices enveloping a particular value system (Mutch, 2018). In our study, the value corresponds to the assimilation of green practices within the firm. These logics act as an anchor to prescribe individual and organisational behaviour under specific social settings (Fan and Zietsma, 2017), such as in the study, logics would be the corporation that fosters green-centric behaviour among the employees within the organisational context acting as an anchor for their behavioural prescription.

The paper begins with a brief review of GHRM and green organisational culture. The second section and third section of the study highlights the theoretical underpinning of institutional logics that facilitates in formulating the propositions and delves into the conceptual framework construction through propositions development, respectively. The fourth section discusses the theoretical contribution of the study, the managerial implication of the model, provides future directions for the researchers and highlight the limitations of the study. The last section summarises our complete research through a comprehensive conclusion.

GREEN HUMAN RESOURCE MANAGEMENT AND GREEN ORGANISATIONAL CULTURE

Connelly and Smith (2012) stated that sustainable development entails simultaneous assimilation of economic development and social welfare with pro-environmental orientation. Augmented cognisance of environmental harm among the masses demanded organisation to align their policies to protect the environment and ensure sustainable development (Bansal and Hunter, 2003). Thus, organisations began to restructure their policies, practices and procedures to align

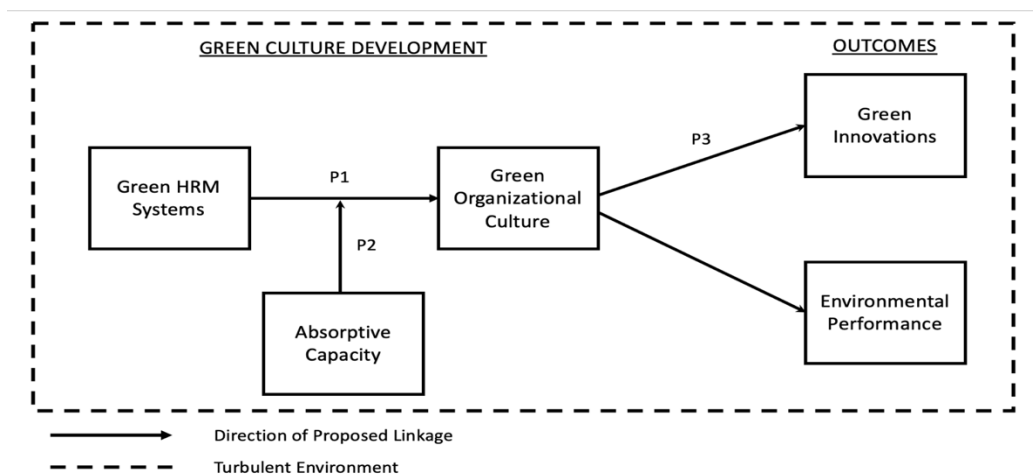
with environmental management (Marshall and Brown, 2003) to subscribe to stakeholders demands for clean and green growth (Jabbour and Santos, 2008). The changed structure to foster sustainable development engendered HR systems that ensured environmental driven changes and that enhanced behavioural disposition of employees towards environmental performance (Taylor, Osland, and Egri, 2012; Jabbour and Jabbour, 2016). The HRM dimension for establishing environmental management in the organisation fall under the ambit of Green Human Resource Management, also abbreviated as GHRM (Taylor et al., 2012). Few GHRM systems include recruiting environment-conscious employees (Egri and Herman, 2000), dissemination of pro-environmental information during training sessions (Renwick, Redman, and Maguire, 2013), and incentivising environmental-friendly behaviour (Fernández, Junquera, and Ordiz, 2003). According to Brockbank (1999), HRM systems tend to affect organisational culture. Thus, environment-friendly infused HRM systems would eventually consolidate green organisational culture.

Organisational culture has been explained as the symbols, rituals, and shared understanding in the firm manifesting beliefs, values and norms and thus, cumulatively the philosophy of the organisation, which further determines the expected set of behaviour in the firm among the internal stakeholders and acts as an anchor for the organisation during the turbulent period (Ulrich, 1984; Schein, 1992). As the organisational philosophy gets enveloped around pro-environmental orientation, green organisational culture is manifested. HRM systems can be utilised to develop specific orientation (Brockbank, 1999), and in this case, an environmental approach to nurture green practices in the firm.

Theory and Proposition Development

The study utilises the theoretical lens of Institutional logics to explain the role of absorptive capacity in assimilating green practices during rapidly changing environmental dimensions. Different stakeholders need to ensure that these bundle of practices align with the intended institutional environment (Boon, Paauwe, Boselie, and Den Hartog, 2009) and HRM systems that facilitate in the given synchronisation. Hence, HRM systems assimilating the changing demands during turbulence to create pro-environmental behaviour can be explained using institutional logics. Using the theoretical lens of institutional logics, our conceptual model has been formulated, and the following propositions have been developed (refer figure 1).

Figure 1: Green Culture Development Framework



HRM systems have a profound impact on the organisational culture as it has the potentiality to affect the beliefs, values and norms of the organisation via interdependent HRM systems such as recruitment, training, performance management, and compensation (Amini, Bienstock, and Narcum, 2018). Thus, an HRM system designed to train employees towards sustainable development and formulating an incentive structure that rewards pro-environmental behaviour leads to fostering a green culture in the organisation (Attaianese, 2012).

Proposition 1: Green HRM Systems tend to foster a pro-environmental organisational culture

GHRM systems affect sustainable organisational culture, and the absorptive capacity of the firm influences this relationship. The dynamic capability of the firm to manifest knowledge and utilise the firm's ability to develop sustainable competitive advantage is defined as the absorptive capacity of the organisation (Zahra and George, 2002). This capacity is instrumental in enhancing financial performance and environmental performance of the organisation, especially during a rapidly changing and uncertain environment (Delmas et al., 2011). Once new knowledge is generated using subsumed environmental dimensions via absorptive capacities, then the acquired knowledge is moved across the organisation through individuals via established HRM systems (Nonaka, 1994). The manifested knowledge once consolidated in the organisation is inferred by internal stakeholders using various HR techniques (Klaas, Semadeni, Klimchak, and Ward, 2012). Further, this knowledge creation in the firm influences complex set of beliefs, ideas and assumptions and in turn enhances the overall organisational culture of the organisation (Wang, Su, and Yang, 2011).

Proposition 2: Augmented Absorptive capacity of the firm, especially during the turbulent period strengthens the relationship between GHRM systems and organisational culture

Innovative climate and organisational capabilities assist innovation activities and such climate and capabilities are fostered through the organisational culture (Muffatto, 1998). A study by Hempel and Chang (2002) analysed that once the new organisational culture of 'hi-tech model' was established in the Taiwanese firms using HR techniques, high-tech innovations augmented in these organisations. Thus, in alignment with the findings of Hampel and Chang (2002), a culture formulated around green values and beliefs would stimulate innovations that mitigate environmental damage, also called as green innovations.

Proposition 3: Pro-environmental organisational culture leads to green innovative products and services

Discussion

Amid environmental urgencies, there is a dire need for organisations to adopt pro-environmental behaviour. Hence, our study is an attempt in the same direction as it proposes a holistic cultural development model for sustainable outcomes for the organisation, especially in a turbulent environment. The sustainable consequents in the framework have been established through a green organisational culture that in turn has been consolidated via GHRM systems. Since, firms need to operationalise in a rapidly altering environment, their capacity to generate and integrate new external knowledge become instrumental. Thus, the absorptive capacity of the firm takes the forefront in assimilating this new knowledge with the existing one. Institutional logics have been used as the theoretical lens to explain the way organisational culture moulds its practices around the external demand of pro-environmental orientation to amalgamate with the expected behaviour of internal stakeholders in the firm. Thus, our research attempts to make a theoretical contribution towards institutional logics realm by probing the way institutional logics operationalises based on the newly simultaneously generated knowledge in the organisation. The

research provides a robust scaffolding for human resource managerial domain. Using the proposed model, HR managers and practitioners can be cognisant of designing HR systems that infuse green practices in the firm, and that can lead to environmental-friendly innovations and enhanced EP. Every study has its set of limitations, and our study is no exception. As the research provide a conceptual model through proposition building, it does not offer any empirical generalizability (Becker, 1996). Hence, our claims of the study need to be substantiated empirically to ensure its applicability to broader contexts. At the same time, we anticipate that green innovations would influence EP, and this dimension has not been probed in our study. The study provides directions to future researchers to understand various mechanisms and interplays during the cultivation of pro-environmental culture through GHRM systems. It opens the plethora of perspectives for sustainable researchers to explore the ways organisations subsume environment-centric beliefs and values during turbulence. Thus, the model provides hope for organisations to adopt a pro-environmental culture and contribute in achieving United Nation's Sustainable Development Goal (SDG) number eleven to make human settlements and cities more sustainable (United Nations, 2020).

Conclusion

The extent of literature is at the nascent stage on developing a robust model for cultivating green organisational culture via GHRM systems for achieving environmental outcomes. Our study is among the first few studies that probe the mediating role of organisational culture through GHRM systems to acquire sustainable outputs in the turbulent context. Our model has the potentiality for the firms to become more accommodative of practices leading to green innovations and advance environmental performance in a rapidly changing environment. Hence, our study attempts to stimulate management research to explore the proposed linkage --- both theoretically and empirically.

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Sustainability Mindset: Micro-foundation of Dynamic Capabilities for Innovation for Sustainability

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Abstract

This study explores the key components of a sustainability mindset for innovation for sustainability based on the perspectives of dynamic capabilities view of strategic management and cognitive psychology stream of mindset theory. In an organization, a sustainability mindset is a driving factor for positive organizational outcomes such as innovations for sustainability. A sustainability mindset is conceptualized as a comprehensive set of psychological competencies, and entrepreneurial action capabilities for innovation for sustainability. A theoretically developed Sustainability Mindset (SM) framework for innovation for sustainability is presented, which consist of five critical components: sustainability intelligence, sustainability sensitivity, sustainability interactions, ethical capital, and sustainability actions. The practical implications of the study concerned the management of managerial level competencies and capabilities for enhancing innovation outcomes for organizational sustainability initiatives.

Keywords- Sustainability Mindset (SM), Innovation in organizational sustainability initiatives, Cognitive abilities, Emotional abilities, Dynamic capabilities

Introduction

Innovation for sustainability incorporates social and environmental dimensions alongside economic ones and thus has much bigger challenges which include the requirement of more integrated thinking, reconsideration of existing capabilities, stakeholder relationships, knowledge management, leadership, and culture (Larson, 2000; Adams et al., 2016). In the recent literature there seems to be an increased interest in the study of managerial competencies and capabilities that drive innovation for sustainability (Amui et al., 2017; Mousavi et al., 2019). This is largely driven by the empirical support for the effects of individual-level factors on corporate sustainability (Pappagiannakis et al., 2014).

Elkington (1997) posits that it is imminent for organizations to change the paradigm to become sustainable. This requires an overall value reorientation from the current economic rationality to the sustainability-oriented rationality focused on long-term survival (Shrivastava, 1995) shaped by managerial mindsets and dispositions (Ardichvili, 2013). In this study, we address the question of "what is a sustainability mindset that drives innovation towards potentially transformational sustainability initiatives in an organization?". We use the lenses of dynamic capabilities view (Teece et al., 1997; Teece 2007a) and the cognitive psychology stream of mindset theory (Gollwitzer 1990; 2012) to conceptualize the sustainability mindset as a set of managerial psychological competencies and managerial capabilities that drive innovation for sustainability in organizations. The study of different mindsets in organizational literature like the entrepreneurial mindset is a nascent field (Keane et al., 2019) apart from the extensive inquiry on a global mindset (Levy et al., 2007; Andresen and Bergdolt, 2017). In the context of innovation for sustainability, Cezarino et al. (2018) and Mousavi et al. (2019) had called for studying managerial mindset and capabilities that drive innovations in sustainability. The current study addresses these research gaps identified in the literature.

Theoretical foundation for a sustainability mindset for innovation for sustainability

Understanding innovation for sustainability

Innovation for sustainability is defined as the innovation that is developed to achieve the sustainability objectives of a firm and results in the renewal or improvement of products, services, technological or organizational processes to deliver not only economic value but also an enhanced environmental and social performance, both in the short and the long term (Bos-Brouwers, 2010a). Firms innovate for sustainability to transform themselves into higher levels of sustainability (Baumgartner and Ebner, 2010). Sustainability innovations refer to novelty not only in technology, but also in processes, procedures and practices, business models, systems and thinking (Szekely and Strebel, 2013).

Managerial competencies for innovation for sustainability

In the extant literature, different managerial psychological competencies such as managerial environmental awareness (Peng and Liu, 2016) environmental leadership (Chen & Chang 2013), environmental attitudes (Dibrell et al., 2011), eco-centric beliefs (Papagiannakis 2014), ecological concern (Bossle et al., 2016) and sustainable environmental orientation (Criado-Gomis et al., 2018) have been studied as driving factors for innovation for sustainability. Mousavi et al., (2019) highlights that when the manager's hold sustainability as a guiding mental principle, it drives the dynamic capabilities (Teece, 2007) for innovation in sustainability.

Managerial capabilities for innovation for sustainability

Managers are found to be an important resource for managing sustainability strategically (Aragón-Correa and Sharma 2003; Christmann 2000; Stead and Stead 2008). Organizations in which managers are committed to sustainability, there is a strong imperative to develop strategic leadership and management capabilities to meet the challenge of working effectively to promote both social and environmental forms of sustainable development (Gloet, 2006). Manager's dynamic capability has a positive impact on sustainability (del Mar Alonso-Almeida et al., 2017), and helps them detect changes in the market earlier and promote a greater social and environmental commitment (Buil-Fabregà et al., 2017). Lampikoski (2012) discovers three dynamic managerial capabilities for green innovation which are: making sense of the paradigm through curiosity, identifying partners and stakeholders, and connecting the strategy, leadership, and vision termed as research, recognize and revolutionize capabilities respectively.

Sustainability Mindset

Mindset captures a particular way of thinking or processing information. In an organization, mindset carries the collective thoughts and values of its employees into action (Goodpaster, 2006). Mindset research is grounded and conceptualized in the literature streams of cognitive psychology, social psychology, organizational leadership, and positive psychology (French II, 2016). Mindset is intrinsic to a person as it occurs in a person's head but also has the power to regulate the attitude and influence the behavior (Fang et al., 2004). In the cognitive psychology literature, mindset is a specific cognitive process or a specific grouping of cognitive processes to facilitate a given task (Torelli and Kaikati, 2009). Mindset theory identifies both a task and the cognitive mechanisms that get activated to successfully perform the given task (Gollwitzer and Bayer, 1999, Gollwitzer, 2012).

Borland et al. (2016) has highlighted that a transformational strategy for sustainability requires both a managerial mindset and a set of differential and augmented capabilities. In the context of innovation, Tollin and Vej (2012) and Metz et al. (2016) have put forth the need for establishing a sustainability mindset in organizations to drive sustainability-driven innovation. Kalish et al. (2018) have identified a sustainability mindset as a fundamental building block of new product development. We propose a concept of sustainability mindset as a comprehensive set

of managerial psychological competencies and managerial capabilities that drives innovation for sustainability initiatives of a firm combining the mindset theory of cognitive psychology and dynamic capabilities view of strategic management. The sustainability mindset of the managers embodies the cognitive, emotional, ethical, and relational capabilities, and managerial action capabilities that enable the development of innovation for sustainability in organizations. The sustainability mindset concept we propose has similarities to the dimensions of a global mindset, which comprises of intellectual capital, psychological capital and relational capital (Beechler and Javidan, 2007) and orientation, knowledge, and behavior (Cseh et al., 2013). In the literature of globalization, Nielsen (2014) argues that a global mindset is a meta competence and organizational capability. Rimanoczy & Laszlo (2017) conceptualizes a sustainability mindset comprising three critical components of knowing, being, and doing.

Cognitive capital for managing innovation for sustainability

The cognitive capital of managers reflected sustainability-related knowledge skills. Hahn et al. (2014) propose that managers with more complex cognitive frames will have a more inclusive understanding of sustainability and adopt more proactive responses. Managerial cognitive capabilities are the capacity of managers to perform mental activities such as attention, perception, reasoning, and problem-solving (Helfat & Peteraf, 2015). The manager's perception of institutional pressures positively impacts proactive environmental strategy (Yang et al., 2019) and greater attention to emerging technologies (Eggers and Kaplan, 2009) fosters the development of innovation capability. Similarly, a long-term perception has a significant and positive effect on promoting effect on environmental product innovation and environmental process innovation (Liao, 2016). For innovating sustainability, managers needed to think holistically (Heiskanen, 2002). This life cycle thinking offers a holistic perspective by embracing all stakeholder considerations, the environmental impact of products and services (Bocken and Short; 2015). According to Halbesleben et al. (2003), the temporal complexity of leadership was linked to creativity and innovation and has a significant impact on the leader competency set that is critical to lead people effectively in innovation-focused projects. We name the cognitive capital of managers as sustainability intelligence. The sustainability intelligence representing managerial cognitive capabilities are micro foundations of dynamic managerial capabilities (Helfat and Peteraf, 2015) for innovation for sustainability.

Emotional capital for managing innovation for sustainability

Managing sustainably also requires emotional abilities such as passion, sensitiveness, empathy, and environmental values (Montiel et al., 2018). Shrivastava (2010) stated that sustainability-related behavioral changes require emotional skills like passionate commitment and emotional engagement. Huy and Zott (2019) elucidates that managerial emotion regulation behaviors could be construed as an important micro-foundation of dynamic managerial capability. Arnaud and Sekerka (2010) illustrated positive emotions are linked to innovation for sustainability. We name the positive emotional capital as sustainability sensitivity, which is the affect component of the sustainability mindset. These emotional capabilities are micro foundations of dynamic managerial capabilities (Huy and Zott, 2019) for innovation for sustainability.

Ethical capital for managing innovation for sustainability

The managers require strong ethical reasoning abilities as part of their cognitive skills to facilitate innovation for sustainability. The ethical values (Alas et al., 2006) upheld by the managers provide a strong ground for them to make normative assessments of activities of the organization about its rightness regardless of costs or benefits to the organization. Such managerial value assessment and an organizational climate grounded in ethics (Arnaud and Sekerka, 2010) of a firm's activities and moral reasoning whether it is the right thing to do

(George, 2003) are linked to innovations in sustainability (Thomas and Lamm, 2012). Ethical capital corresponds to ability of managers to reason and justify sustainability initiatives based on the fact that it is the right thing to do (Margolis and Walsh 2003) and could be construed as a micro foundation of dynamic managerial capabilities for innovation (Haney, 2017).

Social capital for managing innovation for sustainability

The managers has to possess competencies in dialogues and persuasive and positive communications that enabled new understanding, insight, and actions (Smith et al., 2012). According to Helfat and Peteraf (2015), language and communication was a dynamic cognitive capability, which is a means for raising awareness, encouraging collaboration, and enhancing collective actions (Roper et al. 2004). Institutional dialogues were found to drive innovation for sustainability (Mousavi and Bossink, 2017). Bansal (2002) enumerated that by engaging in dialogue, the organization and societal actors can identify worthwhile activities and suitable measures of sustainable development. In addition to interactional and persuasive skills, manager's social skills of care and empathy (van Kleef and Roome, 2009) and compassionate conduct (Baucus et al., 2008) facilitated collaboration and cooperation to pursue novel and sustainable products and services. We name the social capital of managers as sustainability interactions, which are the capabilities related to the language and social interactions and their positive support for stakeholders and they form the micro foundations (Helfat and Peteraf, 2015) of dynamic managerial capabilities for innovation for sustainability.

Managerial innovation for sustainability capabilities

Managerial capabilities for innovations for sustainability are the capabilities with which managers manage the creativity and innovativeness for sustainability (Helfat and Martin, 2015). Innovation for sustainability required managers to gather sustainability-related data and insights from the business environment through internal procedures to identify and evaluate the sustainability impact on the environment (Mousavi et al., 2019). Innovation for sustainability was driven by managers through their knowledge integration capability (Albort-Morant et al. 2016), environmental scanning capability (Chang, 2018) and green knowledge capability (Fernandez-Mesa et al., 2011). The managers had to possess information sharing capability, and joint sense-making capability (Albort-Morant et al. 2016) to provide sustainability-related inputs to the entire organization including the cross-functional teams and the R&D teams. The managers had to collaborate with highly diverse teams both internally and externally to solve sustainability-related problems (van Kleefe and Roome, 2009). Dangelico and Pujari (2013) and Hartmann and Germain (2015) elaborated on the internal and external integration capability such as cross-functional integration and the creation of collaborative networks along the supply chain for innovation for sustainability. The managerial routines and capabilities to maintain trust, solve problems collectively, and the capabilities to form and maintain strong relationships were found to be significant for driving innovation for sustainability (Van Kleef and Roome, 2009). As per Ayuso et al. (2006), stakeholder dialogue and communication capability are crucial for innovation for sustainability. We name the managerial capabilities for innovation for sustainability as sustainability actions, which are the entrepreneurial activities (Ambrosini and Altintas, 2019) such as knowledge management and stakeholder management capabilities that are micro foundation of dynamic capabilities (Schneckenberg et al., 2015; Castiaux, 2012) for innovation for sustainability.

We propose a Sustainability Mindset (SM) framework for managing innovation for sustainability (Refer to Figure 1) to theorize our findings.

