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Volume 42 **Issue 2** **April-June 2021**

Contents

Editorial

This Issue of the Journal covers a wide range of topics. The first paper evaluates the variance of network relationships in terms of firm size and involved cross sectional survey of knowledge intensive business services (KIBS) firms in India. The study finds there is a significant difference in network relationships with customers and investors for firms with above 10000 employees as compared to firms with up to 100 employees. At the same time no difference across firms of different sizes is found in terms of network relationships with suppliers and competitors. The study gives insights into network relationships for firms of different sizes as such relationships foster innovation and introduction of new services particularly when we are considering KIBS. Also instead of a one size fits all strategy, KIBS firms of different sizes need to develop and evolve a networking strategy most suitable to the size of the firm.

The COVID-19 pandemic exposed the fragility of the existing health system of India. It exposes the extent of vulnerabilities to manage the emergency in health sector. In the second paper, the authors have made an attempt to examine the pattern of public health expenditure in Odisha from 2000-01 to 2017-18, its impact on health outcome, further its relationship with income of the state. The study reveals that total health expenditure as percentage of GSDP is hovering around one per cent. Expenditure on urban health service has been increasing; on the contrary, expenditure on rural health service has declined. The implications of the study clearly favours for the growth of public expenditure on health that too in rural and inaccessible area, where the need of the people is immense. Public health care expenditure should precede all other socio-economic-demographic variables to obtain the desired result.

The next paper, attempts an in-depth efficiency analysis of public factoring companies in India. The efficiency ratios are employed to ascertain the company's efficiency and utilize its assets. The secondary data has been collected from the annual reports of the concerned companies.

The key focus of the fourth paper is to develop and validate the scale for measuring financial inclusion. The psychometric scale development for financial inclusion is developed through three distinguished ways viz: inductive, deductive, and combination of both. The validated scale determines financial inclusion and its initiation taken by banks towards rural inhabitants in the state of Tamil Nadu. The Exploratory Factor Analysis result reveals that the study has developed scales that are loaded in four distinguished dimensions namely usage of financial service, financial access, service quality, and financial welfare.

There has been a tremendous growth in the production of patented Ayurvedic drugs for the past ten years in Kerala. The next paper tries to identify the factors influencing the consumers, who use Ayurveda patent drugs in the Kerala by studying 450 consumers. Empirical result also reveals that cost, convenience, communication from others and consumer's needs and wants are the major factors that influenced the consumers to use patent drugs. This study suggests that the consumers of patent medicine are not completely satisfied with reasonableness of price of the patent medicines.

In the sixth paper, the authors attempts to explore and validate the intrapreneurship dimensions that comply with the Indian auto clusters which are presently juggling with resource allocations amidst a robust networking, competitive industry, and changing government policy. The study contributes in threefold ways, one by lending a conceptual clarity since it is fragmented and employs several perspectives. Second, it closes a major research lacuna by exploring the Intrapreneurship dimensions in the Indian auto clusters which is one of the dominant auto sectors contributing to the economic development of the nation. Finally, the study suggests that the auto cluster firms need to work upon the Intrapreneurship dimensions of Risk-taking, Innovativeness and Proactiveness.

The seventh paper tried to know the perception of citizens towards employing internally migrated labourers from rural areas of the state to Guwahati and the issues involved in their employment in the construction sector. The study found that employing migrated labourers brings several positive benefits like easy availability, accessing services at cheap rates, effectiveness at work, performance of more labourious tasks and ease in management. However they adversely affect the urban landscape, pose a threat to indigenous labourers and causes minor socio economic problems.

In the next paper, the authors examine the factors leading to sustainability of digital payments in India over the period of 2011-2020 by using autoregressive distributed lag model. The results show that per capita net national income and economic shocks (demonetisation and pandemic) positively leads to sustainability of digital payment transactions both in real and nominal terms, whereas, financial inclusion plays no role in sustainability of digital payments. Insights from the findings indicate developmental implications towards increasing need for financial inclusion through financial literacy and increasing economic growth through positive shocks to promote digital payments in India.

Recent outbreak of the global pandemic due to COVID-19 has led to a public health emergency, threatened human life and, created a worldwide economic challenge. Doctors, nurses and, health care workers from public and private sectors responded quickly to tackle the health crisis with stretched resources, shortage of personal protective equipment (PPE), and limited infrastructures. Physical exhaustion due to heavy workload, fear of getting infected, feeling powerless to handle a dying patient's condition and, lack of protective gears and infrastructures have created a situation of tremendous mental stress and high burnout among them. The ninth paper investigated the sources of supports - the workplace and family and their impacts on the work-life balance of the healthcare professionals in Bangalore. The study further indicates that factors related work place settings at hospitals and family support have a significant impact on the Work-life balance of Health care professionals. Ratings on all the above factors are significantly higher among healthcare professionals with good work-life balance than those with poor work-life balance.

The last paper of the issue focuses on ecotourism in Goa. For the growth of a specific tourist destination through strategic planning, it is necessary to understand the nature of tourist contentment and discontent. Gap analysis is used to examine the gap between tourists' expectations before visiting and satisfaction level after the visit at various ecotourism sites with reference to the various ecotourism services available. There is a need for destination planners to undertake measures for improving and maintaining appropriate ecotourism services in Goa and promote as a world class tourism destination.

Hope the readers will enjoy reading this issue and encourage us to stride forward.

Dr. Malay Kumar Mohanty
(Managing Editor)

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Network Relationships in Knowledge Based Service Firms: Variance in Terms of Firm Size

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Network relationships, Firm size, Customer networks, Supplier networks, Competitor networks, Investor networks

JEL Classification

M10, M13, M20, O31, O32

Abstract: Networks are critical in the growth of knowledge intensive business services (KIBS) and include networks with service providers, suppliers, competitors, customers and investors. The research evaluates the variance of network relationships in terms of firm size and involved cross sectional survey of KIBS firms in India. Firms were classified into four groups in terms of number of employees: up to 100; 101 to 1000; 1001 to 10,000; and with above 10,000 employees. The study finds there is a significant difference in network relationships with customers and investors for firms with above 10000 employees as compared to firms with upto 100 employees. At the same time no difference across firms of different sizes is found in terms of network relationships with suppliers and competitors. The study also finds that as a firm crosses the threshold of 100 employees, network relationships across different groups do not have differences that are significant.

1. Introduction

Business organizations have network relationships with other firms. Networks allow access to knowledge and organizational resources and this is further facilitated by social interactions between members of partner organizations (Inkpen and Tsang, 2005). Thus it is imperative for firms to collaborate to gain knowledge as knowledge markets are rare (Huggins, 2010). Innovation is a product of network of actors and firms do not innovate in isolation (Arias, 1995; Huggins, 2010). Explicit knowledge is easier to transfer but networks play a particularly important role in transfer of tacit knowledge which is more difficult to transfer (Hertog, 2000).

Networks may also serve as a good source of ideas for innovation (Sundbo, 1997) and such network relationships may facilitate service innovation (Yung-Chang, 2019). While past approaches have focused on isolated problem solving, there is a need to reorient our thinking towards systems, networks and ecosystems (Barile, 2016). The focus of this study is on how network relationships vary with firm size in KIBS in India.

A firm may have different network relationships such as those with service providers, suppliers, competitors, customers and investors. In the research, number of employees measures firm size and firms are categorized as those with: 1-100; 101-1000; 1001-10000; and 10001 or above employees.

The study gives insights into network relationships for firms of different sizes as such relationships foster innovation and introduction of new services particularly when we are considering KIBS. Also instead of a one size fits all strategy, KIBS firms of different sizes need to develop and evolve a networking strategy most suitable to the size of the firm.

2. Review of Literature

2.1. Network Relationships

Small enterprises are risk averse and intolerant towards uncertainties (Laforet, 2012). The knowledge provided through strong relationships help KIBS firms to innovate and thus bring about new products or services (Amara *et al.*, 2009). Innovative strategic decisions are made by firms as they access knowledge through business and social networks (Wulf and Butel 2017). Innovative partners for inter-firm cooperation include customers, suppliers, competitors, producers and service providers (Zeng *et al.*, 2010). Network types include networks with customers, suppliers, investors, competitors, universities & research institutions and government agencies & regulators (Pittaway *et al.*, 2004). Sareen and Pandey (2014) found that in the case KIBS firms in the Indian context, the network relationships with universities & research institutions and government & regulatory agencies are weak and thus need not be considered.

The cooperation can extend both upstream with suppliers and downstream with customers (Walters and Rainbird, 2007). Network intensity may be described as the frequency of communication between network partners (Xu *et al.*, 2008). Increasing use of information technology and digital platforms facilitates and fosters network relationships with partner organizations. In firms which have strong network relationships, employees of the respective firms may work together as if they are in the same workgroup (Amara *et al.*, 2009). Needs expressed by customers or supplier proposals or ideas from competitors may spur firm level innovation (Chang *et al.*, 2012). High tech firms can co-create relationship advantages by integrating resources through business relationships (Park and Lee, 2018).

Since knowledge and information may reside in computers, information systems, documents, practices, thus knowledge exchange between two firms is a complex process (Landry *et al.*, 2012). It is important for the customers to participate in the entire cycle of the innovation process (Chesbrough, 2011). The line between producers and consumers is increasingly getting blurred (Michel *et al.*, 2008). Client relationships play a central role in innovation in KIBS firms (Santos-Vijande *et al.*, 2013). Customers could be considered as a resource, co-creators and users (Nicolajsen and Scupola, 2011).

Collaboration with suppliers is important in driving innovation (Henke Jr. and Zhang, 2010). Many times while developing innovative products and services, firms need to work with suppliers from the design stage itself. Strong network relationships with suppliers helps generate trust as many times project specifications and details need to be shared with suppliers. Service firms may gain knowledge and technology through suppliers (Tether, 2005; Rusanen *et al.*, 2014). Collaboration with

suppliers is particularly important for developing be-spoke solutions. The roles of suppliers is important when we consider technological innovation (Hertog, 2000).

Many companies have not been able to work together to tackle complex challenges due to competitive self-interest (Nidumolu *et al.*, 2014). The performance of a business is also dependent on the external environment and to meet external environmental challenges, firms may need to work together with competitors to build an appropriate response. Collaborating with competitors always carries certain risk and this may reduce the level of collaboration between two firms (Miotti and Sachwald, 2003). Thus firms may have network relationships with only select competitors with whom they are able to develop trust. Firms may also need to work together with competitors as a part of a global alliance or for executing large projects, which may involve multiple vendors.

Firms may also develop network relationships with strategic investors. Such investors may bring appropriate knowledge and insights from the outside world as they have a stake in the success of the firm. Many of the KIBS firms are privately owned or have investors who have substantial stake in the firm and such investors play an important role in deciding firm strategy and growth related decisions.

2.2. Impact of Firm Size on Network Relationships

Large firms have more resources to conduct research and innovate. Freel and Harrison (2006) suggest that firm size could be a proxy for accumulated resources. Smaller firms are risk averse and would like to avoid ambiguity (Laforet, 2012). The larger firms can spend more resources and are also able to achieve economies of scale (Amara *et al.*, 2009). While the large firms may be able to maintain a diverse portfolio of projects and products, the smaller firms have the advantage of making faster decisions as they are less bureaucratic and have higher flexibility (Pires *et al.*, 2008). Company size may provide a sustainable environment for innovations and large firms may be able to innovate their supply chains and financial models (Aguilar-Fernández *et al.*, 2018). Firms which are older may benefit more from their relationships with research organizations (Yu and Lee, 2017). Larger firms may have an advantage when one considers continuity of exports in global supply chains (Bandick, 2020). When one considers the social and environmental performance of a firm, then one finds that there is a positive linkage with firm size (Wang *et al.*, 2018). In case of larger firms, the promoters may follow a low risk and high innovation strategy, while in case of smaller firms the promoters may follow a high risk and low innovation strategy (Marom *et al.*, 2019). A firm pursuing a higher level innovation strategy would require stronger network relationships with its partner firms. Network level resources positively impact firm innovation (Demirkan, 2018). In case of small and medium enterprises there is a positive linkage between firm size and the performance of the firm (Tang *et al.*, 2020).

3. Objective and Hypotheses of the Study

3.1. Objective

The key objective of the study is to evaluate whether network relationships vary in terms of firm size in the case of KIBS firms in India.

Network relationships include those with investors, select competitors, customers and suppliers. Firm size is measured in terms of the number of employees in the firm. The study provides insights into how network relationships vary with firm size. Such insights may help firms to develop effective strategies to enhance their network relationships.

3.2. Hypotheses

Sareen and Pandey (2015) have developed and defined the constructs and the scale for measuring network relationships in terms of: *Network Relationship with Suppliers* (NS), *Network Relationship with Investors* (NI), *Network Relationship with Customers* (NC), and *Network Relationship with Select Competitors* (NCOM). Based on review of literature and the constructs defined, the following hypotheses have been proposed:

H_{01a}: There is a significant difference in NC of firms with above 10000 employees and firms with upto 100 employees.

H_{01b}: There is a significant difference in NC of firms with above 10000 employees and firms with 101-1000 employees.

H_{02a}: There is a significant difference in NS of firms with above 10000 employees and firms with upto 100 employees.

H_{02b}: There is a significant difference in NS of firms with above 10000 employees and firms with 101-1000 employees.

H_{03a}: There is a significant difference in NCOM of firms with above 10000 employees and firms with upto 100 employees.

H_{03b}: There is a significant difference in NCOM of firms with above 10000 employees and firms with 101-1000 employees.

H_{04a}: There is a significant difference in NI of firms with above 10000 employees and firms with upto 100 employees.

H_{04b}: There is a significant difference in NI of firms with above 10000 employees and firms with 101-1000 employees.

4. Research Methodology

4.1. Research Design

The study aims to evaluate the impact of firm size on network relationships in the context of KIBS firms in India. The study adopted a single cross-sectional research design and has focused on firms across the spectrum of KIBS. The firm sizes varied from organizations with upto 100 employees to organizations with more than 10000 employees. Validity and reliability of the research instrument has been tested through a thorough review process by industry and academic experts and then through factor analysis.

4.2. Sampling Adequacy

Adequacy of the sample was tested through the Kaiser-Meyer-Olkin (KMO) test (Kaiser, 1974). The KMO value above 0.8 indicates that the sample size is adequate. Sampling adequacy can be arrived at by measuring KMO statistics (Pallant, 2013). Bartlett's test of sphericity is a statistical test for presence of correlation among variables (Bartlett, 1950) and is able to indicate any significant correlations among variables under consideration (Hair *et al.*, 2006). In the study it is found that Bartlett's test is significant (p=.000).

4.3. Conceptual Framework

The Conceptual Framework of the study is provided in Figure 1:

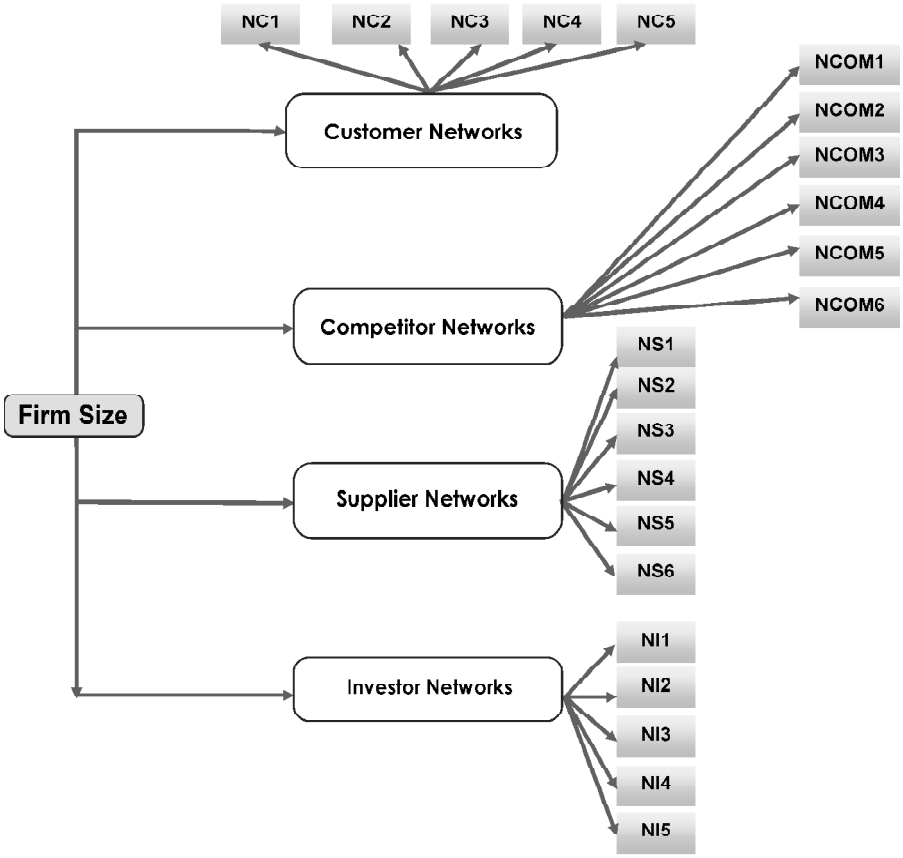

Figure 1: Conceptual Framework

Note: The above figure is authors' own compilation. The constructs for measuring different aspects of networks have been adapted from Sareen and Pandey (2015).

4.4. Firm Groupings

To evaluate the impact of firm size on different network relationships, ANOVA analysis has been done in terms of 4 groups. Firms with employee strength (Emp) of: 1 to 100 belonged to Group 1; 101 to 1000 belonged to Group 2; 1001 to 10000 belonged to Group 3; and 10001 or above belonged to Group 4.

4.5. Data Collection

A personalized email was sent to 687 respondents summarizing the objectives of the study and subsequently a web based questionnaire was sent to those respondents who showed interest in the study. Finally, 172 completed responses were received. On final review of the responses only 151 valid responses were found and this represented a response rate of 22%. The conceptual framework of the study is provided in Figure 1.

5. Data Analysis and Discussion

5.1. Network Relationship with Customers

Firms develop relationships with customers who are an important source of information for innovative activities. The items (NC1 to NC5) constitute the construct *Network Relationship with Customers* (NC) and Table 1 provides the mean scores and standard deviations for each of the items. The mean score of 4.01 for NC suggests strong relationship with customers.

Table 1: Mean Scores and SD of Network Relationship with Customers

Variable	*Description*	*Mean*	*SD*
NC1	We maintain regular communication with our customers	4.4371	.65905
NC2	We fully understand the needs expressed by our customers	4.2583	.73452
NC3	Customers provide detailed specifications for new services	3.5629	.94217
NC4	Customers regularly provide feedback and suggestions for improvement	3.6821	.91921
NC5	We frequently exchange knowledge with our clients	4.1391	.77494
NC		4.0159	.62760

Source: Authors' own compilation

Notes: The construct 'Network Relationship with Customers' has been defined by Sareen and Pandey (2015)

Table 2 describes the analysis of variance of the variable NC with respect to firm size. It is observed that the differences between groups are significant ($p<.05$).

Table 3 presents multiple comparisons among different groups for the variable NC. In Table 3, it may be observed that there is a statistically significant difference between Group 4 and Group 1. Thus network relationship with customers is stronger for firms belonging to Group 4 as compared to firms

Table 2: Analysis of Variance of NC by Firm Size

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	4.181	3	1.394	3.731	.013
Within Groups	54.901	147	.373		
Total	59.082	150			

Source: Authors' own compilation

in Group 1. This shows that the hypothesis H_{01a} is accepted. As firms increase in size network relationships with customers become stronger although in Table 3, it is observed that there is no significant difference in NC between Group 4, Group 3 and Group 2. This implies that the hypothesis H_{01b} is rejected.

Table 3: Multiple Comparisons of NC by Firm Size

(I) Emp		*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
1	2	-.37224	.16216	.158	-.8309	.0864
	3	-.22094	.15447	.564	-.6578	.2159
	4	-.37157*	.11812	.022	-.7056	-.0375
2	1	.37224	.16216	.158	-.0864	.8309
	3	.15130	.18685	.883	-.3771	.6797
	4	.00068	.15813	1.000	-.4465	.4479
3	1	.22094	.15447	.564	-.2159	.6578
	2	-.15130	.18685	.883	-.6797	.3771
	4	-.15063	.15023	.800	-.5755	.2742
4	1	.37157*	.11812	.022	.0375	.7056
	2	-.00068	.15813	1.000	-.4479	.4465
	3	.15063	.15023	.800	-.2742	.5755

Source: Authors' own compilation

Notes: * .05 level is taken for significance in the Mean Difference

5.2. Network Relationship with Suppliers

Suppliers are an important source of information in firms. Table 4 presents the mean scores and SD for the items (NS1 to NS6) constituting the construct *Network Relationship with Suppliers* (NS). The mean score of NS is 3.60.

Table 5 describes the analysis of variance of the variable NS with respect to firm size. It is observed that the differences between groups are not significant. Thus there is no significant difference

in supplier relationships across different firm sizes. Thus both the hypotheses, H_{02a}*: There is a significant difference in NS of firms with above 10000 employees and firms with upto 100 employees* & H_{02b}*: There is a significant difference in NS of firms with above 10000 employees and firms with 101-1000 employees,* are rejected.

Table 4: Mean Scores and SD of Network Relationship with Suppliers

Variable	*Description*	*Mean*	*SD*
NS1	We work with our suppliers just as if we are in the same team	3.6689	.80599
NS2	We frequently exchange knowledge with our suppliers	3.6424	.83542
NS3	Our firm regularly takes initiatives to help development of suppliers	3.5364	.87769
NS4	We often work with our suppliers to make joint bids/proposals to customers	3.4238	.98953
NS5	Our firm often engages in collaborative planning with suppliers	3.5232	.90063
NS6	We maintain regular communication with our suppliers	3.8411	.80905
NS		3.6060	.69027

Source: Authors' own compilation

Notes: The construct 'Network Relationship with Suppliers' has been defined by Sareen and Pandey (2015)

Table 5: Analysis of Variance of NS by Firm Size

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	2.371	3	.790	1.682	.174
Within Groups	69.100	147	.470		
Total	71.471	150			

Source: Authors' own compilation

5.3. Network Relationship with Select Competitors

Firms may also develop relationships with select competitors. The items (NCOM1 to NCOM6) constitute the construct *Network Relationship with Select Competitors* (NCOM). Table 6 provides the mean scores and standard deviations of each of these items. The mean score of NCOM is 2.78 suggesting that KIBS do not have strong relationships with their competitors while at the same time the score of 3.56 for NCOM1 suggests that competitors are a source of new ideas.

Table 7 describes the analysis of variance of the variable NCOM with respect to firm size. It is observed that the differences between groups are not significant. Thus there is no significant difference in competitor relationships across different firm sizes. Thus both the hypotheses, H_{03a}*: There is a significant difference in NCOM of firms with above 10000 employees and firms with upto 100 employees* & H_{03b}*: There is a significant difference in NCOM of firms with above 10000 employees and firms with 101-1000 employees,* are rejected.

Table 6: Mean Scores and SD of Network Relationship with Select Competitors

Variable	*Description*	*Mean*	*SD*
NCOM1	Select competitors are a regular source of new ideas	3.5695	.94875
NCOM2	Our firm maintains regular communication with select competitors	2.9801	.97618
NCOM3	We frequently exchange knowledge with select competitors	2.6755	1.05546
NCOM4	We share resources with select competitors in order to complement mutual strengths	2.4636	1.09407
NCOM5	We work with select competitors to make joint proposals/bids to customers	2.5563	1.09323
NCOM6	We engage in collaborative planning with select competitors	2.4834	1.09456
NCOM		2.7881	.84062

Source: Authors' own compilation

Notes: The construct 'Network Relationship with Suppliers' has been defined by Sareen and Pandey (2015)

Table 7: Analysis of Variance of NCOM by Firm Size

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	4.008	3	1.336	1.926	.128
Within Groups	101.988	147	.694		
Total	105.996	150			

Source: Authors' own compilation

5.4. Network Relationship with Investors

In addition to providing funding, investors may also prove to be good source of knowledge about the competitive scenario and thus the importance of nurturing relationships with investors. Table 8 presents the mean scores and SD for the items (NI1 to NI5) constituting the construct *Network Relationship with Investors* (NI). The mean score of NI is 3.77.

Table 8: Mean Scores and SD of Network Relationship with Investors

Variable	*Description*	*Mean*	*SD*
NI1	Our firm maintains regular communication with investors	3.8940	.98761
NI2	Investors regularly provide critical information about competitive scenario	3.5960	1.00119
NI3	We frequently exchange knowledge with our investors	3.7417	1.01629
NI4	Investors play an important role by providing strategic direction to our firm	3.6887	1.03399
NI5	We update our investors regularly about significant developments in our business	3.9338	1.00445
NI		3.7709	.91954

Source: Authors' own compilation

Notes: The construct 'Network Relationship with Investors' has been defined by Sareen and Pandey (2015)

Table 9 describes the analysis of variance of dependent variable *Network Relationship with Investors* (NI) with respect to firm size and the difference between the groups is significant. Table 10 presents multiple comparisons among different groups for the variable NI and it is observed that differences between Group 4 and Group 1 as well as between Group 3 and Group 1 are significant. Thus the network relationship with investors is stronger for firms in Group 3 as compared to firms in Group 1. This may be reasoned that as firms become large and the stakes of investors increase in these firms, the investor relationships become stronger. Also, it is observed that with respect to NI, the differences between Group2, Group 3 and Group 4 are not significant. Based on the above observations, the hypothesis H_{04a} is accepted while the hypothesis H_{04b} is rejected.

Table 9: Analysis of Variance of NI by Firm Size

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	9.935	3	3.312	4.165	.007
Within Groups	116.897	147	.795		
Total	126.832	150			

Source: Authors' own compilation

Table 10: Multiple Comparisons of NI by Firm Size

(I) Emp		*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
1	2	-.41184	.29842	.520	-1.2185	.3948
	3	-.55705*	.19067	.024	-1.0589	-.0552
	4	-.57150*	.17996	.011	-1.0436	-.0994
2	1	.41184	.29842	.520	-.3948	1.2185
	3	-.14522	.27965	.954	-.9119	.6214
	4	-.15966	.27246	.935	-.9106	.5913
3	1	.55705*	.19067	.024	.0552	1.0589
	2	.14522	.27965	.954	-.6214	.9119
	4	-.01444	.14675	1.000	-.4036	.3748
4	1	.57150*	.17996	.011	.0994	1.0436
	2	.15966	.27246	.935	-.5913	.9106
	3	.01444	.14675	1.000	-.3748	.4036

Source: Authors' own compilation

Notes: * .05 level is taken for significance in the Mean Difference

6. Conclusion

The aim of the study was to evaluate how firm size may impact network relationships in case of KIBS firms in India. Firm size has been measured in terms of number of employees while network relationships include those with suppliers, select competitors, investors and customers.

Firms do have strong network relationships with their customers (NC) as reflected in the mean score of NC being 4.01 as firms regularly communicate with their customers. It is observed in the study that there is a significant difference between NC of firms with more than 10000 employees (Group 4) as compared to firms with upto 100 employees (Group 1). At the same time there are no differences across Group 2 (101 to 1000 employees), Group 3 (1001 to 10000 employees) & Group 4. This shows that as knowledge based firms achieve a size of 100 plus employees they achieve significantly strong network relationships with their clients.

It is also observed that the mean score of network relationship with suppliers (NS) is 3.60 thus showing that supplier relationships are not as strong as customer relationships in knowledge based firms. Also it is observed that there are no differences across different firm sizes in terms of NS. It may be noted that although suppliers may play a critical role in manufacturing firms and form part of critical supply chains, the role of suppliers in knowledge based firms may be more as a supporting function.