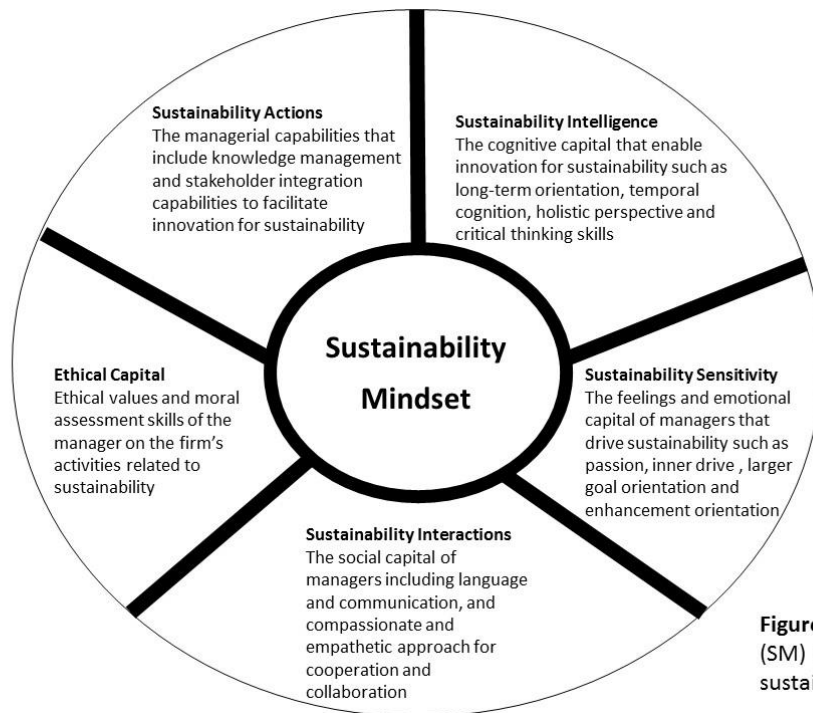


Figure 1: Sustainability Mindset (SM) Framework for innovation for sustainability

Theoretical and Practical Implications

This study has major theoretical implications. Firstly, we intended to advance the conversation of managerial idiosyncrasies as a resource for leading positive organizational outcomes in the context of innovation for sustainability. The concept of sustainability mindset has advanced the scholarly pursuit in understanding, deciphering, and developing managerial competencies to design and realize appropriate solutions towards sustainable development (Wesselink et al., 2015). Secondly, we have expanded the scope of managerial level factors from the current focus of minute behaviors or patterns of behavior such as managerial perception, attitudes, or beliefs in the context of sustainability. In doing so, we have advanced the understanding of a sustainability mindset by conceptualizing it as a comprehensive set of managerial psychological competencies and managerial capabilities. To theorize these findings, we have proposed the Sustainability Mindset (SM) framework (Figure 1). This study has very important managerial implications. Firstly, the study has explicated a sustainability mindset as the right mindset for innovation in sustainability, which can bring positive changes in the organization in the direction of sustainability. The mindset of managers could lead to positive organizational outcomes, which requires nurturing of the underlying psychological competencies. Secondly, the study indicated the importance of the non-technical skills sets of managers that drive innovation for sustainability as against the technological and R&D skills that drive innovation for sustainability. Organizations thus are required to put in place the right managerial capabilities along with the technological and R&D capabilities for driving innovation for sustainability. This means that corporate attention needed to be focused on recognizing and nurturing a sustainability mindset for fostering innovation for sustainability in organizations.

Conclusions and Future Scope

This study's main objective was to understand the components of a sustainability mindset that drive innovation for sustainability. It was conceptualized as a mix of psychological competencies and managerial capabilities that are essential in a sustainability context of an organization to make strategic business decisions for sustainability. We have advanced the understanding of mindset as a managerial meta competency and capability in the context of innovations for sustainability by uncovering the underlying dimensions of a sustainability mindset. As a future scope, further

research should investigate the organizational context, cultural contexts, and individual-level factors that foster a sustainability mindset. It would be a future area of study to identify the relationship between the different dimensions of a sustainability mindset and their influence on each other. Finally, it is required to develop a scale for a sustainability mindset to undertake large scale quantitative studies and generalize the findings of the study.

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'It depends': Regulatory Focus & Risk-taking Behavior

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Abstract

The research intends to show that risk-taking behavior of different types of individuals depend on the type of situation they face. Specifically, promotion-focus individuals are more likely to be risk-taking in uncertain gain situations while; prevention-focus individuals are more likely to be risk-taking in loss situations. By doing so, the research highlights boundary conditions of Prospect theory and Regulatory focus theory.

Keywords: Regulatory focus theory, Prospect theory, gains, losses, risk, risk taking behavior.

Scenario A (Uncertain Gain Situation)

I: Gaining Rs. 100

II: 70% chance of gaining Rs. 200, 30% chance of gaining nothing.

Scenario B (Uncertain Loss Situation)

I: Losing Rs. 100

II: 70% chance of losing Rs. 200, 30% chance of losing nothing.

Most people should select Option I in Scenario A and Option II in Scenario B, suggests Prospect theory, which posits that people treat gains and losses differently such that “individuals tend to be risk-averse with respect to gains and risk-acceptant with respect to losses” (Kahneman & Tversky, 1979).

As a pretest, I asked participants which of the two options would they choose in Scenario A and the same to another set of people in Scenario B. Table A shows the option selected by 49 individuals who responded.

	Option I	Option II
Scenario A	13	19
Scenario B	10	7

Table A: Pretest Result (Showing number of participants in each cell)

The result shows, contrary to the expectation, about 59% of the respondents chose Option II (riskier option) in Scenario A (uncertain gain situation) and option I (risk-free option) in Scenario B (uncertain loss situation). This leads us to the central question that the paper seeks to answer- Do different people exhibit differential risk taking behavior in different situations?

We draw upon Regulatory focus theory (Higgins, 1998), which demonstrates different risk taking behavior among promotion and prevention focus individuals. “A chronic promotion focus entails a propensity to take greater risks, whereas a chronic prevention focus entails greater risk aversion because individuals with a promotion focus are motivated to pursue attainment goals as they seek gains and try to avoid non-gains, whereas individuals with a prevention focus are motivated to pursue avoidance goals as they seek non-losses and try to avoid losses” (Higgins & Spiegel, 2004; Grant & Higgins, 2003).

Prospect theory promulgates that people are more risk averse in case of gains while they are

more risk acceptant with respect to losses (Kahneman & Tversky, 1979). Parallely, Regulatory focus theory communicates that promotion-focus individuals tend to take greater risks as compared to prevention-focus individuals because of former's eagerness to seek gains while the latter is vigilant to avoid losses. Taken together, this body of work from two different streams of research led us to question:

1. Are all people more risk averse with respect to gains and risk acceptant with respect to losses?
2. Are promotion focus people more risk-taking than prevention focus people in all situations?

We propose that promotion-focus individuals are more risk acceptant in case of gain situations while prevention-focus individuals are more risk acceptant in uncertain loss situations. Further, we postulate that the effect is moderated by the size of the gain/loss incurred. The risk-taking behavior of prevention and promotion-focus individuals are likely to converge as the size of the gain/loss increases.

Theoretical Background

Prospect Theory & Risk-taking Behavior

“Prospect theory posits that individuals evaluate outcomes to deviations from a reference point rather than with respect to net that their identification of this reference point is a critical variable, they give more weight to losses than to comparable gains, and that they are risk-averse with respect to gains and risk-acceptant with respect to losses” (Levy, 1992).

Elaborating on the third tenet (as mentioned above) of Prospect theory, people do not handle gains and losses in the same manner. They tend to take risk in loss situations while tend to be risk-averse in case of gain (Kahneman & Tversky, 1979). The phenomenon of loss aversion implies that “losses loom larger than gains” (Kahneman & Tversky, 1979; Thaler, 2000). “People prefer the status quo (or another reference point) to a 50/50 chance for positive and negative alternatives with the same absolute value” (Levy, 1992).

Regulatory Focus & Risk-taking Behavior

“Human beings have two basic motivational principles: approach pleasure and avoid pain” (Higgins 1997, 1998). The theory of regulatory focus is a goal pursuit theory, which states that “individuals tend to exhibit two motivational orientations: promotion orientation and prevention orientation” (Higgins 1997, 1998). Individuals with a promotion orientation tend to “perceive their goals as hopes and ideals” (Higgins, 1997). They are inclined to approach potential desirable outcomes. On the contrary, prevention-focus individuals perceive their “goals as duties and obligations” (Higgins, 1997). Thus “they focus on the potential for undesirable outcomes and intend to avoid them” (Higgins, 2000).

“An increase in strategic approach motivation (increasing eagerness) should be more evident for people in a promotion than a prevention focus, whereas an increase in strategic avoidance motivation (increasing vigilance) should be more evident for people in prevention than a promotion focus” (Forster et al., 2000). Promotion-focus individuals are more likely to be risk-acceptant, while prevention-focus individuals are typically risk-averse (Grant & Higgins, 2003).

Consistent with these theories, we propose that the type of situation at hand moderates the relationship between regulatory focus of individuals and their risk taking behavior. For the purpose of this research, by ‘type of situation’, we mean uncertain gain or loss situation. Since “promotion-focus individuals seek gains and avoid non-gains” while “prevention-focus people seek non-losses and avoid losses” (Higgins & Spiel, 2004), we posit that promotion-focus individuals, being eager and hopeful of attaining desirable outcomes, are more risk acceptant in case of uncertain gain situations to maximize gains; while prevention-focus individuals, with their focus on avoidance of undesirable outcomes, are more risk acceptant in uncertain loss situations to minimize losses. Promotion focus individuals experience a regulatory fit when they take risk in order to attain gains while prevention focus individuals experience a regulatory fit when they take risk to avoid losses. Therefore, this is our first hypothesis:

H1: Type of situation moderates the relationship between regulatory focus and risk taking behavior. When facing an uncertain loss (vs. gain) situation, prevention (vs. promotion) focus individuals are more risk-taking.

Promotion-focus orientation finds “success in achieving a maximal goal”, whereas success in prevention-focus orientation is in “achieving a minimal goal”. Similarly, failure in prevention-focus orientation is “failure to achieve a minimal goal”, while that in promotion-orientation is “failure to achieve a maximal goal” (Idson, 1999). Research suggests that prevention-focus individuals tend to be more loss averse as compared to promotion-focus individuals (Idson et al., 2000; Liberman et al., 2005). Therefore, Prevention-focus individuals will take risk in uncertain loss situations, as they will want to avoid loss, whereas will not take risk in uncertain gain situations as there is nothing to lose in such situations, moreover by taking risk they may lose the confirmed gain. On the other hand, promotion-focus individuals will take risk in uncertain gain situations, as they will want to maximize gains but their risk-taking propensity in uncertain loss situations will be lower, as there is nothing to gain in such situations. By taking risk, they might end up losing nothing i.e. a non-loss, but that’s still considered a failure by promotion-focus individuals and therefore, they will not want to take a risk in such a situation.

H2: Prevention-focus individuals (vs. Promotion-focus individuals) are more risk-taking in uncertain loss (vs. gain) situations in order to minimize loss (vs. maximize gain).

“Loss aversion occurs for large outcomes because the negative feelings associated with large anticipated negative outcomes are harder to discount” (Harinck et al., 2007). As the size of the loss increases in an uncertain loss situation, promotion-focus individuals should also be willing to take risk, as they might not find much merit in taking a risk to avoid a small loss, it may be more difficult to bear a large loss.

On the other hand, when the size of the gain is big (vs. small) in an uncertain gain situation, even promotion-focus individuals should be less willing to take risk to gain more, as its more difficult to give up a large sure gain than a small sure gain.

H3: Size of the loss/gain moderates the relationship between regulatory focus of individuals and their risk taking behavior in uncertain loss/gain situations. As size of loss/gain increases in an uncertain loss/gain situation respectively, risk taking behavior of promotion and prevention focus individuals converge such that in case of a large-sized (vs. small-sized) uncertain loss situation, both prevention and promotion- focus individuals are more likely to take risk to avoid incurring the large loss whereas in case of a large-sized (vs. small-sized) uncertain gain situation, both promotion and prevention-focus individuals are less likely to take risk to attain still larger gains.

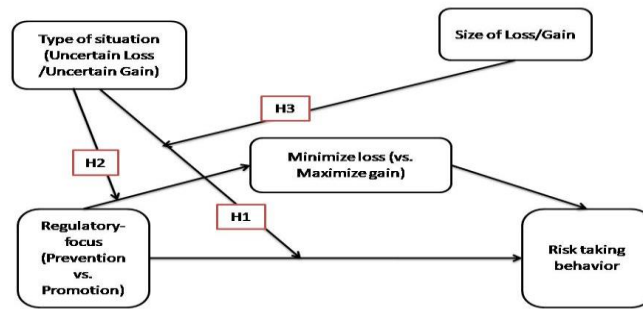


Fig. 1: The Conceptual Framework
The Current Study

In the following studies, we document how regulatory focus of individuals affects their risk taking behavior across different gain and loss situations. Specifically, study 1- Risk it or Not- tests the first hypothesis. It intends to demonstrate risk-taking behavior of participants with prevention and promotion regulatory focus in uncertain gain and loss situations of large and small sizes. Study 2- Minimize Loss or Maximize Gain- is planned to replicate this effect by manipulating regulatory focus among the participants and to show that the relationship is mediated by the participants' willingness to minimize loss or maximize gain.

Study 1

Method

Participants. One hundred and sixty participants (102 male, Mage= 24.76, SDage=4.009) from Indian Institute of Management (IIM) Indore completed the study.

Materials & Procedure. It is a 2(Type of Situation: Loss vs. Gain) X 2(Size of Situation: Small vs. Large) between-subjects design quasi-experiment. Participants were randomly assigned to one of the four conditions- Small gain, Small loss, Big gain and Big loss. The scenarios presented in each of the four conditions are provided in table 1, Appendix. The participants in all the four conditions had to choose between accepting a sure gain/loss and taking a risk (70% chance) of incurring double the gain/loss or no gain/loss at all. Next, to measure their regulatory orientation, participants in all the conditions were asked to answer a set of questions constituting regulatory focus measure (Lockwood et al., 2002) on a scale of 1-7. Finally, they were asked for their demographic details including their name, age and gender.

Results & Discussion

A logistic regression with prevention orientation and promotion orientation as covariates was conducted. For calculating prevention and promotion orientation, we averaged the prevention and promotion items separately across all the participants. The results (see Table B) can prove to be insightful: Prevention-orientation was significant at 0.1 level ($B=-.564$, $p\text{-value}= 0.085$) in small-gain condition. The negative regression coefficient indicates that higher the prevention-orientation, less likely are the participants to take risk in a small-gain condition, which is consistent with what we hypothesized (H1). Also, the regression coefficient for promotion orientation, though not significant, is negative for small-loss condition ($B=-.150$, $p\text{-value}= .688$), unlike all other conditions. This is in line with what we hypothesized (H3), that promotion-focus individuals are less likely to take risk in an uncertain small-loss situation. This could change in

case of big loss as big loss is more painful and promotion-focus individuals might want to take risk to avoid the loss.

We fathom that the reasons for not getting significant results in all the conditions may be multifold. Firstly, participants' answers in the regulatory focus measures seem inconsistent and high/low on both the orientations simultaneously for many participants. It is possible that it's difficult for participants to differentiate between items representing the two orientations, as the items may seem to be just a change in the wording (e.g. attaining something positive vs. avoiding something negative). Therefore, it's probably better to manipulate regulatory focus of participants and then ask them if they are willing to take risk in the uncertain gain/loss situations. Thirdly, making people decide on the basis of scenarios is different from them actually deciding in reality when real money is involved. But this can be argued as previous studies have used similar methodology in the domain of both prospect theory and regulatory focus (Kahneman & Tversky, 1979; Heath & Soll, 1996; Liberman et al., 2005). Additionally, the current times in light of COVID-19 & the ongoing lockdown are unprecedented, uncertain times. The data was collected in the lockdown; therefore participants' responses could be affected and thus may be different from usual.

Results show that a larger proportion of participants are willing to take risk in uncertain gain situations than in loss situations (Refer to Table C).

Big Gain	Chi-square	0.711	P-value=0.701		
	Nagelkerke R-square		0.021		
	Regulatory Orientation	B	S.E.	P-value	
	Prevention	-.222	.274	.419	
Promotion	.117	.282	.678		
Big Loss	Chi-square	0.735	P-value=0.693		
	Nagelkerke R-square		0.026		
	Regulatory Orientation	B	S.E.	P-value	
	Prevention	-.224	.315	.476	
Promotion	.279	.362	.442		
Small Gain	Chi-square	3.630	P-value=0.163		
	Nagelkerke R-square		0.129		
	Regulatory Orientation	B	S.E.	P-value	
	Prevention	-.564	.327	.085	
Promotion	.117	.371	.560		
Small Loss	Chi-square	0.885	P-value=0.642		
	Nagelkerke R-square		0.030		
	Regulatory Orientation	B	S.E.	P-value	
	Prevention	-.209	.320	.514	
Promotion	-.150	.373	.688		

Table B: Binary Logistic regression results for Study 1.

BIG GAIN	No Risk: 23	SMALL GAIN	No Risk: 15
	Risk: 21		Risk: 21
BIG LOSS	No Risk: 26	SMALL LOSS	No Risk: 27
	Risk: 14		Risk: 14

Table C: Number of participants who choose to take/not take risk in small/big gain/loss conditions.

It may be a confirming evidence (refer to Table C) that many participants wish to take risk in uncertain gain situations and many participants who don't wish to take risk in uncertain loss situations, showing prospect theory is not universal and there are potential boundary conditions to it. This can be seen as an affirmation of the pre-test we conducted and reported at the starting of this research, thus validating our research question.

The Planned Study

Study 2: Minimize Loss or Maximize Gain?

In study 2 we plan to retest the first hypothesis and also measure a mediator, as proposed by the second hypothesis. Specifically, we intend to show through this study that promotion-focus participants are more likely to take a risk in a gain situation because they wish to maximize their gains while prevention-focus participants are more likely to take a risk in loss situation because they are inclined towards minimizing their loss. In this study, we will manipulate regulatory focus adopting the approach used by Higgins et al (1994).

Method

Participants. We plan to recruit one hundred and sixty participants for this study.

Materials & Procedure. It is a 2(Regulatory Focus: Preventions vs. Promotion) X 2(Type of Situation: Loss vs. Gain) between-subjects design experiment. Participants will be randomly assigned to one of the four conditions. We will manipulate regulatory focus adopting the approach used by Higgins et al (1994). Next, we will do manipulation check, suggested by Pham & Avnet (2004).

The participants in the gain condition will be asked to choose between a sure gain of INR 500 and 50% chance of a gain of INR 1000; 50% chance of no gain. The participants in the loss condition will be asked to choose between a sure loss of INR 500 and 50% chance of a loss of INR 1000; 50% chance of no loss.

Further, the participants will be asked to answer a set of questions to measure their affinity towards minimizing loss and maximizing gain. Finally, they will be asked for their demographic details including their name, age and gender.

General Discussion

Theoretical Implications

This research contributes to enriching the prospect theory and regulatory focus theory by bringing forth their boundary conditions.

a) Regulatory focus theory posits that promotion-focus individuals, in comparison to prevention-focus individuals, are more risk-taking. We intend to show that risk-taking behavior of the kinds of individuals depend on the type of situation they face. Specifically, promotion-focus individuals are more likely to be risk-taking in uncertain gain situations while; prevention-focus individuals are more likely to be risk-taking in loss situations. **b)** Prospect theory states that people are more risk-acceptant in the case of losses while more risk-averse in case of gains. We intend to illustrate that promotion-focus individuals are risk-acceptant in the case of gains and risk-averse in the case of losses, while prevention-focus individuals are risk-acceptant in the case of losses and risk-averse in the case of gains. **c)** We suggest that size of the gains and losses matter, such that as the size of losses and gains increase, risk-taking behavior of promotion and prevention focus individuals converges.

Marketing Implications

Contests and lotteries are commonplace promotional activities used by marketers. This

research contributes to helping marketers in making more people to participate in them willingly. Since we posit that promotion-focus individuals tend to take risk in gain situations while prevention-focus individuals tend to do so in loss situations, it would be better if contests and lotteries, which are usually worded “Get a chance to win prizes/free trip/cash”, can be worded differently for prevention-focus consumers. For instance, ‘participate and avoid losing xyz’. Lotteries and contests involving high stakes and/or high- ticket items should be designed differently from the ones involving lower stakes/low-ticket items.

Limitations & Directions for Future Research

In all the studies, we make the participants decide on the basis of scenarios presented to them. We believe making the participants actually take decisions by providing them some money/artificial money/points, could generate interesting and more accurate insights. In this research, we discussed about individuals’ risk-taking behavior in uncertain situations preceded by a loss/gain. In the paper, these losses and gains were absolute losses and gains (imagined by participants). It would be interesting to examine individuals’ risk taking behavior in a subsequent situation, on incurring a relative/perceived loss or gain. For instance, getting a lower/higher discount than expected in a scratch-and-save offer or a tensile price claim, a bad/good deal etc. It would be intriguing to look at other psychological and situational factors that could potentially explain the risk taking behavior of individuals and thus enrich prospect and regulatory focus theories.

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Appendix

Table 1 (Scenarios given in different conditions in Study 1)

<p>SMALL GAIN</p> <p>Which of the following two options would you choose?</p> <p>I. You incurring a gain of Rs. 100 II. 70% chance of you incurring a gain of Rs. 200, 30% chance of you incurring no gain.</p>	<p>SMALL LOSS</p> <p>Which of the following two options would you choose?</p> <p>I. You incurring a loss of Rs. 100 II. 70% chance of you incurring a loss of Rs.200, 30% chance of you incurring no loss.</p>
<p>BIG GAIN</p> <p>Which of the following two options would you choose?</p> <p>I. You incurring a gain of Rs. 10,000 II. 70% chance of you incurring a gain of Rs. 20,000, 30% chance of you incurring no gain.</p>	<p>BIG LOSS</p> <p>Which of the following two options would you choose?</p> <p>I. You incurring a loss of Rs. 10,000 II. 70% chance of you incurring a loss of Rs. 20,000, 30% chance of you incurring no loss.</p>

Synergistic Combination of Constructivist Grounded Theory and Analytic Autoethnography: A Novel Hybrid Research Paradigm to Develop Indigenous Theories

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Abstract

The wealth of knowledge in the traditional Indian thought needs to be discovered by indigenous research. This paper proposes synergistic combination of Constructivist Grounded Theory and Analytic Autoethnography as a novel hybrid research paradigm for conducting indigenous studies. The proposed hybrid qualitative research paradigm - Constructivist GT in the first phase followed by Analytic Autoethnography in the second phase, shall allow indigenous researchers to maximize the advantages and minimize the shortcomings of both these methodologies, and illuminate the studied phenomena comprehensively - with high reliability, validity and generalizability of research findings; thus facilitating development of indigenous theories having better predictability and accuracy. This in turn shall help realize high performance work organizations with the potential to drive sustainable development.

Keywords: Indigenous Research, Hybrid Qualitative Research, Constructivist Grounded Theory, Autoethnography

Introduction

There is wealth of knowledge in the traditional Indian thought, with the right potential to guide the world on the path of sustainable development. The Indian philosophy and culture consciously as well as sub-consciously subsume many such processes, practices and traditions which are deeply rooted in well considered thoughts, aimed at 'maximum good for the maximum'. However, over the past few centuries, theories originating in the western contexts have dominated the knowledge front - a case in point could be theories in the contemporary Organizational, Behavioral and Social Sciences which have mostly originated in the North American or the West European contexts, and have been adopted universally – including in the Indian context. There has been insufficient effort to discover indigenous theories and propagate the ab-original Indian thought. With a view to aid discovery of indigenous theories, this paper very briefly reviews the qualitative research methodologies 'Constructivist Grounded Theory' and 'Analytic Autoethnography', and proposes the combination of the two as a novel hybrid research paradigm - which can yield effective results in indigenous studies and facilitate discovery of indigenous theories.

Indigenous Research

Indian academicians, scholars and practitioners have realized that straight forward application of western management literature doesn't work in the Indian context, and often compromises results leading to frustration (Panda, & Gupta, 2007). Tsui (2004), Panda and Gupta (2007) have suggested that rather than testing an existing theory from some other context, a high quality indigenous research derives theories afresh in their specific context. Adair (1996) has defined indigenous research as "research that emanates from, adequately represents, and reflects back upon the cultural context in which behaviour is observed." Tsui (2004) has emphasized upon the use of local language, local subjects and locally meaningful constructs for high quality indigenous research; this suggests that ideally, indigenous research should be steered by indigenous researchers, who belong to and understand the context. Panda and Gupta (2007) have strongly advocated the use of qualitative research techniques for ground-up discovery of original theories for accurate predictability.

A Novel Hybrid Qualitative Approach for Indigenous Research: Combination of Constructivist Grounded Theory and Analytic Autoethnography Grounded Theory

Grounded Theory (GT) is defined as: “The discovery of theory from data systematically obtained from social research” (Glaser, & Strauss, 1967).

Strength of Grounded Theory

The strength of GT lies in Theory Building – it is aimed at discovering theory ground-up. GT is very effective in finding answers to the three Ws – ‘What, When and Where’ of the studied phenomena in new contexts.

Constructivist Grounded Theory

Charmaz’s Constructivist GT is characterized by relativist ontology, which assumes the existence of multiple social realities. The methodology acknowledges researcher’s subjectivity and biases. Constructivist epistemological position endorses that the researcher and the participant co-construct knowledge and interpret meaning mutually (Charmaz, 2000). Constructivist GT allows for a flexible coding scheme (Charmaz, 2006). In Constructivist GT the researcher gets an active role – to use own interpretation, background knowledge and understanding to steer research work.

Constructivist GT and Indigenous Researcher Complement Each Other. Being an indigenous researcher can be put to advantage only when the chosen research methodology allows flexibility and active role for the researcher, where the researcher can make use of own interpretation and background knowledge. Constructivist GT offers flexibility and active role to the researchers. On the other hand, indigenous researcher makes the process of conducting GT faster and accurate.

An indigenous researcher can derive maximum benefits out of Constructivist GT and add much more value to research work by taking on the active role offered by the methodology. By virtue of enjoying the trust of fellow community members, indigenous researchers can get going with data collection easily and quickly – without the requirement of a ‘rapport building phase’. Having same language and ‘lingo’, and having been a co-participant in the experiences of interviewees, indigenous researchers can quickly assimilate large volumes of data – and that too without ‘desirability biases’. By using their insight and inherent knowledge of context, indigenous researchers can bypass unnecessary data, make meaningful interpretation of elicited data quickly, formulate questions that guide the interview more accurately, proceed in the right direction with accurate theoretical sampling and finally graduate to abstract/ theoretical levels of coding and theory building in much lesser time, making the research work faster, accurate, efficient and effective.

Limitation of Grounded Theory

Unlike Autoethnography, while using GT indigenous researcher themselves cannot become the source of data, even though the researcher is a valid sample point by virtue of belonging to the community being researched. For instance, while collecting data for GT, an indigenous researcher cannot interview self! Indigenous researcher may not be able to share own experiences and stories while using GT. Thus, using only GT could devoid the research work of the vast repository of data that the indigenous researcher themselves is. Also, as compared to GT, Ethnography (or Autoethnography) is naturally and inherently more attuned to rendering thick descriptions of the observed phenomena, which can bring out the ‘How’ of the phenomena in greater detail.

Autoethnography

Hayano (1979) questioned whether any ethnographic researcher has the right to represent the

life of others, and conceptualized the idea of Autoethnography. Autoethnography developed as a method of undertaking ethnographic research on one's own community. As per Van Manen (1995), in Autoethnography a native reveals own group. "Autoethnography places emphasis on exploring the nature of particular social phenomenon, and increasingly in recent times working primarily with unstructured data, investigating small number of cases (maybe even a single case) in depth and detail" (Atkinson, & Hammersely, 1998). These studies can be represented in variety of creative ways, including art, photography and other audio and visual means (Ellis, 1995).

Strength of Autoethnography

The strength of Autoethnography lies in its potential to render thick description of various social/ cultural phenomena of one's own community. Thick description by Autoethnography can be effective in finding answers to 'H' - the 'How' of studied phenomena. In addition, Autoethnography allows the indigenous researcher to enrich the research work by culling out own (personal) data and experiences (researcher can interview themselves while undertaking Autoethnography, but not so in the case of other methods!)

Analytic Autoethnography

Off late, 'Autoethnography' has assumed two different connotations: 'Analytic Autoethnography' which refers to ethnography of one's own group, and 'Evocative Autoethnography' which refers to autobiographical writing which has some ethnographical interest as well (Fletcher, 2011). Five key features of Analytic Autoethnography as suggested by Anderson (2006) are:- complete member researcher status, analytic reflexivity, narrative visibility of the researcher's self, dialogue with informants beyond the self, and commitment to theoretical analysis. For the second phase both 'Analytic Autoethnography' and 'Evocative Autoethnography' are suitable - as both have the potential to render thick description of the phenomena under study (which answers the 'How' of the phenomena), however given an option it would be preferable to adopt 'Analytic Autoethnography' - as the larger intent is to undertake 'theoretical analysis', using ethnography as the research approach, while also indulging in 'dialogue with informants beyond the self'.

Limitation of Autoethnography

Autoethnography can get biased by the perspective and personal data of the researcher. Also, unless a careful and focused approach is taken, the researcher may end up building mountains of unconnected data, without a research outcome which can be theorized.

Combining Constructivist GT and Autoethnography

Pettigrew (2000) has suggested that "Grounded Theory and Ethnography when combined may produce a level of detail and interpretation that is unavailable from other methodologies". Charmaz (2006) has used the term '**Grounded Theory Ethnography**', as a hybrid research methodology which "gives priority to the studied phenomenon or process-rather than to a description of a setting". As Autoethnography (Analytic-Autoethnography) is one of the forms of Ethnography, it is but natural that a combination of Grounded Theory and Analytic Autoethnography shall be equally advantageous, in terms of eliciting data, interpretation and theory building.

Hughes and Pennington (2017) have mentioned that Autoethnography is a hybrid research methodology – it can be applied as a complementary method for assembling data from the traditional approaches to qualitative research, including GT. Pace (2012) has suggested that, "Grounded Theory analytic strategies can be used successfully within autoethnographic studies, that is, when researchers treat them as flexible strategies rather than as a set of prescriptive procedures and rules".

As an alternative to selecting only one qualitative research approach in a study, Annells M (2006) has suggested the use of two qualitative approaches - for the advantage of triangulation.

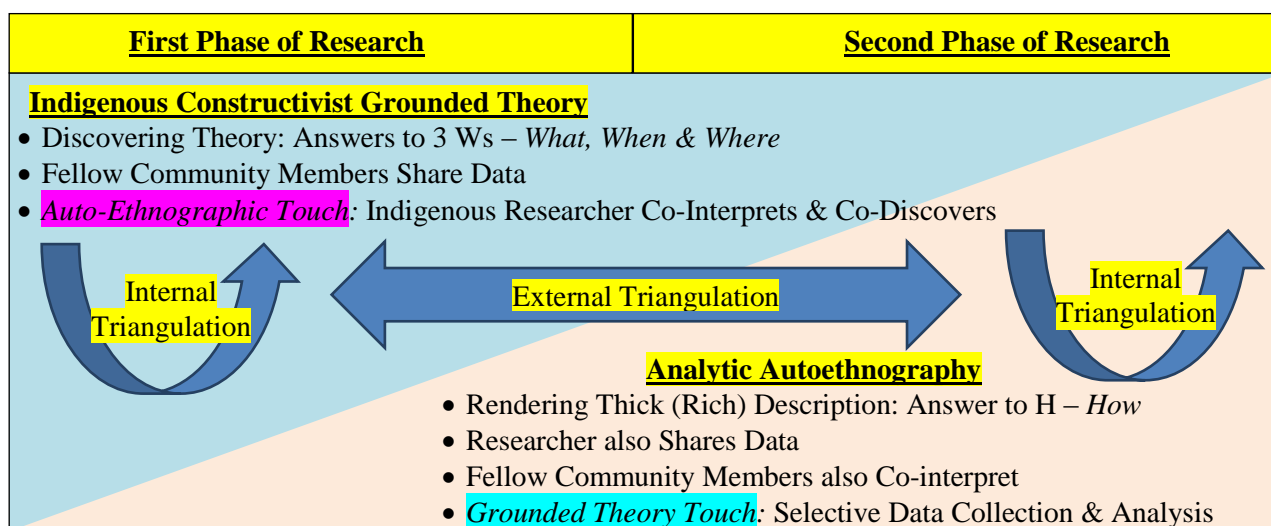
Proposed Methodology

It is proposed that by a careful combination of Constructivist GT and Autoethnography, wherein initially the indigenous researcher starts with Constructivist GT during the first phase of research, and then gradually shifts to Analytic Autoethnography during the second phase, the advantages of both the methods can be maximized, and limitations minimized, finally leading to complete illumination of the underlying phenomena (Fig. 1).

The next section briefly discusses the two phases of research work in terms of aspects like data collection and analysis, as well as the accrued advantages of the combination; and how the two phases are not as distinct as white and black, but more like gradual transition between shades of grey.

Figure 1

Hybrid Qualitative Research: Combination of Constructivist GT and Analytic Autoethnography



First Phase: Constructivist GT

In the proposed methodology, during the first phase of research the indigenous researcher shall start with Constructivist GT approach. For data collection GT Methodologies allow multi-method approach, which means variety of data collection techniques can be used such as interviewing, documentary evidence, diary-keeping, statistical data, observational reflections, memo-writing, and technical and non-technical literature (Glaser, & Strauss, 1967). However, for Constructivist GT, Charmaz (2000) has promoted the use of the in-depth interviewing method for data collection. The researcher shall collect data from fellow community members, mostly by way of in-depth interviews, preferably from such community members with whom the researcher has had minimum interaction in the past.

The researcher shall continue with Constructivist GT methodology – data collection, coding, comparison, making memos, theoretical sampling and theorizing - relying on and using own interpretive skills and background knowledge throughout the process. By co-interpreting meaning and co-discovering concepts along with community members, the researcher shall give a ‘limited touch’ of Autoethnography to the first (GT) phase of research work. However, during this phase of research work, the researcher shall not add data from own side (own experiences, stories etc).

As the indigenous researcher approaches theoretical saturation, the researcher shall get a sense

of reality from neutral perspective. It is the right time for the indigenous researcher to shift to the second phase of research work – the Autoethnography Phase.

Second Phase: Autoethnography

During the second phase of research which is the Autoethnography phase, the researcher shall start culling out own data as well. The indigenous researcher may have a large amount of data to share – own (personal) stories of several incidents, experiences, understanding of different artefacts etc, which they may not have been able to share, had they been limited to Grounded Theory only.

However, while culling out and analyzing own data during Autoethnography, the researcher shall follow the concept of GT for data collection and analysis, i.e. using Theoretical Sampling, Coding and Memos to selectively elicit and analyze data. The researcher shall cull out limited and relevant data only, with the aim to validate/ triangulate the findings of the first phase, and to understand the ‘How’ of the underlying phenomena by rendering a thick description of it. Thus the researcher gives a touch of Grounded Theory approach even during the Autoethnography Phase.

Autoethnographers retrospectively and selectively write about epiphanies that arise from by being part of a culture. They discern patterns of cultural experience, make field notes, interview cultural members and thus produce ‘thick descriptions’ of their experience, mostly using facets of storytelling (e.g., character and plot development) (Ellis et al., 2011). Autoethnographers are also required to analyze these experiences along with other pertinent cultural artifacts (Denzin, 2006). They are required to compare their analysis with existing research as well as with the experience and views of other cultural members (Ellis et al., 2011).

Accordingly, during the Autoethnography phase of research, the researcher shall use reflexive musings, journals etc; and remember such stories and personal experiences which either substantiate or contradict the findings of the first phase. In addition, during this phase of research also, the researcher shall be free to collect additional data in the form of texts, documents, photographs, literature etc, including additional interviews of fellow community members, if required.

Advantages of Proposed Hybrid Methodology

Apt Methodologies for Indigenous Researchers. ‘Flexibility and active role’ offered by Constructivist GT and ‘inherent knowledge of context’ of indigenous researchers complement each other and result in fast, efficient and effective research work. Similarly, Autoethnography as a research methodology is also centered around indigenous researchers.

Complete Illumination of Underlying Phenomena. GT with its strength in theory building helps discovering answers for ‘What, When and Where’ of the underlying phenomena; Autoethnography with its strength in rendering thick description of the setting and the underlying phenomena, helps understanding the ‘How’ of it, thus illuminating the phenomena completely.

Researcher as Source of Data. Indigenous researchers may not be able to add their own (personal) repository of data to the research work if they stick with GT only; however Autoethnography allows that opportunity to indigenous researchers.

Autoethnography with Focused Approach. Charmaz (2006) has suggested that when used in Ethnography, Constructivist GT with its interpretivist approach dispels the positivist notion of passive observers in Ethnography, who merely absorb their surrounding scenes: “Grounded theorists (with interpretivist approach) select the scenes they observe and direct their gaze within them”. Focused approach towards theory building borrowed from Constructivist GT solves the potential problem with ethnographic studies (including autoethnography) of “seeing data

everywhere (and nowhere) and gathering everything (and nothing), inadvertently leading to mountains of unconnected data, un-integrated categories and low level description”.

Autoethnography with Minimized Researcher Bias. In Autoethnography the researcher can start eliciting own experiences first, and then the researcher may proceed ahead with theoretical sampling to collect data from selective fellow community members in line with the emerging theory. In doing so, the researcher may leave the research work biased. Instead, by first collecting data from a large number of fellow community members using GT, and not culling out own data, the indigenous researcher shall be able to develop a more neutral perspective towards the phenomena under study - overcoming personal biases, before switching to Autoethnography.

Internal Triangulation. By increasing the sample size of community members from whom data is collected, beyond the point of theoretical saturation, the researcher can have internal triangulation during the GT phase of research. For incorporating internal triangulation in the Autoethnography phase, the researcher can share own stories/ artefacts, analysis, and understanding of concepts with fellow community members for independent verification and validation.

External Triangulation. Post completion of the second phase of research, the findings of second phase (Autoethnography) are compared with the findings of the first phase (GT), for external triangulation. If the findings of both the phases are similar, the research work gets fully triangulated; in case the findings of second phase contradict the findings of the first phase then the researcher needs to go back to the first phase of research and re-indulge in theoretical sampling and theorizing.

Reliability, Validity and Generalizability. In case of Qualitative Studies, ‘trustworthiness’ of research work holds the key for validity as well as reliability (Golafshani, 2003; Johnson, 1997; Lincoln, & Guba, 1985). It is envisaged that by undertaking a ground-up indigenous research, combining two qualitative research methodologies which complement each other, minimizing the bias that an indigenous researcher may get in, and having internal triangulation for each of the methodologies followed by overall external triangulation, the hybrid research paradigm proposed in the paper adds up the overall trustworthiness, rigor and quality of the research work, thus rendering a high level of reliability, validity and generalizability.

Conclusion

The hybrid qualitative research paradigm proposed in this paper, comprising of combination of ‘Constructivist Grounded Theory’ and ‘Analytic Autoethnography’ in a phased manner, is a promising approach to discover indigenous theories. Especially for the Indian context - where there are many cultures, subcultures and a wealth of traditional knowledge in the form of scriptures, cultural practices and many other artefacts, indigenous research can lead to discovery of rich indigenous theories, which may form the basis for sustainable development.

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Workplace Spirituality and Remote-Cyberloafing: A Conceptual View in the Context of Distributed Work Environments

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Abstract

Cyberloafing or personal internet use during working hours has been mostly studied in the context of centralized offices or workplaces. During COVID-19 world, organizations have been forced to adopt work from home or distributed work arrangements at a much larger scale, on an urgent basis. This will probably remain as the new normal even in the post-pandemic scenario for the safety and convenience of the employees. Based on O'Neill et al (2014a, 2014b)'s work, this paper throws light on a counterproductive behavior in the teleworking scenario, described as remote-cyberloafing. The authors propose the possibility of promoting and facilitating workplace spirituality among the employees to regulate remote-cyberloafing in an organic and non-invasive manner, based on the firm grounds of social control theory and social exchange theory.

Keywords: cyberloafing, remote-cyberloafing, work from home, workplace spirituality

Introduction

The emergence and the rapid spread of COVID-19 pandemic have transformed the way business organizations run their operations. Distributed work environment, which gives the employees the facility of working fully or partially from home or from a convenient location other than the compulsory centralized workplaces (O'Neill et al, 2014b), is no more a matter of choice. It has become a compulsive reality for the safety and convenience of the stakeholders. O'Neill et al (2014a)'s study has shown that working from home opens up the possibility of cyberslacking or cyberloafing which is described as a behavior of utilizing working hours online for personal reasons. Lim (2002) defined cyberloafing in the context of utilizing the 'internet provided at the workplace' for personal reasons 'during office hours'. Over the period of time, with the advent of mobile phones and accessible personal-internet connection, the usage of smartphones and internet-enabled wearable devices for non-job purposes during working hours at workplaces has also been brought in the purview of cyberloafing with terms like mobile-cyberloafing (Sheikkh et al, 2015) and personal-mobile internet loafing (Batabyal and Bhal, 2020). The COVID-19 situation has extended or at times, has diluted the term 'workplace' by compelling a significant portion of the workforce to work from home. Backed by the experience of contemporary times, it can be fairly assumed that in the near future, companies will increasingly allow employees to work from centralized locations along with working from home few days per week. In that scenario, present and the future, the description of 'cyberloafing' becomes a complex one. O'Neill et al (2014a, 2014b) described the utilization of working time by going online for personal reasons as 'cyberslacking', while specifically focusing on the matter of employees working at a 'remote location' or 'work from home'. The concept of 'space' or 'location' was still not predominant in the discussion till few years back but cyberslacking or cyberloafing mostly meant in the purview of 'at the workplace' only (Luqman et al, 2020). However, with the teleworking and work from home facility, the circumference of 'space' or 'workplace' has become bigger in scope. In this paper, the authors refer to the cyberloafing behavior while working from home or any other convenient location other than centralized office spaces as 'remote-cyberloafing'. This distinction is necessary to keep it separate from traditional cyberloafing (Lim, 2002).

Literature suggests that a significant portion of working hours gets utilized for cyberloafing (Batabyal and Bhal, 2020), which can also expose organizations to various risks (Jiang et al,

2020). It has the potential to cause distraction (O'Neill et al, 2014a) and fatigue (Wu et al, 2020), negatively impact performance (Askew et al, 2019) and productivity of employees and can entangle the organizations with legal matters (Cheng, 2014). Weatherbee and Kelloway (2006) and Lim (2002) have described cyberloafing as a deviant behavior at workplace which is counterproductive in nature. Though cyberloafing might also have some benefits like providing relief and respite (Lim and Chen, 2012), invoking creativity (Sawitri and Mayasari, 2018) but in this paper, the authors have concentrated on the harmful aspects of cyberloafing and looked at the possibility of careful regulation of the same. Companies have been increasingly exploring various workplace internet surveillance tools (Burdin et al, 2020) to monitor and control cyberloafing but research suggests that it can influence commitment, motivation, satisfaction of the employees negatively (Jiang et al, 2020). In this paper, the authors throw lights on the possibility of reducing the remote-cyberloafing behavior in a much more non-invasive and organic manner by adopting, promoting and facilitating workplace spirituality among the employees.