Knowledge based firms may even develop network relationships with select competitors (NCOM) as they bid for large projects which require multiple vendors or become a part of a global alliance. The mean score of NCOM is 2.78 which indicates that in knowledge based firms competitor relationships are weak. The score of 3.56 for the item NCOM1 indicates that competitors could be a source of new ideas. In the study it is found that NCOM does not vary with firm size.

Network relationships with investors (NI) may provide crucial knowledge and market insights to firms particularly regarding the competitive scenario in KIBS. The study finds the mean score of NI is 3.77 which indicates that knowledge firms have fairly strong investor relationships and regularly communicate with their investors.

There is a significant difference in NI of firms with more than 10,000 employees as compared to NI of firms upto 100 employees. Similarly, there is a significant difference in NI of firms with 1001 to 10000 employees as compared to NI of firms with upto 100 employees. Also there are no significant differences across other groups. This may be explained in terms of the fact that knowledge based service firms employ high end knowledge based professionals and such firms achieve a sufficient scale as they cross the threshold of 100 employees.

In many such firms which have grown from startups, strategic investors may play a critical role in mentoring and formulating firm strategy. Such firms achieve strong network relationships with both their investors and customers. Investors may provide critical knowledge about competitive scenario while customers may provide market insights as many times service delivery may require frequent and in-depth interactions with clients.

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An Exploratory Analysis of Public Health Care Expenditure in Odisha

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Abstract: Health is a critical dimension of human development. Provision of health care facilities for the people is a vital constituent of the development process. An attempt is made here to examine the pattern of public health expenditure in Odisha from 2000-01 to 2017-18, its impact on health outcome, further its relationship with income of the State. Study reveals that total health expenditure as percentage of GSDP is hovering around one per cent. Expenditure on Urban Health Service has been increasing, on the contrary, expenditure on Rural Health Service has declined and expenditure on 'Medical Education & Training' remains constant. 'Allopathic System of Medicine' soaks up to 75 per cent of expenditure on 'Medical & Public Health'. It is observed that both GSDP and health care expenditure have statistically significant positive impact on LEB and negative effect on IMR and CDR. However, GSDP has an edge over health care expenditure. There exists a unidirectional causality from Per Capita Health Expenditure to Per Capita Gross State Domestic Product in Odisha.

1. Introduction

Health system of our country has come under increasing strain in recent time. The COVID-19 pandemic exposed the fragility of the existing health system of India. It exposes the extent of vulnerabilities to manage the emergency in health sector. The situation is equally applicable to the State of Odisha. Among different factors that influence well-being of the people, 'availability-accessibility-affordability' of health care services is crucial component for improving population health. "National Health Policy, 2000" intend to have a 'universal health coverage' (UHC) through the provision of medical services to all sections of the society. Public provisioning of health care services is a prime necessary in a welfare oriented democratic country like India. Financing the health care service assumes prominence to achieve social welfare as well as ensuring equity.

It is said that health just cannot be defined as a state but, a process. World Health Organization mentions "*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". It is one of the components of human development that determines society's wellbeing.

Sound health enhances labour productivity and contributes to material progress of the nation. Noble laureate Amartya Sen pointed out that "health contributes to a person's basic capability to function, to choose the life he/ she has reason to value" (Sen, 1985). Ensuring a minimal level of health services to the public is an integral element of the development process.

2. Review of Literature

Political concerns, economic considerations and ethical reasons are the driving forces behind the demand for higher public spending on health (Musgrove, 1996), however, the budget constraints very often compelled the governments to cut down their health expenditure. Hence, it is imperative to examine the nexus between population health and public spending.

A good number of empirical attempts have been made by various researchers at different point of time to study the effect of public health spending on health outcome at cross-country level (Gupta *et al.*, 2002; Weitzman, 2017), among Asian countries (Narayan *et al.*, 2010), African countries (Anyanwu and Erhijakpor, 2009; Novignon, 2012; Ssozi and Amlani, 2015), OECD countries (Hitiris and Posnet, 1992; Linden and Ray, 2017), European countries (Lippi *et al.*, 2016; Van den Heuvel and Olaroiu, 2017) and at national level (Deolalikar, 2005; Bhalotra, 2007; Farahani *et al.*, 2010; Barenberg *et al.*, 2017; Panda and Patra, 2021).

Existing literature on the requirement of public spending on health care seems to be divided. Some study reported that PHCE has near negligible influence on health outcomes (Filmer and Pritchett, 1999; Deolalikar, 2005; Kaur and Misra, 2003), while some others observed positive impact (Anand and Ravallion, 1993; Or, 2000, 2001; Baldacci *et al.*, 2002; Berger and Messer, 2002; Bhalotra, 2007; Farahani *et al.*, 2010; Barenberg *et al.*, 2017). The studies by Carrin and Politi (1995), Demery and Walton (1998) observed that poverty and low income rather than low health expenditure are prime reasons of poor health outcome. Other cross-country studies, viz., Kim and Moody (1992), McGuire *et al.* (1993), Musgrove (1996), Gupta *et al.* (2002) corroborated the previous researchers and concluded that level of income is a major determinant of population health. Researchers, Demery and Walton (1998), St Leger (2001), Young (2001) found socio-economic factors are highly associated with population health.

This brief review highlights the controversy on health spending and health outcome nexus. The issue is yet to be settled. The present study attempts to analyse the state level empirical evidence on this subject. Further, the conclusion so derived will help the administrators to tailor the policy framework accordingly.

3. Objectives and Hypothesis of the Study

3.1. Objectives

An attempt has been made in this article to examine three interrelated aspects of health sector in Odisha. These are:

- To analyse the level, trend and pattern of public health care expenditure (PHCE) in Odisha.
- To examine the impact of health expenditure on health outcome of the state, more particularly on life expectancy at birth (LEB), infant mortality rate (IMR) and crude death rate (CDR).

- To investigate the intricacies between PHCE and income of the State represented by Gross State Domestic Product (GSDP).

3.2. Hypothesis of the Study

H_0 : There exists bidirectional causality between public health care expenditure and income of the State.

4. Research Methodology

4.1. Data, Sample Area and Time Frame

To examine the stated objectives we have used the data collected from secondary sources, viz., Demand for Grants, Department of (Health & Family Welfare (H&FW), Demand No. 12, Ministry of Finance, Government of Odisha (different years), State Finance: A Study of Budgets, RBI (different issues) and World Health Statistics, WHO. The study area is the state of Odisha and study period ranges from 2000-01 to 2017-18.

4.2. Methods

To examine the impact of health expenditure on health outcome in the state pair-wise correlations between these variables have been used. Further, to decipher the exact quantitative impact of GSDP and health expenditure on different health outcome variables Liner Regression Models have been employed. Finally to study the linkage between per capita GSDP and per capita PHCE, time series econometrics has been utilised.

5. Data Analysis and Interpretations

5.1. Public Health Expenditure in India

Prinja *et al.* (2012) have estimated the cost of universal health care delivery in India by public and private providers taken together is around Rs. 1713 per capita per annum. By extrapolating the cost of universalisation of health care delivery for the whole of the country Indian government needs to spend 3.8 per cent of the Gross Domestic Product. Likewise, in tune with the recommendations of 'High Level Expert Group' on health, 12th Five Year Plan document mentions "over the next few years the allocation to the health sector as a ratio of GDP will be increased to 2.5 per cent".

In reality it is observed that in India: PHCE as percentage of GDP is 3.9; per capita current health expenditure is only 63 USA Dollar; and public health expenditure as a percentage of GDP is 1.4. In any respect this is abysmally low. India spends even lower than neighbouring Asian countries like Afghanistan, Bhutan, Nepal and Sri Lanka in one respect or more. Leave aside the cases of advanced countries, viz., USA, UK, Australia, Canada, Germany, France etc., even African countries like South Africa and Zimbabwe spend more than India in all these respect (Table 1). With regard to percentage of GDP devoted towards current health expenditure, USA tops the list with 16.8 per cent whereas Bhutan is at the end preceded by India with 3.9 per cent. Again USA tops the list in per capita current health expenditure and Nepal is at the bottom preceded by India, likewise France tops the list in the field of PHCE as per cent of GDP on the contrary India at the tail end.

Table 1: Health Expenditure in India vis-à-vis other Countries of the World

Country	*Current Health Expenditure as percentage of GDP**	*Per Capita Current Health Expenditure (in US Dollar)**	*Public Health Expenditure as per cent of GDP**
Afghanistan	10.3	60	2.9
Australia	9.4	4934	6.3
Bhutan	3.5	91	2.6
Canada	10.4	4508	7.4
France	11.1	4026	9.0
Germany	11.2	4592	8.7
India	3.9	63	1.4
Nepal	6.1	44	2.3
South Africa	8.2	471	4.2
Sri Lanka	3.0	118	2.0
United Kingdom	9.9	4356	7.6
USA	16.8	9536	8.3
Zimbabwe	10.3	94	2.5
Global	6.3	822	6.0

Source: World Health Statistics 2018, WHO; HDR 2016, UNDP

Notes: '*' Data for the Year 2016

5.2. Public Health Care Expenditure: An Inter-State Comparison

Public health care expenditure in India consists of all the government expenditure on medical education, research, public health & family welfare, at central and state government levels towards health services both in urban and rural area. In Indian federation, the provision of health service is primarily the responsibility of the State Government. Item "Public health and sanitation, hospitals and dispensaries" is placed in entry 6 of the 'State List' under 7th Schedule of the Indian Constitution. However, the task of "Population control and family planning", "Legal, medical and other professions" and "Lunacy and mental deficiency, including places for the reception or treatment of lunatics and mental deficiencies" are placed as Entry 20A, 26 and 16 respectively under the 'Concurrent List'. Further, the Central Government may intervene by initiating programmes under central sector and centrally sponsored schemes, though the implementation of these are mainly done by the state governments.

So far as fund flow is concerned until 2002-03, all central scheme funds were routed through the state budget. The funds were first transferred as grant to the states' consolidated account. It was therefore easy to arrive at the amount of total expenditure on health sector incurred in the states. But the system was dispensed off since then and funds have been transferred from central government directly to the implementing agencies. This practice continued till 2015-16. Therefore, it is difficult to

track PHCE at the state level. However, in the present analysis we have taken into account only the fund routed the state budget.

The proportion of States' income (Gross State Domestic Product, GSDP) earmarked for the health sector varies across states (Table 2). It ranges from a low of 0.24 per cent recorded by Uttarakhand in 2000-01 to a high of 1.74 per cent spent by Bihar for the same year. On an average Bihar spent 1.10 per cent of its GSDP per annum towards health sector, followed by Assam 1.06 per cent of GSDP per annum during the period 2000-2018. On the other hand Haryana spent only 0.46 per cent of its GSDP per annum towards health sector, preceded by Maharashtra 0.50 per cent of GSDP per annum during the same period. This implies economically advanced states spend a little and economically poor states spend more towards health sector. Well off states like Haryana, Maharashtra, Gujarat, Punjab, Karnataka, Tamil Nadu spent less of their GSDP and poor states like Uttar Pradesh, Bihar, Odisha, Madhya Pradesh, and Rajasthan spent more of their GSDP on health.

Table 2: Public Health Care Expenditure as per cent of GSDP: A Cross State Analysis

State	*2000-01*	*2017-18*	*Average 2000-18*
Andhra Pradesh	0.92	0.86	1.02
Assam	0.97	2.02	1.06
Bihar	1.74	1.45	1.10
Chhattisgarh	0.31	1.59	0.80
Gujarat	0.83	0.65	0.57
Haryana	0.51	0.59	0.46
Jharkhand	0.00	1.40	0.91
Karnataka	0.93	0.59	0.67
Kerala	0.95	0.96	0.83
Maharashtra	0.65	0.58	0.50
Madhya Pradesh	1.09	1.03	0.86
Odisha	1.06	1.26	0.83
Punjab	0.86	0.72	0.64
Rajasthan	1.10	1.29	0.94
Tamil Nadu	0.81	0.75	0.68
Uttar Pradesh	0.80	1.33	1.04
Uttarakhand	0.24	0.79	0.89
West Bengal	1.05	0.86	0.79

Source: Computed from 'State Finance: A Study of Budgets', RBI, different issues

5.3. Public Health Care Expenditure in Odisha

Total expenditure on health in nominal terms, its annual growth rate, the percentage of revenue expenditure in total health expenditure, state PHCE as per cent of GSDP and Health Expenditure

as per cent of Total Social Sector Expenditure are shown in Table 3. In absolute figure health care expenditure was Rs. 141 crore in 1990-91 which increased to Rs. 1957 crore in 2013-14, and to Rs. 5258 crore in 2017-18. The growth rate of health care expenditure does not depict any consistency. It varies from a low of 0.5 per cent (2003-04) to a high of 62.87 per cent (2014-15). It was even negative in two years, viz., 2001-02 and 2005-06. It is observed that revenue expenditure as a per cent of total health care expenditure is above 92 per cent. Only after 2014-15 the percentage has shown to be below 87 per cent. Total PHCE as a per cent of GSDP is hovering around one per cent, even it is less than one per cent during the decade 2003-04 to 2013-14. Around 11 per cent of SSE is devoted on health care expenditure. Initially up to 2004-05 the percentage was more than 11.5 per cent; in 2005-06 it has come down to 8.7 per cent and thereafter till 2013-14 it remained below 10 per cent level. Finally 2014-15 onwards it has reversed the earlier trend and improved marginally. The health care expenditure as a percentage of social sector expenditure was slashed during the decade 2005-2015.

Table 3: Expenditure on Health in Odisha

Year	*Total Health Care Expenditure (Rs. in Cr.)*	*Annual Growth Rate of Health & FW Expenditure*	*RE on Health as Percentage of Total Health Care Expenditure*	*Health Care Expenditure as percentage of GSDP*	*Health Expenditure as per cent of Total SSE*
2000-01	459	-	94.4	1.1	11.3
2001-02	450	-1.96	93.7	1.0	10.9
2002-03	497	10.44	92.4	1.0	11.8
2003-04	500	0.60	91.8	0.8	11.5
2004-05	631	26.2	99.5	0.8	13.7
2005-06	467	-25.99	96.5	0.5	8.7
2006-07	608	30.19	94.6	0.6	9.9
2007-08	747	22.86	97.3	0.6	9.1
2008-09	937	25.43	98.4	0.6	8.4
2009-10	1171	24.97	97.9	0.7	9.4
2010-11	1272	8.62	97.8	0.6	8.3
2011-12	1362	7.07	97.3	0.6	7.5
2012-13	1765	29.58	95.3	0.7	9.0
2013-14	1957	10.87	92.6	0.7	7.9
2014-15	3187	62.85	87.0	1.0	10.9
2015-16	3681	15.50	85.7	1.1	10.2
2016-17	4729	28.47	85.9	1.3	11.9
2017-18	5258	11.18	84.6	1.3	10.5

Source: Computed by the Authors

Further, per capita state health care expenditure of Odisha both at nominal and constant prices (2004-05 prices) over the study period is shown in Table 4. Data reveals that both of the above mentioned items have exhibited an increasing trend in Odisha.

Table 4: Per Capita Public Health Expenditure at Current vs. Constant Prices (in Rs)

Year	*Current Prices*	*Constant Prices (2004-05)*
2000-01	125.32	150.75
2001-02	121.24	140.79
2002-03	132.63	148.93
2003-04	131.83	140.38
2004-05	163.79	163.79
2005-06	119.67	114.51
2006-07	153.82	138.08
2007-08	186.37	159.83
2008-09	230.8	183.18
2009-10	284.69	217.66
2010-11	305.32	213.07
2011-12	322.56	206.64
2012-13	413.81	246.90
2013-14	454.21	255.75
2014-15	732.34	404.16
2015-16	837.19	473.79
2016-17	1064.89	611.30
2017-18	1172.15	653.37
Average 2000-18	386.26	256.83

Source: Computed by the Authors

5.4. Components of PHCE in Odisha

Table 5 reveals the components of PHCE in Odisha. Public expenditure on health can be divided in to three major heads 'Medical & Public Health, Family Welfare and Other'. Medical & Public Health alone accounts for more than 95 per cent of total expenditure on H&FW. Expenditure on Family Welfare ranges from 5 to 17 per cent, while allocation for 'Others' moves from 0.85 to 14.44 per cent. 'Medical and Public Health' is the dominant one, its share has been increasing over the time, from 75 per cent in early 2000 to 90 per cent at present. On the contrary 'Family Welfare' head receded back. Its share has slashed from 15 per cent to a low of 4.46 per cent in 2015-16.

Table 5: Head-wise Distribution of Health & Family Welfare Expenditure (in per cent)

Year	*'Medical & Public Health'*	*'Family Welfare'*	*Others*
2000-01	76.36	15.69	7.95
2001-02	79.16	13.18	7.57
2002-03	82.14	14.50	3.36
2003-04	73.21	12.36	14.44
2004-05	82.69	14.30	3.01
2005-06	84.05	15.95	0.00
2006-07	82.84	16.25	0.90
2007-08	83.65	15.50	0.85
2008-09	85.45	13.54	1.01
2009-10	85.03	14.16	0.81
2010-11	81.97	17.19	0.85
2011-12	83.99	14.90	1.11
2012-13	84.85	11.88	3.27
2013-14	88.19	9.15	2.66
2014-15	90.07	8.10	1.83
2015-16	92.99	4.46	2.55
2016-17	90.23	6.76	3.01
2017-18	91.13	7.05	1.82

Source: Computed by the Authors

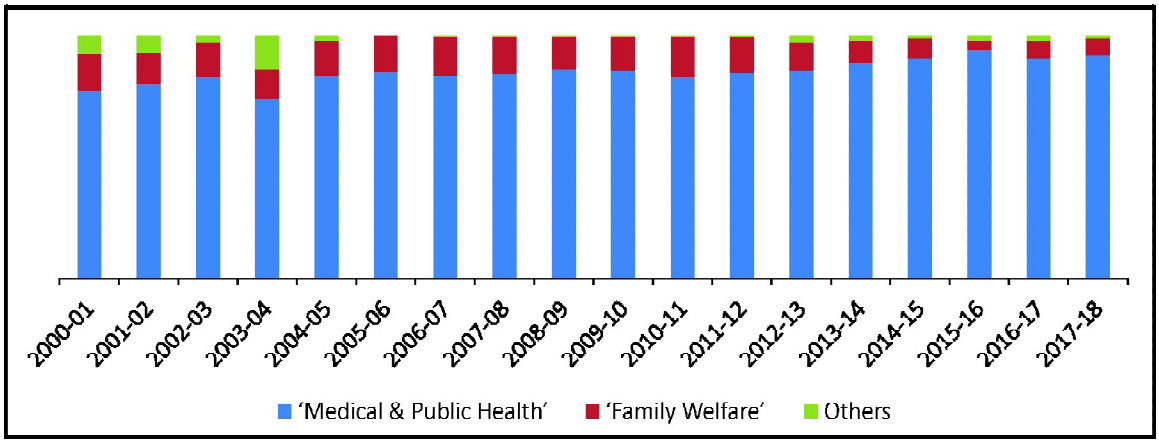

Figure 1: Components of Health Care Expenditure in Odisha

Source: Computed by the Authors from Table 5

5.5. Composition of PHCE in Odisha

The allocation for 'Medical & Public Health' is segregated into seven different sub heads, namely, Allopathy and Other Systems of Medicine, both in Rural and Urban Area; Public Health, Medical Education Training & Research and General. These sub heads have been reduced and reported in Table 6.

Table 6 shows that expenditure on Urban Health Service has been increasing from 39 per cent in 2000-01 to a high of 63 per cent in 2017-18; on the contrary expenditure towards Rural Health Service has been declined from more than 30 per cent to 16 per cent in the corresponding period. This reveals that expenditure on Urban Health Service is doubled whereas on Rural Health Service it is reduced to half. Expenditure on 'Medical Education & Training' has been more or less constant, i.e., around 10 per cent. The only exception is 2016-17, when it touched a high of 19 per cent. The situation of 'Public Health' reflects that up to 2009-10 the percentage share was more than 12, but thereafter it starts to decline to reach a low of 6.73 per cent in 2016-17. It is observed from the Table that 'Allopathic System of Medicine' soak up to 75 per cent of expenditure on 'Medical & Public Health' and 'Other System of Medicine' gets only 4 per cent share. However, the situation has been significantly changed from 2015-16 onwards. The share former is reduced to less than 50 per cent and the latter has been increased to more than 30 per cent.

Table 6: Head-wise Distribution of 'Medical & Public Health Expenditure' (in per cent)

Year	*'Urban Health Service'*	*'Rural Health Service'*	*'Medical Education & Training'*	*'Public Health'*	*'Other'*	*Allopathic System of Medicine*	*Other System of Medicine*
2000-01	39.96	33.65	8.43	16.93	1.03		
2001-02	40.59	33.58	9.91	15.02	0.9		
2002-03	32.05	37.80	8.24	21.00	0.91	62.99	6.86
2003-04	38.13	37.06	8.77	15.05	0.99	68.23	6.97
2004-05	51.79	28.41	7.03	12.03	0.74	74.71	5.50
2006-07	37.76	39.65	9.44	12.23	0.92	70.36	7.06
2007-08	45.32	32.48	8.28	13.11	0.81	70.50	7.30
2008-09	39.74	40.15	7.82	11.43	0.86	73.54	6.35
2009-10	39.11	37.49	9.94	12.62	0.84	70.45	6.16
2010-11	37.38	38.90	12.26	10.61	0.85	70.31	5.98
2011-12	39.41	39.36	10.39	10.08	0.76	72.90	5.88
2012-13	36.11	46.04	9.08	8.20	0.57	77.60	4.55
2013-14	42.22	35.98	12.50	8.75	0.55	73.77	4.43
2014-15	30.87	46.88	10.21	10.56	1.48	74.72	3.02
2015-16	54.39	23.91	12.21	9.15	0.34	48.30	30.00
2016-17	58.68	15.29	19.02	6.73	0.28	39.19	34.77
2017-18	63.03	16.45	11.89	8.18	0.45	43.56	35.92

Source: Computed by the Authors

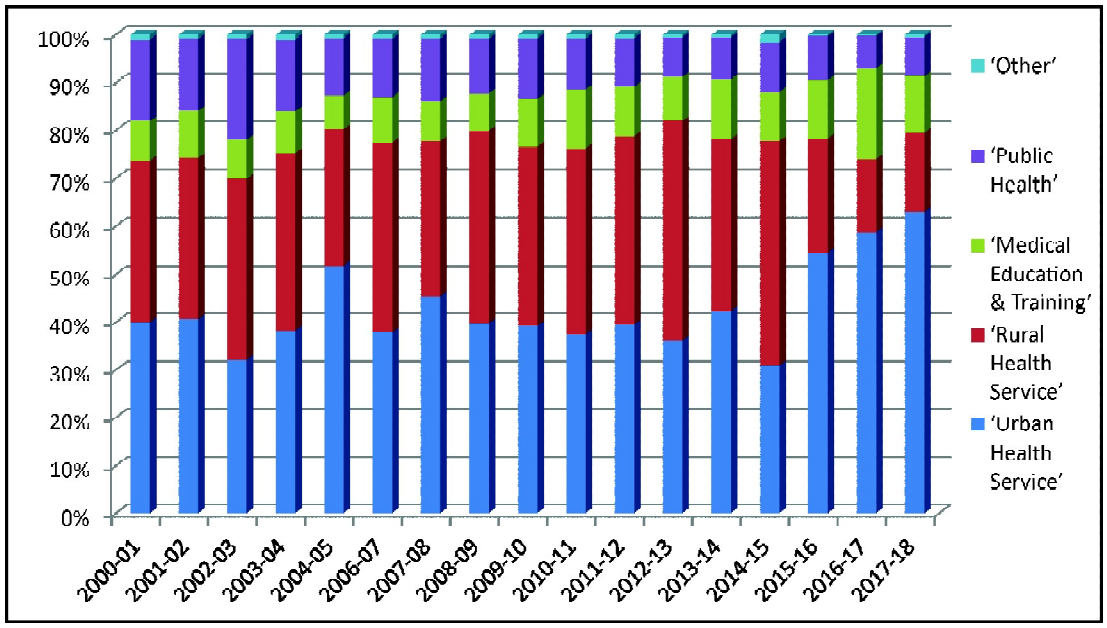

Figure 2: Composition of Health Care Expenditure in Odisha

Source: Computed by the Authors from Table 6

5.6. Elasticity of PHCE in Odisha

To examine the responsiveness of expenditure on health with respect to Social Sector Expenditure (SSE), Aggregate Expenditure (AE) and Gross State Domestic Product (GSDP) we have employed simple regression model. The outcomes are enumerated in Table 7. The result shows that the values of elasticity for SSE is less than one, i.e., less elastic but, with respect to AE and GSDP is more than one, i.e., more elastic. This implies that expenditure on health & family welfare in Odisha is less responsive to variation of the state's social sector expenditure, and more responsive to the variation of aggregate expenditure and GSDP as well.

Table 7: Regression result on the effect of SSE, AE & GSDP on HE

Dependent Variable: Natural Logarithm of Expenditure on Health			
Explanatory Variable	*Constant*	*Coefficient*	*Adjusted R Square*
LNSSE	-1.8190*	0.9476*	0.9636
LNAE	-4.7129*	1.1397*	0.9725
LNGSDP	-5.3399*	1.0429*	0.8836

Source: Computed by the Authors

Note: '*' represents significant at 1 per cent level

5.7. Health Expenditure and Health Outcome

In tune with the objective 'to examine the impact of health expenditure on health outcome of the state' we have examined the pair-wise correlation between per capita health expenditure (PCHE) and per capita gross state domestic product (PCGSDP) on the one hand and different health outcome variables, viz., LEB, IMR and CDR on the other hand. The result is shown in Table 8. The result shows that PCHE and PCGSDP are positively correlated with LEB, negatively correlated with IMR & CDR.

Table 8: Pair-wise Correlation between PCI, PCHE, LEB, IMR & CDR

	LNPCGSDP	*LNPCHE*	*LNLEB*	*LNIMR*	*LNCDR*
LNPCGSDP	1.000				
LNPCHE	0.859*	1.000			
LNLEB	0.988*	0.887*	1.000		
LNIMR	-0983*	-0.889*	-0.993*	1.000	
LNCDR	-0.968*	-0.861*	-0.978*	-0.978*	1.000

Source: Computed by the Authors

Note: '*' indicates significant at 1% level

As the correlation coefficient does not go deeper into the analysis, we have applied econometric technique to quantify the causal relationship that exist between PCHE, PCGSDP and different health outcome variables. We posit the following model to be applied for econometric analysis.

$$HOV_i = \alpha + \beta \ PCGSDP_i + \gamma \ PCHE_i + \varepsilon_i$$

Where, *'HOV'* represents LEB / IMR / CDR

The result of Ordinary Least Square Regression is tabulated in Table 9. The coefficient for PCGSDP and PCHE have the correct sign as expected, positive for LEB and negative for IMR and CDR. All the coefficients are statistically significant at one per cent level except the coefficient between PCHE and CDR. Further, it is observed from the value of the coefficients that GSDP has more pronounced impact on health outcome as compared with state health care expenditure. Based on the elasticity of life expectancy, a 10 per cent increase in PCGSDP would increase a rise in 1.12 per cent in LEB, whereas, only 0.25 per cent by raising the equal percentage of PCHE. Likewise, 10 per cent increase in PCGSDP and PCHE would reduce IMR by 4.76 and 1.28 respectively. The present result is quite consistent with the works undertaken by different researchers, viz., Berger and Messer, 2002; Martin *et al.*, 2008; Jaba *et al.*, 2014; Barenberg *et al.*, 2017.