1. Hypotheses Development

1.1. Workplace Spirituality: Brief Description

Spirituality at workplace is increasingly finding its place in contemporary management literature (Zhang, 2020; Otaye-Ebede et al., 2019; Bhaskar and Mishra, 2019; Petchsawang and Mclean, 2017) along with organizational spirituality (Pfaltzgraff-Carlson, 2020; Rocha and Pinheiro, 2020; Khari and Sinha, 2018). However, the elements of workplace spirituality have not been explored in the domain related to cyberloafing behavior. Ashmos and Duchon (2000) defined "spirituality at work" as the "recognition of an inner life that nourishes and is nourished by meaningful work that takes place in the context of community" (p. 139). They segregated the factors in three parts; "individual level", "work unit level" and "organizational level" (Ashmos and Duchon, 2000, p. 143). First part consists of three factors namely "conditions for community", "meaning at work" and "inner life" (Ashmos and Duchon, 2000, p. 139). The "work unit level" is comprised of "work unit community" and "positive work unit values" (Ashmos and Duchon, 2000, p. 142). "Organizational values" and "individual and the organization" are said to be the two components of "organizational level" (Ashmos and Duchon, 2000, p. 143). In order to ensure parsimony and conscious exclusion of transcendental nature of spirituality at work, backed by the extant literature, Milliman, Czaplewski and Ferguson (2003) concentrated on three aspects of workplace spirituality namely "meaningful work at individual level", "sense of community at group level" and "alignment with organizational values at organizational level" (p. 428). Giacalone and Jurkiewicz (2010) have put forward the importance of transcendence in the conceptualization of spirituality at workplace. This was subsequently supported by Saks (2011), who showed that there are three dimensions of workplace spirituality; "transcendence", "sense of community" and "spiritual values" (p. 330).

1.2. Significance of Workplace Spirituality

Research has shown workplace spirituality's significance for better performance in the organizations and also for promoting organizational citizenship behavior (Garg, 2020). This has echoed similar findings from earlier research which exhibited strong association between spirituality at work and organizational citizenship behavior (Sholikhah et al, 2019; Houghton, 2016; Kutcher et al, 2010). It has also been revealed that spirituality at work shares strong positive association with work engagement (Baker and Lee, 2020; Petchsawang and McLean, 2017), employee loyalty (Aboobaker, 2020), job satisfaction (Chawla and Guda, 2010), ethical climate, moral judgment and prosocial motivation (Otaye-Ebede et al, 2019) and negative association with intention to leave (Chawla and Guda, 2010) and loneliness at work (Ghadi, 2017). Literature also suggests negative association between spirituality at workplace and counterproductive behavior or deviant behavior at workplaces (Eliyana and Sridadi, 2020).

Ahmad and Omar (2014) and Chawla (2014) have also proposed on theoretical grounds that deviant behavior in organizations can be controlled through adopting workplace spirituality. James (2011) study has shown that when workplace spirituality is high, there exists a negative association between trait cynicism and counterproductive behavior at workplace.

1.3. Workplace Spirituality and Cyberloafing Behavior

In the case of distributed work environments, remote-cyberloafing becomes easier and more convenient due to the absence of the possible detection by immediate supervisors or co-workers (O'Neill et al, 2014a). As monitoring personal online activities during work from home is either not feasible or not effective, or at times bring negative results (Jiang et al, 2020), it is worthwhile to look for alternative options which can control remote-cyberloafing. Research has shown that counterproductive work behaviors can be curbed down by workplace spirituality (Eliyana and Sridadi, 2020) and logically, it can be utilized for the purpose of regulating remote-cyberloafing as cyberloafing has been termed as one of the counterproductive and deviant behaviors (O'Neill, 2014b). Cyberloafing has also been seen as withholding effort or a kind of withdrawal from work (Mercado et al, 2017). Drawing from Jurkiewicz and Jurkiewicz and Giacalone (2004)'s value structure of workplace spirituality, Chawla (2014) proposed that promoting sense of 'responsibility' can lead to lesser deviant behaviors.

In this regard, the authors have adapted workplace spirituality construct as used by Milliman, Czaplewski and Ferguson (2003) to propose the regulatory impact of meaningful work, sense of community and alignment with organizational values on remote-cyberloafing. Research has shown negative association between meaningful work and cyberloafing (Usman et al, 2019). As far as the sense of the community is concerned, drawing from the Theory of Social Control (Hirschi, 1969), strong social bonding can result to lesser deviant behavior at the workplaces (Hollinger, 1986). Based on this framework, Luqman (2020) found negative association between social bonding and cyberloafing. It can be fairly assumed that strong sense of community through virtual meetings and teamwork during remote working scenario can open up the possibility of bringing down remote-cyberloafing. Alignment with organizational values, the third aspect of spirituality at workplace, is a function of employees' perceived belief that the organization thinks and acts for the welfare of its workers and community (Ashmos and Duchon, 2000). On the firm grounds of Blau (1964)'s Social-Exchange Theory, it has been found that employees' perception of high organizational justice can bring down the magnitude of cyberloafing with high self-control (Restunog et al, 2011). Taking cues from the mentioned literature, the authors propose that the three layers of workplace spirituality will share a negative association with remote-cyberloafing.

H1: Meaningful work will share a negative association with remote-cyberloafing.

H2: Sense of community will share a negative association with remote-cyberloafing.

H3: Alignment with organizational values will share a negative association with remote-cyberloafing.

2. Conclusion:

There is a considerable gap in the literature in terms of covering the counterproductive behaviors like remote-cyberloafing in a distributed work environment scenario. This paper is the first one to propose the utility of workplace spirituality to regulate remote-cyberloafing. Organizations need to focus on creating avenues to acknowledge, facilitate and strengthen employees' perception of meaningfulness at work, sense of community and alignment with organizational values to control possible remote-cyberloafing.

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‘An Analytical Study on Privatization of Oil Industry in Kuwait: Challenges and Opportunities

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Abstract

This research paper aims to critically analyse the “oil sector” (Kuwait Petroleum Corporation (KPC) & its subsidiaries) given the peculiarity of this vital sector in Kuwait’s national economy, as there is a dearth of researches for this special sector. The several explanations and drivers which reveal reasons for State of Kuwait, which is heading towards privatization and related forms of the participation of the private partnerships are being discussed.

The systematic review of published literature on the topic of privatization in oil sector of Kuwait over a 30-year period (1991-2020) by critically examining the methodological, conceptual, and empirical aspects has been carried-out. This research comprised the analysis and significance of Privatization Law #37 of 2010 in Kuwait and Decree # 38 (2015) issuing the Executive Regulations of Law # 37 of 2010, and also implications on Kuwait’s oil sector at the present, or should PPP or other initiatives be pursued, including the *legal, economic, political and social challenges*.

Keywords : Oil Industry in Kuwait, Kuwait Petroleum Corporation (KPC), Privatization Law #37 in Kuwait, Challenges & Prospects

1. INTRODUCTION & RATIONALE FOR THE STUDY

The overview of Oil Industry in Gulf Cooperation Council (GCC) states is covered, including Kuwait Oil Industry, **evolving models of increased private-sector participation and public-private partnerships (PPPs)**, Kuwait Petroleum Corporation (KPC), PESTEL (Political, Economic, Social, Technological, Environmental and Legal) analysis.

The recent academic literature contains several explanations, drivers to reveal why the State of Kuwait “in general” is heading towards privatization and related forms of the participation of the private partnerships.

Kuwait when privatized, as **many of the academic community did not include the “oil sector” {Kuwait Petroleum Corporation (KPC) and its subsidiaries} in their research scope**, not realizing the peculiarity of this vital sector and not taking its special nature into consideration in its review, or they omitted to address important aspects when researching the topic. *Hence, it is considered that there is a dearth of researches for this special sector.*

2. REVIEW OF LITERATURE & RESEARCH GAP / PROBLEM

To understand how the current literature understand the issue of privatization, the oil sector of Kuwait, the methodological tool of a **critical systematic review** was employed.

The Gulf States viz., Kuwait, Saudi Arabia, UAE and Qatar and neighbors Iran, Iraq are producing about 65-70% of global oil reserves, thereby offering energy supply to global economy. However, the Middle East countries are confronted with on-going wars, conflicts (like Arab-Israel, Arab-Iran, Gulf-US, etc.) and also recently emerging terrorist attacks. In this context, there is increased need for enhanced peace, harmony and cooperation on energy supply security, not the unhealthy competition (**Samil Sen & Tuncay Babali, 2007; Estrin and Pelletier, 2018; Gross & Ghafar 2019**).

The technological developments in oil and gas industry have impacted the structure and also influencing the supply and demand in transport in OECD Countries. This has resulted in lesser dependency on oil supplies by Middle East countries to US and European region (**John V. Mitchell and Beth Mitchell, 2014**).

2.1 Comprehensive and systematic review of the relevant literature: *The Approach*

A comprehensive review of the relevant literature including a computer assisted search was initiated to develop an understanding of privatization and related aspects and collect sources that is thought to be useful and available in providing an insight into the research topic. Materials have been selected based on the objective of the study, time period was applied to the search, from 1991 to date. Ten search strings were utilized using the “Title, Abstract, and Keywords” (Privatization, PPP, Oil Sector, Financial challenges, Social Challenges, Legal Challenges, Political Challenges, Risks, Energy Industry, Advantages and Disadvantages of Privatization).

This review has selected books and articles written by leading experts and other academic accredited sources, which are mentioned later, presenting the topic theme for the review, then analysing the chosen books or articles thoroughly before summing them up briefly at the end.

This section includes study of OECD Countries and Gulf States viz., Kuwait, Saudi Arabia, UAE, Qatar, Iran, Iraq, etc. which are producing about 65-70% of global oil reserves.

2.2 Comprehensive and systematic review of the relevant literature: *The preliminary findings*

A comprehensive and systematic review of the relevant literature is carried out using the published sources like books, journals, literature of doctoral research, case studies, laws related to privatization, etc of about 150, from which 74 relevant literature have been considered for the analysis/study herein by the researcher (Table 1).

- **Systematic review of the relevant literature is carried out during 1991 to 2020 (30 years).**
- **Ten search strings** were utilized using the “Title, Abstract, and Keywords” (Privatization, PPP, Oil Sector, Financial challenges, Social Challenges, Legal Challenges, Political Challenges, Risks, Energy Industry, Advantages and Disadvantages of Privatization).

Coding Category	Dimension of Review of the literature, which is relevant to the topic of Doctoral Research	Number of papers addressing the dimension (s) <i>(How where they distributed from 9 areas)</i>
1	Published books which focus on privatization in developed and developing countries;	3
2	Published books which focus on privatization and energy	14
3	Published journal articles in renowned legal and economic databases	19
4	Documents from policymaking organizations like the World Bank and UNCTAD	10
5	Laws governing the oil sector in Kuwait, privatization in Kuwait and relevant cases	2
6	Review of the relevant literature, including government documents	4
7	Case studies on Kuwait	4
8	Electronic sources	10
9	PhD & Doctoral research	1
10	Consultancy commentary, and Practitioner research	2, 8 (the 8 can be considered from code 10 and also it was distributed into different codes).

Table 1: Summary of Systematic Review of Literature (Source: Compiled by the Researcher)

2.3 Research Gap and Key Research Questions

This research is also expected to argue that the literature available is incomplete and by providing relevant evidences supporting the line of analysis and/ or arguments , regarding the privatization of Kuwait's oil sector, which faces multiple challenges that were not fully tackled and should be evaluated accordingly, leading to important research questions such as:

- 1) Whether the **preliminary measures** and appropriate studies been taken in Kuwait, before making the policy decision of privatization?
- 2) Is **privatization the best way forward for Kuwait's oil sector** at the present, or should PPP or other initiatives be pursued?
- 3) What are the **key challenges facing the PPP and Privatization processes of Kuwait's Oil sector**?Regulatory burdens: what is the level of eventual state sovereignty over oil and gas resources in Kuwait, what restrictions on foreign ownership in privatized companies will exist, and what are the international interests?
- 4) **What is the recommended form**: full privatization, partial, joint venture arrangements between the public and private sectors of Kuwait's oil sector?

The researcher shall discuss the privatization issue from multiple perspectives as follows, and it has been chosen these headings and subjects based on a notable available body of academic literature and published reports concerning them, and present the critical analysis related to the subject matter based on what the privatization process in Kuwait has suffered and where the essential required factors for its success have not yet been fulfilled, trial and error - in most cases due to lack of experience and a significant lack of enthusiasm by the government to give up hold over Public Enterprises and many other reasons as will be discussed.

The research paper further explicates that there are four main underlying challenges to the Kuwait's privatization energy process, namely **legal, economic, political and social**.

2.4 OBJECTIVES OF THE STUDY

Given the context of above mentioned background, a research (based on both the secondary research from published resources and also the primary industry research) is being planned to be undertaken with the following primary objectives:

- 1) To understand and undertake **a systematic analysis** of the preliminary measures and appropriate studies/ research undertaken already, regarding the privatization of Oil Industry in Kuwait.
- 2) To **evaluate the best-feasible and practically-applicable strategy for the scientific privatization and internationalization for the Kuwait's oil sector**, including evaluation of PPP (Public Private Partnership) model, legal amendments & other initiatives.
- 3) To **examine the challenges and opportunities for the privatization of Kuwait's Oil industry**, with maximization and leveraging benefits to the all the stakeholders, while protecting the national interests of Kuwait Government & its citizens.

3. RESEARCH METHODOLOGY

This is an analytical & descriptive study consisting of both secondary and primary research. This *analytical research paper* has presented the anaysis of status, influencing factors and growth trends in respect of emergence of Kuwait's Oil Industry's privatization and it is a Work in Progress (WIP) Doctoral Research in the 1st year of PhD program.

The primary research work is in progress on the topic of study, as an integral part of the Doctoral Research work.

4. RESULTS & FINDINGS OF THE STUDY

Based on the research undertaken during the 1st year of PhD program, the preliminary research findings are presented here below in sub-topics:

4.1 Privatization Law is Kuwait

The **Privatization Law is enacted as #37 of 2010**, which has paved the way for the process of privatization in the state of Kuwait. The summary of Privatization #37 of 2010 is enumerated here below in **Table 2**:

Chapter #	Title of the Chapter	Articles covered
	Definitions	Article 1
1	General Rules	Article 2, 3, 4
2	The Supreme Council of Privatization	Articles 5, 6, 7, 8, 9 and 10
3	Privatization Operations	Articles 11, 12, 13, 14, 15, 16, 17
4	Protection of Employees Rights	Articles 18, 19, 20, 21, 22
5	Penalties	Articles 23, 24, 24, 25, 26, 27
6	Final Rules	Articles 28

Table 2: Summary of the Privatization Law #37 of 2010 in the State of Kuwait
(*Source: Prince of Kuwait, Issued at Al Seif Palace, on 16th Gomadi Al Akhera, 1431, Hijri, dated 30th May 2010, A.D., pages 1-12*)

It may further be noted that Decree # 38 for the 2015 issuing the Executive Regulations of Law # 37 of 2010 regarding the Organization of Privatization's Programs and Operations has been released and is enumerated in **Table 3** here below:

Chapter #	Title of the Chapter	Articles covered
	Definitions	
1	General Rules	Article 1
2	Jurisdictions the Supreme Council of Privatization	Article 2
3	Rules and procedures of the Evaluation	
	Branch One: Procedures of selecting Evaluation Entities	Article 3
	Branch Two: Rules for Evaluation of the Public project of the establishment of a Public Joint Stock Company in a public auction	Article 4
	Branch Three: Rules of Evaluation of the Joint stock Owned by the State that replaced the public project	Article 5
4	Procedures for the selection of the Winner Investor	Article 6, 7, 8
5	Training Programs of the Employees Transferred to Public Stock Company	Article 9, 10
6	Conflicts of Interest	Articles 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
7	Penalties applied to Joint Stock Companies violating the Provisions of the Law, the decisions of the Council, the Articles & Memorandum of Association of the Joint Stock Companies	Articles 21, 22, 23
8	Usufruct property of State's Real Estate	Articles 25, 26, 27
9	General Provisions	Articles 28, 29

Table # 3: Summary of Decree # 38 for the 2015 issuing the Executive Regulations of Law # 37 of 2010 regarding the Organization of Privatization's Programs & Operations

(Source: Prince of Kuwait, Prime Minister, Deputy Prime Minister, Minister of Trade & Industry Issued at Al Seif Palace, Law No 116 of 2014, on the partnership between public and private sectors and upon submission of the Supreme Council for the Privatization on 26 Rabee Al-Akhar 1436, corresponding to 15th February 2015 A.D., pages 1 – 15) and Foster (2007) & Al-Moqatei (1999).

4.2 Current Key Challenges to Privatization of the Kuwaiti Oil Industry:

Further, the current key challenges of privatization of the Kuwait Oil Industry, viz., Legal, Economic, Political and Social challenges are analyzed, presented and discussed (based on the research undertaken till date, Table 4).

The broad framework of future line of work, along with possible limitations of this research work is being mentioned.

Category of Challenge	Brief Description of the Challenge	Degree / Intensity of concern
1) Legal Challenges	Suitability of the current legislative provisions	High
2) Economic Challenges	Dependence on oil	High
3) Political Challenges	Parliament - opposition	High
4) Social Challenges	Nations opposition	High

Table 4: Summary of Key challenges faced by Privatization of Kuwait Oil Industry

(Source: Compiled by the Researcher, based on the systematic Review of Literature and analysis of findings during the study, as per research undertaken till May 2020)

The summary of legal, economic, political and social challenges are presented here below:

4.2 (a) Legal Challenges

- Suitability of the current legislative provisions
- Current laws that contradict privatization
- There is a lack of consolidation and illustration of the responsibilities of the body /bodies competent with executing and/or supervising the Privatization process and implementation

4.2 (b) Economic Challenges

- Oil for long has been Kuwait's source of income and the oil sector has formed the major part of public sector, and this source is one that is depleting fast.
- Therefore, the government at present faces the challenge of diversifying its economy

4.2 (c) Political Challenges

- This programme is not only highly controversial, but also politically charged issue
- It is evident that political support to ensure the success of the implementation of privatization is not yet in place

4.2 (d) Social Challenges

- The first social challenge is that Kuwaitis are concerned that certain few powerful families in Kuwait, who blindly support the government and form alliances with it, will

control and exploit privatized sectors to increase their wealth, and gain more dominance in the country

- Kuwaiti citizens are worried that privatization will affect public finances drastically, with widespread fears of job losses being the main worry

It could be said that essential factors required for the success of privatization in Kuwait must be fulfilled.

4.3 Impact and implications of Privatization on the Kuwaiti Oil Industry

Furthermore, there is an acute and pervasive fear that privatization leads to layoffs,

- 1) **Firstly** in the short-term in the firms divested, and then in the longer-run and
- 2) **Secondly** in the economy at large.
- 3) **Thirdly** it is widely believed that even if privatization improves efficiency, the bulk of its benefits accrue to a few privileged shareholders, managers and those with political associations, while the costs are borne by workers and consumers.

Moreover, there is much concern that

- 4) lack of transparency and corruption within the privatization process itself has diminished its intended gains and
- 5) have further led to wider and more severe problems of governance.

This data has been presented the detailed discussion on the process of privatization of Kuwait's Oil Industry. The discussion of findings, including the arguments "in favor" of privatization ('for' the privatization) and "not in favor" the privatization ('against' the privatization) are presented.

4.4 Most research papers that support the objectives of Privatization to be remedies for the problems of public sector, these objectives can be summarized as follows:

- 1) Higher rates of performance (sufficiency) in national economic (**Dr. Ibrahim Alessawy, 1992**), increasing the quality of goods and services, due to allowing the competitive forces among units of private sector, effective management, financial planning and the most accurate marketing in this sector, as it aims at profit maximization (**Attiat F. OTT and Keith Hartley, 1995**).
- 2) Reducing the deficit in public budget of national economy (**Figure 1**) as per Budget 2018-19.
- 3) Reducing open and hidden unemployment, due to increasing the utilization of labor in governmental sector, creating new employment opportunities in private sector (**Maged Saleh Aldaihany, Wafa Mohammed Alkhaneny, 1994; Gamal El-Din, 1996**).
- 4) Allow the foreign ownership of companies, dealing with foreign companies similar to national companies, which creates a pull-factor for foreign investments, and resulting of applying techniques which owned by foreign companies and assistance in opening new markets, and strengthening international relations (**International Bank Report**).