5.8. Linkage between Health Expenditure & Income of the State

The foregoing analysis clearly highlights the pre-eminence of GSDP over PHCE. However, mere increase of GSDP is not enough to achieve the desired health outcome rather this income should be properly channelled for the provision of health care facilities such as infrastructure and manpower.

Table 9: Results of OLS Regression

	LNLEB	*LNIMR*	*LNCDR*
Constant	2.8904	9.7240	4.7993
	(0.0000)	(0.0000)	(0.0000)
LNPCGSDP	0.1120	-0.4764	-0.2338
	(0.0000)	(0.0000)	(0.0000)
LNPCHE	0.0255	-0.1283	-0.0407
	(0.0134)	(0.0174)	(0.2668)
R^2	0.9819	0.9738	0.9401
Adj R^2	0.980	0.9715	0.9349
F-Statistic	626.42	428.60	180.67
	(0.0000)	(0.0000)	(0.0000)

Source: Computed by the Authors

Note: Figure in parentheses shows the p-value

Therefore, now we shall examine the relationship between PHCE and income of the State during the period 1990-91 to 2015-16.

In this context we formulate the hypothesis "there exists bidirectional causality between public health care expenditure and income of the State" and to verify the hypothesis we employ 'Time Series Econometrics'. Under this technique we follow three-step procedure as: (1) Augmented Dickey Fuller (ADF) (1979) and Phillips-Perron (PP) (1988) tests are used to examine the stationarity of the time series (2) the Johansen cointegration test is employed to establish long run relationship between the two series, and (3) to know the short-run dynamics we employ 'Granger Causality Test'.

The ADF and PP Test has been used to examine the stationarity of both the series namely LNPCGSDP and LNPCHE (LN stands for Natural logarithm) and to know the order of integration by employing trend & intercept and Intercept alone models to ascertain the presence of unit root. The results of unit root test are shown in Table 10. From the table it is observed that ADF & PP tests confirmed that both the series are non-stationary at level, but becomes stationary after first difference. Hence, each original series is I (1).

The cointegrating equation gives long-run relationship between the variables, particularly for any economic model using nonstationary time series data. Here, we have used Johansen Cointegration Test but do not found any such cointegrating relation (as shown in Table 11).

The results of pairwise Granger Causality Test is shown in Table 12. It is observed that there exists a unidirectional causality between PCGSDP and PCHE and the causality runs from PCHE to PCGSDP. This implies PCHE Granger Cause PCGSDP, but PCGSDP does not Granger Cause PCHE.

In this context it should be worth mention that causality in econometrics is not the same thing as is used in day-to-day life, rather it refers more to the ability of one variable to predict (and therefore

Table 10: Unit Root Test of PCGSDP & PCHE

The Estimated τ Statistic

PANEL I

Variable	*ADF Test*				*Remark*
	Intercept alone		*Intercept + Trend*		
	Level	*1st difference*	*Level*	*1st difference*	
LNPCGSDP	0.0178	-6.5858*	-2.3021	-6.5576*	I(1)
LNPCHE	1.1461	-5.1268*	-0.7032	-5.9665*	I(1)

PANEL II

Variable	*PP Test*				*Remark*
	Intercept alone		*Intercept + Trend*		
	Level	*1st difference*	*Level*	*1st difference*	
LNPCGSDP	0.0178	-6.5858*	-2.2643	-6.5576*	I(1)
LNPCHE	1.7094	-5.1259*	-0.4451	-5.9665*	I(1)

Note: MacKinnon (1996) critical value has been used for testing of unit root (H_N: The series has unit root); '*' indicates significant at 1% level.

Source: Computed by the Authors

Table 11: Johansen Cointegration Test

Cointegration Rank Test (Trace Statistic)			
No. of Cointegrating Equation	*λ (Eigen value)*	*Trace Statistic*	*P-value*
None	0.2873	8.4822	0.4154
At most 1	0.0295	0.6905	0.4060
Cointegration Rank Test (Maximum Eigen value)			
No. of Cointegrating Equation	*λ (Eigen value)*	*Max. Eigen Statistic*	*P-value*
None	0.2873	7.7917	0.4003
At most 1	0.0295	0.6905	0.4060

Source: Computed by the Authors

cause) the other (Chris Brooks, 2014). "Granger causality really means only a correlation between the *current* value of one variable and the *past* values of others; it does not mean that movements of one variable cause movements of another". Hence, PCHE in time period 't-1' influences PCGSDP in time period 't'.

Table 12: Granger Causality Test

Null Hypothesis:	*F-Statistic*	*P-value*	*Remark*
LNPCGSDP does not Granger Cause LNPCHE	0.7366	0.4926	Do not Reject Null
LNPCHE does not Granger Cause LNPCGSDP	2.9932	0.0755	Reject Null

Source: Computed by the Authors

6. Results and Discussion

Foregoing analysis reveals that in India public health expenditure as a percentage of GDP is just 1.4. Our country spends very little amount on health care, lower than neighbouring Asian countries and even some of the African countries, keeping aside the cases of advanced countries. An interstate comparison shows that economically advanced states spend a little and economically poor states spend more towards health sector. On an average poor state like Bihar spent 1.07 per cent of its GSDP per annum towards health sector, however, rich state like Haryana spent only 0.45 per cent of its GSDP per annum towards health sector during the period 2000-2016. In Odisha growth rate of health care expenditure is quite inconsistent. Total PHCE as a per cent of GSDP is hovering around one per cent, even during the decade 2003-04 to 2013-14 it is less than one per cent.

Component wise 'Medical and Public Health' has an edge over 'Family Welfare', former even moves up to 90 per cent of total public health care expenditure. So far as composition of health care expenditure is concerned Urban Health Service has an increasing trend (from 39 per cent in 2000-01 to 63 per cent in 2017-18), but Rural Health Service has a declining trend (from 30 per cent to 16 per cent in the corresponding period). Expenditure on 'Medical Education & Training' has been more or less constant, i.e., around 10 per cent. Analysis shows that expenditure on health & family welfare in Odisha is less responsive to variation of the state's social sector expenditure, and more responsive to the variation of aggregate expenditure and GSDP.

Regarding health expenditure and health outcome it reveals that PCHE and PCGSDP are positively correlated with LEB, but negatively correlated with IMR & CDR. Econometric analysis depicts that the coefficient for PCGSDP and PCHE have the correct sign and statistically significant at one per cent level, positive for LEB and negative for IMR and CDR. Further, it is observed that GSDP has more pronounced impact on health outcome as compared with state health care expenditure.

To establish the relationship between per capita GSDP (PCGSDP) and per capita health expenditure (PCHE) time series econometrics has been employed. The results of pairwise Granger Causality Test shows a unidirectional causality between PCGSDP and PCHE and the causality runs from PCHE to PCGSDP. Howevere, by using Johansen Cointegration Test we do not find any such cointegrating relation, i.e., the long-run relationship between PCGSDP and PCHE.

7. Conclusion

To sum up it is observed that in Odisha total health care expenditure as percentage of GSDP is hovering around one per cent. The annual growth rate of health care expenditure does not depict any

consistency. 'Medical & Public Health' and 'Family Welfare' account more than 95 per cent of total expenditure on H&FW and the former is the dominant one. Expenditure on Urban Health Service has been increasing, on the contrary expenditure on Rural Health Service declined and expenditure on 'Medical Education & Training' remains constant. 'Allopathic System of Medicine' soaks up to 75 per cent of expenditure on 'Medical & Public Health', however, recently it has reduced to less than 50 per cent.

The empirical result shows that both PCGSDP and PCHE have statistically significant positive impact on LEB and negative effect on IMR and CDR. However, GSDP has an edge over health care expenditure. The study of causality reveals that a unidirectional causality running from PCHE to PCGSDP in Odisha during the study period 1990-2018. This implies Per Capita Health Expenditure in one year affects Per Capita Gross State Domestic Product in the following year.

Therefore, there exists an intricate relation among GSDP, PHCE and Health Outcome. Each one reinforces the other. One cannot be improved at the cost of the other. Thus, effort should be geared up to move all these variables in unison, so as to reap optimum benefit. The managerial effort should be all inclusive irrespective of spatial, sectional and temporal dimensions of the society for a better outcome. The implications of the present endeavour clearly favours for the growth of public expenditure on health that too in rural and inaccessible area, where the need of the people is immense. Public health care expenditure should precede all other socio-economic-demographic variables to obtain the desired result. It is observed that in all most all State and Central Government followed this practice in post COVID-19 budget formulation. Hence, further research may be undertaken in this area to carry forward the analysis.

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Assessment of Efficiency of Public Factoring Companies in India

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Keywords

Efficiency, Public factoring companies, Assets utilisation, Total assets turnover, Equity turnover, Working capital turnover.

JEL Classification
G17, G20, G11, G23

Abstract: This paper aims to examine and compare the efficiency position of public factoring companies in India. The efficiency ratios are employed to ascertain the company's efficiency and utilize its assets. The secondary data has been collected from the annual reports of the concerned companies. The average total assets turnover ratio indicates that all public factoring companies do not show efficiency in utilising total assets. The Canbank Factors and IFCI Factors have higher efficiency in equity turnover, which indicates that these factoring companies have utilised the equity capital properly to earn more revenue. The working capital turnover ratio explains that Canbank Factors have proper management in controlling the short-term assets and liabilities. The ANOVA results show that there is a significant difference in the efficiency position of public factoring companies, except for an insignificant difference concerning the total assets turnover ratio. Canbank Factors and IFCI Factors have better efficiency in terms of equity turnover and working capital turnover ratio.

1. Introduction

The economic development of any nation relies on the presence of an efficient, organized financial system. The financial system helps to provide the essential financial contributions for the creation of merchandise and services, promoting the prosperity and way of living of a nation's individuals. The fundamental duty financial system is to activate the reserve funds as cash and money-related resources and put them in profitable ventures.

A lot of working capital is tied up in the form of trade debt. The trade debt emerges from the credit sale to customers by a company/business. This credit sale leads to liquidity problems and consequently delays production and supplies. In India, the circumstances are that most organizations/ companies are catering to the requirements of a single large buyer, and these buyers are always known for deferment in paying his payment. To conquer this circumstance, the factoring service has been conceived.

Funds from creditors and owners are invested in various assets to generate income/sales and profit. The better the asset management, the better the sales/income. The efficiency ratios are employed to ascertain the company's efficiency in utilizing its assets. These ratios are often called activity/ performance/turnover /efficiency ratio and indicate the sales/revenue frequency concerning its assets. The activity/efficiency ratio thus involves a relationship between sales/revenue and assets. A right balance between sales/revenue and assets often reflects good assets management. The higher ratio shows a better efficiency of the business.

Hence, this study attempts an in-depth efficiency analysis of public factoring companies in India. The analysis results, findings and suggestions are pointed out from this study will help the factoring companies to review their performance and better understand to keep improvising their performance.

1.1. Mechanism of Factoring Business

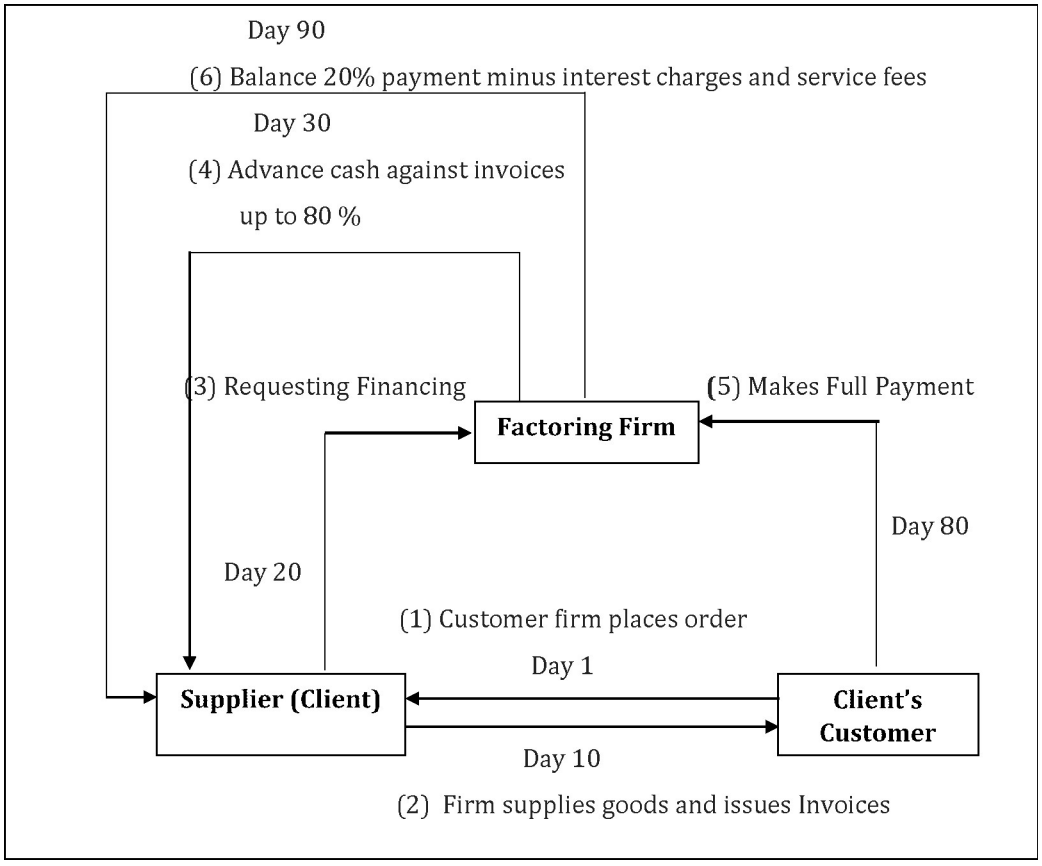

Figure 1: Mechanism of Factoring Business

Source: Researcher Compilation

- In the first stage (1), the customer places an order to the supplier to sell the goods on a credit basis.
- In the second stage (2), the supplier/client supplies goods on a credit basis and creates invoices in the usual mode.
- In the third stage (3), the client's customer's debt unpaid to the client is allocated to the factor by advising the client customer to pay the client's amount. And client handovers the invoices to the factor.
- The factor makes an instant payment of up to 80 percent of the allocated invoices in the fourth stage (4).
- Client customer makes the repayment of dues after agreed days for repayment (stage 5).
- After realizing payment from the client's customer, the factor pays the balancing amount by deducting interest charges and service fees (stage 6).

2. Review of Literature

The entire literature review is divided into four categories. Theoretical perspective, growth/prospects, financial performance, and technology usage.

2.1. Theoretical/Conceptual Perspective

Goyal (2011), in their study discusses the working, features, and factoring types. An attempt was also made to analyse the current factoring position and the Factoring Regulation Act, 2011. It points out some of the bottlenecks of the post Factoring Regulation Act, 2011. Hoti (2014) also describes factoring's overview and historical development and it focuses mainly on meaning, its types, and the advantages/ disadvantages of factoring.

2.2. Growth/Prospects

Junnaykar (2014) attempted to find the reasons behind the service's snail pace. In their study, the researcher considers that factoring performed very well in the initial few years but, later on, years it failed to carry out at the same pace. The researcher states some problems like- lack of awareness, better service from the banks, non-availability of credit insurance, fake bills, etc. Muthulakshmi (2014) affirms that SMEs in India are facing the challenges like non-availability of adequate/timely funds, delayed payments, lack of R&D, lack of access to technical information and consultancy and problems relating to raising funds, traditional finance normally requires adequate security/collateral, perceived to be high risk. Finally, it concluded that the factoring business is yet to gain ground in India wherein SMEs struggle to get funding support from banks. Mohmad (2015) states that how the factoring service is considered an upcoming source of finance for SMEs in India. Factoring becomes even more popular, as did not require some sort of credit check. And small businesses, start-ups, and rapidly growing companies benefited significantly from factoring. Rao et al (2018) describe how the factoring institutions helping the business to meet their financial crunch, which resulted from the credit sale to their customers. And the researchers explain how the factoring institutions are adopting biased methods for gathering awful obligations, altering the image of factoring institutions and corporate employing factors.

2.3. Financial Performance

Kalaivani (2013) tried to study the financial performance with specific parameters like-own funds, current liabilities, factoring income, etc. The researcher has taken two factoring companies, namely-SBI Global Factors and Canbank Factors, and secondary data were collected for ten years from 1997 to 2006-07. The results of the study reveal that there is no significant difference among both factoring companies. Kaur & Dhaliwal (2014) affirms that the financial performance of Canbank Factors was better than that of SBI Global Factors in terms of operating income, net profit ratio, return on equity, and return on assets. The researchers suggest that SBI Global Factors should utilize its assets more efficiently to earn a higher return on assets. Banerjee (2015) tried to suggest some lessons for Bangladesh by evaluating the Indian Factoring in terms of operational and financial performance. The study reveals that the operational and financial performance of the factors in India has been improving over time. Khan (2016) discovered that the Canbank Factors execution is better than the IFCI Factors.

2.4. Technology Usage

Vilas & Praveen (2020) explain how the Trade Receivables Discounting System (TReDS) technology playing an essential role in making the human resources skillful and knowledgeable. This paper draws an overview of the new technology and how it helps the factoring business reach unreached customers, i.e., MSMEs and vice versa.

3. Objectives and Hypothesis of the Study

3.1. Objectives of the Study

- To study the efficiency position of select public factoring in India.
- To compare and highlight the overall efficiency position of public factoring companies with select variables.

3.2. Hypothesis of the Study

H_a: There is a significant difference in the efficiency position of select public factoring companies.

4. Research Methodology

4.1. Population and Sample of the Study

For the study, all factoring companies in India are considered as the population. For the study sample, three public factoring companies have been selected, which are registered with RBI as "NBFC Factors" as of March 29, 2020, were selected. The registered public factoring companies are:

- SBI Global Factors Limited.
- Canbank Factors Limited and
- IFCI Factors Limited.

4.2. Data Collection

The data for the study is secondary. They have been collected from the annual reports of the select public factoring companies (2013-14 to 2017-18).

4.3. Tools Used for Analysis

The efficiency ratios like- total asset turnover, equity turnover, working capital turnover, and current assets turnover ratio have been used. The descriptive statistical tools like- mean, standard deviation and coefficient of variance have been used to conclude. To test the hypothesis, ANOVA has been used. The following efficiency ratios have been used.

- Total Assets Turnover Ratio
- Equity Turnover Ratio
- Working Capital Turnover Ratio
- Current Assets Turnover Ratio

5. Data Analysis and Interpretations

5.1. Results of Total Assets Turnover Ratio

Table 1: Total Assets Turnover Ratio (In No. of Times)

Year	*SBI Global Factors*	*Canbank Factors*	*IFCI Factors*
2013-14	0.12	0.11	0.14
2014-15	0.09	0.13	0.12
2015-16	0.08	0.12	0.10
2016-17	0.09	0.18	0.12
2017-18	0.07	0.09	0.11
Mean	0.09	0.12	0.12
SD	0.02	0.03	0.02
CV %	17.42	26.69	13.31

Source: Authors' Calculations

Table 1 depicts the total assets turnover ratio of public factoring companies for a period of five years from 2013-14 to 2017-18. The SBI Global Factors Ltd. has the highest ratio of 0.09 times for 2014-15 and 2016-17 and the lowermost ratio was 0.07 times for 2017-18. Whereas, Canbank Factors Ltd. has the highest ratio of 0.18 times for 2016-17 and the lowermost was 0.09 times for 2017-18. Similarly, IFCI Factors Ltd. recorded the highest ratio of 0.14 times for 2013-14 and the lowermost ratio was 0.10 times for 2015-16. The Canbank Factors and IFCI Factors have the mean value of 0.12 times, which means the companies have the higher efficiency in using the investments in total assets to earn revenue among the

other public factoring companies under the study. Whereas, SBI Global Factors Ltd. recorded lower efficiency in utilising the total assets to earn revenue, as the mean value stands 0.09 times. The coefficient of variance (CV) of IFCI Factors Ltd. was 13.31 %, which means IFCI Factors Ltd. is more consistent. In contrast, Canbank Factors Ltd. has a CV of 26.69 %, which clarifies that the company is more inconsistent in terms of total assets turnover ratio among the other factoring companies under the study.

Table 2: Results Showing One-Way Results for Total Assets Turnover Ratio

ANOVA						
Particular's	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*	*Remarks*
Between Company's	.004	2	.002	3.153	.079	≥ 0.05 Not
Within Company's	.007	12	.001			Significant
Total	.010	14				

Source: Authors' Calculations

Table 2 represents the ANOVA results for the total assets turnover ratio of select public factoring companies. Here the p-value is above the confidence level of 5 percent (i.e., 0.05). Thus, the results conclude that there is no significant difference in the total assets turnover ratio of select public factoring companies.

5.2. Results of Equity Turnover Ratio

Table 3: Equity Turnover Ratio (In No. of Times)

Year	*SBI Global Factors*	*Canbank Factors*	*IFCI Factors*
2013-14	0.34	0.42	1.15
2014-15	0.31	0.54	0.76
2015-16	0.30	0.48	0.47
2016-17	0.34	0.74	0.51
2017-18	0.31	0.41	0.50
Mean	0.32	0.52	0.68
SD	0.02	0.13	0.29
CV %	5.76	25.79	42.57

Source: Authors' Calculations

Table 3 depicts public factoring companies' equity turnover ratio for a period of five years from 2013-14 to 2017-18. SBI Global Factors has the highest ratio of 0.34 times for 2013-14 and 2016-17, and the lowermost ratio was 0.30 times for 2015-16. Whereas, Canbank Factors have the highest ratio

of 0.74 times for 2016-17, the lowermost was 0.41 times for 2017-18. Similarly, IFCI Factors recorded the highest ratio of 1.15 times for 2013-14 and the lowermost ratio was 0.47 times for 2015-16. The SBI Global Factors had a mean value of 0.32 times, which means the company has a lower efficiency in using the equity capital to earn revenue among the other public factoring companies under the study. Whereas, IFCI Factors recorded higher efficiency in utilising the equity capital to earn revenue, as the mean value stands 0.68 times. The coefficient of variance (CV) of SBI Global Factors was 5.76 %, which means SBI Global Factors is more consistent. In contrast, IFCI Factors has a CV of 42.57%, which clarifies that the company is more inconsistent in terms of equity turnover ratio among the other factoring companies under the study.

Table 4: Results Showing One-Way Results for Equity Turnover Ratio

ANOVA

Particular's	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*	*Remarks*
Between Company's	.322	2	.161	4.746	.030	≤ 0.05
Within Company's	.407	12	.034			Significant
Total	.728	14				

Source: Authors' Calculations

Table 4 represents the ANOVA results for the equity turnover ratio of select public factoring companies. Here the p-value is below the confidence level of 5 percent (i.e., 0.05). Thus, the results conclude that there is a significant difference in select public factoring companies' equity turnover ratio.

5.3. Results of Working Capital Turnover Ratio

Table 5: Working Capital Turnover Ratio (In No. of Times)

Year	*SBI Global Factors*	*Canbank Factors*	*IFCI Factors*
2013-14	0.20	0.47	0.29
2014-15	0.16	0.59	0.44
2015-16	0.16	0.56	0.40
2016-17	0.18	1.09	0.36
2017-18	0.16	0.73	0.46
Mean	0.17	0.69	0.39
SD	0.02	0.24	0.07
CV %	11.12	34.87	17.14

Source: Authors' Calculations

Table 5 depicts the working capital turnover ratio of public factoring companies for a period of five years from 2013-14 to 2017-18. The SBI Global Factors has the highest ratio of 0.20 times for 2013-14 and the lowermost ratio was 0.16 times for 2014-15, 2015-16, and 2016-17. Whereas Canbank Factors has the highest ratio of 1.09 times for 2016-17, the lowermost was 0.47 times for 2013-14. Similarly, IFCI Factors recorded the highest ratio of 0.46 times for 2017-18 and the lowermost ratio was 0.29 times for 2013-14. The SBI Global Factors had a mean value of 0.17 times, which means the company has a lower efficiency in using the working capital to earn revenue among the other public factoring companies under the study. Whereas, Canbank Factors recorded higher efficiency in utilising the working capital to earn revenue, as the mean value stands 0.69 times. The coefficient of variance (CV) of SBI Global Factors was 11.12 %, which means SBI Global Factors is more consistent. In contrast, Canbank Factors has a CV of 34.87 %, which clarifies that the company is more inconsistent in terms of working turnover ratio among the other factoring companies under the study.

Table 6: Results Showing One-Way Results for Working Capital Turnover Ratio

ANOVA

Particular's	*Sum Squares*	*df*	*Mean of Square*	*F*	*Sig.*	*Remarks*
Between Company's	.671	2	.335	15.692	.000	≤ 0.05
Within Company's	.257	12	.021			Significant
Total	.928	14				

Source: Authors' Calculations

Table 6 represents the ANOVA results for the working turnover ratio of select public factoring companies. Here the p-value is below the confidence level of 5 percent (i.e., 0.05). Thus, the results conclude that there is a significant difference in select public factoring companies' working turnover ratio.

5.4. Results of Current Assets Turnover Ratio

Table 7: Current Assets Turnover Ratio (In No. of Times)

Year	*SBI Global Factors*	*Canbank Factors*	*IFCI Factors*
2013-14	0.13	0.12	0.16
2014-15	0.11	0.13	0.14
2015-16	0.09	0.13	0.13
2016-17	0.10	0.19	0.16
2017-18	0.08	0.10	0.16
Mean	0.10	0.13	0.15
SD	0.02	0.04	0.01
CV %	18.57	27.76	7.57

Source: Authors' Calculations

Table 7 depicts the current assets turnover ratio of public factoring companies for the study years from 2013-14 to 2017-18. The SBI Global Factors has the highest ratio of 0.13 times for 2013-14 and the lowermost ratio was 0.08 times for 2017-18. Whereas Canbank Factors has the highest ratio of 0.19 times for 2016-17, the lowermost was 0.10 times for 2017-18. Similarly, IFCI Factors recorded the highest ratio of 0.16 times for 2013-14, 2016-17, and 2017-18 and the lowermost ratio was 0.13 times for 2015-17. The IFCI Factors has a mean value of 0.15 times, which means the company has the higher efficiency in using the current assets to earn revenue among the other public factoring companies under the study. Whereas SBI Global Factors recorded the lower efficiency in utilising the current assets to earn revenue, as the mean value stands 0.10 times. The coefficient of variance (CV) of IFCI Factors was 7.57 %, which means IFCI Factors is more consistent. In contrast, Canbank Factors has a CV of 27.76 %, which clarifies that the company is more inconsistent in terms of current assets ratio among the other factoring companies under the study.

Table 8: Results Showing One-Way Results for Current Assets Turnover Ratio

ANOVA

Particulars	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*	*Remarks*
Between the Company's	.006	2	.003	5.271	.023	≤ 0.05
Within the Company's	.007	12	.001			Significant
Total	.013	14				

Source: Authors' Calculations

Table 8 represents the ANOVA results for the current turnover ratio of select public factoring companies. Here the p-value is below the confidence level of 5 percent (i.e., 0.05). Thus, the results conclude that there is a significant difference in select public factoring companies' current turnover ratio.