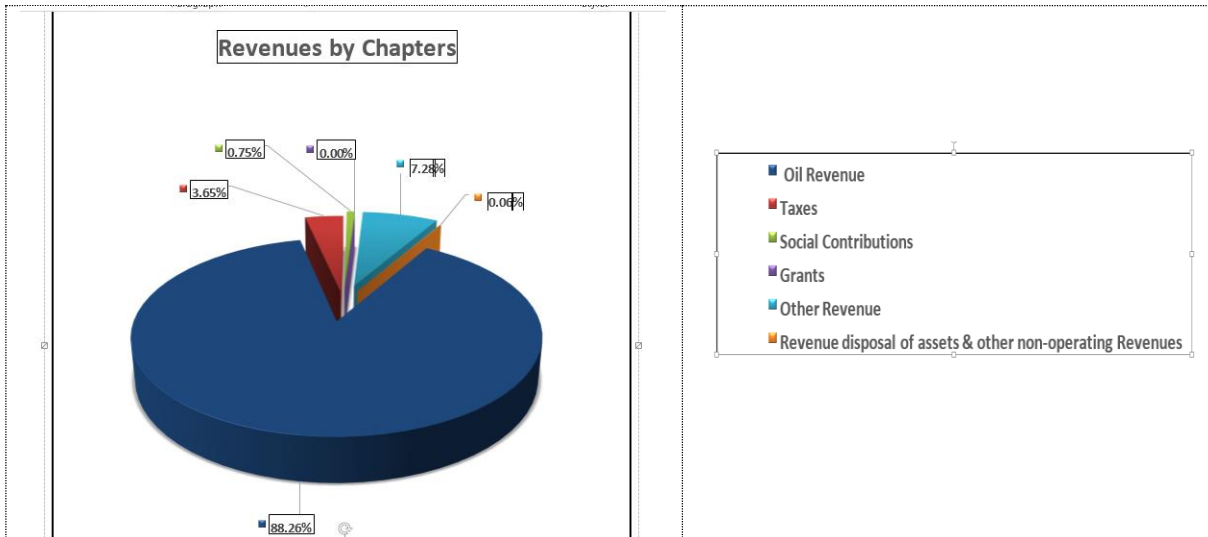


Figure 1: Revenues from the different sources to the State of Kuwait
 (Source: Budget Report from the State of Kuwait, for the year 2018-19)

5. IMPLICATIONS OF THE STUDY

This study and its findings consisting of the legal, economic, political and social challenges and possible impact on the Oil Industry in Kuwait, is expected to throw light upon the possible consequences upon the Kuwait's economy. Hence, this study has practical relevance and practical utility, for the public administrators, academicians and economists, etc.

6. SUMMARY & CONCLUSIONS

This section has **enumerated the Summary of research undertaken till date** regarding the process of privatization process of Oil Industry in Kuwait by covering the Academics Vs. Practitioners perspectives, timing, implementation strategies, possible mismatch between intent & clarity, sensitivity, capability, etc.

Based on the preliminary research (undertaken till date, based on the secondary data, through systematic review of literature) the 'preliminary' conclusions regarding the privatization experiences, dilemmas & key factors to be considered during privatization of oil Industry in Kuwait are presented.

6.1	Summary of privatization process of Oil Industry in Kuwait
	6.1(a) Academics versus Practitioners
	6.1(b) Timing of the privatization process
	6.1(c) Implementation strategies
	6.1(d) Mismatch of intent and reality
	6.1(e) Recognition of the importance and sensitivity of reconfiguring Kuwait's public sector
	6.1(f) Current lack of privatization capability
	6.1(g) Reconfiguration of the public sector
6.2	Conclusions
	6.2(a) Lessons from earlier privatization experiences
	6.2(b) Dilemmas to be kept in mind during privatization of Oil Industry in Kuwait
	6.2(c) Key factors to be considered during privatization of Oil Industry in Kuwait
	6.2(d) Overall Conclusions

6.2 (a) Lessons from earlier privatization experiences: is being compiled upon

6.2 (b) Dilemmas to be kept in mind during privatization of Oil Industry in Kuwait

- a) Difficulty of translating earlier privatization experiences
- b) Lessons of earlier failures and absence of an appropriate institutional framework
- c) Structural challenges
- d) Need for clearly defined objectives
- e) The efficiency fallacy

6.2 (c) Key factors to be considered during privatization of Oil Industry in Kuwait

- a) Changes to the legal and regulatory context
- b) Calculation and calibration of the national and international economic environment
- c) Communicating and engaging with key stakeholders
- d) Educating and informing the Kuwaiti national audience

6.2 (d) Overall Conclusions

For understandable reasons given the rapidly changing social, political and economic contexts in the region in relation to PPP projects and their governing legal frameworks, there is a substantial legal and economic consultancy commentary (**Arabian Business, 2017; Hart Energy, 2016; King & Spalding, 2017; PwC, 2015; Sattout & Batwala, 2018; Stevens, 2016; Energy Information Administration, 1996**).

However, the researchers need to consider the challenges and implications of Kuwait's changing privatization agenda and PPP legal contexts post-2007, particularly in relation to the oil sector if the country proceeds in this direction.

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Founder Ownership and the Readability of Management Discussion and Analysis section of the annual report

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Abstract

We examine the influence of business groups and promoter shareholdings on the readability of the Management Discussion and Analysis section of the annual report amongst the Indian firms. Using the Fog index, length of the document as indicators of readability, we show that promoters tend to make reports more readable in order to project a better picture of the firm. However, business groups tend to make statements challenging to read. Using sub-sample analysis, we further report that promoters in a standalone firm are more inclined to make annual reports more readable. Collectively, our results indicate that textual content plays a vital role in the decision of the users of these statements and hence, serves as a tool for the managers to obfuscate information.

Keywords: Business Groups, Readability Index, Promoter Shareholding, Incomplete Revelation

Introduction

The growing complexity of financial statements has attracted the attention of accounting researchers. With rare disagreement among the researchers regarding the ever-increasing complexity of financial documents, it is inevitable to address the readability of financial reports in an emerging market like India. The Companies Act, 2013, mandated the preparation of financial documents following accounting standards under Section 133 to present a fair picture of the firm. Thus, the readable financial reports will help investors make an informed judgment, assist analysts, and other advisors make recommendations, enable firms to build better relationships with the existing and prospective stakeholders and further acquire resources at a lower rate. The growing importance is credited to the increasing amount of information transmitted through the financial documents (Lahart, 2014; Loughran & McDonald, 2014). The disclosure by the firm incorporates numerical and textual information. Standard setters provide a standardized format for numerical information transmission; however, there are no guidelines for the reports' text portions. Further, there has been a substantial rise in textual content (Chen & Li, 2015).

The textual component of financial documents affects investors' decisions (De Franco, Hope, Vyas, & Zhou, 2015). Also, prior research suggests that the investors find these documents complex to understand (Li, 2008), requiring advanced processing capabilities. The complexity affects the ability to search and incorporate necessary information in investment decisions. Consequently, the Securities and Exchange Commission (SEC) issued a handbook on plain English disclosures guidelines in the year 1998, motivating all firms to use plain English measures to prepare the documents for disseminating the information to the outside parties¹. Moreover, the management usually makes an effort to complicate the financial reports for the information they do not wish to communicate; at the same time, the remaining data is easily communicable. Thus, readability can be regarded as a strategic choice by the firm's managers to disclose selective information.

In this study, we examine the determinants of readability among Indian firms. Prior research on readability focused on developed markets like the USA, the UK, which is characterized by diffused ownership and healthy regulatory norms for investor protection. In contrast, Indian firms

¹Plain Writing Act, 2010, superseded the disclosure guidelines.

are characterized by concentrated ownership and prominence of business groups, inadequate investor protection, weaker institutional settings, and legal enforcement. Thus, it serves as a new setting to analyse financial documents' readability. Besides, business groups are common in India (Khanna & Palepu, 2000). With poor governance and disclosure practices, the business groups fill the institutional gap due to weaker institutional settings, equipping group firms to take diversification and reputational benefits, fill in the resource constraints. However, business group membership comes at the cost of conflict between the controlling and minority shareholders, misallocation of resources amongst the groups, and biased compensation schemes (Khanna & Palepu, 2000). Thus, it would be significant to see the impact of business groups on the readability of financial documents. Hence, we hypothesize that business groups may be motivated to make annual financial reports less readable for the minority shareholders' expropriation.

This study takes the horizon of existing literature a step ahead. The readability concept in accounting and finance is at an emerging stage in India. The research on readability has identified various determinants of readability and its impact on returns to firms in different developed countries. However, prior studies lack identifying the effect of the readability of financial documents in the Indian context. The remainder of the article is organized as follows: Section 2 discusses the literature for readability and the hypothesis; Section 3 discusses the data description and the methodology; Section 4 presents the results and discussion for the hypothesis, and Section 5 concludes.

Literature Review and Hypothesis Development:

As a measure of text complexity, readability allows the users to understand the document and realize the real value and risk characteristics of the reporting entity. (You & Zhang, 2011) provide evidence that complex financial statements pose a concern as it delays the investors' reaction to the information; therefore, slowing information incorporation into the stock prices. (R. J. Bloomfield, 2002) mention that difficulty level of comprehension of the annual reports has increased over time. With the growing importance of the readability of financial statements, various studies document the economic outcomes of readability. (Smith & Smith, 1971), using the readability index on footnotes of 50 random fortune companies, consider the reports restrictive. They further show that only 19.3% of the US population has the requisite education, limiting the financial reports' understandability. A large sample study by (Li, 2008), have reported that firms with meagre earnings are more inclined to file challenging to read annual reports. (Miller, 2010) show that the less readable records lead to reduced trading by the small investors, having relatively less impact on the large investors. Moreover, (Lo et al., 2017), in his study presents that the earnings management practices in the firm lead to complex annual reports. (Nelson & Pritchard, 2011) show an asymmetric sensitivity of a firm's cautious language because of the litigation risk. Further, firms avoid boilerplate warnings, provide more critical details about the risk factors, and use cautious language to reduce litigation costs. In contrast, no evidence is found of firms not using cautious language when litigation risks reduce. (Callen, Khan, & Lu, 2013; You & Zhang, 2011) associate less readable financial reports of firms to stock price crash risk and stock price delay, respectively; consistent with (R. J. Bloomfield, 2002) "Incomplete Revelation Hypothesis," suggesting that investors underreact to the complex and challenging information extracted from the financial reports.

Thus, the readability of financial documents affects investors' decisions (De Franco et al., 2015), and the investors find these documents complex to understand (Li, 2008), requiring better and advanced processing capabilities. (Lehavy, Li, & Merkley, 2011) find that investors' demand for analyst's services increases with increasing complexity in the financial reports. These studies clearly emphasize the need for improved readability in making information more accessible to the users of financial documents.

Hypothesis:

Concentrated ownership is a common phenomenon in an emerging market like India. The conflict of interest between minority and the majority shareholders (Shleifer & Vishny, 1997) remains a significant concern for the regulatory authority. In our study, we consider the readability of financial documents, which serves as a vital avenue with the management to expropriate minority shareholders. Further, prior research on readability considers annual financial reports by the firms to be unreadable. To sum, a firm's management often practices lower readability to present a better picture of a firm. (Rennekamp, 2012), using an experiment, show that investors react firmly to more readable documents.

Promoter Holding: Among Indian firms, concentrated ownership plays a dominant role. Promoters with significant stake holding have substantial decision-making power and have a significant influence on the firm's management. With direct rewards associated with firm performance, promoters have incentives to improve firms' governance. The founders manage the conflict between the owner-manager and minority-majority shareholders in an efficient manner (Mitton, 2002). Further, prior research suggests that family firms perform better than their counterparts (Anderson & Reeb, 2003; Barontini & Caprio, 2006). The promoters can potentially affect the firm's disclosure quality by influencing the readability of financial reports positively.

Hypothesis 1: There is a significant positive relation between promoter holding and readability of financial reports.

With a flawed regulatory framework, institutional voids, and inefficient contract enforcement (Khanna & Palepu, 2000), Indian business groups serve as essential intermediaries for the firms. Moreover, the expropriation of minority shareholders by controlling shareholders remains a significant concern. Thus, the business groups may use complex language in their financial reports to misrepresent the minority shareholders.

Hypothesis 2: Business groups will prepare the Management discussion and analysis report less readable in nature

Further, we add control variables for various factors. The definition can be obtained from Table 1.

Data and Methodology:

Centre for Monitoring Indian Economy (CMIE) and Ace knowledge portal is used to collect the data for the financial variables and Management Discussion and Analysis section reports. We use a sample of

1890 firms listed on the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE); for the period 2015 to 2019. Our final sample has a total of 5680 observations, excluding firms with missing data. We winsorize all financial variables to reduce the effect of outliers at 1% (top and bottom).

Readability Measures:

In this study, to evaluate the readability, we consider widely used measures like the Fog Index, length of MD&A, the number of characters in the MD&A, and the number of pages. The second measure is the length of the document. The length of the report is the logarithm of the number of words. Length as a measure of readability is easy to calculate and emphasizes the concern of higher processing costs associated with lengthy documents. Further, the number of characters and the number of pages help us associated with lengthy documents. Further, the number of characters and the number of pages help us measure the possible information overload to obscure the information. To examine the determinants of readability, we use equation 1. In equation 1, the firm and year are listed as i and t , respectively. The firm and year fixed effects

ensure that the results are not affected by the firm-specific characteristics and periods. Refer table 1 for the definition of the variables used in the equation 1.

Table 1: Variables definition

This table presents the definition of the variables used in the study

Variable	Definition
Fog Index (Fog)	Gunning Fog Index as a measure of readability, calculated as $0.4 * (\text{number of words per sentence} + \text{percent of complex words})$
Modified Fog Index (Md_Fog)	Gunning Fog Index as a measure of readability, calculated as $0.4 * (\text{number of words per sentence} + \text{percent of complex words})$, after excluding complex words
Pages (Pages)	Number of pages in the report
Pages (ln_pages)	Natural logarithm of the number of pages in the report
Character (Char)	Number of characters in the report
Modified Character (Md_Char)	Number of characters in the report after excluding complex words
Log Character (ln_char)	Natural logarithm of the number of characters in the report
Log Modified Character (ln_md_char)	Natural logarithm of the number of characters in the report, after excluding complex words
Words (Words)	Number of words in the report
Modified Words (Md_Words)	Number of words in the report, after excluding complex words
Log Words (ln_words)	Natural logarithm of the number of words in the report
Log Modified Words (ln_md_Words)	Natural logarithm of the number of words in the report, after excluding complex words
Firm Size (Size)	Natural logarithm of the total assets of the firm
Age (Age)	Number of years of incorporation of the firm measured in years
Log Age (ln_age)	Natural logarithm of the number of years of incorporation of the firm
Stock return volatility (St_vol)	The standard deviation of monthly stock years in the prior year
Leverage (Lev)	Book value of total borrowings of the firm to book value of total assets
Return on Assets (ROA)	An indicator to measure a company's operating profit by total assets
Price to Book Ratio (PB)	The ratio of the market value of equity to book value of equity
Earnings Volatility (Ea_vol)	The standard deviation of operating earnings during the prior five years in order to capture the volatility of the business (Li, 2008)
Shares held by promoters (Pr_share)	Percentage of shares held by the promoters of the firm in a year
Business Group (Bg)	An indicator which equals 1 for business group firms and 0 for standalone firms
Loss (Loss)	An indicator which equals 1 if a company experienced loss in the current year and 0 otherwise

Table 2: Summary statistics

The table presents the summary statistics of the variables

Variable	Mean	p25	Median	p75	Std
Fog	17.678	15.446	17.462	19.654	3.232
Md_Fog	16.366	14.369	16.203	18.157	2.937
Pages	7.521	3	5	9	6.86
ln_pages	1.687	1.099	1.609	2.197	.815
Char	17758.95	8825	16138	24748	11059.27
Md_Char	13910.76	6368	12462	19766	9463.542
ln_char	9.55	9.085	9.689	10.116	.758
ln_md_char	9.024	8.759	9.43	9.892	1.694
Words	3376.598	1648	3030	4692	2255.18
Md_Words	2989.412	1463	2717	4193	1848.662
ln_words	7.885	7.411	8.017	8.454	.738
ln_md_words	7.771	7.288	7.907	8.341	.743
Size	6.729	4.974	6.568	8.434	2.541
Age	30.394	20	27	34	18.211
St_vol	2.808	1.702	2.394	3.379	2.148
Lev	.925	.1	.272	.465	22.433
ROA	.083	.018	.075	.133	.08
PB	2.237	.553	1.216	2.683	3.101
Ea_vol	.079	.012	.027	.059	.201
Pr_share	50.989	38.37	53.96	67.48	20.407

$$\text{Fog} = \alpha + \beta_0 \text{Size}_{it} + \beta_1 \text{Age}_{it} + \beta_2 \text{Volatility}_{it} + \beta_3 \text{BG}_{it} + \beta_4 \text{PS}_{it} + \beta_5 \text{Lev}_{it} + \beta_5 \text{ROA}_{it} + \beta_6 \text{PB}_{it} + \beta_7 \text{Loss}_{it} + \text{IndDummy} + \text{YearDummy} + \varepsilon_{it} \quad \text{equation (1)}$$

Results and Discussion:

Table 2 presents the descriptive statistics of the sample of Indian firms on the determinants of readability. The mean (median) of the fog index is 17.67 (17.46), which is challenging to read. The mean (median) of the length is 7.88 (7.41). We have performed the analysis using fog index and modified fog index. The modified fog index has been calculated after excluding word list provided by (Kim, Wang, & Zhang, 2019).

Next in Table 3, to test the impact of Business Groups on readability, we include a dummy variable taking value 1 for BG firms and 0 for standalone firms. Also, to study the effect of concentration of ownership, we add promoter shareholding. With a positive coefficient of 0.212, business group firms lead to complex MD&A, whereas promoters holding reduces the fog index. We further see that age and PB are not significantly related to fog index after including business group firms. Further, as explained by (R. Bloomfield, 2008), good performance is relatively more comfortable to tell, and losses require essential information and are difficult to describe. In table 4 Panel A, we explore the interaction between business group firms and promoter shareholdings. The coefficient of business groups becomes insignificant, while promoter shareholdings have a negative coefficient at a 1 percent significance level. The coefficient of Business groups*Promoter

Shareholding is positive and significant at 5 percent. It suggests that the promoter holdings in business groups tend to make financial reports challenging to read. Our results concerning the other determinants are by the prior studies. The loss firms prepare MD&A more challenging to read (Li, 2008).

Subsample Analysis of Business groups vs. standalone firms:

In addition to the above analysis, we examine the difference in the readability of the standalone firms and business group firms. The results in Table 5, Panel B presents the results for the standalone firms, and results for business groups. Consistent with the prior results, we find that promoters for standalone firms make MD&A easier to read. The results imply the role of promoters in standalone firms who make every effort to portray a better picture of the firm. Business firms being self-sufficient can afford poor readability.

Conclusion:

With the growing literature on the determinants of readability and its economic consequences, it is of utmost importance to study the determinants of readability in an emerging market like India. The concentration of ownership is a common feature among Indian firms. Thus, it serves as a valuable setting to examine the impact of textual content on the decisionmakers in an environment primarily governed by business groups with weak legal enforcement and inadequate investor protection. Using the Ace knowledge portal for extracting the Management Discussion and Analysis section of the annual report from 2015 to 2019, we find these documents challenging for an average reader. Using the Fog index, as a measure of readability, we find that it requires an average of 17.67² years of education to comprehend the annual reports.

Further, we study the impact of business groups amongst Indian firms. We find that business groups make annual reports harder to read. With a large percentage of business groups in India, our study provides insight and understanding of the management perspective in such a setting and the preparation of the annual report narratives. Thus, this study provides evidence that the management of the firms in India obfuscate information and present a better picture of the firm.

This study is likely to be of interest to the regulators (the Securities and Exchange Board of India), the standard setters (the Institute of Chartered Accountants of India), the investors, and the firms at large. There is scope for additional research on readability among Indian firms' using more sophisticated measures.

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² At the same time, the gross enrolment rate in the year 2015-16 for higher education was 24.5% (Data Source: Department of Higher Education, MHRD, Government of India)

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Table 4: Readability, Business Group, and Promoter Shares

The table presents the relationship between readability and promoter shares. t-values are presented in the parentheses. *, ** and *** indicate significant level at 10%, 5% and 1% respectively.

Variables	Fog	Md_Fog	ln_pages	ln_char	Md_ln_char	ln_words	Md_ln_words
Intercept	24.46*** (52.63)	22.25*** (52.66)	0.558*** (5.291)	7.549*** (70.25)	6.439*** (26.51)	5.918*** (57.90)	5.715*** (56.18)
Size	0.729*** (25.77)	0.629*** (24.66)	0.240*** (37.34)	0.206*** (34.01)	0.254*** (17.77)	0.205*** (34.44)	0.212*** (35.63)
Age	0.00329 (1.484)	0.00316 (1.604)	0.000534 (1.095)	0.00109** (2.137)	0.000450 (0.447)	0.00117** (2.501)	0.00101** (2.200)
St_vol	0.0742*** (2.600)	0.0587** (2.379)	0.00660 (1.097)	0.00502 (0.901)	0.000367 (0.0345)	0.00734 (1.278)	0.00637 (1.123)
Bg	0.212** (2.236)	0.166* (1.918)	0.0486** (2.230)	0.00138 (0.0625)	0.130** (2.570)	0.00842 (0.402)	0.0160 (0.769)
Pr_shares	0.00518** (2.045)	0.00568** (2.413)	5.74e05 (0.101)	8.48e05 (0.150)	0.000590 (0.427)	5.82e05 (0.111)	0.000171 (0.327)
Lev	0.0743** (2.565)	0.0681*** (2.726)	0.0188*** (3.504)	0.00835** (2.090)	0.00428 (0.192)	0.00774* (1.925)	0.00862** (2.134)
ROA	2.236*** (2.846)	2.415*** (3.308)	0.730*** (4.499)	0.872*** (5.376)	1.173*** (2.848)	0.895*** (5.688)	0.875*** (5.519)
PB	0.0261 (1.606)	0.0333** (2.175)	0.0179*** (4.886)	0.00842** (2.292)	0.000788 (0.0806)	0.00908** (2.577)	0.0106*** (3.111)
Ea_vol	0.538* (1.912)	0.462* (1.851)	0.0940 (1.353)	0.0691 (1.122)	0.0140 (0.0866)	0.0680 (1.121)	0.0654 (1.054)
Loss	0.326*** (2.711)	0.257** (2.330)	0.0891*** (3.427)	0.0103 (0.400)	0.0262 (0.421)	0.00766 (0.317)	0.0132 (0.543)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,548	4,544	4,782	4,565	4,760	4,549	4,544
Rsquared	0.239	0.215	0.393	0.323	0.139	0.343	0.356

Table 5: Readability and Business Group*Promoter Shares and Sub-Sample Analysis

The table presents the relationship between fog index and the interaction of business groups with promoter shares and the result of the determinants of readability for both standalone and group affiliated firms.