6. Findings

The average figures of total assets turnover ratio indicate that all three public factoring companies do not show efficiency in utilising the total assets. Based on the equity turnover ratio, it can be concluded that Canbank Factors and IFCI Factors factoring companies have better efficiency, which indicates that these factoring companies have properly utilised the equity capital. In the case of working turnover ratio, except for Canbank Factors remaining public factoring companies have lower working capital turnover ratios, which indicates that management is not efficiently utilised the short-term assets and liabilities to support revenue. From the current assets' turnover ratio, all public factoring companies under the study fail to maintain a good ratio, which shows that management fails to have a reliable strategy in short-term assets and liability. The ANOVA results revealed that there is a significant difference in the efficiency position of public factoring companies, except for an insignificant difference in the total assets turnover ratio.

7. Conclusion

Factoring companies are meant for meeting the working capital requirements of the MSMEs by purchasing account receivables. The importance of factoring companies is that they provide the following services to the MSMEs - provide working capital and debt collection, credit risk assessment, sales ledger management, consultancy, off-balance-sheet financing, etc.

The study reveals that all three public factoring companies failed to utilise the total assets efficiently to earn more revenue. From the study, it is suggested that all public factoring companies under the study should focus on appropriately utilising the total assets to get more revenue. All the factoring companies need to diversify their services to other areas such as – hire purchase, leasing, etc., to earn more revenue. The SBI Global Factors should focus on the better management of equity capital to support revenue. From the analysis, it is found that the SBI Global Factors and IFCI Factors registered a lower working capital turnover ratio. Hence, the above two public factoring companies should effectively utilise short-term assets and liabilities to support the revenue.

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Developing and Validating Financial Inclusion Measuring Scale for Rural Inhabitants in Tamil Nadu

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Financial empowerment, Financial inclusion, Rural inhabitants, Generalization of scale, Principal component analysis.

JEL Classification

R11, G10, G21, C18

Abstract: The rural penetration of banking products is very low in India. The inclusion of financial resources aids the availability of financial services with ease, maximizes business opportunities, and outsources financially literate people among the rural inhabitants. The key focus of this research study is to develop and validate the scale for measuring financial inclusion. The psychometric scale development for financial inclusion is developed through three distinguished ways viz: inductive, deductive, and combination of both. The present study adopted the inductive method to validate the scale because of its feasibility and wide usage. The validated scale determines financial inclusion and its initiation taken by banks towards rural inhabitants in the state of Tamil Nadu. The probability sampling technique is employed to identify the sample of respondents. Factor Analysis is run to find the pattern relations. The Exploratory Factor Analysis result reveals that the study has developed scales that are loaded in four distinguished dimensions namely usage of financial service, financial access, service quality, and financial welfare.

1. Introduction

Financial empowerment of rural and urban inhabitants is accelerated through strong financial inclusion initiatives. The timely delivery of quality financial service assessed by citizens will enable more empowerment, be it social, economic, and political. One of the ways to control poverty through inclusive development is specifically designed for rural inhabitants. The computational statistics studied in the year 2011 in India, found 55 percent of the rural households being financially excluded in Tamil Nadu alone. On the other hand, the urban inhabitants' participation and access to financial services accounted for 60.37 percent. Under the economy of developed countries, there is substantial progress backed up by effective financial systems. Financial inclusion initiatives are also being developed to aid the developed economy. It helps the inhabitants utilize these financial services efficiently and promote the country's economy. Many countries which have already been listed in the developed and the

underdeveloped have a different regulatory framework to concentrate more on delivering effective financial inclusion initiatives. The major trouble in enhancing effective inclusion is its implementation. In this connection, the present study is conducted by the researcher to develop and to a systematic measurement scale for financial inclusion from the perspective of rural inhabitants in Tamil Nadu.

2. Review of Literature

There are few studies conducted with the perception of rural inhabitants towards financial inclusion at the national and international level along with a new scale development and validation. The present study aims to collect the comprehensively related literature in financial inclusion and another measurement of scale. This would help to form the hypothetical measurement model for financial inclusion in different constituent factors in a pre-run pilot study. After validation, the study aims to conduct the same in a more comprehensive manner across India. The researcher has taken many insights from renowned theorists like Smith.A, Yunus, and others to validate the base of financial inclusion.

The economist Smith (2002) stated "No society can surely be flourishing happy without the greater part of the poor and miserable" and also supported by Noble Laureate Yunus in his key-note address on receiving Nobel Prize said, "Poverty is not created by poor people; it is an outcome of the failure of the framework and policies". The primary key of all the developing and the developed economy is to eradicate poverty through financial inclusion. Josiah and Elizabeth (2012) state that financial inclusion and its initiatives are very crucial factors for economic development. It is strongly believed by both high-income as well as low-income countries. Many Researchers and Government bodies believed the same. The financial sector's progress is considered a prerequisite for an economic hike and eradicates poverty (Chibba, 2009).

The financial inclusion policy enables people to use banking products and services in unbanked areas. Banking systems play a pivotal role in developing the financial system. Kochaar (2009) that system offer financial services are available to every individual to do banking transactions. Apart from that rural inhabitants are facing many constraints when they access banking products (Basu *et al.,* 2005). 'Accessibility' to financial resources is found as the key parameter of Rural and Urban households. More technological and human approaches are essential for strengthening the enabling and evaluation of financial inclusion (Serrao *et al.,* 2012). Also, systematically disadvantaged groups always exclude themselves from inclusive development, especially rural inhabitants. This is a very critical context to examine the protocol of rural habitant's wealth impacted through financial inclusion initiated by banks in India.

Scale development is very important in the stream of social sciences and humanities. Moreover, it is also a very common and habitual procedure. This has a set of complicated rules and techniques for feasible scale development. Many researchers have articulated many ideas for many years to generate measurement scales. The most accepted scales include the generalised scale for financial inclusion which is developed by Sarma and Pais (2011). In the present study, the researcher has endeavoured to blend the past as well as the present financial inclusion scales to arrive at more accurate and feasible findings. The researcher's articulated scales thus developed have many similarities with the one framed

by the RBI. The only difference between the scale developed by the researchers and National Strategy for Financial Inclusion 2019-2024 is that the former relates with primary data while the latter deals with secondary data.

The present study is undertaken to analyze the views of rural inhabitants towards financial inclusion initiatives by the banks. Before executing the study, the researcher has generalized the scale for measuring financial inclusion. After successful validation, the research will be carried out. In this regard, the paper attempts to validate and generalize 20 -item scale for measuring financial inclusions.

3. Background

The other way to define financial inclusion is that it ensures each household to have access to financial products & services. For offering a sustainable economy and social development, the particular country should have strong financial inclusion practices. The robust financial inclusion initiative enables the empowerment of the socially excluded, the poor and women, to make them equipped to make the right financial decisions on their own. The inclusion of weaker sections in the society and imparting of the financially oriented access is universally called "Financial Inclusion". These initiatives insist the excluded society access more financial services like handling bank accounts, utilizing financial products for various reasons such as credit insurance, accessing the subsidy from the government, and so on. The problem with the dimension of demand is when it gets recovered the Indian economy eradicates the low-income groups, the ones with the lack of financial literacy and have more than one bank account in a family. The other problematic side is that financial inclusion has issues with supply, which are positively associated with bank penetration. Poor banking penetrations are the least in number with bank branches, failing to offer suitable banking products to the poor income groups, problems in execution, and barriers in communication. All these factors affect financial inclusion in the form of the supply-side by the financial institution.

During the last decade, timely policy decisions and huge investments have been availed by national and state levels in India. Many different measures and initiations have been taken by the union government and state body in respect to financial institutions. In addition, a huge interest is required for policy decisions and effective administration informing and delivering new initiations in financial services. The banking institution in India plays a very important role in enhancing the efficient financial inclusion of products and services. The initiations not only end itself with public sectors, but also private sectors who offer these services to compete with the public banks and offer services to the financially excluded society in general. Moreover, the banking sector has adopted a world-class proven initiation framework to serve society and impart them into financial inclusion.

The concept of financial inclusion has two distinguished elements that are good decision making on investment and also access the products and services in financial sectors. Access to financial services promotes self-confidence and empowerment among the users. The central governing institution RBI and the Indian government have taken much more continuous efforts to offer and increase effective financial inclusion practices and measures. Generally, accessing financial sources is available in the form of reports of the particular institution. The reports aid in assessing banking penetrations. But it is not the only factor to decide financial inclusion. The other factors include customers' perspective in

research, mapping of the best models from universal players, and empirical model validations that do not form a part of the report.

4. Objectives of the Study

The main objectives of the study are:

- To generalize and validate the scale for measuring financial inclusion.
- To determines the financial inclusion and its initiation taken by banks towards rural inhabitants in Tamil Nadu.

5. Methodology

5.1. Data Sources and Samples Size

This study is not only descriptive but also empirical in nature and approach. It analyses the views of rural customers towards financial inclusion initiatives taken by banks in Tamil Nadu. The data are collected through a structured interview schedule. Many versions of the scale are available to measure financial literacy in different dimensions (Chen and Volpe, 1998; Mandell, 2008; Klapper *et al.,* 2015). These scales are only addressed to measure financial literacy. For analysis, the scale items are recoded as identifiable code such as (FI 1 to FI 20).

The scale is measured through the Likert five-point scaling technique ranging from Strongly Agree to Strongly Disagree. For high content and face validity, the schedule is administrated based on recommendations given by academicians and experts in the banking sector. The data collected are from the rural people of Tirunelveli district in Tamil Nadu's province. The rural mapping of collected samples is identified through records availed in the administrative office of the particular district. Going by the derivations of the Cochran sample size formula, the total population of the area taken for the study is 15,57,004 (uidai.gov.in). As per the data provided by the District Collector office, there are 13 rural blocks in the district. According to the above formula, 5 percent confidence and 5 percent interval level the selected sample size is 193. Computing the data, the researcher could find that 193 samples are distributed equally to 13 blocks. Since the block sample size was unequal (193/13=14.84%). 15 samples selected through probability sampling are equally distributed among the 13 blocks. Finally, 177 sampled respondents are fit for data analysis. The sample response rate is 91.70 percent, which is more admissible for analysis in behavioural research.

5.2. Approach of Scale Development

Measurement scales are a very essential tool, it enables the researcher to discover a new theory and fill the research gap which is to be filled. Scale development study is a scientific approach for seeking solutions to problems. But it is not an easy task, more complex procedures have to be followed until a systematic validation is reached; (Clark and Watson, 1995; Morgado *et al.* 2017).

The first step of scale development begins with generating the scale items, which is derived by the researcher through a strong theory. There are many methods to generate the scale and the widely accepted methods are inductive, deductive and the rest is a combination of both. Each method has its

pros and cons adopted based on the researcher's interest, as much as the availability of theories, objectives of the research, and feasibility. The deductive method of scale generation may be applied by the researcher when the scale is derived from the existing comprehensive literature and the scale formerly utilized by someone (Hinkin, 1995). In the inductive method, the base of scale item is developed through the opinions gathered from the subject experts in respect to qualitative information (Kapuscinski and Masters, 2010). Thus, the method may help the researchers to develop the measurement scale from the strategy which is under study. Like the way, the present study has been executed by the researcher through RBI-National Strategy for Financial Inclusion (2019-2024) by the opinions derived from the panel of experts. After their opinions, the researcher has developed the scale as 20 items to measure financial inclusion from the perspective of rural inhabitants. The face and content validities are also evaluated by the panel of experts and potential users. Their recommendations are invited by the researcher and redefined and reframed accordingly.

The last stage of the scale development process is checking the construct validity and reliability of the measurement items. In the present study, the construct validity is evaluated through Exploratory Factor Analysis (EFA) and the scale item reliability is tested through many ways such as internal reliability using Cronbach test, test re-rest, and split-half method. Many researchers have argued that the combination of both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) is an efficient way to evaluate the measurement scale or theory. In most of the studies in scale development, the majority of the researchers have chosen EFA as the best way to check the construct validity rather than CFA (Bakar and Mustaffa, 2013). The data analysis has been carried through the application of the IBM-SPSS 21 version.

6. Results and Discussion

6.1. Exploratory Factor Analysis

The sampled respondent of this study area belongs to different rural regions of the state province, the demographic classification of collected respondents out of 177, 64.97 percent male respondents, 45.23 percent of them completed higher schooling, 39.73 percent have monthly income of below Rs.15,000 and 48.95 percent of the respondents use electronic banking instead of directly visiting the bank nearer to their residence. Many demographic variables are taken for analysis during that time countable outliers fought by the researcher and its holdout by the researcher for further analysis.

To run the Exploratory Factor Analysis (EFA) the multivariate analysis assumptions are carefully considered for obtaining effective results for empirical evidence. The major prerequisite criteria for applying EFA is viz. the data should be normally distributed and free from multicollinearity, adequacy of data and the correlation matrix should be an identity matrix.

The sampling adequacy and matrix determinant are evaluated by KMO and Bartlett's test. If the value of KMO is less than 0.50 it should not be adequate to apply the factor analysis for collected data (Hair *et al.* 2009) and Bartlett's test for Sphericity is statistically significant ($P<0.05$). After fulfilling these criteria, the researcher has analyzed the percentage of explained variance by each dimension and the rotated factor matrix table was examined for efficient structure detection by the researcher proposed

conceptual scale for measuring the financial inclusion initiatives. Further Cronbach alpha test was applied by the researcher to assess the scale developed for the study to check the reliability of each dimension.

Table 1: Mean and Standard Deviation Values of the Financial Inclusion Scale

Recode	*Statements*	*Mean*	*Std. Deviation*
FI1	I regularly access the financial institutions, whenever a financial need arises	3.7627	.91090
FI2	The bank continuously intimates me up-to-date information about new products and services	3.7175	.97081
FI3	I am okay with utilizing E-services provided by banks	3.9718	.90723
FI4	Accessing the banking personnel is very comfortable when I encounter problems	3.0960	1.06432
FI5	I never think my bank is far away from me during a financial crisis	3.7232	.96952
FI6	Banks offer quality products and services, which satisfy my financial expectations	3.6102	.87938
FI7	My bank representative clearly explains the terms and conditions of products and services	3.4576	.91680
FI8	My bank maintains better relationship marketing practices to approach the customers	3.6497	.94833
FI9	The navigation of online banking is easy to proceed with the transactions	3.4802	1.01741
FI10	My bank is technically strong and it is not difficult to make transactions	3.3220	1.03530
FI11	I always utilize the services offered by banks to a larger extent	3.5311	.88574
FI12	My bank offers a wide range of value-added services	3.7345	.97852
FI13	I mostly prefer automated kiosks for depositing the fund and other banking transactions	3.6102	.89855
FI14	I am very much interested to pay my bills through online/mobile banking	3.6271	.92131
FI15	I strongly believe the bank products and services are mostly utilized by rural inhabitants	3.6102	1.01159
FI16	I enjoy productive assets gain through financial inclusion	3.6836	.84033
FI17	I strongly feel my living standard is very good	3.7571	.73296
FI18	Through financial investment, I can access and maintain standard education, health &hygiene	3.7571	.84124
FI19	I have sufficient awareness and knowledge about our country's economic conditions	3.6045	.85386
FI20	I am willing to take risks to gain high returns from financial products offered by banks	3.7797	.83396

The descriptive statistics presented by mean and standard deviation. The highest value obtained is 3.9718 and the least value is also found as 3.090. The highest standard deviation arrived more than

once in three of four dimensions. Before considering the reliability issues in scale generalization, the researcher determines if the analytical data set is reliable to conduct factor analysis for the collected data. Before applying factor analysis for structure detection, the researcher should fulfil the statistical criteria for executing the factor analysis model. Before the factor analysis model, the two initial criteria were analyzed by the researcher such as KMO & Bartlett's test. The KMO test predicts the sampling adequacy. This test compares both the correlation and partial correlation in the analysis. The KMO test value should be more than or equal to 0.5 is more reliable. Kaiser (1974) has recommended many comparable values for the test of KMO. By following his barometers, the computed test value in the present analysis comes out to 0.899, which is an acceptable value according to him. The other criteria of factor analysis are that the correlation matrix should be identical, which is proved in the present study. Bartlett's Test of Sphericity test value is 1.569 at df 190 and the p-value is less than a threshold value of 0.05. It infers that the correlation matrix is significant for an identical matrix.

Table 2: Test of Sampling Adequacy and Checking of Identical Matrix

The measurements of Kaiser-Meyer-Olkin-Sampling Adequacy.		.899
Sphericity test is given by Bartlett	Chi-Square testing	1569.736
	degrees of freedom	190
	Significance	.000

In general, EFA is widely used multivariate statistical analysis; it groups the large set of statements into a smaller set of components based on a correlations matrix. Many methods are used by the researcher universally but Principal Component Analysis (PCA) is the best method for empirical work i.e. theory-building piece of work strongly recommended by Costello and Osborne (2005) and another criterion for factor analysis is factor loading if the factor loading of particular statement is more than 0.6is considered very effective. While at the same time, the factor loading of more than 0.5 ± 0.03 is more reliable (Klien, 2005). There is no hard and fast rule to decide the cut-off point, but generally, it is taken above 0.5. If the extracted factor loading is less than 0.5 or the extracted factor cross-loaded with others is eliminated by the researcher. Through EFA, 20 statements were extracted as four components exposed from rotated components matrix output.

As shown in the above table the rotated sum of squared loading for the first dimension is 22.380, that dimension Average variance extracted value is .489 and out of 177 sampled respondents, 44 respondents are given priority to the first dimension of financial initiatives taken by the banks. Under this dimension of financial inclusion, the factor 'My bank offers a wide range of value-added services' loading is .805 which is high among the other variables in the latent dimension. In respect to the second dimension accounted for 17.598 variances extracted by the factors while loading, no factors in extracted dimension factor loading is less than 0.5 so all the factors are retained by the researcher to generalize scale for financial inclusion.

Table 3: Component Matrix after Rotation

Statements	*Component*			
	1	*2*	*3*	*4*
FI12	.805			
FI14	.705			
FI15	.682			
FI11	.675			
FI13	.614			
FI10		.765		
FI8		.728		
FI9		.715		
FI7		.647		
FI6		.521		
FI3			.582	
FI2			.564	
FI4			.530	
FI1			.514	
FI5			.511	
FI16				.796
FI17				.741
FI19				.552
FI20				.545
FI18				.532
Squared loadings	22.380	17.598	9.187	9.007
Average Variance extracted	.489	.511	.292	.446
*Cluster Membership	44	45	51	37

Note: Principal Component Analysis: (PCA) with varimax rotation

*Where K-means cluster test using factor scores

6.2. Reliability and Validity of Financial Inclusion Scale

After carrying out the factor analysis of the 20-item scale which was measuring the financial inclusion perspectives among rural inhabitants under four-dimension, Cronbach's alpha test is found .767,. 799,. 766, and .772 respectively. If the alpha value is more than 0.7 is considered more reliable (Straub et al,. 2004). In the present case, the results of Cronbach's alpha test reveal that the researcher has created scale items that are found more reliable and fulfil the reliability criteria.

Table 4: Inter-Item Correlation Matrix among Four Dimensions of Financial Inclusion

Dimension(s)	*Usage of Financial service*	*Financial Access*	*Service Quality*	*Financial Welfare*
Usage of Financial service	1			
Financial Access	.576	1		
Service Quality	.514	.534	1	
Financial Welfare	.579	.600	.676	1

Significant p<0.01 percent level

The convergent validity of four distinguished dimensions assessed by correlation matrix, the service quality dimension, and the financial welfare dimension correlation coefficient is .676 which is high than the correlation followed by service usage and financial welfare (.579), Service usage and financial access correlation coefficient is (.576). The lowest correlation coefficient was found between service usage and service quality dimension (.514). The results of the inter-item correlation matrix among four dimensions confirm the convergent validity of the Financial Inclusion measurement scale for the Indian context.

7. Theoretical Dimension of Measuring Financial Inclusion

Financial inclusion is a multi-phase concept with many components; it may not be relevant from one country to the other country. The following four dimensions are extracted by EFA, the scale developed by the researcher itself. The dimensions of financial inclusion can be defined, in order of context.

7.1. Usage of Financial Service

The main success factor for financial inclusive development ultimately begins with creating awareness. It is essential for success in financial inclusion (Rather and Lone, 2012). To improve the usage of banking products and services the bank should take necessary awareness programs to enhance the continuous usage of banking products. The usage dimension of financial inclusion concerned the usage of financial products is more than the basic adoption and usage. Moreover, it measures the perception and In-depth level of usage of financial products. To evaluate the usage, what kind of financial products are used by individuals and household utilized according to their preference.

7.2. Service Quality

The second dimension in measuring financial inclusion is quality. Quality service is one of the deciding factors of financial inclusion. The quality of products and services are fulfilling the needs of the customers. The perceived quality encompasses the experience, attitude, and opinion about the financial products and services available to the customer. The quality measure makes together a relationship between the financial institution and its users. The relationship impacted with understanding levels and choice of implication by the consumer.

7.3. Financial Access

The third component of financial inclusion measurement is named 'financial access'; it is concerned with the ability and uses of availability of service and products by the financial institution. To evaluate the access dimension, it should analyse the barriers which are accountable in opening and maintaining the bank accounts. A better understanding of the access dimension is evaluated through the gap proportion between several bank accounts and the population. The access data obtained easily because it is a source of information provided by the financial institution. But in the primary source of measuring this dimension is gathered in what extent the customers utilize the service to achieve their expectations.

7.4. Financial Welfare

The fourth dimension of measuring financial inclusion is, how well the effective inclusion policies will improve the wealth of consumers. Many theoretical models replicate that financial inclusion reduces wealth inequality (Dieter and Anna, 2020). A higher financial inclusion index is improving economic growth and reduces the poverty (Park and Mercado, 2018). It is very difficult to measure the outcome of welfare through financial products and services. By enhancing and improving bank business, the progress is tuned to improvising the customer base which will increase the welfare of the customer. The customer's financial welfare will result in effective financial decision-making in a dynamic environment.

8. Conclusion

The primary purpose of the present study is to evaluate the validity of the researcher's proposed psychometric scale for measuring financial inclusion. An independent financial inclusion 20 items scale is developed by the researcher. The structure detection proves that scales are loaded in the respective dimension. The structure detection is carried out with the support and assistance of Exploratory Factor Analysis (EFA), the result of factor analysis replicates that four dimensions are extracted, which all accounted to financial inclusion from the perspective of rural inhabitants in Tamil Nadu. It is very much possible to measure financial inclusion through this scale. To sum up, the development of the financial inclusion scale has provided an important contribution to the financial institution particularly for measuring the same. It is advisable that the user adopts extracted scale from this study, and validates the dimension with a large sample size by using various factor analyses to find construct validity. Furthermore, the present study is carried out with negligible limitations. The selected samples are considered as a pilot study for major research in the future. The researchers strongly recommend using the financial inclusion scale to validate any further research undertaken by other researchers and other academia.

The purpose of this research is to bridge the gap between income inequality and poverty. The financial inclusion will also help in removing the negative impacts of poverty. Through this study, the four variants in financial inclusion will pave way for scientific study. The customer perceptions can also be measured through the financial inclusion scale developed by the researcher. In the long run, the rural customer needs and wants on financial inclusion will be increased and improved in a better way. The most advantageous part of adopting financial inclusion to rural inhabitants will make their life

more luminous. The study focuses on incorporating the aforesaid implications and helps to fill the research gap by developing a novel financial inclusion scale.

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Factors Influencing the Consumers' Willingness to Use of Ayurvedic Patent Medicines in Kerala Market

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Abstract: There has been a tremendous growth in the production of patented Ayurvedic drugs for the past ten years in Kerala. In this study the researcher attempts to identify the factors influencing the consumers, who use Ayurveda patent drugs in the Kerala by studying 450 consumers. For the purpose of research, factor analysis has been carried out and multiple regression analysis has been used to measure the functional relationship between the variables. Empirical result also reveals that cost, convenience, communication from others and consumer's needs and wants are the major factors that influenced the consumers to use patent drugs. This study suggests that the consumers of patent medicine are not completely satisfied with reasonableness of price of the patent medicines. The empirical findings also suggest that if the pharmaceutical companies of Kerala could take proper patent, it will create a paradigm shift in the Ayurvedic treatment of Kerala.

1. Introduction

The word *Ayurveda* is originated from Sanskrit, in which *Ayur* means life and *Veda* means wisdom**.** It is viewed as perhaps the most established arrangement of medicinal known to the humanity. A portion of the idea of Ayurveda exists from the time of Indus Valley civilization or essentially before it. Ayurveda is based on an individual move towards to correct imbalances before they expand into diseases. It names three elemental substance of *'doshas'* such as *Vata, Pitta and Kapha*, the balance of which results in health, while the imbalance causes diseases.

The traditional knowledge in Ayurveda gives great opportunities for IPR, especially, in patents. Shukla (2010) argue that a new form of IPR protection in traditional medicines has emerged which ensures sustainable development in IPR climates, especially in patents. Lemley (2004) found that many of the legal principles governing intellectual property rights have evolved over centuries, it was not until the 19th century that the term intellectual property began to be used, and in the late 20th century it became commonplace in major parts of the world.

Recently, the Ayurveda pharmaceutical industries have been converting their production from traditional medicines to patent and proprietary medicines. India is a pioneer in the field of different conventional meds. She has been gifted with a large repository of medicinal plants by the nature and rich Ayurvedic texts that prescribe guidelines for the preparation of medicinal combinations. Such traditional wisdom coupled with the supply of abundant medicinal plants ensured by the nature helps the manufactures to produce patented products for the benefit of the society. The twenty first century saw an insurgency in Ayurveda area, particularly, in patent medications. Medications made to lighten knee torment; back torment, skin health management illnesses and hair issues are the features of this achievement. This was to a great extent contributed by the logical development in patent medication. The present study tries to investigate the factors influencing consumers to use patent drugs in the Kerala Ayurvedic market.

2. Review of Literature

Of recent, the Ayurveda firms have tried to improve their operations through patent drugs. Nowadays, world economy is patent based economy and firms are turning to patent their drugs or medicines. Giroud and Godfraind (2007) noted that the basic intention of an Ayurvedic firm is to patent its products to reduce cost and improve the return on investment.

Vast majority of the organizations accept that it is an approach to improve their presentation through development and creating benefit from the business. Patents in Ayurveda industry have brought more changes in treatments. It not only affects the treatments, but also gives the importance to life expectancy. Knauft (2002) found that the Ayurveda pharmaceutical research is essential for identifying the changes related to medicines and treatments. The creative interaction of the Ayurveda business demonstrates a type of elective innovation that varies from mechanical exchange.

Patents in Ayurveda intend to bring innovation in Ayurveda medicines and it facilitates the quality of medicines available to the general public. In the colonial age, there was huge biomedical knowledge in Ayurveda through traditional medicines. Harrison and Pati (2002) found that the effective traditional medicines can be easily converted into a patented one as per the regulation provided by the law.

According to Rao (2007), the 9 P's of marketing is to measure the success of pharmaceutical drugs in the market. He explained that price, product, place, promotion, personal selling prescription, policy, power and public relation are the critical factors which determine the success of pharmaceutical marketing. In modern marketing, the manufactures take attention in consumers' needs and wants, cost affected to them, communication of products and convenience that they have to face when they buy a product. The author have also mentioned that the importance of advertisement and sales force promotion strategies carried by the firm to attract the consumers into particular products. Advertisements play a significant role in communication of various benefits of pharmaceutical drugs *i.e.* affordability, accessibility and quality of products. There is a recent trend, that consumers are moving OTC use of drugs in markets. As the manufacturing has taken serious attention to classify the categories are related to prescription and non-prescription drugs available in the market. In the same

time, Smith (1997) found that the relationship maintained with doctor by the manufacturing firm is essential to promote their drugs in the market.

Vijay (2006) in her thesis on "A study on impact of direct to consumer's pharmaceutical marketing under Indian conditions" An investigation was led in Mumbai to quantify the effect of advertisement in promotion of significant prescriptions. It was tracked down that the ads have assumed critical part and positive connection between deals of medicines. The examination has brought to the light that purchasers' discernment on minor diseases was cured without specialist conference and significant afflictions. In the current market, buyers do not have sufficient opportunity to visit specialists for their minor sicknesses and intrigued to purchase the medication through OTC. It is an alarm for the manufactures to study the rational behaviour of consumers regarding affordability and acceptability of the medicines available in the market.

Human culture consistently longed for a reasonable arrangement of medical care. Modern system of medication has taken quick steps frequently with mystical answers for issues of wellbeing. Yet, it is costly and at times unreasonably expensive to people in general. In this specific situation, there is unique importance for Ayurveda, which is bound to be a socially pertinent method medication. Ayurveda has consistently kept a set of principles for a solid brain for a sound body. Due to its impact on the society, people have started practicing yoga, meditation, self-regulation and moderation, hence, Tara (2002), found that Ayurveda has a strong tradition and sober effect on human beliefs.

At present, lack of standardization and quality control in Ayurvedic medicine is a major hurdle for marketing it internationally. One of the most relevant questions faced by the Ayurveda manufacturers is about reaching this international market. The last decade of industrialization has led to commercialization, and manufacturers concentrated on patented medicines along with traditional medicines. As of now, traditional medications have been supplanted by patent medications, which prepare for patent medications to the worldwide market. The patentability has brought an identity for Ayurveda drugs in the home-grown market, however at the worldwide level moreover. Patents remind so as to standardization of raw drugs is an absolute necessity, because, to get standardized product, use of standardized raw materials is essential. According to Prajapathi (2002), standardization means assurance of the quality of drugs and formulations, efficacy and genuineness in terms of measurable parameters. Similarly, Varrier (2002) found that standardization and quality control should be taken care of to promote export of Ayurvedic medicines to make Ayurveda popular and acceptable to the people at large.

During the most recent twenty years, the patent has been drastically changing the field of Ayurveda in Kerala. Ayurvedic patent meds are showcased in different structures. The fundamental ones are tablets, pills, powders, matured items (Asava-Arishta), decoctions and cured fats (Ghrita and Tel). For skin use, drops, creams, moisturizers, liniments and treatments are accessible. According to Sharma (1987), dried plant extracts in capsule form are also used by the Ayurveda consumers. Similarly, the consumers use the patent drugs of different manufacturers. There are various reasons that encourage consumers to use patented drugs. Hence, it is important to check the factors that influence the consumers to use patented medicines or drugs.

3. Objectives of the Study

The main objectives of this study are:

- To determine the factors influencing consumers to use patent drugs in the Kerala Ayurvedic market.
- To find out the relationship between various factors and consumers usage of patent drugs.

4. Research Methodology

This study is deliberate as a descriptive one based on primary data. A well-structured questionnaire and schedule have been used to collect the data. The questionnaire has been designed for the consumers and the questions are framed after consulting with experienced dealers and doctors in the field of Ayurveda. The questionnaires are validated by conducting a pilot study. The reliability test was conducted for the data available through questionnaire. Cronbach Alpha Reliability test was conducted to measure the reliability of the data. The data set of questionnaire and its cronbach alpha was 0.743.

The population related to this examination is very enormous and spread all through the territory of Kerala; it is beyond the realm of imagination to expect to direct a population study. Consequently, a sample study has been directed and multi stage sampling technique has been utilized in this examination.

In the first stage of sampling, the total Ayurveda manufacturing from 14 districts in Kerala was recognized from government sources. Table 1 shows the district wise distribution of Ayurveda manufacturing units in Kerala.

Table 1: District wise Ayurveda Manufacturing Units in Kerala

No. of Districts	*Name of the Districts*	*Ayurveda Manufacturing Units*
1	Thiruvananthapuram	93
2	Kollam	122
3	Pathanamthitta	32
4	Alappuzha	32
5	Kottayam	43
6	Idukki	8
7	Ernakulam	124
8	Thrissur	144
9	Palakkad	68
10	Malappuram	65
11	Kozhikode	83
12	Wayanad	5
13	Kannur	69
14	Kasargod	7

Source: Directorate of Industry & Commerce, *www.industry.kerala.govt.in*

Here, the manufacturing units are varying sizes, thusly, simple random sampling is not an appropriate technique; it has been assured that the sample selection technique adopted is in proportion to the size of the units. Probability Proportional to Size (PPS) sampling method through Lahiri's technique (Mukhopadhyay, 2014b) guarantees meeting the prerequisite of sample districts and three district chose are Thrissur, Thiruvanathapuram and Kozhikode through PPS strategy.

In the second stage, the researcher identified the large scale Ayurveda manufacturers in Kerala with respect to the year of establishment and number of patent drugs produced by them. Table 2 explains the status of large scale Ayurveda manufacturing units in Kerala.

Table 2: Leading Large Scale Manufacturers in Kerala

No.	*Year of Establishment*	*Name of the Firm*	*No. of Patent Drugs*
1	1902	Arya Vaidya Sala, Kottakkal	43
2	1920	SNA Oushahasala	15
3	1921	Sitram Pharmacy	21
4	1941	Vaidyaratnam Oushahasala	14
5	1943	The Arya Vaidya Pharmacy	17
6	1945	Kerala Ayurveda Ltd.	30
7	1960	Nupa laboratories	22
8	1975	Oushadhi	18
9	1987	Kandamkulathy Oushahasala	16
10	1988	Pankajakasturi Herbals	7
11	1989	Nagarjuna Herbals	19
12	1999	Sreedhereyam	23
13	2005	Dhathri Herbals Ltd.	11

Source: Kerala Ayurveda Medicine Manufacturers Association (KAMMA)

Here, the number of patent drugs varies from firm to firm; therefore, simple random sampling is not the appropriate method for selecting firms. Thus, the researcher again use Probability Proportional to Size (PPS) sampling through Lahiri's strategy for the determination of sample firms and three firms Arya Vaidya Sala, Oushadhi and Vaidyaratnam have been selected for the investigation.

In the third stage, district wise selection of consumers has been done through equal allocation of stratified sampling procedure. In the fourth and last stage, firm wise selection of consumer has been conducted through the proportional allocation of stratified sampling (Mukhopadhyay, 2014a) method. Here, the firm wise selection of consumers has been done in the proportion of their patent drugs offered by these firms i.e. 43: 18: 14 (43 patent drugs from Arya Vaidya Sala, 18 from Oushadhi and 14 from Vaidyaratnam).

At last, 450 consumers (86 consumers of Arya Vaidya Sala, 36 consumers of Oushadhi and 28 consumers of Vaidyaratnam from three districts) have been selected through purposive sampling.

5. Data Analysis and Interpretation

For the purpose of finding the factors influencing the consumers to use patent drugs, factor analysis has been carried out and multiple regression analysis has been used to measure the functional relationship between the variables. The relevant aspects of factors were framed on the basis of Robert Lauterborn (Lauterborn, 1990), 4 Cs of marketing. According to him, 4 Cs are the major factors related to 4 Ps (Product, Price, Place and Promotion) of consumers. The 4 Cs consist of Consumers Needs and Wants, Cost to the Consumers, Convenience for the Consumers and Communication. Here, 15 statements are analyzed, which were related to Consumers Needs and Wants, Cost to the Consumers, Convenience for the Consumers and Communication.

Table 3: Descriptive Statistics

Relevant Aspects of Factors	*Mean*	*Std. Dev.*
Cost of the Patent drugs affordable to me.	3.669	1.389
Ayurveda firms charging reasonable price to patent drugs.	3.671	1.436
Ayurveda firms are keeping stabilization in price of patent drugs.	3.420	1.492
I got quality drugs at reasonable price.	3.287	1.544
Patented drugs are conveniently located from nearby places.	3.191	1.578
I am comfortable with usage of patent drugs.	2.973	1.491
I feel patent drugs are needed to the community.	3.376	1.549
I do feel the usage of patent drugs is better to my health.	3.300	1.472
I prefer to use patent drugs for my family.	3.740	1.396
Certain patent drugs are very effective to solve the body pain.	3.264	1.483
I feel it is necessary to cure allergy faced by the person.	3.276	1.393
I feel it is very usable to my family members.	3.624	1.422
Patent drugs are conveniently used in the polluted environment.	3.173	1.609
I used patent drugs through the suggestion of my friends.	2.740	1.488
I prefer to use patent drugs through doctor's communication.	3.593	1.381

Source: Primary data

Table 3 consists of mean and standard deviation of prescribed factors related to consumer's needs and wants, cost, convenience and communication has reasonable mean values. It indicates that most of the respondents have given average weight on these factors.

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.761
Bartlett's Test of Sphericity	Approx. Chi-Square	2761.644
	DF	105
	Sig.	.000

Source: Primary data

The result of table 4 obtained from 450 consumers had been thoroughly analyzed and the output of result has been clearly explained in this section. The Kaiser-Meyer-Olkin (KMO) value is .761, which is greater than 0.7 and Bartlett's Test is significant at 5 per cent level of significance. It indicates that the 15 variables related to various factor is suitable for factor analysis

Table 5: Communalities

Variables	*Extraction*
Cost of the Patent drugs affordable to me.	0.46
Ayurveda firms charging reasonable price to patent drugs.	0.67
Ayurveda firms are keeping stabilization in price of patent drugs.	0.56
I got quality drugs at reasonable price.	0.51
Patented drugs are conveniently located from nearby places.	0.91
I am comfortable with usage of patent drugs.	0.58
I feel patent drugs are needed to the community.	0.59
I do feel the usage of patent drugs is better to my health.	0.67
I prefer to use patent drugs for my family.	0.77
Certain patent drugs are very effective to solve the body pain.	0.67
I feel it is necessary to cure allergy faced by the person.	0.68
I feel it is very usable to my family members.	0.35
Patent drugs are conveniently used in the polluted environment.	0.83
I used patent drugs through the suggestion of my friends.	0.55
I prefer to use patent drugs through doctor's communication.	0.58

Note: Extraction Method: Principal Component Analysis.

Source: Primary data

Table 5 reveals that extraction communalities represent the relationship between the variables and all other variables before rotation. Here, all the extraction communalities are above 0.30. It shows the good relationship between the variables. Therefore, the 15 variables related to various factor forced the consumers to adopt patent drugs did not distort results.

The total variance explained in the table 6 shows how the variance is dividing the 15 variable factors. Here, the four factors have eigenvalues greater than 1, which is a common criterion for a factor. The first factor explains 29.570 per cent, second factor explains 16.107 per cent, third factor explains 9.378 per cent and fourth factor explains 7.405 per cent. So, the researcher needs to take only four factors for rotation.

Table 6: Total Variance Explained

Factors	*Initial Eigenvalues*			*Extraction Sums of Squared Loadings*			*Rotation Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	4.435	29.570	29.570	4.435	29.570	29.570	3.520	23.464	23.464
2	2.416	16.107	45.677	2.416	16.107	45.677	2.466	16.442	39.906
3	1.407	9.378	55.055	1.407	9.378	55.055	2.232	14.881	54.787
4	1.111	7.405	62.460	1.111	7.405	62.460	1.151	7.673	62.460
5	.884	5.893	68.353						
6	.869	5.791	74.145						
7	.727	4.844	78.988						
8	.648	4.319	83.307						
9	.565	3.764	87.072						
10	.480	3.200	90.272						
11	.443	2.953	93.225						
12	.400	2.667	95.891						
13	.307	2.044	97.935						
14	.199	1.324	99.259						
15	.111	.741	100.000						

Extraction Method: Principal Component Analysis.

Source: Primary data

Table 7: Rotated Component Matrix

Variables	*Statements*	*Component*				*Communality*
		Factor 1	*Factor 2*	*Factor 3*	*Factor 4*	
Variable 1	Cost of the Patent drugs affordable to me.	-0.109	**0.668**	0.031	-0.051	0.461
Variable 2	Ayurveda firms charging reasonable price to patent drugs.	-0.002	**0.817**	-0.038	0.044	0.67
Variable 3	Ayurveda firms are keeping stabilization in price of patent drugs.	-0.052	**0.738**	0.051	0.113	0.562
Variable 4	I got quality drugs at reasonable price.	-0.036	**0.681**	-0.189	-0.079	0.508
Variable 5	Patented drugs are conveniently located from nearby places.	0.078	0.094	**0.945**	-0.013	0.908
Variable 6	I am comfortable with usage of patent drugs.	0.435	-0.148	**0.578**	0.184	0.579
Variable 7	I feel patent drugs are needed to the community.	**0.466**	0.36	0.463	0.158	0.585

contd. table 7

Variables	*Statements*	*Component*				*Communality*
		Factor 1	*Factor 2*	*Factor 3*	*Factor 4*	
Variable 8	I do feel the usage of patent drugs is better to my health.	**0.802**	0.131	0.081	-0.002	0.667
Variable 9	I prefer to use patent drugs for my family.	**0.857**	-0.012	0.177	-0.018	0.767
Variable 10	Certain patent drugs are very effective to solve the body pain.	**0.785**	-0.126	0.196	0.041	0.672
Variable 11	I feel it is necessary to cure allergy faced by the person.	**0.809**	-0.124	0.09	0.009	0.679
Variable 12	I feel it is very usable to my family members.	**0.563**	-0.123	0.127	0.021	0.349
Variable 13	Patent drugs are conveniently used in the polluted environment.	0.349	-0.274	**0.793**	-0.063	0.83
Variable 14	I used patent drugs through the suggestion of my friends.	0.012	0.135	-0.122	**-0.72**	0.551
Variable 15	I prefer to use patent drugs through doctor's communication.	0.055	0.168	-0.075	**0.738**	0.581
Eigenvalues		4.435	2.416	1.407	1.111	
Percentage of variation		29.57	16.107	9.378	7.405	

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Source: Primary data

From the rotated component matrix, the first four eigenvalues (4.435, 2.416, 1.407 and 1.111) of rotation matrix of 15 variables are taken, which suggest a factor solution with four factors is presented in Table 7. The factor loadings are estimated by principle component factor analysis method. In the first factor, the 7th, 8th, 9th, 10th, 11th and 12th variables have heavy loadings with an eigenvalues of 4.435 which has 29.570 per cent of variation. This factor is called consumers needs and wants. The second factor, 1st, 2nd, 3rd and 4th variables have high loading with an eigenvalues of 2.416 which has 16.107 per cent of variation and it is termed as cost to the consumers. The third factor, 5th, 6th and 13th variables have high loading with an eigenvalues of 1.407 which explains 9.378 per cent of variation. This factor is labeled as convenience for the consumers. In factor 4th, 14th and 15th variables have high loading with an eigenvalues of 1.111 which has 7.405 per cent of variation and it is labeled as communication for the consumers. The total variance explained by the four factors together is approximately 62.460 per cent.

6. Results and Discussion

At this stage, it is essential to test the four factors which were identified through factor analysis have any relationship between their usage of patent drugs. The regression analysis was conducted to establish the relationship between the four variables and consumer usage of patent drugs. For statistical analysis, the normality of residuals and constant variance of residuals are two important assumptions of regression analysis. Therefore, the shape of Histogram/PP plot for normality of residuals (Figure 1 to 2) and

Scatter plot for constant variance of residuals (Figure 3 to 6) are showed in the appendix. The usage of patent drugs is related with how long they have been using such drugs. The usages is ranged like less than 2 years, 2-4 years, 4-6 years, 6-8 years and above 8 years are identified through the structured questionnaire.

Table 8: Model Summary of Regression Analysis

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
Regression	.761[a]	0.579	0.575	0.971	1.152

Note: 'a' Predictors: (Constant), Communication from Others, Convenience for the Consumer, Cost to Consumers, Consumers Needs and Wants

Source: Primary data

Table 8 shows the model summary which expresses the relationship between dependent variables and independent variables (predictors). In this situation, usage of patent drug is dependent variable and consumer's needs and wants, cost to consumers, convenience for the consumer and communication from others are independent variables. The model summary 'R' expresses the simple correlation between the independent variables i.e. predictors. Here, the R value is .761 which indicates that there is high degree of correlation between the variables. The R square value represents how much of the total variation in usage of patent drugs (dependent) can be explained by the independent variables like consumers needs and wants, cost to consumers, convenience for the consumer and communication from others. In this situation, 57.9 per cent of variation can be explained with the help of independent variables. The Durbin-Watson statistic shows the value 1.152, which indicate that there is positive auto correlation between the variables.

Table 9: ANOVA through Dependent and Independent Variables

ANOVA[b]						
Model		*Sum of Squares*	*DF*	*Mean Square*	*F*	*Sig.*
1	Regression	577.919	4	144.48	153.167	.000[a]
	Residual	419.761	445	0.943		
	Total	997.68	449			

Notes: 1. 'a' Predictors: (Constant), Communication from Others, Convenience for the Consumer, Cost to Consumers and Consumers Needs and Wants.

2. 'b' Dependent Variable: How long have you been using this drug (Usage of Patent Drugs)

Source: Primary data

Table 9 shows that the independent variables statistically significantly predict the dependent variable, F (4, 445) = 153.167, p (.000) < .05 i.e., the regression model is a good fit of the data. Thus we can assume that there is an association between the various factors and consumers usage of patent drugs.

Table 10: Coefficients between Dependent and Independent Variables

Coefficients[a]

Model		*Unstandardized Coefficients*		*Standardized Coefficients*			*Collinearity Statistics*	
		B	*Std. Error*	*Beta*	*t*	*Sig.*	*Tolerance*	*VIF*
1	(Constant)	**2.973**	0.346		8.592	.000		
	Consumers Needs and Wants	**1.649**	0.412	0.435	4.002	.000	.381	4.415
	Cost to Consumers	**-1.221**	0.137	-0.148	-8.912	.000	.473	3.551
	Convenience for the Consumer	**2.861**	0.421	0.578	6.795	.000	.651	3.448
	Communication from Others	**1.275**	0.321	0.184	3.971	.000	.575	5.708

Note: 'a' Dependent Variable: How long have you been using drug (Usage of drugs)
Source: Primary data

Table 10 shows that the usage of drugs increases for increase in consumer needs and wants, convenience for the consumer and communication from others. The drug or medicine usage increases when there is decrease in cost. The p-value of B coefficient is less than .05. So the coefficients are statistically significant.

The regression equation of these variables are constructed as:

Y= 2.973 +1 .649 (Consumers Needs and Wants) - 1.221 (Cost to Consumers) + 2.861 (Convenience for Consumers) + 1.275 (Communication from others)

The equation is constructed with the help of dependent and independent variables. Here, Y represents usage of patent drugs. The regression analysis suggests that the factors consumers needs and wants, convenience, communication are positively related with the usage of drugs and the cost is negatively associated with usage of patent drugs. Finally, the researcher concludes that there is a significant relationship between various factors and usage of patent drugs.

7. Conclusion

After the consciousness of different advantages, the investigation followed what are the variables compelled the consumers to buy the patent medications made by the firm. The outcomes demonstrate that consumer's needs and wants, convenience, communication from others are directly related with the utilization of medications and the cost to the consumers is adversely connected with the use of patent medications. It is further found that there is a huge connection between variables that forced the consumers to buy patent drugs and its usage of patent medications.

The consumer's utilizations of patent medications were improved mostly in the past two years. It is a positive sign to the makers to focus on Ayurveda patent. In the current scenario, the general consumers acknowledge the quality of patent prescriptions alongside traditional medicines. It gives

some quick reliefs to buyers for relieving their illnesses. Similarly, the consumers of patent medicine are not completely satisfied with reasonableness of price of patent medicines.

The reformulation regime happened in India provided wide benefits to use IPRs provision especially patent in Ayurveda industry. In the initial period, political and economic condition prevailed in India did not support patents, but later it has improved. Unfortunately, the obstructive behaviour is still prevailing in the Ayurveda sector of Kerala. It will demoralize the Ayurveda enterprises in Kerala. Patent meds explore the opportunities in Ayurveda, if the pharmaceutical companies of Kerala could take proper patent, it will create a paradigm shift in the Ayurvedic treatment of Kerala. Therefore, the administration finds a way to expel the challenges faced by the Ayurveda business in Kerala.

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Appendix

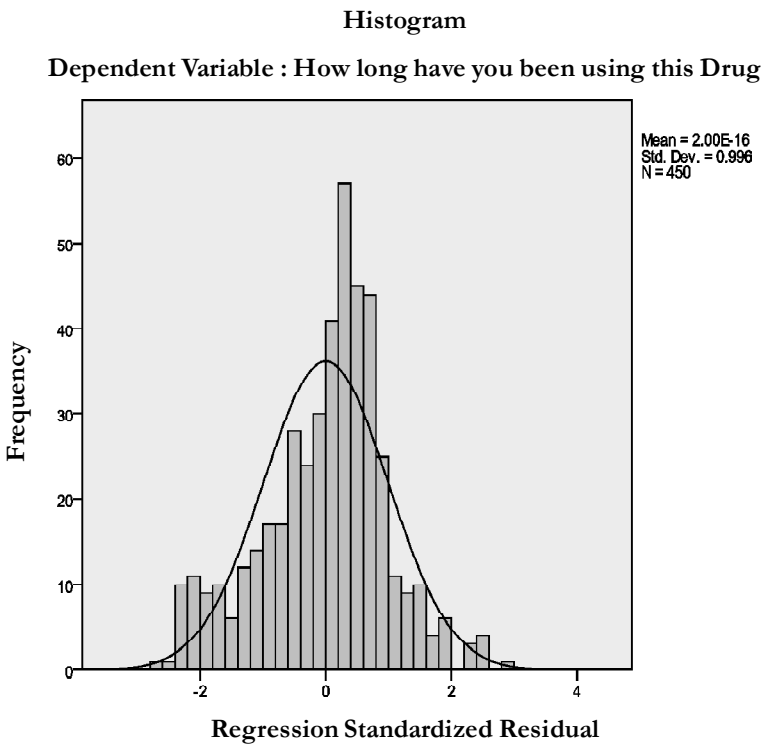

Figure 1

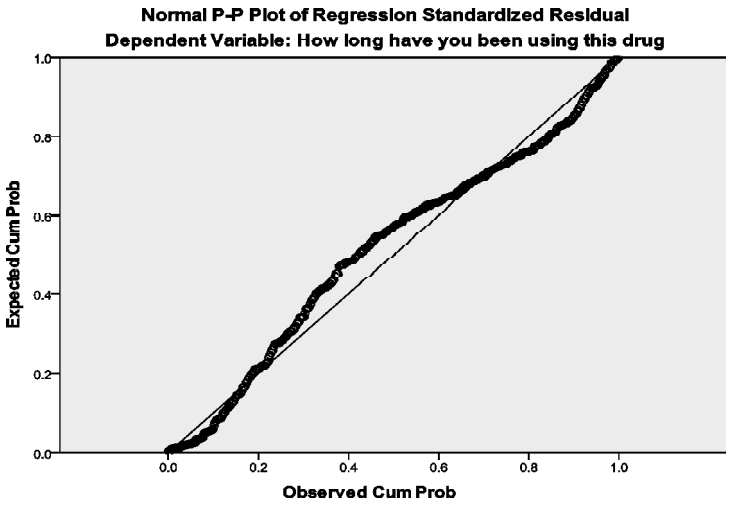

Figure 2

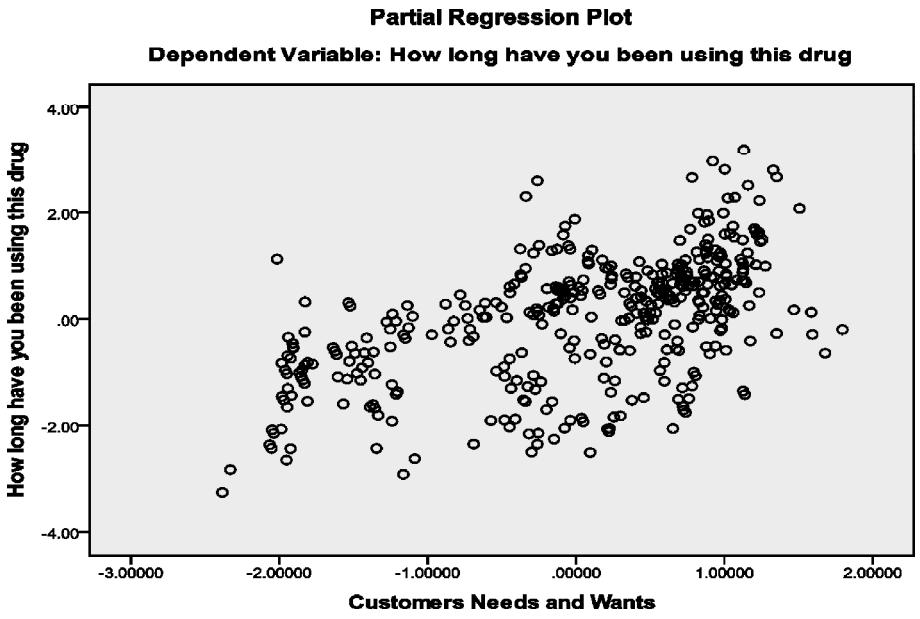

Figure 3

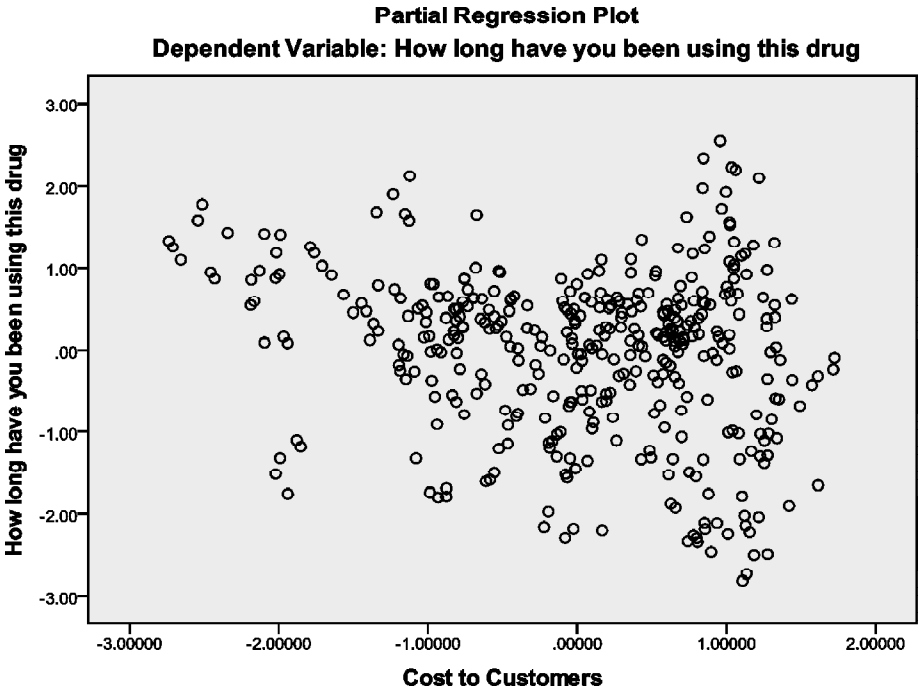

Figure 4

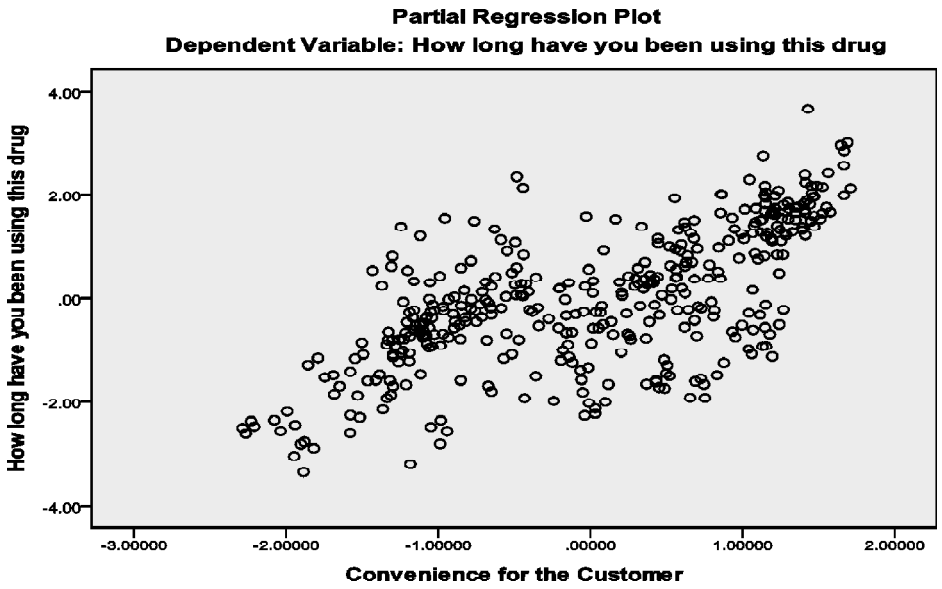

Figure 5

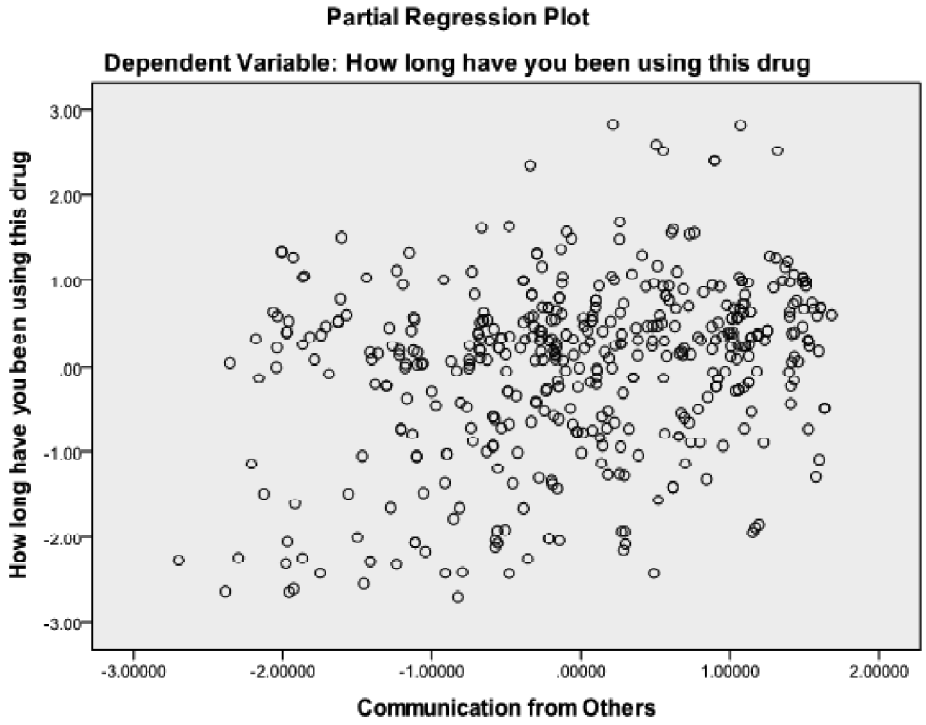

Figure 6

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Exploring the Intrapreneurship Dimensions for Industrial Auto Clusters: A Study in Delhi-NCR Region

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Keywords

Intrapreneurship, Dimensions of intrapreneurship, Auto clusters, EFA and CFA.