Variables	(Panel A Interaction)		(Panel B) Standalone vs Business Group			
	Fog	Md_Fog	Fog (Bg=0)	Md_Fog (Bg=0)	Fog (Bg=1)	Md_Fog (Bg=1)
Intercept	24.62*** (52.11)	22.41*** (52.14)	25.06*** (41.24)	22.71*** (41.22)	23.76*** (32.09)	21.79*** (32.39)
Size	0.726*** (25.74)	0.626*** (24.61)	0.775*** (20.80)	0.664*** (19.95)	0.659*** (14.69)	0.582*** (14.17)
Age	0.00390* (1.740)	0.00374* (1.877)	0.00408 (1.170)	0.00435 (1.432)	0.00374 (1.266)	0.00310 (1.148)
St_vol	0.0737** (2.567)	0.0582** (2.345)	0.0636* (1.725)	0.0480 (1.516)	0.0857** (2.117)	0.0737** (1.999)
Pr_share	0.00907*** (2.881)	0.00944*** (3.203)	0.00912*** (2.785)	0.00943*** (3.061)	0.00366 (0.850)	0.00254 (0.641)
Lev	0.0773*** (2.702)	0.0709*** (2.881)	0.0951*** (3.789)	0.0862*** (4.018)	0.179 (0.551)	0.147 (0.494)
ROA	2.204*** (2.809)	2.383*** (3.271)	2.328** (2.247)	2.960*** (3.019)	1.836 (1.537)	1.351 (1.254)
PB	0.0254 (1.567)	0.0325** (2.140)	0.000893 (0.0349)	0.0151 (0.621)	0.0463** (2.128)	0.0455** (2.301)
Ea_vol	0.556** (1.986)	0.479* (1.932)	0.794** (2.218)	0.718** (2.311)	0.0571 (0.143)	0.127 (0.334)
Loss	0.328*** (2.725)	0.258** (2.342)	0.277* (1.735)	0.178 (1.216)	0.303 (1.550)	0.289 (1.633)
Bg	0.439 (1.455)	0.461* (1.650)				
Bg*Pr_shares	0.0116** (2.277)	0.0112** (2.372)				
Year Effects	Fixed Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects	Fixed Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,548	4,544	2,625	2,621	1,923	1,923
Rsquared	0.239	0.216	0.276	0.248	0.208	0.197

Career Success of Women: Role of Family Responsibilities, Mentoring And Perceived Organizational Support

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Abstract

Women are under-represented at top level positions despite increasing women empowerment, participation and decelerating gender discrimination in India. Women have to go through various obstacles in order to reach to senior or top-level positions in their professional life. Since, there are many barriers that a woman has to go through to get career success this study focuses on the barriers that women face due to organizational and family barriers. The current research paper aims to test whether lack of mentoring, perceived organizational support (POS), and family responsibilities impact the perceived career success (PCS) of women in the Indian IT sector. Data in this regard has been collected using a structured questionnaire and a total of 292 respondents have been analysed. In order to examine the impact of these barriers on the perceived career success of women, the method of SEM i.e. Structural Equation Modeling has been used. Findings of the study reveal that each of the independent variable significantly impacts the perceived career success of women which works as a wake-up call for women executives that they must overcome these barriers to advance their career smoothly.

Keywords: Perceived Career Success (PCS), Barriers, Information Technology (IT) sector, Career Success, Family Responsibilities, Mentoring, Perceived Organizational Support (POS).

Introduction

When one talks about senior managerial positions, the picture that strikes in an individual's mind is usually male and the reason behind it is that most of the industries are male-dominated and in every industry women found at managerial positions are very less as compared to men. While there is an increase in women's ranks in organizations over the past decade, most of the organizations are still male-dominated (O'Neil *et al.*, 2008). Scott (2014), stated that women representation in senior-level positions has been trapped at 24 percent. Schein (2001) stated that challenges for women in managerial positions exist across the world. Involvement of women in professional jobs, namely, engineering, technical work, and construction has been low (Fernando *et al.*, 2014; Powell *et al.*, 2009). As per report of Catalyst (2017), women only held 24 percent of top managerial positions around the globe in 2016 and one third of businesses do not have any women at senior level positions, it was also concluded that even by the year 2060, women will not achieve equality with men.

Indian Context

Gupta *et al.* (1998), established that when it comes to Indian men, they find themselves more comfortable in supervising women rather than being supervised by women as it clashes with their ego. Universally, women capture approximately 10 percent of the top management positions in Fortune 500 companies (Chadha, 2002). Women's career progression encounters social biases against them which restrain them from reaching the middle or top-level management (Budhwar *et al.*, 2005). Database of Directors' (2007) revealed that only 4.9 percent of the board seats were held by women in 1993 public companies (Buddhapriya, 2009).

Indian culture and practices acts as the main hurdles hindering women to reach to leadership positions (Kulkarni, 2002; Desai *et al.*, 2011). According to report of Catalyst (2013), only 15.7

percent of women hold supervisory roles, 18.1 percent of senior positions and 14.8 percent of board positions, and only 4 percent of executive positions in Fortune 500 companies. In the years 2004 – 2011, India grew at an average rate of approximately 7 percent, however, there was a fall in the contribution of women in the workforce from 35 percent to 25 percent (ILO Report, 2015).

Bharathi *et al.* (2015), revealed that the main obstacle that a woman has to go through is maintaining the work-life balance in IT/ITes sector, and it becomes difficult to balance due to long working hours, travel time, additional jobs and then feeling guilty for not taking care of children and elders at home. ILO report states that women acquire less than four percent of top management positions in BSE 100 companies (The Hindu 2015). The issue is that there are only a few women found in the board of directors in Indian organizations and women are under-represented at managerial levels and at decision-making stages (Bhattacharya *et al.*, 2018). In a study by Rath *et al.* (2019), preventers to the career advancement of women were identified, namely, marriage, gender discrimination, Indian culture, and lack of networking and mentoring.

2. Research Gaps and Hypotheses

It has been surprising to find that gender discrimination plays a vital role in the IT sector, women are usually found at lower or middle-level jobs and the majority of senior and technical management level jobs are occupied by men. Even in other sectors, women are found to occupy low paying and unskilled jobs, and out of all working women, 55 percent of women are found to do the jobs of these categories (Indecon, 2002). This study is done with a purpose to test women's perception on every level of management. Majority of the studies done in the past to identify the barriers to career success of women have been of qualitative nature. In the past, researchers have conducted interviews to understand and capture the real picture of barriers to career success of women in any industry. Empirical studies focused on the career success of women have been limited. Also, Tharenou (1999) disclosed that female executives encounter more barriers in their career success than male executives. To work on the research gaps, researcher identified the barriers that impact the career success of women from qualitative studies. Keeping in mind the same challenges that women have to go through for their career progression, this research has been carried out using the quantitative methods to identify the impact of those barriers (namely, family responsibilities, mentoring, and perceived organizational support) on the career success of women in Indian IT sector.

Hypothesis 1: There is a significant impact of family responsibilities on the perceived career success of women.

Hypothesis 2: There is a significant impact of mentoring on the perceived career success of women.

Hypothesis 3: There is a significant impact of perceived organizational support (POS) on the perceived career success of women.

3. Research Methodology

Present study is entirely focused on working Indian women and the challenges they face in their career success. Respondents considered for the study has been the women executives appointed at different roles at different levels of management in Indian IT sector. Data collection has been done with the help of an online survey. For keeping the study's relevance specific to women, the questionnaire was floated using Google Forms' link only to the female professionals of the Indian IT sector and a total of 292 respondents have been taken into consideration for final analysis. The questionnaire used for the study was divided into two sections. The former section collected the demographic profile of the respondents, namely, age, marital status, parental status, number of dependents, the highest degree of qualification, total experience, and managerial position. Using descriptive frequency analysis, the demographic profile of respondents has been

analysed. The latter part consisted of adapted scales for measuring family responsibilities, mentoring, perceived organizational support, and perceived career success given by Buddhapriya (2009), Dreher and Ash (1990), Lynch *et al.* (1999) and Greenhaus (1990) respectively.

4. Analysis

To check the impact of independent variables on the dependent variable a two-step approach has been applied to the study. First, an Exploratory Factor Analysis (EFA) has been applied to identify the reliability and validity of the items and also to reconfirm the dimensions of the various scales used in the study. Second, analysis has been performed with the help of SEM that includes Confirmatory Factor Analysis (CFA) and path analysis.

4.1. Validity and Reliability

4.1.1 Exploratory Factor Analysis

Table 1: Summary of Exploratory Factor Analysis

Constructs	Items	Mean	Standard Deviation	Factor Loading	KMO	Cronbach Alpha
Family Responsibilities	FR1	4.58	2.001	0.717	0.864	0.918
	FR2	4.95	1.732	0.865		
	FR3	4.86	1.837	0.808		
	FR4	4.78	1.635	0.835		
	FR5	4.68	1.754	0.831		
	FR6	4.75	1.771	0.771		
Perceived Organizational Support (POS)	POS1	4.36	1.592	0.701	0.828	0.916
	POS2	4.53	1.582	0.759		
	POS3	4.87	1.355	0.768		
	POS4	4.45	1.614	0.723		
	POS5	4.67	1.547	0.761		
	POS6	4.73	1.530	0.790		
	POS7	4.83	1.439	0.706		
	POS8	4.66	1.546	0.720		
Mentoring	Ment1	4.71	1.735	0.684	0.928	0.960
	Ment2	4.64	1.803	0.804		
	Ment3	4.63	1.755	0.837		
	Ment4	4.18	1.896	0.806		
	Ment5	4.41	1.902	0.811		
	Ment6	4.33	1.866	0.813		
	Ment7	4.60	1.822	0.879		
	Ment8	4.48	1.847	0.828		
Perceived Career Success (PCS)	PCS1	4.20	1.644	0.734	0.844	0.909
	PCS2	4.39	1.688	0.846		
	PCS3	4.10	1.800	0.768		
	PCS4	4.15	1.608	0.848		
	PCS5	4.40	1.701	0.803		

Source: Authors' Compilation using SPSS 22.0

4.1.2. Confirmatory Factor Analysis

CFA has been used to test the construct validity concerns, and model fitness. Construct validity has been analysed by checking convergent validity, and discriminant validity. To test the convergent validity, CR must be greater than 0.7, the AVE should be greater than 0.5 and CR should be greater than AVE. To test the discriminant validity, AVE should be greater than MSV and AVE should be greater than ASV. The study's results satisfy all the conditions and outcomes are tabulated in Table 1.

Table 2: Convergent and Discriminant validity

Constructs	CR	AVE	MSV	ASV	Mentoring	PCS	Family Responsibilities	POS
Mentoring	0.959	0.746	0.388	0.306	0.864			
PCS	0.906	0.661	0.264	0.218	0.514**	0.813		
Family Responsibilities	0.916	0.646	0.266	0.184	0.516**	-0.403**	0.804	
POS	0.907	0.554	0.388	0.246	0.623**	0.476**	0.351**	0.744

Source: Authors' Calculation using AMOS 22.0

CR = Composite Reliability, AVE = Average Variance Explained, MSV= Maximum Shared Variance, ASV = Average Shared Variance

** Correlation is significant at $p < 0.01$ level (2-tailed)

To test the model fitness of the constructs, basic criteria and results for the study are tabulated in Table 2.

Table 3: Model Fit Indices

Fit Indices	Criteria	Results
CMIN/DF	<3.0	2.94
GFI	>0.8	0.826
RMSEA	<0.10	0.082
CFI	>0.9	0.917
IFI	>0.9	0.917
TLI	>0.9	0.905

Source: Authors' Compilation using AMOS 22.0

4.2. Hypotheses Testing

Hypotheses testing have been conducted with the help of path analysis. Path analysis has been applied to check the impact of family responsibilities, mentoring, and perceived organizational support on the perceived career success of women in the Indian IT sector. All of the hypotheses are accepted or rejected on the basis of regression coefficients (Beta), significant level ($p < 0.5$), and critical ratio which is acceptable above 1.96. From the results of the study, H_1 is accepted, which means that family responsibilities significantly impact the perceived career success of women with $\beta = -0.189$, $p < 0.001$, and critical ratio = -3.378. H_2 is accepted, stating that mentoring impacts the perceived career success of women with $\beta = 0.263$, $p < 0.001$, and critical ratio = 3.815. H_3 is accepted on the basis of its $\beta = 0.269$, $p < 0.01$, and critical ratio = 4.304 which means that POS significantly impacts the perceived career success of women. The R^2 of the study is 36.3%. In addition to hypotheses testing the correlation between the demographic variables and perceived career success of the woman in the Indian IT sector has also been tested,

this is done in order to check how the demographic profile of women is related to their career success. The results of the correlation reflected that each of the demographic variable is found to be significantly correlated with PCS at significance level of 0.05.

5. Conclusion

Firstly, the study analyzed the impact of family responsibilities on the perceived career success of women. As a result, it has been seen that family responsibilities brings a negative and significant variance in the perceived career success of women in the Indian IT sector. Secondly, mentoring is always taken as a positive technique that helps everyone but especially women in improving their performance and guides them in the right direction to reach to the senior or top-level management in their career ladder. But lack of mentoring acts like an obstacle to their career success. In the same way, findings of the present study suggests that when women get enough amount of mentoring in their career ladder in Indian IT sector, they are more likely to achieve the career success than the ones who do not receive the same. Thirdly, it has been tested, whether POS brings a significant variance to the career success of women or not. On the basis of the results, it is concluded that POS has a positive and significant effect on the perceived career success of women in the Indian IT industry. An organization has a great role in providing opportunities and support to its employees that can help them achieve a great height of success in their career and it is said to be more true about women as they have to go through more barriers in order to achieve their career success than their male counterpart.

6. Implications of the Study

The results of the study are useful for the Indian IT industry. Women, especially in the IT sector, have to go through lots of challenges in order to achieve a good career or career success. It has been seen in the results that mentoring, family responsibilities, and perceived organizational support all of these 3 barriers impact the perceived career success of the woman in the IT industry which works as a wake-up call for women executives that they must overcome these barriers to advance their career smoothly. Every woman understands that she has to play a dual role, as a responsible family member as well as a responsible employee but they believe that the same roles should not act as barriers to their career advancement. Therefore, to promote the advancement of women, a change in the mindset of family, society, and organization is required, such as spousal support and organizational support can help women in overcoming the barriers to their career advancement to a good extent.

There is finite literature for women in managerial positions in the IT sector of India. This study provides and contributes to academic concepts about women's career progression and the barriers that they face in their career ladder. Also, by providing HRD executives with the current scenario it becomes useful and helpful for them, as they can plan and implement their policies and initiatives accordingly in order to remove or atleast reduce the barriers that come in the way of women's career progression. The organization should try to create an environment by providing them with the support that helps women in their career advancement, such as flexible and part-time working hours, childcare rooms to manage family and work simultaneously. It is also suggested to make sure that women executives do not lack mentoring and organizational support. To make sure of it, women should be provided with the opportunities to receive mentoring and to mentor as well, keeping in mind that the organizational support does not vary on the basis of the gender of the employee. These initiatives are also important for each level of management to keep good talent in the organization.

7. Limitations and Future Scope of the Study

Even after taking all the precautionary measures to keep the relevancy and objectivity of the study, few limitations have been identified. This study is focussed on Indian IT sector, further it can be comprehensively tested for various other sectors of India. The proportion of women

working at senior level management has been low in the present study. Other researchers may work on this point in future studies by involving a higher proportion of women working at senior or top level management. The study has been limited when it comes to the sample and variables included. Other researchers can test the same barriers on a larger sample and including various other barriers like networks, glass ceiling, international assignments and opportunities, gender discrimination and many more. Also, this study is focussed only on the barriers to career success of women, in future one can work on the facilitators to the career success of women.

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Reinvigorating Green Bond as an Alternative Energy Investment amidst Foreseeable Funding Crisis due to the Great Lockdown

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Abstract

The Great Lockdown due to the outbreak of COVID-19 pandemic has exasperated the prevailing situation beyond a mere health crisis and its economic impact is anticipated to be risking the prospect of the sustainability of the energy sector. Conducting a time-series analysis with five major countries, chosen in terms of their renewable-energy consumption and issuance of the green bond, this study imprecates that the lockdown would severely harm the investments in renewable energy, whereas, the long-term asset financing is less vulnerable to economic slowdowns compared to the gross investment. The study represents Green Bond as a rapidly growing long-term financial instrument for the private investors and capable of absorbing macroeconomic disturbances, hence, more propitious as a rescuer for the renewable energy sector for the future.

Key-words: Great Lockdown; Energy Investment; Renewable Energy; Green Bond; Time Series Econometrics; Long-term Asset Financing

1. Introduction

According to a scenario-based projection of the *World Energy Outlook* (IEA 2018), under the current policies scenario, the global energy demand will grow by more than 25 per cent in 2040 from the 2018 level, which would require an annual average investment of more than USD 2 billion to satisfy this demand. In the face of growing concerns and commitments to reduce the energy-related carbon emissions, the sector of renewable energies is expected to become the most important source and would meet almost half of this increased energy demand (BP Energy Outlook 2019).

The entire world is presently experiencing an exceptional situation stemming from the outbreak of the Corona Virus that led to a public health crisis all over the globe. To contain the spread of this infection, the maximum number of countries are maintaining lighter to stricter forms of prolonged lockdown measures to avoid and restrict the social contamination, such that these unprecedented restrictions are hammering on the macroeconomic spontaneity all across the globe. In these circumstances, this present research is based on the foreknowledge on the prospect of investment for the clean energy and other climate initiatives. The world may find the pandemic-stricken developed countries concentrating their priorities into reviving national economies and the policies with emission-reduction efforts to finance the climate development projects both in their homeland and in developing countries could be side-lined such that the flow of investment for the growth of clean energy generation capacity is expected to be hugely disrupted. In a forecast for the period of 2019 to 2024, by the International Energy Agency (IEA), several months before the announcement of the Pandemic by the WHO, the year 2020 has been described as an excellent year for the renewable electricity additions, such that the global installations of solar PV and wind turbines were expected to outpace 2018 level by more than 20 % through the rapid expansion of capacities in China, the EU, the USA and India (IEA 2019). However, the pandemic shock not only dismantled the supply chain of environmental goods and instruments, but also slowed down the construction activity of the renewable energy generation projects, which is alarmingly derailing the progress in the clean energy sector (Bahar 2020).

From the literature, it can be observed that all the market-based mechanisms delivered good results in terms of environmental sustainability and perpetuating international cooperation through technology transfer and information sharing, etc., but their governance mechanisms are reasonably questioned in various studies and the explorations for the potentials of the private-sector investors remained untapped (Zadek, 2013; Clapp, 2014). Green bonds are often regarded as the trailblazer which explored new opportunities for the private investors with positive announcement returns, long-term value creation and smart operating performance while at the same time changed the status quo by ensuring a robust alternative funding option for climate initiatives as indicated by Flammer (2019). The issuance of the green bond gained momentum prominently since 2013 and over the years, the green-bond instrument successfully raised climate awareness among the potential investors to demonstrate their support for climate solutions through safe contributions without giving up financial returns (Dupre et al. 2018). From the review of existing literature, this study found that the prudence of the Green Bond as an asset financing instrument has never been examined academically in terms of its ability to absorb the macroeconomic shocks. The novelty of this paper lies in understanding the fate of climate-friendly energy projects due to the pandemic-induced anticipated financial disruptions and illustrating a way out in the form of Green Bond by ensuring greater participation from the socially responsible investors those who seek to foment the eco-friendly fixed payment securities with their portfolios.

The structure of the paper is as follows. In Section 2 the empirical model, the methodology and about the use of the databases are explained. Section 3 illustrates the results and discusses the findings. Finally, in Section 4 this study concludes the paper with important takeaways.

2. Methodology and Data

Based on the background on the relevance of Green Bond as an alternative source of investment for the renewable energy sector, especially on the long-term asset creation and project financing, the study formulates the terms of reference with the following null hypotheses (A, B):

- H_{A0} : The pandemic-driven lockdown will not affect investment in renewable energy
- H_{B0} : The long term funds are more sensitive for the renewable energy project financing under macroeconomic shocks.

Table 1: Major Performers in Renewable Energy Consumption and Green Bond Market

Countries	Renewable Energy Consumption (2018)*	Global Ranking in Renewable Energy Consumption (2018)	Renewable Energy Production** (% of total energy) (2016)	Green Bond Issuance*** (2019)	Global Ranking in Green Bond Issuance (2019)
China	1836.65	1	4.86	31.3	2
USA	747.23	2	7.39	51.3	1
France	111.07	12	6.2	30.1	3
Germany	226.09	6	26.3	19.2	4
India	261.17	5	5.36	6.6	11

Note: ‘*’ Units in TWh (Terra Watt Hour) ‘**’ indicates excluding the hydroelectric energies; ‘***’ Units in USD Billions.