JEL Classification

L10, L22, L90, L91

Abstract: Recently, 'Intrapreneurship' is recognized as an indispensable strategy to build firms innovative capabilities, gain value linked competence, and financial returns quickly. So, it is imperative to unveil key dimensions of intrapreneurship for revitalizing firm's growth in the automobile sector. The main objective is to determine the key intrapreneurship dimensions in the Auto Clusters in Delhi/NCR. For this, the quantitative data were gathered from 300 executive/managers using structured questionnaires and data were analysed using the "Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)". This led to a 6-dimension structure of intrapreneurship, consistent with the extant studies. The study concluded with the important implications of the intrapreneurship dimensions in the auto clusters that will pave way for other studies. This study is confined to auto clusters in Delhi/NCR, however, there is further scope of extending this research to other industries in different geographical areas.

1. Introduction

In the realm of industrial transformation, a new paradigm called 'Intrapreneurship' has attracted a lot of attention from academia and industry as reflected in the increased publications (Alam, M., et al, 2020; Neessen. *et al.*, 2019). Intrapreneurship refers to the "phenomenon of entrepreneurship in already existing organizations (Antoncic and Hisrich, 2001), and embodies activities of new internal and external business venturing, transformation through innovation and strategic renewal (Parker, 2011)." Regarded as an offshoot of entrepreneurship, it is recognized as an important means to rejuvenate firms through strategic renewal, innovation and venturing process (Stopford and Baden-Fuller, 1990), for firm's development (Kakati, 2003), to strengthen competencies through enhancing knowledge and skills for a competitive advantage (Hornsby *et al.*, 2002). Further, aligning with the resource-based view, its role is considered vital for resource utilization leading to firm advantage (Floyd and Wooldridge, 1999), creating an innovation culture for entrepreneurial pursuits for excellence (Lukes and Stephan, 2017). It spurs innovations through the firm's proactiveness in the market leading to growth and profitability

(Miles and Covin, 2002). So, Intrapreneurship is the foundation stone for innovation and performance to align with competitive challenges.

The term was first pioneered by Pinchot (1985). It is a combination of two concepts: 'intra corporate and 'entrepreneur'. Intrapreneurship is 'entrepreneurship within organizations. It imbibes the spirit of entrepreneurial orientation across all the levels and departments in an organization and so, is quite distinctive of the organizational culture prevalent in a particular organization. The extant theory cites that 'Intrapreneurship' can be regarded to be similar to entrepreneurship, but it is different in the context despite similarity in the two. The former, encompasses entrepreneurial orientation in perceiving new opportunities proactively rather than reacting to state of things complacently (Stevenson and Jarillo, 1990). So, Intrapreneurship is conceptualized as reformative processes; a way of doing things not only differently but moving ahead beyond the traditional ways of doing things to stay ahead of competitors. It is also reckoned as ways in which employees foresee opportunities beyond the resources they own or control (Blanka, 2019; Neessen. *et al.*, 2019). Thus, it is a behavioural intention that is divergent and distinctive in traditional ways of doing things. (Antoncic and Hisrich, 2003, 2004). In a recent systematic review of the literature, Neessen *et al.* (2019) affirmed that key dimensions of intrapreneurship include- "innovativeness, proactiveness, risk-taking, opportunity recognition, and external networking".

Due to its strategic importance in firm growth and renewal, there has been plethora of studies focusing on conceptual formulations and empirical studies on intrapreneurship (Antoncic and Hisrich, 2001; Champathes and Swierczek, 2002; Wiklund and Shepherd, 2003). However, there are less studies concentrating on the key dimensions of intrapreneurship (Augusto Felício *et al.*, 2012; Chawla and Lenka, 2015; Kassa and Raju, 2015; Vargas *et al.*, 2017). Augusto, *et al.* (2012) in the study enumerated 6 main dimensions of intrapreneurship, as- "innovation, risk/uncertainty, risk/challenges, competitive energy, proactiveness and autonomy, productivity, improvement, financial performance, and growth". But most of the studies relate to the antecedents and orientation and pertain to the developed economies with scant studies in the context of emerging economies, like India. This study plugs in this major research lacuna to unravel the key dimensions spurring intrapreneurship in the context of Indian auto clusters. In this backdrop, this study attempts to explore and validate the Intrapreneurship dimensions that comply with the Indian auto clusters which are presently juggling with resource allocations amidst a robust networking, competitive industry, and changing government policy. The study contributes in threefold ways, one by lending a conceptual clarity since it is fragmented and employs several perspectives. Second, it closes a major research lacuna by exploring the Intrapreneurship dimensions in the Indian auto clusters which is one of the dominant auto sectors contributing to the economic development of the nation. Moreover, such a study will guide other similar studies in various clusters, primarily to derive networking benefits for enhancing their performance.

2. Review of Literature

Intrapreneurship is conceptually derived from the theoretical underpinnings surrounding entrepreneurship. It relates to "Schumpeterian innovation dimensions as: corporate venturing, strategic renewal, and spin-offs for ideas generation" (Zahra, 1991).

The experts have extensively dwelled on its importance as instrumental for firm rejuvenation (Pinchot and Pellmann, 1999), and the dynamic force behind the firm's innovative capability (Wennekers and Thurik, 1999; Carree and Thurik, 2003). As per Kuratko (2007), it is linked to tapping opportunities leading to innovations and capability building. In a similar vein, Fernald, *et al.* (2005) linked it with risk bearing capabilities of firms, thereby, leading to innovations.

Previous studies have categorized Intrapreneurship into these dimensions, as New business venturing (Vesper,1984; Rule and Irwin, 1988; Zahra, 1991; Stopford and Baden-Fuller, 1994), Product/service innovativeness (Covin and Slevin, 1991; Zahra, 1991; Knight, 1997), Process/ technology innovativeness (Covin and Slevin, 1991; Damanpour, 1996; Tushman and Anderson, 1997; Antoncic, 2003), Self-renewal (Guth and Ginsberg, 1990; Zahra, 1991), Risk taking (Covin and Slevin, 1991), and Proactiveness (Covin and Slevin, 1991). They have defined these dimensions as follows:

2.1. Dimensions of Intrapreneurship

New business venturing is "the creation of new businesses related to existing products or markets and the creation of new units without regard to the level of autonomy or size." Innovativeness means "innovations in product/service offerings, production processes, procedures and techniques, as well as in technologies. Self-renewal "reflects in the transformation of organizations through a renewal of the key ideas on which they are built" Risk taking relates to "the firm adeptness in quickly quick pursuit of opportunities, fast commitment of resources and bold actions Proactiveness is "the extent to which organizations attempt to lead rather than follow competitors in key business ventures, entering new markets as new product development or introduction of new services operating technologies or administrative techniques".

2.2. Intrapreneurship and Related Constructs

Studies have affirmed that it will foster functional competencies of managers and employees, including operation, finance, marketing, and human resource functions that would lead to integration and assist in new strategic thinking and reformations. (Jiang, 2009; Zaech and Baldegger, 2017). Besides, Intrapreneurship within firms will create entrepreneurial leaders through development of their personal competency (Bagheri, Pihie, and Krauss, 2013), managerial competency, proactive competency, and technological competency (Baylor and Ritchie, 2002). These competencies will encourage and contribute to adoption of the new policies, as in the case of Indian auto clusters.

2.3. Outcomes of Intrapreneurship

Several important outcomes have also been cited by researchers, like firm performance as stated by Antoncic and Hisrich, (2003), growth and profitability as per Covin and Slevin, (1991). Remarkedly, studies have linked Intrapreneurship to firm growth, irrespective of its size, like in case of small-firm growth by Covin, (1991), large-firm growth (Covin and Slevin, 1989), and performance in hostile environments. So, it is important to understand Intrapreneurship in small and medium auto cluster firms in the current transition phase as taken up in this study.

To sum up, from the above discussion, it can be inferred that Intrapreneurship will lead to development of products and services using high technology that leads to superior business performance.

3. Objectives of the Study

The main objectives of the study are:

- To determine the key dimensions of intrapreneurship in context of auto clusters in Delhi/NCR.
- To validate the key dimensions of intrapreneurship in the context of auto clusters in Delhi/NCR.

4. Research Methodology

To achieve the objectives, the study utilized a quantitative cross- sectional study design approach based on the analysis of data generated through the questionnaires which was distributed online to executives and managers from the auto clusters in Delhi/NCR. India's automotive industry is spread across three clusters — Chennai in the South, Maharashtra in the West and the National Capital Region in the North. Since these auto clusters are heavily concentrated in the Delhi-NCR regions, so it has been taken up as the focal case point/context in this study. These auto clusters are quite competitive and resourceful deriving the advantages of networking and most importantly progressive and industry focused but presently facing a lot of challenges on account of technological transitions. A sample of 300 executives as respondents participated in the survey and the sampling method used was "cluster random sampling".

The minimum sample size needed for conducting EFA and CFA should be N = 150, with the EFA and CFA methods of analysis. (Mundfrom, Shaw, and Ke (2005).The "Intrapreneurship scale" was used which was derived from (Antoncic and Hisrich, 2004), which is actually combination of i) the ENTERSCALE of Khandwalla (1977), Covin and Slevin (1991), and ii) the corporate entrepreneurship scale of Zahra (1991). The responses were assessed through likert 5-point scale (1: Strongly Disagree - 5 Strongly Agree). Techniques of Exploratory Factor Analysis, EFA and Confirmatory Factor Analysis, CFA were run to unravel and confirm the "Intrapreneurship dimensions" in the auto clusters. EFA was run with the purpose of data reduction and component summarization and CFA was done to test and confirm construct validity for Intrapreneurship dimensions.

5. Data Analysis and Findings

5.1. Demographic Profile

The respondent profile of the 300 executives was aptly represented by 195 males (65%) and with 105 females (35%). In terms of educational level, 198 respondents (66%) were holders of a bachelor's degree, while 102 respondents were Postgraduate (34%). Majority of the respondents were 31-40 years (45%) followed by 41-50 years (34%) and there were 65 respondents in the age group of above 51 years (22%).

Table 1: Demographic Analysis

Gender	*Frequency*	*Percent*
Male	195	65%
Female	105	35%
Total	300	100%
Age	*Frequency*	*Percent*
31-40	134	45%
41-50	101	34%
Above 51	65	22%
Total	300	100%
Education	*Frequency*	*Percent*
Graduate	198	66%
Post Graduate	102	34%
Total	300	100%

Source: Authors' Calculation

5.2. Exploratory Factor Analysis

In the first place, the EFA was run for data reduction and component summarization, and then Confirmatory factor Analysis, (CFA) was performed to test and confirm the "construct validity" for ascertaining the Intrapreneurship dimensions. Prior to administering EFA, the data was checked for EFA through Kaiser-Meyer-Olkin, KMO sampling adequacy measure, and Bartlett's test (Table 2). The KMO value was .850, above the recommended value of .6, and Bartlett's test of sphericity was significant ($\chi 2$ (351) = 8455.509, $p < .05$) in line with (Guttman, 1954; Tabachnick and Fidell, 2013). Further, Eigen value criteria (>1) was applied for factor extraction.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.850
Bartlett's Test of Sphericity	Approx. Chi-Square	8455.509
	df	351
	Sig.	0.000

Source: Authors' Calculation

The overall results of Promax rotation showed six factors with loadings greater than .50 (Guttman, 1954; Tabachnick and Fidell, 2013) with a total variance of 79.164% variance, which is a good measure.

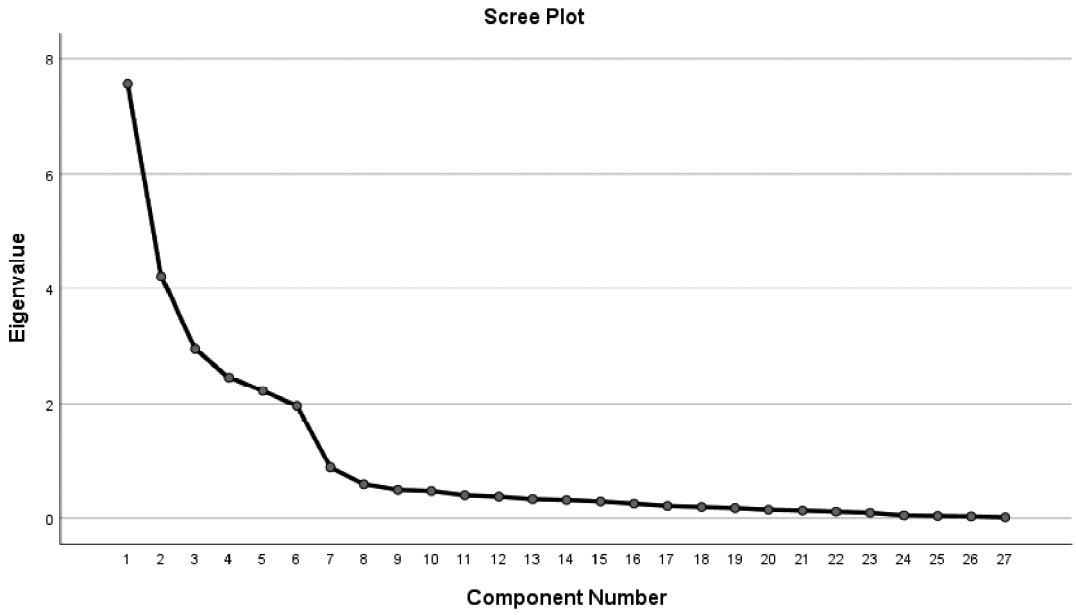

Figure 1: Scree Plot

Source: Authors' Calculation

Table 3: Factor Loadings, Variance and Reliability

Constructs	*Item Code*	*Statement (s)*	*Loading*	*Variance(%)*	*Reliability*
Risk-taking	ICRT1	Our firm has a strong proclivity for high-return high-risk projects.	0.921	9.097	0.924
	ICRT2	Our firm takes bold and wide-ranging acts to achieve our objectives	0.904		
	ICRT3	Our firm adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.	0.902		
	ICRT4	Our firm encourages risk-taking behaviours.	0.868		
Proactiveness	ICPR1	Our firm typically initiates actions to which competitors have to respond to.	0.77	8.252	0.864
	ICPR2	Our firm is often the first to introduce new products.	0.87		
	ICPR3	Our firm typically adopts a very competitive strategy	0.881		
	ICPR4	Our firm is proactive.	0.867		

contd. table 3

Constructs	*Item Code*	*Statement (s)*	*Loading*	*Variance(%)*	*Reliability*
Innovativeness	ICIN1	Our firm has a strong emphasis on R&D, technological leadership and innovation	0.819	7.292	0.764
	ICIN2	Our firm has had many new lines of products in the past five years (or since its establishment).	0.65		
	ICIN3	Our changes in product lines have usually been quite dramatic.	0.874		
	ICIN4	Our firm engages innovative behaviours and activities	0.53		
New Business Venturing	ICBV1	Stimulating new demand for existing products in current markets through aggressive advertising and marketing	0.915	15.606	0.948
	ICBV2	Broadening business lines in current industries	0.916		
	ICBV3	Pursuing new businesses in new industries that are related to current business	0.918		
	ICBV4	Finding new niches for products in current markets	0.943		
	ICBV5	Entering new businesses by offering new lines and products	0.853		
Self Renewal	ICSR1	Reorganizing units and divisions to increase innovation	0.834	28.052	0.95
	ICSR2	Increasing the autonomy (independence) of different units to enhance their innovation	0.919		
	ICSR3	Adopting flexible organizational structures to increase innovation	0.833		
	ICSR4	Training employees in creativity techniques	0.886		
	ICSR5	Establishing procedures to solicit employee ideas for innovations	0.928		
	ICSR6	Establishing procedures to examine new innovation ideas	0.925		
Competitive Aggressi-veness	ICCA1	I prefer aggressive price competition.	0.976	10.865	0.971
	ICCA2	I try hard to take customers from competitors	0.978		
	ICCA3	I watch competitors' business strategies to react against them promptly	0.96		
	ICCA4	I prefer aggressive marketing of new menus and services through the Internet	0.973		

Source: Authors' Calculation

So, the 6 main Intrapreneurship dimensions, as extracted from the Exploratory Factor Analysis, are: *Self Renewal (Cronbach Alpha 0.95, Variance Explained 28.05%), New Business Venturing (Cronbach Alpha 0.948, Variance Explained 15.60%), Competitive Aggressiveness (Cronbach Alpha 0.971, Variance Explained 10.86%), Risk-taking (Cronbach Alpha 0.924, Variance Explained 9.097%), Proactiveness (Cronbach Alpha 0.864, Variance Explained 8.252%), and Innovativeness (Cronbach Alpha 0.764, Variance Explained 7.292%).*

This is followed by the CFA to test and confirm the validity of the key constructs/dimensions of Intrapreneurship, as per the study of objective 2.

5.3. Confirmatory Factor Analysis

CFA is advocated and administered to affirm "construct validity" for Intrapreneurship dimensions, which will set the ground for examining the relationship between construct dimensions and their items (figure 2). The values establish the model fitness for the data (table 4).

As per the criteria, the ratio of goodness of fit to degrees of freedom should not exceed 3, and RMSEA<0.08, along with GFI, IFI, NFI, CFI values being > 0.9. The smaller RMR indicates a better model fit (Hooper, *et al.,* 2008). The value of RMSEA is <0.08 and CMIN/DF is <3 which indicates a good model fit (Fornell and Larcker, 1981).

Table 4: Model Fit Measures

Model Fit Indices	*Citation*	*Threshold Limit*	*Estimated Value*	*Interpretation*
Normed Chi-Square	Maclver, J. P., and Carmines, E. G. (1981)	< 3	715.521 (282); CMIN/DF - 2.537	Excellent
CFI	MacCallum and Hong (1997), Hu and Bentler (1999) Gefen, D., Straub, D., and Boudreau, M. C. (2000)	> 0.80	0.95	Acceptable
RMSEA	Browne and Cudeck (1989)	< 0.08	0.07	Acceptable
SRMR	Hair *et al* (2009)	<0.06	0.05	Excellent

Source for Criterion of Model Fit Measures align with Hair, et al (2009), Fornell and Larcker (1981).

5.3.1. Validity Assessment

The results show that Convergent validity assessment: (CR > 0.7; AVE < CR; 0.5 < AVE) Validity of Discriminant: (AVE > MSV, ASV<AVE) hold good in the study (Fornell and Larcker, 1981; Hair *et al,* 2009) as per table 5. So, the measurement model has sufficient convergent validity and discriminant validity).

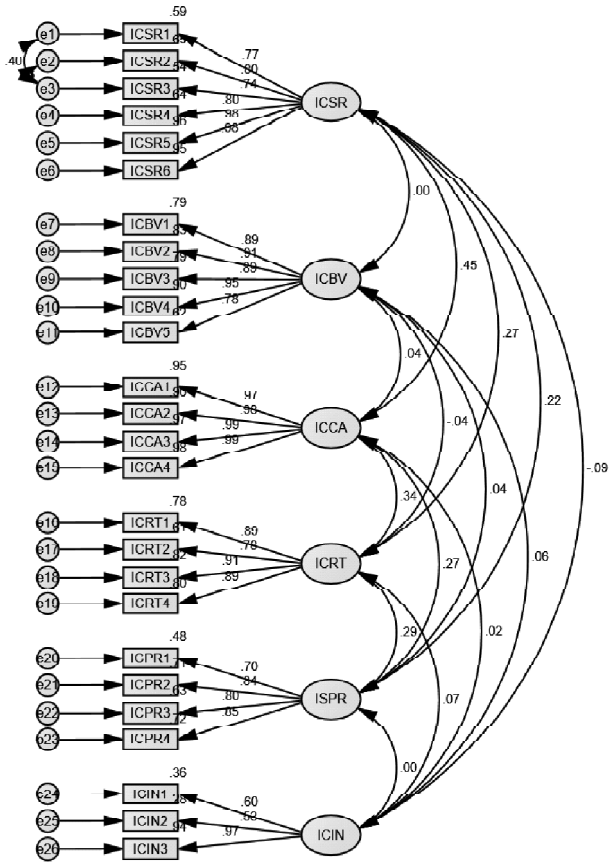

Figure 2: Confirmatory Model

Sources: Authors' Calculation

Table 5: Model Validity Measures

	CR	*AVE*	*MSV*	*Max R(H)*
ICSR	0.939	0.721	0.201	0.98
ICBV	0.948	0.787	0.003	0.959
ICCA	0.99	0.963	0.201	0.992
ICRT	0.925	0.755	0.118	0.933
ISPR	0.874	0.635	0.087	0.883
ICIN	0.757	0.527	0.008	0.943

Source: Authors' Calculation

Table 6: Unstandardized and Standardised Weights

			Unstandardized Regression Weights			*P*	*Standardized Regression Weights*
ICSR1	<—	ICSR	1				0.77
ICSR2	<—	ICSR	1.05	0.07	15.32	***	0.8
ICSR3	<—	ICSR	0.97	0.05	17.74	***	0.74
ICSR4	<—	ICSR	0.98	0.06	15.24	***	0.8
ICSR5	<—	ICSR	1.26	0.06	19.81	***	0.98
ICSR6	<—	ICSR	1.26	0.06	19.76	***	0.98
ICBV1	<—	ICBV	1				0.89
ICBV2	<—	ICBV	1	0.04	24.67	***	0.91
ICBV3	<—	ICBV	0.91	0.04	23.14	***	0.89
ICBV4	<—	ICBV	1.06	0.04	27.31	***	0.95
ICBV5	<—	ICBV	0.75	0.04	17.93	***	0.78
ICCA1	<—	ICCA	1				0.97
ICCA2	<—	ICCA	1	0.02	53.7	***	0.98
ICCA3	<—	ICCA	0.98	0.02	58.18	***	0.99
ICCA4	<—	ICCA	1.01	0.02	60.52	***	0.99
ICRT1	<—	ICRT	1				0.89
ICRT2	<—	ICRT	0.81	0.05	17.24	***	0.78
ICRT3	<—	ICRT	1.07	0.05	22.88	***	0.91
ICRT4	<—	ICRT	1.01	0.05	22.25	***	0.89
ICPR1	<—	ISPR	1				0.7
ICPR2	<—	ISPR	0.99	0.08	12.9	***	0.84
ICPR3	<—	ISPR	0.86	0.07	12.35	***	0.8
ICPR4	<—	ISPR	1.22	0.09	12.96	***	0.85
ICIN1	<—	ICIN	1				0.6
ICIN2	<—	ICIN	1.45	0.18	8.05	***	0.53
ICIN3	<—	ICIN	1.38	0.2	6.99	***	0.97

Source: Authors' Calculation

To sum up, the 6 key dimensions of Intrapreneurship that are confirmed and validated are "Self Renewal, New Business Venturing, Competitive Aggressiveness, Risk-taking, Proactiveness, and Innovativeness". One item ICIN4 was dropped due to low loading.

6. Conclusion

The implications drawn in context of auto clusters in Delhi NCR is that they should consolidate the Intrapreneurship dimensions of Self renewal, New business venturing and Competitive aggressiveness. Self renewal can be realized through collateral structures that would enhance exchange of knowledge and partnering with the OEM in case of auto clusters.

More importantly, the main benefit of any clusters due to concentration is networking and sharing a common resource base. So, these attributes favour prospects of Self Renewal and New business venturing through increased innovation. This calls for establishing procedures for idea generation, ensuring autonomy in the work departments. New venturing relates to venturing out into new markets (sourcing) and in the related industries. The Intrapreneurship dimensions of Self renewal is in conformity with study of (Guth and Ginsberg 1990; Zahra 1991) who opined that Self renewal implies strategic and organizational change connotations through reorienting businesses, reorganizing and the introducing system-wide changes for innovation. At the same time Competitive aggressiveness can be fostered by winning over competitors or nurturing alliances with them.