Source: IRENA, Climate Bonds Initiative

Since the study broadly covers not only the relationship of renewable energy production with macroeconomic indicators, but also explores its funding opportunities, this primarily concentrates on five most important countries having a sharp trend in renewable energy generation and a considerable presence in the emerging climate bond investment market as shown in Table 1. This

table is showing that the USA, China, France and Germany ranks the top four positions in terms of global ranking in Green Bond issuance, whereas India ranks only 11th. However, as per the consumption of renewable energies, India ranks 5th, while China and the USA ranks first and second respectively.

2.1. Testing the First Hypothesis

To test the first hypothesis, this study frames the contribution of renewable energy as a percentage of total energy generation, the GDP growth rate and the cost of capital measured in terms of easy lending rates (LR) in a time-series structure as shown in equation (1) and equation (2) below, which depict the renewable energy variable by excluding and including the hydroelectric energy (REN and $RENH$) respectively. In this course of analysis, the study first checks the non-stationarity of the underlying variables for all the five countries mentioned in Table 1 by applying the Augmented Dickey-Fuller (ADF) unit-root test. After the unit-root tests, this study conducts the Johansen cointegration test discussed by Johansen (1988) and Johansen and Juselius (1990). The Vector Autoregression (VAR) procedure, under this Johansen test, allows simultaneous evaluation of multiple relationships and imposes no prior restrictions on the cointegration space. The basic Vector Auto Regressions (VARs), of order p based on the present multivariate models are as follows:

$$REN_t = A_1REN_{t-1} + A_2REN_{t-2} + \dots + A_pREN_{t-p} + B.GDP_t + C.LR_t + \varepsilon_t \quad (1)$$

$$RENH_t = A_1RENH_{t-1} + A_2RENH_{t-2} + \dots + A_pRENH_{t-p} + B.GDP_t + C.LR_t + \varepsilon_t \quad (2)$$

Here, REN_t and $RENH_t$ are the k -vectors of non-stationary $I(1)$ variables, GDP_t and LR_t are the d -vectors of deterministic variables and ε_t are the vectors of innovations.

As this study embarked on ascertaining the possible relationship between the variables, the pair-wise Granger causality test is conducted to examine the causal directions (Granger 1969). However, the Granger causality assumes only the precedence of the past value of one time series to predict the future value of another time series but does not by itself indicate causality in the more common use of the term. Once any said variables found to Granger-cause another variable, this study performs the VAR lag exclusion test to assess the importance of the VAR lag order for representing the variables. For each lag, the χ^2 (Wald) statistics for the joint significance of all endogenous variables at that lag are checked for each equation separately and jointly. Once the lag orders are identified with relevant significance, this study reveals the relationships among variables. To make the analysis robust, this study ventures into finding structural break with Chow Breakpoint test, if any, in the dependent variable.

2.2. Testing the Second Hypothesis

While testing the second hypothesis, this study considers two variables, namely the total investment in renewable energy (INV) and the long-term asset financing within the total investment in renewable energy ($ASSET$). The study initially checks the presence of unit root by ADF test and subsequently tests the possibility of autocorrelation separately among the variables. Therefore, the study estimates the variables, INV and $ASSET$ separately with simple first order autoregression equations as follows:

$$INV_t = D_0 + D_1INV_{t-1} + u_t \quad (3)$$

$$ASSET_t = G_0 + G_1ASSET_{t-1} + \mu_t \quad (4)$$

The paper tests the variables with structural breaks by applying the Chow Breakpoint test. The idea of the Chow breakpoint test is to fit the equation separately for each subsample and to see whether there are significant differences in the estimated equations. A significant difference indicates a structural change in the relationship and reveals the pattern of responsiveness of the variable against exogenous events which may influence its value. Since this study is trying to understand the credibility of the Green Bond as an alternative asset financing instrument for

investment in renewable energy during the expected foreseeable financial crunch, the detection of the structural break, in the absence of long time-series data points, exposes the consistency and strength to absorb exogenous shocks and helps to analyse the impacts of the COVID-19 pandemic in the best possible way.

2.3. Source of Data

The primary data of renewable energy production and consumption with its contribution to total energy share is obtained from the *CEIC Insights* database and open access statistics of the *International Renewable Energy Agency*. GDP growth and lending rate data are collected from the *World Bank open data source*. The investment data on renewable energy is collected from the *International Renewable Energy Agency* investment database. The labelled Green Bond and certified issuance data are picked up from the *Climate Bonds Initiative* data library.

3. Results and Discussions

3.1. Economic Growth, Cost of Capital and Renewable Energy

The results from the unit root test reveal that all the underlying variables of equations (1) and (2) are integrated with the same order at I(1) level and significantly confirmed the non-stationarity of the time series. The Johansen Cointegration test reveals one or multiple cointegrating equations for all the five countries at highly significant 5 per cent level. For the USA, France, Germany and India both the Trace and Maximum Eigen Value Rank Test confirms the presence of one cointegrating equation, whereas in the case of China the presence of cointegrating equation found three and one respectively. Hence, this can be said that the linear combinations of the underlying variables for all these five countries are capable of generating stationarity and postulating a long-run equilibrium relationship. After confirming the long-run relationship, the study tests for the predictive causality among the underlying variables using the pair-wise Granger Causality test that found the GDP growth rate Granger-causes the REN (and RENH) for the USA and Germany at 5 % significant level, whereas for China and India at 10 % significant level. Therefore, the test results signify bidirectional causality for the USA and unidirectional causality for China, India and Germany.

With the VAR analysis, the study found the variables significant up to second-order lag. Lag-exclusion Wald test justifies the significance of the lag orders in the said multivariate model signifying the relevance of the model in forecasting the future results. For the USA, India and Germany, the lag orders 1 and 2 are found significant at 2 per cent level whereas lag order 1 is found significant for China and France. These tests establish the relevance of GDP growth and lending rates on the growth potential of renewable energy backed by sustainable investment in this sector with easy credit availability. This evidence of a strong dependence for all the key economies has resulted in prima facie rejection of the first null hypothesis of the study which states that the pandemic driven lockdown will not affect investment in renewable energy.

3.2. Reinstating Global Lockdown with Structural Break and Renewable Energy

To test the consistency of the dependence of investment in renewable energy on the decisive macroeconomic indicators namely GDP growth and cost of credit (easy lending rate), the study reiterates the fact that major global macroeconomic shocks may impact on the investment in green energy. Considering the global recession and decelerated economic trend in and around the year 2008, the study performs the Chow Breakpoint test and the structural break-point locations are established for the USA, China, India and Germany in 2008, 2009, 2009 and 2007 respectively. The study verifies the significance of the break by incorporating a dummy variable (DUM) considering its pre and post break values as 0 and 1 respectively. These dummy variables are found significant at the 5 % level for the USA, Germany and China whereas at 6 % level for India. Therefore, the results from the Chow Breakpoint test, followed by the evidence of the significance

of all the dummy variables with structural breaks essentially proves the presence of considerable deviation in the proportion of renewable energy generation during the 2008-2009 period. This period is also termed as one of the greatest global financial turmoil of all times. The outbreak of COVID-19 besides intensifying a ubiquitous health crisis is also expected to bring down the global economy to a historically low level and considered to be an event which can take the financial world decades back. Because this event of Pandemic-led Great Lockdown can only be compared and evaluated in terms of 2008 Great Recession in recent times, this present analysis proposes this argument that the global events similar to these macroeconomic shocks significantly are impacting on the investments in the renewable energy sector, resulting in complete rejection of the first null hypothesis.

3.3. Energy Investment in long term project financing amidst external shocks

The study further empirically examines the steadiness of investment for the long-term green energy projects considering the total investment in renewable energy (INV) and the long-term asset financing within that (ASSET) for the period 2004-2015. The ADF unit-root test shows both the variables strongly establish the absence of unit roots at 5 % significance. This not only confirms the underlying causality but also clears the variables for subsequent autoregression testing which confirms significant autocorrelation among the variables at a 5 % level with first-order lag, i.e. AR(1) and a considerably high R-squared value (more than 0.8) for both the variables, INV and ASSET.

To better understand the features of the said variables and their responsiveness against the external shocks and exogenous impulses, this study tests the presence of structural breaks for some selected years. The INV variable represented a significant structural break in 2010, the year after the incidence of global financial crisis, as shown in Table 2, whereas, ASSET variable witnessed no such breaks for the entire period under consideration. This particular outcome reveals the most important clue for this present analysis which reveals the fact that investment trend in the long term project financing stood tall amidst external shocks due to major global economic degrowth.

Table 2: Chow Breakpoint test (2009-2011) comparison for INV and ASSET variables

Break Year for Chow test	INV (Total Investment) variable		ASSET (Asset Financing) variable	
	<i>Prob (Chi Sqr) Log Likelihood Ratio</i>	<i>Prob (Chi Sqr) Wald statistics</i>	<i>Prob (Chi Sqr) Log Likelihood Ratio</i>	<i>Prob (Chi Sqr) Wald statistics</i>
	2009	0.4292	0.0121	0.4696
2010	0.0307	0.0006	0.1757	0.0076
2011	0.1218	0.0688	0.1783	0.0297

Authors' Calculation

3.4. Discussion

The total investment in renewable energy already witnessed a stellar growth since 2004 and grew by 600 % till 2017 of which investment in asset financing had been historically one of the key components (Global Trends in Renewable Energy Investment, 2019). Of late, the contribution of the green bond had been significant and its share in overall investment in renewable energy segment grew rapidly. The growth of green bond in contributing to overall investment in renewable energy is three-fold since 2015 as shown in Figure 1-B. This is even more remarkable as it is slowly replacing the other traditional modes of asset financing like hire purchase, lease financing etc. in the renewable energy sector (Renewable Energy Finance Brief, 2020). The sectoral contribution to renewable energy from the total proceeds of green bond issuance also witnessing sustainable maintenance at around 30 % level as shown in Figure 1-A. This ensures a stepped increase in green bond investment in the energy sector due to exponential growth

trajectory of the total issuance of green bond from US\$ 2.6 Billion in 2012 to US\$ 257.7 Billion in 2019.

As the investment growth trajectory seems to be sustainable in normal economic scenarios, it happens to be considerably hindered during any economic crisis. COVID-19 induced global lockdown prodded the policy agencies to forecast economic degrowth in 2020-21, and the infrastructural project investment is genuinely going to bear the brunt. In these circumstances, long-term debt financing is an efficient way-out for these projects. Certified issuance of climate bonds emphasises the fact that long-term debt financing is a way forward, resulting in lesser investment risk, more return efficiency, higher repayment security and optimized cost of capital. The five-fold increase in certified green bonds with a maturity of more than 20 years in 2019 from 2018 as shown in Figure 2 below that clearly indicates investor’s inclination towards long term asset financing. In 2020, 90 % and 62 % of the investments in green bonds are made for tenure more than 10 years and 20 years respectively. This represents the potential robustness of Green Bond as a viable source of investment for the renewable energy project financing in the post-COVID world.

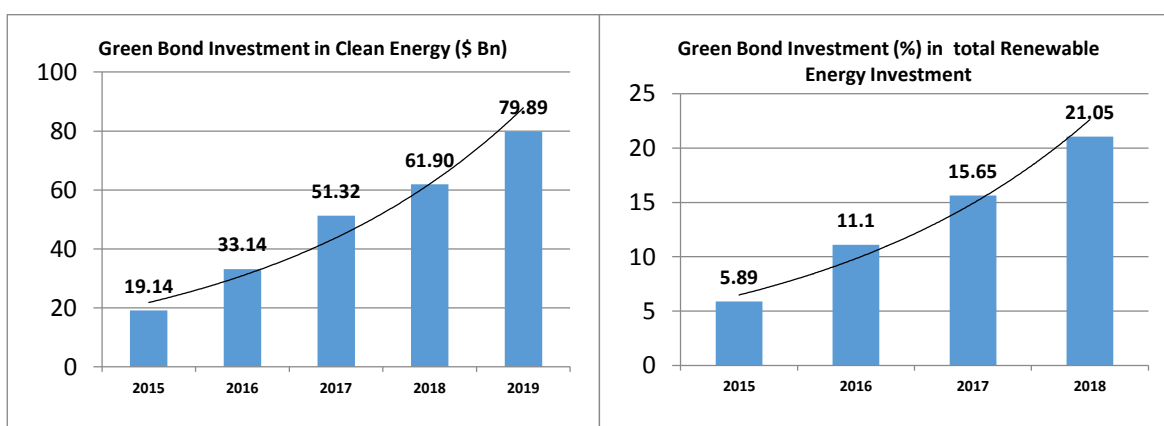


Figure 1-A:

Figure 1-B:

Source: Clean Bond Initiatives

Figure 1. Green Bond Investment in Renewable Energy

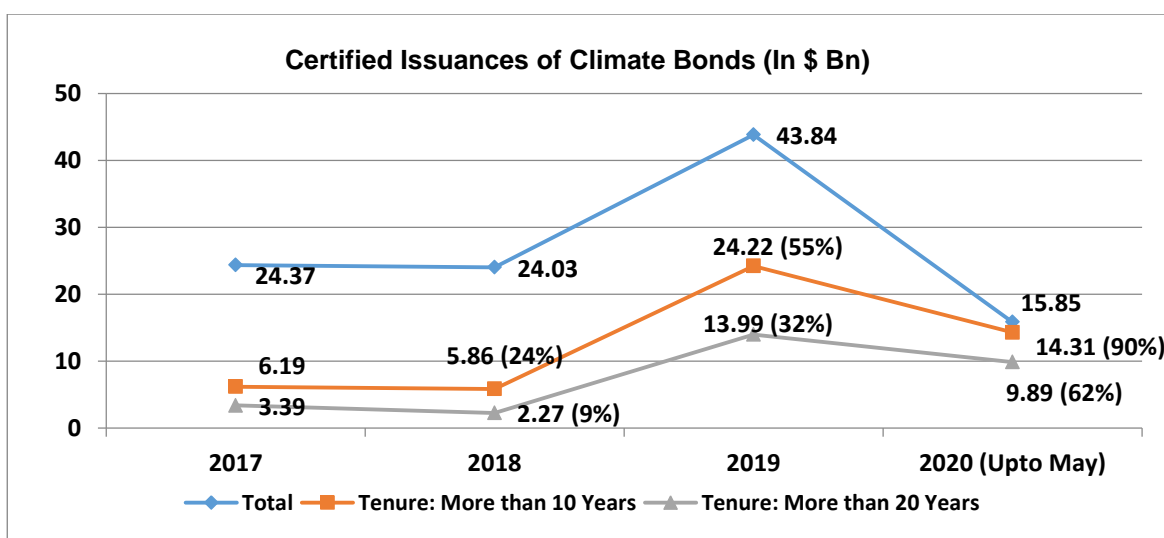


Figure 2: Investment tenure trend in Certified Issuances of Climate Bonds

4. Conclusion

The paper aimed at studying the impact of the Great Lockdown across the globe on the renewable energy generation and it subsequently motivates further researches that may intend to unveil the effectiveness of the Green Bond as an alternative investment medium to contribute in the area of generations and distributions of green energy. The analysis done in this paper divulges a wide range of factors in financing renewable energy that includes, inter alia, the correlation of investment potential with proportionate production in renewable energy, the trend in investment in renewable energy with structural breaks, the steep growth of investment in the green energy sector, both in terms of volume and share in total green bond issuance and the exponentially increasing trend of investing through long-term debt financing in renewable energy projects. The gradual shift in investment trend in green energy towards climate bonds found more prominent in the recent years which again promulgates its popularity and acceptance among the potential investors. Therefore, this study reiterates the importance of Green Bond as a saviour for the investments in renewable energy projects for a sustainable future.

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Nature of Internal Labor Migration in India: Do Education and Digitalization Matter

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Abstract

Migration is a temporary or permanent change of residence within a country or across borders. The inclusion of Migration as a Sustainable Development Goal (SDGs) has established the fact that migration has garnered attention from all over the world. International Migrants are no doubt a bone of contention at the global level; internal migration is far more significant as they are estimated to be four times as many as the international migrants (UNDP,2009).The study finds that there is a steady decline in out-migration and recently internal migration of degree holders rise in comparison to less educated ones who migrate earlier. The study also shed light on the fact that ICT development in the state has no significant impact on out-migration.

Key Words: - ICT, education, internal migration, Kerala

Introduction

The term migration creates visions of heroic movements of the human population over long distances in the quest for a good life. Migrant moves across an international border or within a country itself to settle down permanently or temporarily (IOM,2004). The forces driving migration are search for economic opportunities, better academic prospects, fleeing from conflict and climate change disasters being the significant drivers of migration. International migration is recognized as a global phenomenon with the publication of World Migration Reports by the International Organization on Migration (IOM), a UN wing on Migration. The World Migration Report 2020, estimated 150 million international migrants in the year 2000 and this number has grown by 81.3percent to 272 million in the last two decades with international migrants accounting for 3.5percent of the world's population in 2019 (IOM,2020). The World Migration Report 2020 throws light on key features of international migration. High Income countries are home to two-thirds of international migrants in 2019 (IOM,2020). Asian and European countries are the most preferred destinations of migration that host 61 percent of international between 2005 and 2019. USA, Germany, Saudi Arabia, the Russian Federation, and the United Kingdom are the top five preferred destinations of migration. The South Asian countries of India, Pakistan, Bangladesh, and Afghanistan account for a whopping 40 percent or 112 million international migrants in 2019.

The Indian subcontinent bagged the first position with a total of 17.6 million international migrants in 2019 (IOM,2020). Remittance data shows that India has consistently been the top receiver of international migrants since the year 2010 and remittances have increased by 47 percent in the last decade (IOM,2020). India is not just the world leader in international migrants; internal migrants in India are also equally important. Internal migrants in the year 2011 are 454 million, with a considerable increase of 45 percent over 309 million migrants in the year 2001(Census,2011)

Trends and Pattern of Internal Migration in India

One-third of the Indian population are internal migrants. The National Sample Survey Organization (NSSO) is a government agency entrusted with the responsibility of conducting household surveys across the country. The NSSO estimates reveal a steady increase in internal migration from 24.8 percent in 1992-93 to 28.5 percent in 2007-08. The last published report of

NSSO corresponds to the year 2007-08. These estimates suggest that internal migration has been continuously increasing and the pace of increase is high (Rajan and Sumeetha,2020). The growth rate of internal migrants doubled during the decade of 2001-2011 at 4.5 percent as compared to the previous decade estimates of 2.4 percent during the period 1991- 2001(Economic Survey,2016). Table 1 shows category wise migration rates in India from 1983 to 2007. Both rural and urban total migration has been steadily increasing except in the 49th round (1993) as both migration rates show a downward trend. However, rural and urban male migration shows a consistent declining trend during 1983-2007. On the other hand, both rural and urban women migration shows increasing trends except during 1993 that shows a fall in urban women migration

Table 1: Category wise Migration Rates in India

All India NSSO Rounds	Rural			Urban		
	Male	Female	Total	Male	Female	Total
38 th (January- December 1983)	7.2	35.1	20.9	27	36.6	31.6
43rd (July 1987-June 1988)	7.4	39.8	23.2	26.8	39.6	32.9
49th (January-June 1993)	6.5	40.1	22.8	23.9	38.2	30.7
55th (July 1999-June 2000)	6.9	42.6	24.4	25.7	41.8	33.4
64th July 2007-June 2008)	5.4	47.7	26.1	25.9	45.6	35.4

(Source: Malhotra and Devi, 2017)

Thus, it is evident that internal migration patterns differ concerning gender and the rural-urban classification and female migration has been showing an upward trend since the first round of the survey. The State Wise Migration Rates shed light on the fact that the top five out-migration states of India are Uttar Pradesh, Maharashtra, Kerala, Sikkim, and Punjab (see Table 2). The primary destination states are Delhi, Maharashtra, Tamil Nadu, Gujarat, Andhra Pradesh, and Kerala (Economic Survey, 2016). Kerala had always been the hub of emigration which had resulted in a shortage of labor force. This mismatch converted Kerala into an attractive state for internal migrants from other states (Rajan and Mishra, 2018). As per the NSSO data Mumbai, Chennai, and other metropolitan cities being the most preferred migration destinations (Rajan and Sumeetha, 2020). In terms of demographics, internal migrants are mostly youth leaving their place of residence in search of better livelihood. The role of gender is also gaining momentum in terms of migration as the feminization of labor continues. There is an increasing share of women on the move owing to better awareness and women empowerment (Rajan and Sumeetha, 2020).

Literature Review

Based on the literature, different factors are responsible for facilitating migration. The prominent theory of migration that throws light on the determinants of migration is Lee's Push-Pull Theory. According to this theory, the negative factors that force people to leave their origin states are the push factors, and the positive aspects that lure people to migrate to host states are the pull factors (Lee,1966). In other words, push factors are those that compel a person to leave the place and look for new places to settle, and pull factors are those that encourage people to migrate (Lee,1966).