It can also be implied in this study that the auto cluster firms need to work upon the Intrapreneurship dimensions of Risk-taking, Innovativeness and Proactiveness. The Risk taking capabilities and risk endurance to achieve objectives with high returns/ profit margins is important in case of auto clusters. This is consistent with Fellnhofer, *et al.* (2017) viewpoint of aligning risk-taking with top management orientation in pursuit of competitiveness and also as individual's propensity to take risk (Kelley *et al.*, 2011; Kollmann *et al.*, 2017).

It can also be concluded that in case of auto clusters, Innovativeness should be considered as the thrust area which needs to be developed to a large extent in product line diversification and investing in R&D, technological and leadership innovation. Proactiveness is also affirmed as an important dimension of Intrapreneurship in conformance with the study of (Chen *et al.*, 2015; Hornsby *et al.*, 2009; Parker and Collins, 2010) who asserted that proactive employees tend to challenge contemporary job roles in light of competition and assume entrepreneurial leadership roles. So, management in auto clusters need to identify proactive employees and assign them roles to implement change and assume leadership roles for enhanced performance.

Despite the important findings, the few limitations of the study which were encountered in this study were first, on account of small sample size which is confined to Delhi/NCR only. So, future studies may regard large samples in different geographical locations. Second, it has not included control variables (firm size, operations, etc.).Third, the dimensions of Intrapreneurship weren't linked with outcomes, as performance or productivity so further refinements to overcome these limitations suggests scope for similar studies in this domain. Besides, the scope extends to other longitudinal research that can also be done in other clusters in various locations. Moreover, each dimension of intrapreneurship can be examined in detail with related constructs, like organizational culture satisfaction, etc.in the context of clusters. Further, scope of this study extends to similar studies in different industries, to examine each of the key Intrapreneurship dimensions that have not been covered so far, to examine the antecedents of Intrapreneurship and impact of these dimensions on outcomes, as firm performance, growth and profitability.

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Issues and Challenges of Employing Internally Migrated Labourers: An Empirical Study with Reference to Guwahati

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JEL Classification

J4, J6, J62, J82

Abstract: The study tried to know the perception of citizens towards employing internally migrated labourers from rural areas of the state to Guwahati and the issues involved in their employment in the construction sector. The study was exploratory in design and conducted in two phases of field work with a sample of 387 and 223 units respectively. The study used convenience sampling technique with a structured questionnaire. Exploratory factor analysis and regression analysis were used for data processing. The study found that employing migrated labourers brings several positive benefits like easy availability, accessing services at cheap rates, effectiveness at work, performance of more labourious tasks and ease in management. However they adversely affect the urban landscape, pose a threat to indigenous labourers and causes minor socio economic problems. The study recommends measures to address the issues identified. This study is novel as it based on empirical evidence in the identified region for the overall benefit of stake holders.

1. Introduction

Migration is a worldwide phenomenon. It is a situation where a worker moves from one place to another in search of work or for better living conditions (Oxford Dictionary). According to International Organization for Migration, structured and properly managed labour migration has vast possibilities for governments, communities, employers, migrants and other stakeholders in the countries of origin and destination. With newer job avenues at home, gradually countries are viewing international labour migration as a basic element for national policy and development for increasing employment. This is possible with the opportunities for employment globally and consequent inflow of foreign exchange. Migration thus leads to growth of economy and innovations in the place of destination. It further emancipates the burden of poverty in the place of origin. However there are issues like abuses committed on migrants by recruiters and the separation of migrants from families, leading to stress and immigration

at a higher level. This in turn can create grave challenges to the identity and sovereignty of a nation. Hence both favourable and adverse effects are associated with the event of migration (Weiner, 1995).

According to World Migration Report (2010), the number of migrants globally would double from 214 million in 2010 to 405 million by 2050 because of reasons like variations in demography, environmental changes, revolutions in technology and social networking. Migrants often have the tendency to reflect on the opportunities of the labour market available, both in the rural and urban areas and the scope of landing on an urban job (Todaro, 1969). Of late the rate of migration from the rural to the urban areas has been quite significant as more people moved from the rural areas to the urban centres (Gimba and Kumshe, 2001). At the same time the rate of population growth has risen with the phenomenon of internal and international migration (Srivastava, 1968). Thus rural to urban movement leads to pressure on the urban housing and environment (Gimba and Kumshe, 2001) as well. According to Economywatch (2010), the construction sector is a thriving industry and with rapid development, the movement of people from rural to the urban areas often takes place. With increase in emphasis on infrastructure and housing, construction sector in India has become an important component of the economy.

The phenomenon of labour movement to the valley of Assam in the north eastern part of India can be broadly classified into two major categories namely the international immigrants mostly from neighbouring Bangladesh and the internal migrants where movement is from one place to another within the state. Guwahati being the prime urban centre in Assam account for around 24 percent of the urban population of the state (Borah, 2011). According to India Population Report 2020 which takes input from UN World Urbanisation Prospects, the population of Guwahati in 2020 is estimated at 2.381056 million. With the increase of purchasing power of the people and availability of easy credit, the boom in real estate and infrastructure sector is visible. This makes infrastructure development the thrust area for Guwahati. Consequently, demand for various construction workers for providing the services of mason, carpenter, plumber, unskilled labourers and helpers have increased. To meet this growing demand, there is internal migration of workers from various rural districts within the state like Barpeta, Dhubri, Darrang, Goalpara, Kamrup (rural), Nalbari, Morigaon to Guwahati.

2. Review of Literature

A few notable research works has been reviewed related to migration of labourers. They have found a place among the selected few because they have made an impact in the proposed area of study.

Migration of labourers from the rural to the urban areas takes place primarily for economic reasons. It provides employment (Malhotra and Devi, 2017; Lalrampuii, 2016; Mahapatro, 2014) and leads to better standard of living (Debnath *et al.*, 2017; Mander and Sahgal, 2010). It provides scope to the migrant to save and remit money to native places and further educate children (Mander and Sahgal, 2010). Consequently it rescues poverty stricken households in both the delivering and the receiving ends by a self help mechanism (Handral *et al.,* 2018). Mahapatro (2013) contend that structural adjustment programmes in rural areas has led to rural urban migration and it is being increasingly used as a survival strategy by majority of the male. Lalrampuii (2016) highlighted multiple factors as instrumental in promoting migration in north east India, out of which one significant factor is population pressure.

Migration leads to rapid growth in the urban areas with a huge inflow of people to the city (Debnath *et al.,* 2017). The phenomenon of urbanization and per capita credit to industry has a positive linkage with the volume of in-migration. On the other hand per capita income has a negative linkage with the size of out-migration (Malhotra and Devi, 2017). As migrants provide cheap labour for economic development (Handral *et al.*, 2018), they are a preferred lot. They are easier to be managed under complex conditions and their supply can be simply and effortlessly augmented or reduced at a low cost to the employers. Further migrant workers can work for longer duration with flexibility (Sanyal and Maity, 2018).

However migrated labourers in the urban areas encounter several issues in terms of lack of identity, right to education, food security, shelter, health and financial inclusion (Borhade *et al.,* 2016). Mander and Sahgal (2010) highlighted the distress of internal migrant labourers in the form of poor working conditions, habitat available, poor social protection (Jane, 2016) and fear of displacement. Further though laws exist for protection of the rights of migrant labourers, there are abuses of rights committed by the employers and intermediaries (Mahapatro, 2013). To address the issue of rural to urban migration, there is a need for a proper smart city planning for the future growth in urban areas (Debnath *et al.,* 2017) as well as a nationwide documentation exercise of labourers moving out from rural areas (Borhade *et al.*, 2016). There is also a need to formulate policies for the welfare of the migrant labourers and their families residing in urban areas in terms of safeguarding their rights so as to get context specific service (Jane, 2016).

The past studies looked at the problem of migration from the perspective of environmental geography, political science, history and other branches of social sciences. Further the past studies were conducted using theoretical frameworks of the respective fields and were based on qualitative analysis. However it has been felt that empirical research works on the issue of using rural to urban migrated labourers at Guwahati in the construction sector is rare. To fulfill the identified gap, a need is felt to understand the perception of citizens towards internal (rural to urban) migration of labourers and address the contentious issues involved in their employment.

3. Objectives of the Study

The main objectives of this study are:

- To study the perception of citizens towards employing internally migrated labourers from rural areas of the state to Guwahati in the construction sector.
- To identify the key issues and explore the key managerial implications so that such labourers can be employed optimally.

4. Research Methodology

4.1. Definitional Perspective

Internally migrated labourers are labourers who migrate from various rural areas of the states including char (river island of Brahmaputra) areas to Guwahati but do not habitually stay at Guwahati; *Indigenous labourers* are local labourers who habitually stay at Guwahati or at the vicinity throughout the year and provide labour services.

4.2. Attitudinal Statements

The research design was exploratory by character based on collection of primary data from field survey. Initially a total of 25 attitudinal statements related to probable opinions on the issue of employing internally migrated labourers in the construction sector were developed. These statements were framed taking into account the views expressed by experts during a focus group interviews conducted with a group of 7 experts in the field, taking input from the reviewed papers and from other secondary literature. The 25 statements developed are in Table 1.

Table 1: Reliability Score of Attitudinal Statements

	Attitudinal Statements	
S1	Internally migrated labourers are readily available in comparison to indigenous labourers	
S2	Internally migrated labourers provide stiff competition to indigenous labourers available	
S3	Internally migrated labourers are more innovative in comparison to indigenous labourers	
S4	Internally migrated labourers have easy accessibility in comparison to indigenous labourers	
S5	Internally migrated labourers create pollution problems in the locality than indigenous labourers	
S6	Internally migrated labourers are more industrious than the indigenous labourers available	
S7	Internally migrated labourers can perform multiple task compared to indigenous labourers	
S8	Internally migrated labourers create more environmental problem than indigenous labourers	
S9	Internally migrated labourers are a source of petty crimes in the city than indigenous labourers	
S10	Internally migrated labourers can be managed and motivated easily than indigenous labourers	
S11	Internally migrated labourers hardly contribute anything to government revenue earnings	
S12	Internally migrated labourers can do more work with limited resources than indigenous labourers	
S13	Internally migrated labourers have easy accessibility in comparison to indigenous labourers	
S14	Internally migrated labourers create pollution problems in the locality than indigenous labourers	
S15	Internally migrated labourers are more industrious than the indigenous labourers available	
S16	Internally migrated labourers can perform multiple task compared to indigenous labourers	
S17	Internally migrated labourers create more environmental problem than indigenous labourers	
S18	Internally migrated labourers are a source of petty crimes in the city than indigenous labourers	
S19	Internally migrated labourers can be managed and motivated easily than indigenous labourers	
S20	Internally migrated labourers hardly contribute anything to government revenue earnings	
S21	Internally migrated labourers complain less at tasks assigned than indigenous labourers	
S22	Internally migrated labourers are very flexible at work in comparison to indigenous labourers	
S23	Internally migrated labourers can work more till late hours when there arises any contingency	
S24	Internally migrated labourers are highly skilled compared to indigenous labourers	
S25	Internally migrated labourers have a lesser level of civic sense than indigenous labourers	Cronbach Alpha 0.842

For assessment of the responses against the attitudinal statement, a 5 point itemized rating scale was used. The respondents were instructed to express their rating on the statements where the rating 5 represented the item 'highly agree', 4 represented the item 'agree', 3 represented the item 'cannot say', 2 represented the item 'least agree' and rating 1 represented the item 'do not agree'. With a view to verify the reliability of the scale, Cronbach's Alpha was run and 0.842 was the score. Therefore it was accepted to be valid as the score was greater than 0.70 (Nunnally, 1978). The statements were accordingly administered (as part of the first phase of the study) on a sample of 387 respondents. The sample size selected was deemed to be sufficient as it was more than 200 which was the minimum sample size prescribed for behavior studies and based upon affordability (Sudman, 1976).

4.3. Sampling Plan

Among the sampling units, 105 belonged to the public sector / government sector, 121 belonged to the private sector, 72 were self-employed, 65 were professionals, 14 belonged to the unemployed / housewife / student category and 10 were senior citizen of the city. The study used convenience sampling technique. A structured questionnaire through Google Form was used as a research instrument for data collection.

5. Data Analysis and Interpretation

In the first phase, Factor Analysis was applied to reduce the number of attitudinal statements to a manageable level and to optimize the content validity. The initial 25 attitudinal statements were used as factors. Principal Component Analysis was run and primarily three pivot tables with output namely Factor Matrix, Final Statistics as given in Table 2 and Rotated Factor Matrix as given in Table 3 were extracted. Table 2 reflected the 25 variables (only 10 variables shown) with their communality along with the Eigen value of all factors with a value of 1 or more than 1. From Table 2 it was found that 9 factors had Eigen value of 1 or more than 1 and together accounted for 79.70 percent of the variance on an overall basis. Further through rotation of the components (using Varimax with Kaiser Normalization) the variables were reduced from 25 to 9 factors.

Table 2: Final Statistics

Variable	*Communality*	*Factor*	*Eigen value*	*Pct of variable*	*Cum pct*
VAR00001	.710	1	3.123	12.493	12.493
VAR00002	.828	2	2.840	11.360	23.852
VAR00003	.620	3	2.444	9.777	33.629
VAR00004	.845	4	2.312	9.248	42.877
VAR00005	.824	5	2.270	9.079	51.956
VAR00006	.784	6	1.908	7.632	59.588
VAR00007	.735	7	1.846	7.383	66.972
VAR00008	.710	8	1.723	6.890	73.862
VAR00009	.897	9	1.461	5.844	79.706
VAR00010	.830				

The variables as above are the factors

Table 3: Rotated Factor Matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
VAR00001	.230	.376	-.232	.361	.158	.251	**.455**	-.060	-.182
VAR00002	.160	.044	-.191	**.838**	-.208	.091	-.087	-.020	.043
VAR00003	-.032	.127	.078	-.028	-.118	**.739**	.118	.143	.038
VAR00004	.121	-.215	-.315	.165	.388	.327	**.541**	-.066	.322
VAR00005	.285	.138	**.816**	-.110	.137	.076	.047	-.063	.122
VAR00006	.423	-.263	.359	.103	-.006	**.556**	.098	.087	-.265
VAR00007	.067	.119	.176	-.177	-.015	.039	**.779**	.157	.143
VAR00008	-.113	.085	**.745**	-.088	.048	.038	.167	.240	-.193
VAR00009	-.015	.107	.088	-.127	**.912**	-.103	-.031	.022	.132
VAR00010	.025	**.523**	.317	.517	.348	-.073	.213	-.009	.132
VAR00011	-.331	.382	.365	-.022	.197	.253	-.003	**.559**	.005
VAR00012	-.128	.128	.357	.065	**.547**	-.108	.408	-.165	-.094
VAR00013	.409	-.103	.017	**.664**	.272	-.048	-.027	.326	-.083
VAR00014	**.782**	-.130	-.022	.066	.076	.150	-.219	.315	.250
VAR00015	**.849**	.042	-.019	.270	-.029	-.007	.082	-.029	.067
VAR00016	**.876**	.074	.166	.051	-.079	.052	.215	-.026	.015
VAR00017	.142	.045	-.027	.014	.064	-.011	.165	.084	**.914**
VAR00018	.192	.090	**.576**	.396	-.050	.475	-.232	.133	.200
VAR00019	.430	**.533**	.157	.298	.334	-.121	.146	.266	-.065
VAR00020	-.104	**.804**	.099	-.032	.002	.077	.051	-.331	.183
VAR00021	.027	**.794**	.117	-.071	.068	.060	.016	.316	-.060
VAR00022	.104	.431	-.136	.175	.500	**.543**	.028	-.140	-.007
VAR00023	-.013	**.530**	.011	.351	.487	.285	.113	-.030	-.147
VAR00024	.209	.061	.253	.398	.056	.329	**.473**	.166	.327
VAR00025	.221	-.040	.082	.131	-.155	.112	.142	**.836**	.122

Note: Extraction Method: Principal Component Analysis, Rotation converged in 13 iterations *variables as above are the 25 Statements used*

The 9 factors were given appropriate names. This was done with a view to keep the true meaning of each factor and at the same time keeping in mind the constituent variables with high loadings of each one of the factors that were extracted. From Table 3 (Rotated Factor Matrix), it was found that for factor 1, statement 14 (Employing internally migrated labourers are more profitable for the employer), statement 15 (Internally migrated labourers have a lesser bargaining power than indigenous labourers) and statement 16 (Internally migrated labourers are available at cheaper cost compared to indigenous labourers) have high loadings of 0.782, 0.849 and 0.876 respectively. They are related and have been

named as '*provider of cheap labour*'. For factor 2, statement 10 (Internally migrated labourers can be managed and motivated easily than indigenous labourers), statement 19 (Internally migrated labourers have low level of absentism at work than indigenous labourers), statement 20 (Internally migrated labourers complain less at tasks assigned than indigenous labourers), statement 21 (Internally migrated labourers are very flexible at work in comparison to indigenous labourers) and statement 23 (Internally migrated labourers can work more till late hours when there arises any contingency) have high loadings of 0.523, 0.533, 0.804, 0.794 and 0.530 respectively. They are related and have been named as '*easy to manage and flexible'*.

For factor 3, statement 5 (Internally migrated labourers create cleanliness problem in the locality than indigenous labourers), statement 8 (Internally migrated labourers create more environmental problem than indigenous labourers), and statement 18 (Internally migrated labourers have led to the formation of rapid urban slums in the city) are with high loadings of 0.816, 0.745 and 0.596 respectively. They are related and have been named as '*adversely affects the urban landscape'*. For factor 4, statement 2 (Internally migrated labourers provide stiff competition to the indigenous labourers available) and statement 13 (Internally migrated labourers have created unemployment for indigenous labourers) have high loadings of 0.838 and 0.664 respectively. They are related and have been named as '*threat to indigenous labourers'*. For factor 5, statement 9 (Internally migrated labourers may be a source of petty crimes in the city than indigenous labourers) and statement 12 (Internally migrated labourers create more socio economic problems than indigenous labourers) have high loadings of 0.912 and 0.547 respectively. They are related and have been named as '*creates socio economic problem'*.

For factor 6, statement 3 (Internally migrated labourers are more innovative in comparison to indigenous labourers), statement 6 (Internally migrated labourers are more industrious than indigenous labourers available) and statement 12 (Internally migrated labourers can do more work with limited resources than indigenous labourers) have high loadings of 0.739, 0.556 and 0.543 respectively. They are related and have been named as '*are innovative'*. For factor 7, statement 1 (Internally migrated labourers are readily available in comparison to indigenous labourers) and statement 4 (Internally migrated labourers have easy accessibility in comparison to indigenous labourers) have high loadings of 0.455 and 0.541 respectively. They are related and have been named as '*easy availability'*. Further for the same factor, statement 7 (Internally migrated labourers can perform multiple task compared to indigenous labourers) and statement 24 (Internally migrated labourers are highly skilled compared to indigenous labourers) have high loadings of 0.779 and 0.473 respectively. They are related and have been named as '*perform labourious tasks'*. For factor 8, statement 11 (Internally migrated labourers hardly contribute anything to government revenue earnings) and statement 25 (Internally migrated labourers have a lesser level of civic sense than indigenous labourers) have high loadings of 0.559 and 0.836 respectively. They are related and have been named as *'non contributor to Government revenue'*. For factor 9, statement 17 (Internally migrated labourers are more effective than indigenous labourers) have a high loading of 0.914. It has been named as '*effective labourers'*. The appropriate names as derived are listed in Table 4.

For each factor, name was given with the exception for factor 7 (comprising of 4 statements with high loadings which denoted two different meanings for the related statements). So a total of 10 names were derived. Based on the 10 names as per Table 4, 10 final attitudinal statements were developed.

Table 4: Derivation and Naming of the Key Factors

Factor	*Variables / Statements*	*Names*
F1	V14, V15, V16	Provider of cheap labour
F2	V10, V19, V20, V21, V23	Easy to manage and flexible
F3	V5, V8, V18	Adversely affects urban landscape
F4	V2, V13	Threat to indigenous labourers
F5	V9, V12	Creates socio economic problem
F6	V3, V6, V12	Innovativeness
F7	V1, V4	Easy availability
F7	V7, V24	Performs labourious tasks
F8	V11, V25	Non contributor to Government revenue
F9	V17	Effective labourers

Details of variables as per Table-1

The detailed statements were included in Table 5. To know the overall perception of respondents towards using internally migrated labourers, an 11th statement has been framed as '*labourers are indispensable for the city's overall infrastructural growth and development*'.

Table 5: Attitudinal Statements

S1	Internally migrated labourers are easily availability when compared to indigenous labourers
S2	Internally migrated labourers can perform more labourious tasks compared to indigenous labourers
S3	Internally migrated labourers are more innovative compared to indigenous labourers
S4	Internally migrated labourers are more effective in comparison to indigenous labourers
S5	Internally migrated labourers can be easily managed and flexible compared to indigenous labourers
S6	Internally migrated labourers provide services at cheap wages compared to indigenous labourers
S7	Internally migrated labourers do not contribute in any way to the Government revenue
S8	Internally migrated labourers can adversely affects the urban landscape compared to indigenous labourers
S9	Internally migrated labourers are a threat to indigenous labourers as they provide competition
S10	Internally migrated labourers create more socio economic problem compared to indigenous labourers
S11	Labourers are indispensable for the city's overall infrastructural growth and development

'S' stands for Statements

For the attitudinal statements framed as per Table 5, the same attitudinal scale as used in the first phase was adopted in the second phase. As a final phase of field study, a final sample of 223 respondents was taken for survey. Among the sampling units, 61 belonged to the Public Sector / Government sector, 70 belonged to the Private Sector, 42 were Self Employed, 38 were Professionals, 7 belonged to the Unemployed / Housewife / Student category and 5 were Senior Citizen of the city.

Regression analysis (as per Table 6) was used on the collected data to find out the most significant issues as felt by the citizens. In conducting Regression Analysis, statements no 01 to statement no 10 were used as the independent variables. Further statement no 11 was used as the dependent variable.

Table 6: Regression Table

Sl no	*R=0.509* *Statements*	*R^2=0.259* *Standardised Co-efficient (Beta)*	*F=07.421* *t*	*Significance = 0.000* *DW= 1.705*
S1	Internally migrated labourers are easily availability when compared to indigenous labourers	.240	4.838	**.000**
S2	Internally migrated labourers can perform more labourious tasks compared to indigenous labourers	.094	2.262	**.025**
S3	Internally migrated labourers are more innovative compared to indigenous labourers	-.009	-.222	.825
S4	Internally migrated labourers are more effective in comparison to indigenous labourers	.098	2.056	**.041**
S5	Internally migrated labourers can be easily managed and flexible compared to indigenous labourers	-.126	-3.281	**.001**
S6	Internally migrated labourers provide services at cheap wages compared to indigenous labourers	-.107	-2.963	**.003**
S7	Internally migrated labourers do not contribute in any way to the Government revenue	-.008	-.262	.794
S8	Internally migrated labourers can adversely affect urban landscape compared to indigenous labourers	-.106	-2.484	**.014**
S9	Internally migrated labourers are a threat to indigenous labourers as they provide competition	.091	2.372	**.019**
S10	Internally migrated labourers create more socio economic problem compared to indigenous labourers	-.015	-.399	.690

Level of significance at 5 percent

From the regression Table 6 it was found that the perception towards the statement S1 (internally migrated labourers are easily availability when compared to indigenous labourers) was significant (with P value ≤ 0.000, beta=0.240) which influences attitude by an overall 24.0 percent. Secondly perception towards the statement S2 (internally migrated labourers can perform more labourious tasks compared to indigenous labourers) was significant (with P value ≤ 0.025, beta=0.094) which influences attitude by an overall 09.4 percent. Thirdly the perception towards the statement S4 (internally migrated labourers are more effective in comparison to indigenous labourers) was significant (with P value ≤ 0.041, beta=0.098) which influences attitude by an overall 09.8 percent. Fourthly the perception towards the

statement S5 (internally migrated labourers can be easily managed and flexible compared to indigenous labourers) was significant (with P value ≤ 0.001, beta=0.126) which influences attitude by an overall 12.6 percent.

Fifthly the perception towards the statement S6 (internally migrated labourers provide services at cheap wages compared to indigenous labourers) was significant (with P value ≤ 0.003, beta=0.107) which influences attitude by an overall 10.7 percent. Sixthly the perception towards the statement S8 (internally migrated labourers can adversely affects the urban landscape compared to indigenous labourers) was significant (with P value ≤ 0.014, beta=0.106) which influences attitude by an overall 10.6 percent. Lastly the perception towards the statement S9 (internally migrated labourers are a threat to indigenous labourers as they provide competition) was significant (with P value ≤ 0.019, beta=0.091) which influences attitude by an overall 09.1 percent.

On the other hand as per Table 6, it was found that the perception of the respondents towards statement S3 (internally migrated labourers are more innovative compared to indigenous labourers) with (P value ≥ 0.825), towards statement S7 (internally migrated labourers do not contribute in any way to the Government revenue) with (P value ≥ 0.794) and towards statement S10 (internally migrated labourers create more socio economic problem compared to indigenous labourers with (P value ≥ 0.690) are not significant.

6. Results and Discussion

6.1. Citizen Perception Analysis

Citizens perceive internally migrated labourers to be easily available. Such labourers migrate to the city during the agricultural slack season in substantial numbers from the populated char areas. They are perceived to perform very labourious tasks as they are culturally trained to do hard tasks. It is also perceived that migrated labourers are more effective at work. This is because such labourers have a specific intention to work, earn and return back to native places after work is over. Further it is perceived that migrated labourers can be easily managed and are flexible as their communality is less.

Citizens perceived the migrated labourers to be accessible at cheap rates. This is possible as their cost of living and bargaining power is low. Consequently the average wages in the labour market is decreased by competition. Such labourers adversely affect the urban landscape as significant population of migrant labourers live in densely populated areas. Further it is perceived that migrant labourers are a threat to indigenous labourers as they provide competition. However the reality is that service from the indigenous labourers is not forthcoming in the construction sector.

Citizens view the migrated labourers to be non-innovative. Further there is a perception that such migrated labourers are not contributing to the government revenue. But as such labourers as not taxable, they are not obligated to pay direct tax. However the government earns indirect tax when they purchase various consumable items for personal consumption both at the host region and the region of origin. Lastly it is perceived that migrant labourers sometimes create socio economic problem and they lack much accountability.

6.2. Key Issues and Implications

Based upon the findings of the field work related to the first objective, key issues have been identified. Suitable measures from the managerial perspective are suggested to address such issues as given in Table 7.

Table 7: Key Issues and Managerial Implications

Issues	*Implications*
Easy availability of migrant labourers	Based upon the economic theory of labour mobility as well as demand and supply in the labour market, migrant labourers may be conveniently employed for the benefit of the employers.
Performs labourious tasks	As the labourers have fewer skills their bargaining power is weak. At times they may be employed in double shifts with incentives for extra income. Hence they may be employed optimally.
Significantly not innovative	High degree of innovative is not an essential requirement for labourious jobs. Hence their non-innovativeness may not be an issue in their employment.
Effective at work	As such labourers are effective at work, they may be suitably employed in projects works with deadlines. Further they can be employed in ad-hoc works to the benefit of the employer.
Manageable and flexible	Flexibility and execution of work as per command is a good quality of the migrant labourer. Hence such labourers may be employed in works where services from the indigenous labourers is not forthcoming
Accessible at cheap wages	The concept of yield management can be applied in employing the labourers to the benefit of the employers. Alternative models may be worked out so that such labourers may be perennial employed.
Non contributor to government revenue	As major part of earnings of workers are remitted to the native places, the purchasing power of their families' increases. Thus purchase transactions in the native place leads to increase of indirect tax.
Adversely affect urban landscape	Employers can make arrangement for labourers during the peak seasons in planned designated colonies in the outskirts of the city. Rules may be given to labourers to maintain the etiquettes of city life.
A threat to indigenous labourers	Internally migrated labourers are not a threat as they conform to the principle of survival of the fittest in the market. They cater to a niche labour market and hence can be employed profitably.
Creation of socio economic problems	The task to infuse civic sense and cultivation of good habits can be made the responsibility of the employer. Hence labourers can be educated on the city rules and regulations with the do's and do not's.