Table 3: Summary of Previous Studies on Internal Out-migration in India

Study	Data/Estimation Method	Reasons for out-migration
All India		
Bhagat and Lusome, 2006; Singh and Shandilya, 2012	Census of India (COI) and National Sample Survey Organization (NSSO) of India	Push Factors:- Low income, low literacy, high dependence on agriculture, and high poverty Pull Factors:- High income, better standard of living
Mahapatro, 2014	Logistic Regression model	For male migration, odds of migration are higher for educated class employed whether casual or salaried labor. For women migration, a positive association is revealed between migration and educated class, higher income class.
Turrey, 2016	Secondary data	Push Factors:- Unemployment, poverty, social and political tension, civil conflict, discrimination, environmental hazards Pull Factors:- Higher wages, better standard of living, political and religious freedom, presence of family and friends and education, and other facilities.
Bala, 2017	COI	Employment, Business, Marriage, Education, and Movement of Household
Malhotra and Devi, 2017	Simple Regression and Factor Analysis	HDI, Per Capita GDP, Poverty Line, Literacy rate, the share of workers in agriculture and service sector and urbanization.
State Wise		
Bihar		
Haan, 2002; Kumar et al, 2006; Kumar and Bhagat, 2012	Primary data and NSSO	Push Factors:- Chronic poverty, low agricultural productivity, growing economic inequality, low literacy level, unemployment, lack of industrialization, and political tensions Pull Factors:- Predominantly illiterate, unemployed, and unskilled single males migrate to Punjab, Haryana, Maharashtra, and Delhi in search of lucrative employment opportunities.
Uttar Pradesh		
Khan and Hassan, 2015; Singh et al, 2005	Primary data and Census Data from 1971-2001	Single male unskilled migration belonging to lower-income strata in search of employment to Delhi, Mumbai, Surat, and Ahmedabad. Women Migration due to marriage.

Kerala		
Zachariah, Mathew and Rajan, 2001	A large scale sample survey of 10,000 households surveyed during March-December 1998	59percent of the out-migrants had received formal education. Migration tendencies are higher among Degree holders (2.7 times higher) and High School graduates (2.5 times higher) than those with no education.
Mishra and Rajan, 2018	Census Reports from 1971-2001, NSSO and the Kerala Migration Survey (KMS)	Push Factors:- Better employment Search for employment is the primary reason for migration. Out-migration from Kerala to Tamil Nadu, Maharashtra, and Karnataka are highest (70percent) among the highly educated migrants in the age group of 15-45 years.

According to the existing literature, the internal migrants in India were primarily unskilled male laborers from the less developed states like Bihar, Uttar Pradesh, West Bengal, and Madhya Pradesh that move into the developed states like Punjab, Haryana, Kerala, and other metropolitan cities. Interestingly, in contrast to other states, the mobility of migrants from Kerala is correlated with educational level (Raja and Mishra, 2018). In short, the major push factors that cause migration in India are (i) High rates of unemployment, (ii) Low productivity in the agricultural sector, (iii) Low economic development, (iv) Lower per capita income, (v) Widening economic inequality, (vi) Increasing poverty, (vii) Small size of the agricultural holding. On the other hand, the primary pull factors that cause migration in India are better (i) Employment opportunities, (ii) Higher wages, (iii) Improved working conditions, (iv) Better amenities, and (v) Enhanced standard of living.

Information and Communication Technology (ICT) and Migration

One of the most noteworthy technological revolutions in the history of humankind is ICT. ICT includes not just traditional technologies such as television and radio but also contemporary technologies of cellular phones, computers, satellite systems, videoconferencing and social media platforms (Sample, 2018). The roots of the internet can be traced back to 1960 with the development of the Advanced Research Project Agency Network (ARPANET), established by the U.S Department of Defense (Leiner et al, 2009). A breakthrough in the field of information technology came about with the creation of the World Wide Web in 1991, a public interface that allowed users across the globe to access its services. This access to the internet or the World Wide Web paved the way for establishment of ICT. With over 28 years since its inception, the internet is here to stay, and it only gets more prolific as time progresses.

India is considered as one of the first few countries to join the bandwagon of the internet revolution in the world. The roots of the internet in India can be traced back to Videsh Sanchar Nigam Limited (VSNL) a Government agency that first launched the internet in India in the year 1995. Since its inception, Internet in India has progressed in leaps and bounds in the country.

International migration literature sheds light on two schools of thought concerning ICT and migration. One school of thought promotes the idea that ICT has paved the way for access to large amounts of information, thereby reducing the barriers of incomplete information and facilitating migration. The second school advocates the idea that development in ICT increases the opportunity to work remotely, thus reducing the need to migrate. According to Collin and Karsenti, 2012, ICT facilitates migration in two phases: Pre-migratory phase and the Post-migratory phase. In the Pre-migratory phase, ICT enables establishing social connections in the

country of destination, creates aspirations to migrate, and acts as informational assistance in the process of migration. On the other hand, in the Post-migratory phase, ICT promotes inclusion and integration in the host society and helps in maintaining connections with family and friends in the host country. Hamel, 2009, reports that ICT aids in the migration process by helping in maintaining family ties, retaining cultural identities, and extending support to families left behind in the home country.

Table 4 – Summary of studies showing relationship between Migration and ICT

Study	Countries and Period of Study	Estimation Method	Findings
Kotyrlo, 2020	191 countries from Asia, Africa, Europe, and Latin America; 1995-2015	GMM Approach	ICT impede migration
Iqbal, Peng, Hafeez and Khurshaid, 2019	59 Belt and Brick Initiative (BRI) countries; 2000-2017	Fully Modified Ordinary Least Squares (FMOLS); Granger Causality	ICT facilitates migration
Cooke and Shuttleworth, 2018	Northern Ireland Longitudinal Survey (NILS); 2011 and 2015	Instrumental Variable (IV) Approach	ICT impede migration
Cooke T.J	United States; 1981-2011	Logistic Time Series Regression	ICT impede migration
Schapendonk and Moppes, 2007	Sub Saharan African Migration to Spain and Italy; 2006	Case study of migrants in Italy and Spain	ICT facilitates migration
Hiller and Franz, 2004	Newfoundland, 2002	Qualitative interviews of 350 migrants in Newfoundland.	ICT facilitates migration

From the literature, it is evident that along with Push-Pull factors, ICT also influences migration

decisions. The ICT infrastructure and access to ICT services in the host country/state influences the decision to migrate. The analysis of the above literature suggests that there is no one dominant school of thought concerning the impact of ICT on migration. The existing studies show that ICT aid migration as a facilitator and some scenarios as a hindrance to migration. However, none of the existing studies examined the role of ICT and migration in India.

Objective of the Study

In this context, the objective of this study is to understand the nature of internal migration from Kerala and significant factors that contributed to it and to examine whether education and ICT influence the out-migration decision. Kerala is one of the states in the Southern part of India whose migrants migrate domestically and internationally. Kerala reported the highest international out-migration from the country as per the 64th National Sample Survey Round (NSSO). International remittances account for 35 percent of the state Gross Domestic Product in the year 2017 (Economic Survey, 2017). The state of Kerala has always been a well-researched topic in

terms of international migration. But there is a shortage of studies concerning internal migration from Kerala, and none of the studies examines the impact of education and ICT on migration.

Data and Methodology

The data used for the study are internal migrants from Kerala state, internet subscriptions in the host state of Kerala, control variables of per capita state gross domestic product, state unemployment rate, and state consumer price index. Internal migration data collected from Kerala Migration Survey (KMS), a longitudinal study initiated by the Centre of Development Studies, Thiruvananthapuram an Autonomous Research Centre established by the Government of India and Indian Council for Social Science Research. KMS is a scientifically designed household survey based on the census sampling frame. KMS records the information on the different states and countries that the residents have migrated to and the demographic characteristics of the migrants such as age, educational qualification, occupational status, and Monthly income before and after migration. KMS has completed seven rounds of migration spanning over the last two decades namely, 1998, 2003, 2007, 2011, 2013, 2016, and 2018. The data for the rest of the years between 1998-2018 has been computed by authors using the Interpolation Method.

The internet subscription statistics gathered from the Telecom Statistics Reports published by the Department of Telecommunications, Government of India. The control variables of per capita State Gross Domestic Product (SGDP) and State Consumer Price Index (SCPI) for the period 2011-18 collected from Centre for Monitoring of Indian Economy (CMIE), and earlier years from Labor Bureau Consumer Price Index Reports. Unemployment rates gathered from the Labor Bureau Survey on Employment and Unemployment in India. We have also conducted the time series analysis using the data from 1998-2018 to examine the push factors that facilitated migration from the state of Kerala. The model used for the study is as follows:-

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon$$

Y = Log of Labor Migrants from Kerala

X1 = Log SGDP

X2 = Log SCPI

X3 = State Unemployment Rate

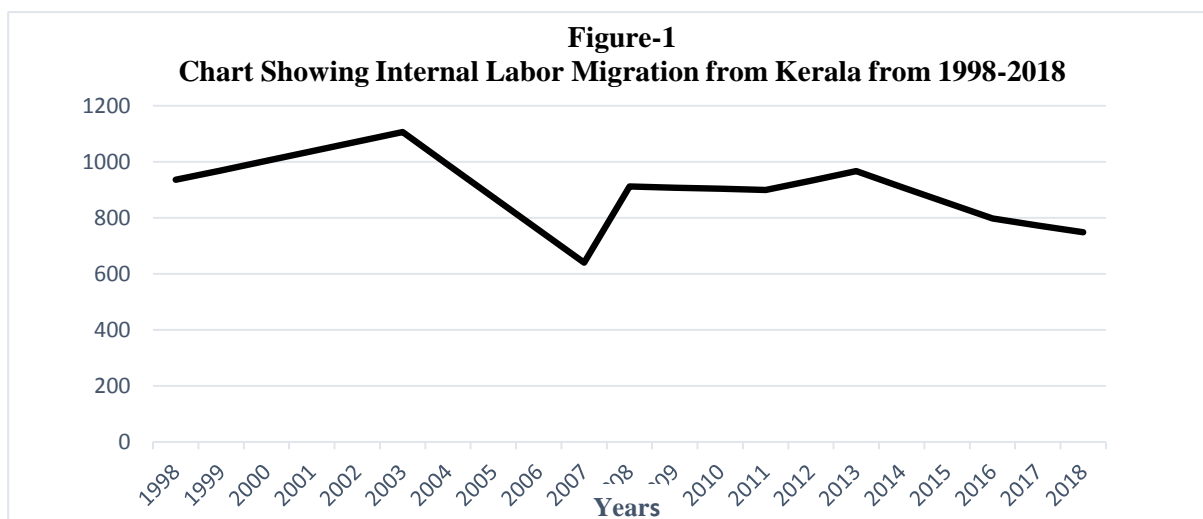
X4 = Log of Number of Degree Holder Migrants

X5 = Log of Number of Skilled Migrants

X6 = Log of Number of Unemployed Migrants.

Findings of the Study

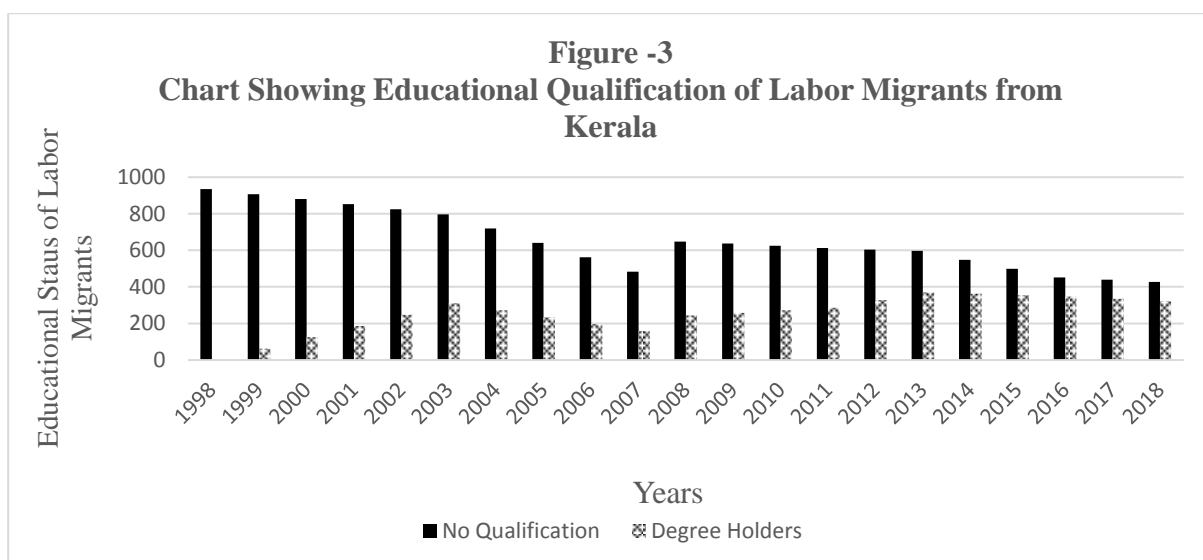
The overall internal labor out-migration from Kerala over two decades, 1998 to 2018 shows different trends across time (Figure 1). The migrants chosen for study are those in the working-age group of 15-64 as defined by the World Bank. It is evident from the figure that labor migration was rising from 1998 to 2003 and the four years following 2003 witnessed a decline with a sharp dip in the year 2008. There was a rising trend in labor out-migration from 2009 to 2013. But from 2014-18 saw a steady decrease in out-migration. The decline is due to demographic contraction of the working-age population in the state, competition from other states, fall in wages in states of destination, better employment opportunities in the host state, a boost in the economy of Kerala (Devasia, 2018).



Source- Kerala Migration Survey (KMS)

Educational Qualification of the Labor Migrants

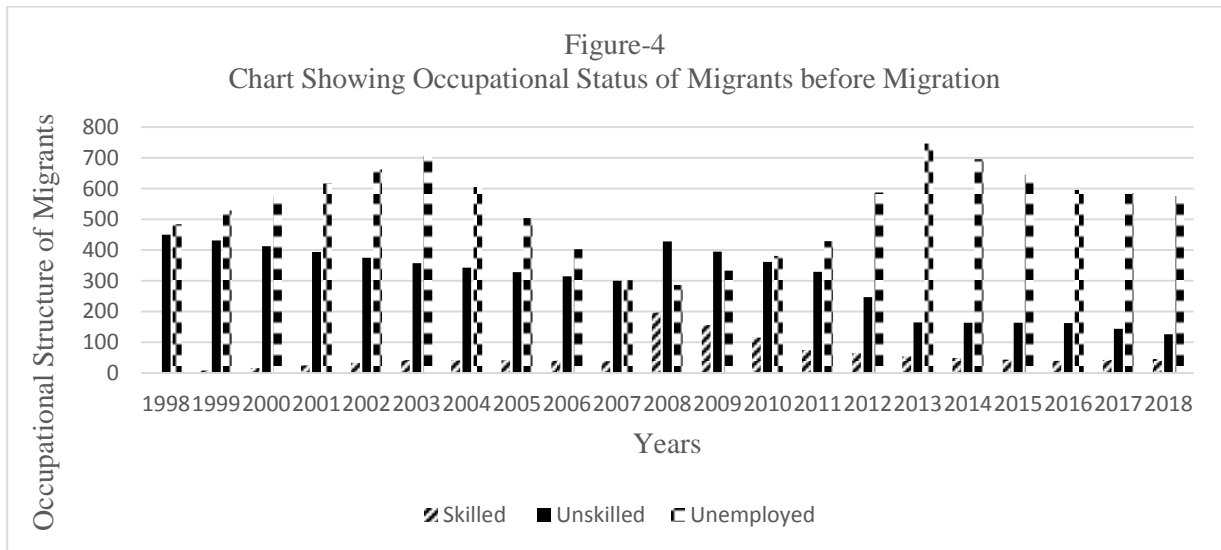
The educational status of the migrants defined in terms of no professional qualification refers to those labor migrants who have not been awarded a degree by colleges or universities, migrants who are either unlettered, school dropouts, high school graduates, or diploma holders. The degree holders include those who have received formal education and degree from colleges or universities, and these include undergraduates, postgraduates, and doctorate holders. It is evident from figure 3 that the majority of the migrants belong to the no qualification category, and degree holders are relatively less in number in the initial years. But from 2008 onwards migration of professional laborers started rising, and the gap between the professional and non- professionals has drastically reduced.



Occupational Status of Labor Migrants before Migration

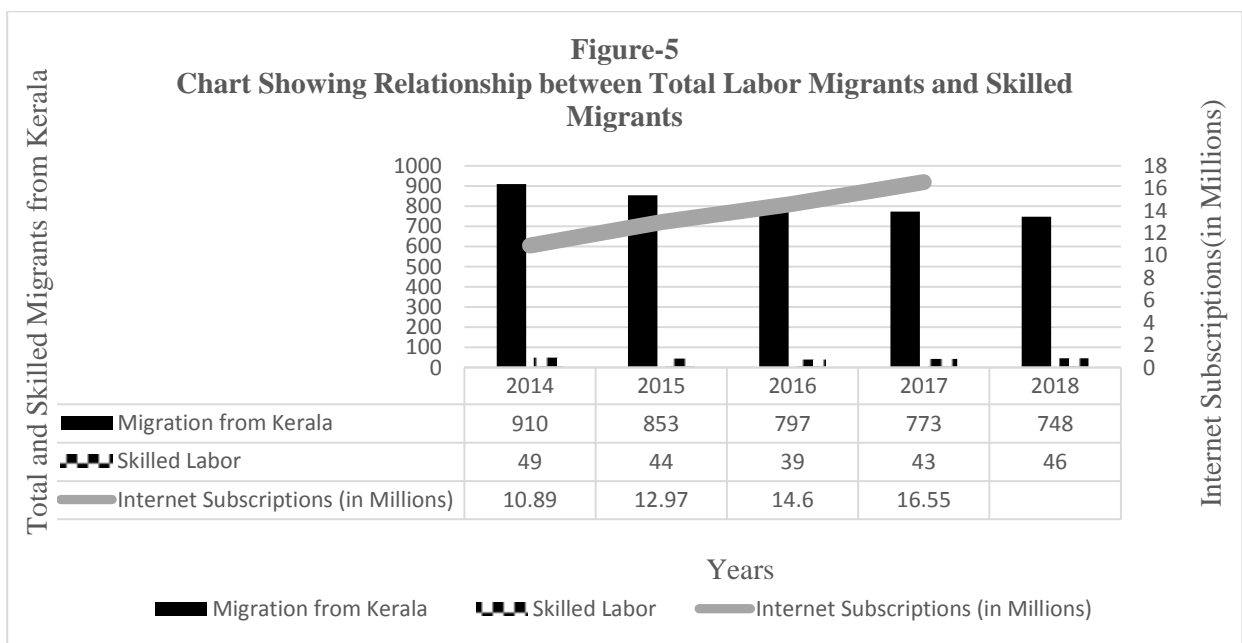
The KMS classifies employment status into skilled, unskilled, and unemployed categories. According to KMS, skilled employees are those that work independently with an extraordinary degree of skills or competence with some formal training in the occupation. Unskilled work involves the execution of simple duties that require no independent judgment or training. Based on KMS definition, migrants with graduation who were working in a formal sector are considered as skilled labor. Migrants without graduation and who were working in an informal sector are categorized as unskilled. Figure 4 sheds light on the fact that unemployed workers form a bulk of

the migrants moving out of the state followed by unskilled migrants. Skilled migrants include a small portion of internal out migrants as skilled migrants preferring emigration over out-migration.



Internet Subscriptions and Labor Migrants from Kerala

Even though internet subscriptions in the state of Kerala is rising, the number of migrants moving outside the state declined in the same period (See Figure 5). Thus the evidence does not support the theory that ICT facilitates migration. However, the second school advocated that development in ICT increases the opportunity to work remotely, thus reducing the need for people to migrate. This theory holds only in the case of educated-professional workers who can work remotely. But the data shows that there is no direct relationship between skilled labor migration and internet subscriptions.



Statistical Analysis

Table 5: Regression Analysis

Variables	Labor Migrants from Kerala
Log State Per Capita GDP	-0.128*** (-4.33)
Log State CPI	-0.0958** (-3.03)
Log State Unemployment Rate	0.0961 (1.96)
Log Migrants who are Degree Holders	-0.286** (-3.61)
Log Skilled Migrants	0.281*** (6.85)
Log Unemployed Migrants	0.685*** (8.90)
Constant	5.132*** (8.62)
N	21
R Squared	
Adj R Squared	0.965 0.95

Note: t statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Simple regression analysis sheds light on the fact that per capita SGDP, State CPI, skilled migrants, unemployed migrants, and degree holder migrants are statistically significant. State Unemployment is insignificant in the regression analysis. This implies a one percent rise in per capita SGDP, State CPI, and degree holders lead to a fall of 0.128 percent, 0.096 percent, and 0.286 percent in the labor out-migration. A one percent rise in skilled migrants and unemployed migrants leads to an increase of 0.281 percent and 0.685percent percentage of migrants from the state. Thus we can conclude that the higher the economic growth, inflation, and educational qualification lesser the internal out-migration from Kerala.

Conclusion

The study reveals that some structural change happened in late 2000. Before this period there were mostly less educated migrated from Kerala to other states, especially to northern states in India. On the other hand, most of the skilled migrants from Kerala migrated to other countries instead of internal migration due to high salaries and job opportunities abroad (Rajan and Mishra,2018). Post-2010 there was a continuous decline in unskilled migration and a constant rise in skilled migration. The main reason behind this trend may be due to the high minimum wages in Kerala for unskilled labor in comparison to other states in India. The rise in skilled migration may be due to high ICT penetration in the neighboring southern cities of Kerala like Bangalore,

Chennai, and Hyderabad. However, ICT penetration in Kerala has no significant impact on out-migration from Kerala. The Regression results shed light on the fact that the state economic variables of State Per Capita GDP and State CPI have a negative relationship, a rise in these variables leads to a fall in out-migration. In contrast, the migrants who are skilled and unemployed have a higher propensity to migrate out of the state in search of opportunities that suit their qualifications.

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