7. Conclusions

The topic of internal migration is an important area of discourse. Internal migration of labourers from the rural to the urban areas takes place due to economic reasons. Such migration is desirable as it accrues manifold benefits to the host region and the region of origin. Migration leads to growth and development of the economy at the place of destination. It also emancipates the migrant and their families from an impoverished life. However such phenomenon is accompanied by various issues to the host region as well.

Critics contend that internal migration from rural to urban areas, lead to urban slums and consequently affect the beauty of the urban landscape. Sometimes petty socio economic problems are also created by migrant labourers in the city. Hence hiring migrant labourers without maintaining the etiquettes of a disciplined city landscape may create problems for the city administrators and the city dwellers. Proper rules are required and to be followed during employment of such labourers in the city for the overall benefit of the stakeholders. Further study can be carried out in the area of living condition, wage discrimination, gender issues and economic impact in the native place of migrated labourers.

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Investigating the Sustainability of Digital Payments in India

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Abstract: Globally it has been asserted that digital payments and newer financial technologies if provided profitably and responsibly in a structured environment will enable growth and faster achievement of Sustainable Development Goals for a country. In India, although, digital payment transactions have exponentially increased, the demand for cash also has been on rising trend in the recent years. Therefore, the objective of the present study is to examine the factors leading to sustainability of digital payments in India over the period of 2011: Q1-2020: Q4 by using autoregressive distributed lag model. The results show that per capita net national income and economic shocks (demonetisation and pandemic) positively leads to sustainability of digital payment transactions both in real and nominal terms, whereas, financial inclusion plays no role in sustainability of digital payments. Insights from the findings indicate developmental implications towards increasing need for financial inclusion through financial literacy and increasing economic growth through positive shocks to promote digital payments in India.

1. Introduction

Sustainable development is the central idea that revolves around integrating short run and long run problems concerning society, economy and environment (Streurer *et al.* 2005). Financial inclusion is considered as an economic instrument of inclusive growth and sustainable development. The Global Findex Database (2017) highlights the emerging benefits and status of financial inclusion through digital payments. World over, research studies suggest that digitising payments can further enhance the productivity by augmenting the swiftness of payments and lowering the cost of disbursement. This also led to substantial increase in formal savings. But at the same time the successful implementation of digitisation depends heavily on the necessary technological infrastructure; such as stable electricity and mobile networks and financial structure comprising of an efficient payment structure and a competent network connectivity to deliver the payments. People utilising digital payments should be able to deposit or withdraw their cash securely, easily and with certainty at cash-in and cash-out points.

In order that the benefits from digital financial services are reaped, the governments should execute relevant legislations which safeguards and protects the consumers.

India in the recent years has witnessed exponential growth in the digital payment transactions due to massive drive by the Government of India's "Digital India" programme. With an objective to push Digital Payments and transform India to cash-less economy, great number of policy and actionable measures are undertaken by the Government for its procurement, service offering and disbursements. In India various types of digital payment systems are available. First, most commonly used digital payment systems in India are Credit and Debit cards. Amongst well-known gateways like Visa, Mastercard, etc., National Payment Corporation of India (NPCI) recently initiated Rupay as domestic gateway. However, over the years the usage of debit cards compared to credit card has increased exponentially. Second popular payment systems are National Electronic Funds Transfer (NEFT), Real-time Gross Settlement (RTGS) and Immediate Payment Service (IMPS). NEFT and RTGS are electronically transferred from one bank account to another bank account directly and are cost-efficient. While IMPS allows to electronically transfer fund instantly any time from one bank account to another bank account. Third widely used payment system is Unified Payment Interface (UPI). This was introduced by NPCI in 2016. Through UPI, funds can be transferred through virtual ID without a requirement of bank account. Further, Bharat Interface for Money (BHIM) app was also launched in 2016 by government of India, to facilitate transfer of money from bank accounts using UPI. Another form of BHIM app is connected with Aadhaar card to aid Aadhar pay options. Fourth, the digital wallets like Paytm, Freecharge, Mobikwik and so on are accessible either on computer or mobile phone. In this, wallet is laden through bank account either through debit or credit card or net banking so as to pay to merchants or people. These wallets apart from money transfers also offer different services like shopping, recharge, bill payments etc. Table 1 shows the trend of different payment instruments (in

Table 1: Trends in Different Payment Instruments

Item	*Value (Rs. Crore)*		
	2015-2016	*2018-19*	*2019-20*
Total Digital Payments (1+2+3+4+5)	92038329	163852286	162305934
1. Large Value Credit Transfers – RTGS	82457801	135688187	131156475
2. Credit Transfers (AePS -Fund Transfers, APBS, ECS Cr, IMPS, NACH Cr, NEFT, UPI)	8901828	26097655	28572100
3. Debit Transfers and Direct Debits (BHIM Aadhaar Pay, ECS Dr, NACH Dr., NETC)	230354	656233	826036
4. Card Payments (Credit cards, Debit cards)	399588	1196888	1535765
5. Prepaid Payment Instruments (wallet, PPI cards, paper vouchers)	48758	213323	215558
Other Payment Channels			
6. Mobile Payments (mobile app based)	404091	2958407	5781435
7. Paper-based Instruments (CTS, others)	-	8246065	7824821

Source: Reserve Bank of India (2020)

value of transaction) in India. As per Reserve Bank of India (RBI) report 2020, the share of digital transactions in the total volume of non-cash retail payments have grown by 97.0 per cent during 2019-20 from Rs 95.4 per cent in the previous year.

The digital payments industry in India is poised to reach at US$ 700 billion by 2022 in context of value of transactions. Further, this industry is divided by digital payment system classifications and regions. The digital payment system classification includes m-wallets, internet banking, mobile banking, Point of Sale (POS), and others, whereas, the regions comprise of urban and rural regions. However, in terms of share of digital payments, urban areas contribute significantly as compared to their rural counterparts. Figure 1 displays monthly trend of payment system infrastructure in India. The number of POS terminals, Automated Teller Machines (ATMs) and number of Bharat QR codes increased by 38.2 per cent, 3.08 percent and 74.6 percent respectively (RBI report 2020).

There are several rationales for undertaking this investigation. First, in the economic literature, a high proportion of electronic payment transaction is believed to add to the economic development and also increases the competitiveness, as higher use of digital payments accelerate the consumption expenditure in the economy, leading to higher production of goods and services, which ultimately propels economic growth of a country. Second, electronic payments further aid financial inclusion, by introducing formal financial services to those without an access to the formal banking. In order to make country more digitally enabled society and knowledge driven economy, the central government is

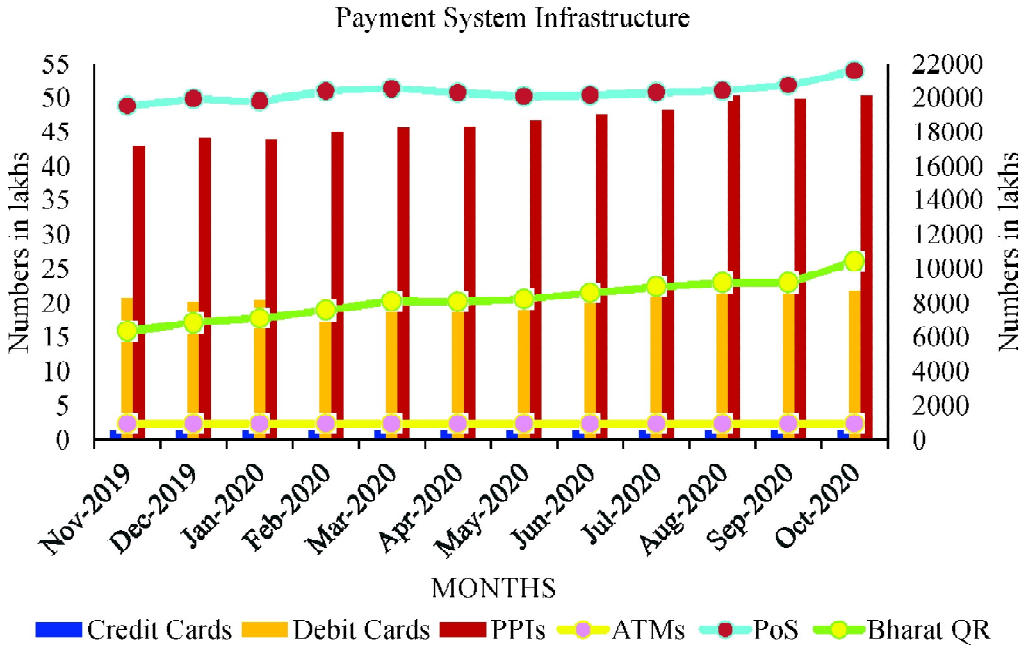

Figure 1: Trends in Payment System Infrastructure

Source: Authors' Compilation from CMIE – Economic Outlook.

aggressively banking on the Digital India initiative. Through Digital India initiative, government targets to get involved with citizens in the most remote locations in order to involve them into India's growth story. Since technology is a key driver in causing disruptive change, digital tools will empower citizens and prove to be a game-changer. Third, although in India digital payments to GDP ratio did increase significantly post demonetisation, it is evident that the currency in circulation to GDP ratio has also increased during the same period (RBI Bulletin, 2019). Further, international experience shows a slow transition to cashless economy and estimates that the surge in digital payment is temporary. Fourth, the enablers for digital payments in a country are mobile phones and internet, bank accounts, debit and credit cards, underlying digital infrastructure, efforts by the government, growth in the economic activity or growth in per capita income to name the few. Although, country level experiences suggest that these enablers do influence, facilitate and popularise the cashless transactions in a country, their impact on digital payment is not the same both in terms of its usage and popularity. A cross-country study by Bech *et al.* (2018) indicates that cash still remains the most favoured way of transaction than digital payment transactions because of lower opportunity cost and store of value motive. These divergent experiences indicate ambiguity in the sustainability of digital payments and it thus becomes imperative to examine the factors that lead to the sustainability of digital payments in India.

2. Review of Literature

According to D'Silva *et al.* (2019), Indian economy is predominantly a cash-driven economy. India's approach on digital finance is built upon four components: (i) making available the digital financial infrastructure as a collective commodity; (ii) supporting innovations by making available unrestricted permission to this infrastructure; (iii) giving an equal opportunity to all through the regulatory framework; and (iv) allowing individuals through a data-sharing framework that requires their consent. Further, as per one report, an inclusive digital payments ecosystem is composed of various elements and an empowering environment. The various elements of such an ecosystem contain: i. Digital payment service providers (financial and non-financial operators); ii. A financial infrastructure that consists of payment system; iii. A distribution system (or channels and access points, including agents and direct digital access); iv. An information communication and technology infrastructure as well as energy infrastructure; and v. An efficient user identification system.

With a big push to go digital at all levels, digital modes of payment are gaining popularity. The factors underlying the surge in the usage of digital payments are attractive money-back and user-friendly rewards, quick money transfer digitally, relatively larger transaction security as against credit/debit cards, lack of transaction costs, general acceptance and minimum risk to name few. Nonetheless, there exists disparities between consumers' expectancy and the satisfaction level which present a threat for sustainability of digital wallets.

Bagla and Sancheti (2018) in their study examines the underlying factors for rising trend of digital wallets in India and investigated sustainability problems encountered by digital wallets as a result of differences between consumers' expectations and their satisfaction level with leading wallet brands like Paytm, Freecharge, Mobikwik and Oxigen. Sikdar and Kumar (2017) have investigated the role of payments banks as the digital payments instruments in achieving the financial inclusion goals. The

study highlights the advantages of these banks over the formal banking by ensuring the last-mile connectivity in providing benefits to the unbanked and excluded demography.

Gochhwal (2017) studied in detail about the Unified Payment Interface, the technology used and the added benefit that UPI brings in relation to the current digital payment systems. The study tries to decode the technical architecture, transactional processes and security systems of UPI, through which innovative business solutions could be developed. Inclusive finance results in well-being and development of the economy by eradicating or reducing poverty, inequal income distribution and predominance of local bankers. Financial inclusion is thus a multi-dimensional process that concludes once processes like access to and utilisation of financial benefits and banking penetration are completed. Panagariya (2019), in his research paper on digital revolution in India, has asserted that mere availability of technology will not lead individuals to adopt it. The paper has given the instance of a high tax rates scenario wherein parties involved in a transaction are motivated to use cash to make payments and play safe thereby generate a digital record of the transaction by depositing or receiving payments digitally. Thus, the paper underscores the importance of incentives to help permeate the digital revolution across the country.

Dahiya and Kumar (2020) in their study with an aim to examine linkages between financial inclusion and economic growth in India studied three main dimensions of financial inclusion: utilization, penetration and accessibility. The findings of the study reveal a substantial relationship between economic growth and the utilization dimension of financial inclusion in India. Another study tried to determine the financial inclusion in a complex way to understand whether the present apparent important socio-economic factors of financial inclusion as studied in the literatures are pertinent in a panel data analysis. The econometric evaluation using a panel data analysis of states of India established that income, infrastructure and employment opportunities are possibly the predominant variables of financial inclusion (Raichoudhury, 2020).

Singh and Malik (2019) made an attempt to present the prospects and difficulties arising in the rural banking sector with a particular focus on digitalization. Given the present banking scenario, the paper further analyzes the relevance of digital literacy. Further, to get insight about the perception and behavior of rural consumers regarding these services, the paper also gives an overview of the digital technology and ways adopted by banks in rural India. Arner *et al.* (2020) asserts that the maximum potential of FinTech to strengthen the Sustainable Development Goals (SDGs) will be achieved with a graded approach to the development of fundamental infrastructure to promote digital financial transformation. The study implies that the feasible remedy to this is to emphasis on four pillars. The first being, creation of digital identity, streamlining opening of bank account and verifying know your customer (e-KYC) systems. This should be through the medium of second pillar of free interactive electronic payments systems. The third pillar includes the use of infrastructure of the first and second pillars to strengthen the electronic supply of public utilities and payments. The last pillar focuses on the structure of digital money markets and systems, which further assists enhanced access to finance and investment. Such an approach of developing digital financial infrastructure depends mainly on the supply of communications' infrastructure. Such an approach offer better opportunities to the countries with higher rate of smart phones penetration and incompetent obsolete financial systems.

World Bank (2014) in its article presents a dialogue on digital finance and its significance for financial inclusion and financial stability. In emerging and developed economies, through Fintech providers, digital finance has favourable impact on financial inclusion. Further, digital finance is more convenient and valuable to the consumers with low and variable income, since these consumers may incur higher cost for such services from conventional regulated banks. The article further underlines few challenges for financial inclusion and financial stability which the digital finance poses. Ozili (2018) in his study furthers the debate advanced by the World Bank in justification of financial inclusion as useful remedy for alleviating poverty in emerging and poverty stricken countries. The study examines the effect of digital finance for financial inclusion and financial system stability. From theoretical standpoint, the study also highlights the strengths and weaknesses of digital finance, digital financial inclusion and financial inclusion.

According to Draboo (2020), the major stimulus to the measures of financial inclusion has come from Digital India. Different schemes like simplifying universal banking services, reduction of processes related to Permanent Account Number (PAN), unique identification system of Aadhaar, streamlining of taxes through the goods and services tax (GST), etc., have substantially rendered to increase financial inclusion in the country. This study investigates the effect of this schemes and range of activities of Digital India in transforming the conventional manual procedures of utilising government services into digital system. Also, the effect of Digital India on tax (direct and indirect) systems, financial and banking institutions, and the implementation of varied government programmes is also examined.

As concluded by Kim (2014), for the success of digital initiatives, multifaceted procedure is essential, whereby the current digital platforms, infrastructure, human resources, and policy frameworks are enhanced. Of this, human resource is supposed to be leveraged by up-skilling them and encouraging them to participate constructively so as to accomplish the last-mile connectivity of financial institutions. If remedial measures are used to overcome the current problems and interventions, then Digital India has an ability to augment the positive effects of economic development to the poor. Besides, this will lower the expenses for financial institutions and it will also tackle the security issues and accuracy of the data related to financial transactions.

3. Objectives

Given the above setting, the intent of this paper is to elucidate the semantics of sustainability of digital payments in India. The main objectives of the study are:

- To study the indicators of sustainability of digital payments.
- To analyse the factors contributing to sustainability of digital payments in India.

4. Data and Methodology

4.1. Data

In order to formally gauge the sustainability of digital payments in India, the present study for empirical analysis uses the quarterly data from the period 2011-12: Q1-2020-21: Q4. The digital payment transactions as well as mobile banking transactions have been considered both in volume terms (real

transactions) and in value terms (nominal transactions). The data on the real and nominal digital payments transactions (RDP and NDP), digital payment infrastructure (DI), real and nominal Mobile banking/ payment (RMB and NMB), per capital net national income (PCNNI), growth in the bank accounts (ACT), growth in currency in circulation (CIC) are mainly sourced and assessed from official websites of Reserve Bank of India (RBI) and Centre for Monitoring Indian Economy (CMIE). Additionally, dummy variable (DV) assumes 1 for economic shocks (like demonetisation and current pandemic) and 0 otherwise.

Further as per RBI's payment system indicators, total digital payment is inclusive of large value and retail credit transfers, debit transfers, card payments and Prepaid Payment instruments but excludes mobile payment/banking, whereas digital payment infrastructure is inclusive of ATMs, POS, credit and debit card distributions. Hence in this study, mobile payment/banking is substitute to digital payments.

4.2. Methodology

To achieve the objectives, Autoregressive distributed lag (ARDL) approach to cointegration tests were employed, while for robustness, dynamic ordinary least square (DOLS) method was deployed. The empirical approach viz., unit root and cointegration have been employed to investigate the linkage between digital payments and economic growth in India. Autoregressive distributed lag (ARDL) bounds approach to cointegration and dynamic ordinary least square analysis are directed to test the linkage between the variables. ARDL method developed by Pesaran *et al.* (2001) was selected compared to other conventional cointegration test primarily because of: i) ARDL could be used to variables regardless of their order of integration, i.e., purely I(0), purely I(1) or mixed, ii) it gives consistent estimates for small as well as large sample data (Pesaran and Shin, 1995), iii) short-run and long-run estimators could be attained simultaneously. Nevertheless, presence of second order integration makes this test inappropriate; so, it is imperative to test for stationarity of variables. The unit root tests employed to check the stationarity of the variables in the study are Augmented Dicky Fuller (ADF) (1979) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) (1992). Further, to capture short run and long run dynamics for cointegrating relationship, the bounds test procedure in the unrestricted error correction model is employed as follows:

$$\begin{aligned}\Delta RDP_t = {} & \alpha_0 + \Sigma_{i=1}^{k}\beta_i\,\Delta PCNNI_{t-1} + \Sigma_{i=1}^{k}\theta_i\Delta DI_{t-1} + \Sigma_{i=1}^{k}\eta_i\Delta RMB_{t-1} + \\ & \Sigma_{i=1}^{k}\varphi_i\Delta ACT_{t-1} + \Sigma_{i=1}^{k}\vartheta_i\,\Delta CIC_{t-1} + \Sigma_{i=1}^{k}\varphi_i\,\Delta DV_{t-1} + \pi_1 PCNNI_{t-1} + \\ & \pi_2 DI_{t-1} + \pi_3 RMB_{t-1} + \pi_4 ACT_{t-1} + \pi_5 CIC_{t-1} + \\ & \pi_6 DV_{t-1} + \varepsilon_t \end{aligned} \quad (1)$$

$$\begin{aligned}\Delta NDP_t = {} & \alpha_0 + \Sigma_{i=1}^{k}\beta_i\,\Delta PCNNI_{t-1} + \Sigma_{i=1}^{k}\theta_i\Delta DI_{t-1} + \Sigma_{i=1}^{k}\eta_i\Delta NMB_{t-1} + \\ & \Sigma_{i=1}^{k}\varphi_i\Delta ACT_{t-1} + \Sigma_{i=1}^{k}\vartheta_i\,\Delta CIC_{t-1} + \Sigma_{i=1}^{k}\varphi_i\,\Delta DV_{t-1} + \pi_1 PCNNI_{t-1} + \\ & \pi_2 DI_{t-1} + \pi_3 NMB_{t-1} + \pi_4 ACT_{t-1} + \pi_5 CIC_{t-1} + \\ & \pi_6 DV_{t-1} + \varepsilon_t \end{aligned} \quad (2)$$

In order to investigate the long run relationship among the variables, following hypotheses are formulated. The null hypothesis of no cointegration ($H_0 : \pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = \pi_6 = 0$) is tested against the alternative hypothesis of the existence of cointegration relationship ($H_A : \pi_1 \neq \pi_2 \neq \pi_3 \neq \pi_4 \neq \pi_5 \neq \pi_6 \neq 0$). This is based upon the F-test by ordinary least squares (OLS) estimation. This calculated F-statistics value is then compared against Narayan's (2005) critical bounds value especially developed for smaller sample data. Accordingly, in case the calculated F-statistics is higher than the upper critical value, the null hypothesis of no long run cointegration could be rejected i.e., there exists cointegration relationships and vice versa. All the same, if the F-statistics fall between lower and upper critical values the result is inconclusive. Following the confirmation from bounds test about the cointegrating relationship between the variables, the long-run (Equation 3) and short-run (Equation 4) coefficients can be investigated.

$$\Delta RDP_t = \alpha_0 + \Sigma_{j=1}^{k} \delta_i \Delta RDP_{t-i} + \Sigma_{j=1}^{k} \beta_i \Delta PCNNI_{t-i} + \Sigma_{j=1}^{k} \theta_i \Delta DI_{t-i} + \Sigma_{j=1}^{k} \eta_i \Delta RMB_{t-i} + \Sigma_{j=1}^{k} \varphi_i \Delta ACT_{t-i} + \Sigma_{j=1}^{k} \zeta_i \Delta CIC_{t-i} + \Sigma_{j=1}^{k} \psi_i \Delta DV_{t-i} + \mu_t \quad (3)$$

$$\Delta RDP_t = \alpha_0 + \Sigma_{i=1}^{k1} \alpha_{DPi} \Delta RDP_{t-1} + \Sigma_{i=1}^{k2} \alpha_{PCNNIi} \Delta PCNNI_{t-1} + \Sigma_{i=1}^{k3} \alpha_{DIi} \Delta DI_{t-1} + \Sigma_{i=1}^{k4} \alpha_{ACTi} \Delta ACT_{t-1} + \Sigma_{i=1}^{k5} \alpha_{M1i} \Delta CIC_{t-1} + \Sigma_{i=1}^{k6} \alpha_{DVi} \Delta DV_{t-1} + \Sigma_{i=1}^{k6} \alpha_{RMBi} \Delta RMB_{t-1} + \xi_1 ECT_{1t-1} + \upsilon_{1t} \quad (4)$$

where ECT_1 refers to error correction term

Likewise, same specification is taken NDP (equation 2) if there is evidence of cointegration. Generally, the ECT_{t-1} should be negative and between 0 to 1. The ECT_{t-1} displays the speed of the adjustment to converge back to its long-run equilibrium. For robustness to ARDL estimates, dynamic ordinary least square method (DOLS) of Stock and Watson (1983) is used. Endogeneity is taken care

Table 2: Unit Root Tests

Variables	*ADF*		*KPSS*	
	Levels	*Differenced*	*Levels*	*Differenced*
RDP	-0.10	-4.72*	0.70	0.19*
NDP	-1.50	-4.53*	0.55	0.20*
DI	-0.46	-4.13*	0.71	0.19*
PCNNI	-3.59*	-	0.68	0.32*
RMB	1.74	-3.45**	0.73	0.31**
NMB	-1.76	-4.12*	0.65***	0.45**
CIC	-7.30*	-	0.35**	-
ACT	-5.33*	-	0.25*	-

Notes: Eviews 9 used for estimations.

*significant at 1%, **significant at 5%, *** significant at 10%.

Source: Authors' Calculation

in DOLS by adding the leads and lags. DOLS is easy to compute and outperforms and reduces bias better than fully modified least square (FMOLS), according to Kao and Chiang (2000). The analytical results from these methodologies would throw light on adoption of policies that foster an integrated and harmonised digital payment and also to improve the sustainability of digital payments in the country.

5. Findings and Discussions

To achieve the objective of the study, firstly, to ascertain the order of integration of all variables, the unit root test for stationarity of all variables is determined using ADF test and KPSS tests. Table 2 reports the unit root tests carried out on all variables. The test regression includes a constant for the levels and for the first differences of the variables. It is apparent from the outcomes that all series are either stationary for ADF and KPSS at levels or after first difference they are stationary. Hence, these variables are of mix order of integration.

Second step is to test whether there exists cointegration between the variables. For this, equations (1) and (2) are estimated to generate the value of F-statistics and reported in table 3. As stated previously, if F value is higher than the upper bound critical values, the null hypothesis of no long-run cointegration is rejected. The results in table 3 indicate that the computed F-statistics is more than the upper bound critical value obtained from Table Case II in Narayan (2005). This reflects that null hypothesis is rejected, implying that digital payments and factors influencing the digital payment usage have long-

Table 3: ARDL Bounds Test for Cointegration

Test Statistic				*F-statistic Value*	*K*	*Lags*[#]
F(RDP | PCNNI, DI,	ACT,	RMB,	CIC, DV)	6.76[*]	6	1
F(NDP | PCNNI, DI,	ACT,	NMB,	CIC, DV)	4.63[**]	6	2
Critical Value Bounds (Narayan, 2005)						
Significance level				*I0 Bound*		*I1 Bound*
				n =39		
10%				2.224		3.339
5%				2.641		3.881
1%				3.686		5.184
				n =38		
10%				2.233		3.354
5%				2.663		3.893
1%				3.621		5.148

Notes: Eviews 9 used for estimations.
[*]significant at 1%, [**]significant at 5%, [***] significant at 10%.
[#]According to lag order selection criterion

Source: Authors' Calculation

run cointegrating relationship. Alternatively, this implies that the variables form stable long-run relationships amongst each other. This also indicates that there may be disequilibrium among the variables in short run, but in the long run there is equilibrium among the variables.

Once the long-run cointegrating relationship between the variables is established, equations (1) and (2) are estimated using ARDL specification. DOLS is also employed to test the robustness of long-run estimates obtained from ARDL. The findings attained from ARDL and DOLS estimations of the equations (1) and (2) are reported in table 4. It is clear from the long-run ARDL estimates, that the per capita net national income is found to have highest impact on both real and nominal digital payments followed by the economic shocks (dummy variable). Both the variables are positive and significant. This indicates that with increase in the level of income, the probability of using digital payment increases. The per capita net national income result corroborates with findings of Davies *et al.* (2016), Bech *et al.* (2018) and Stavins, (2001).

Table 4: ARDL Long Run Estimates

Variables	*Autoregressive Distributed lag model (ARDL)*		*Dynamic ordinary least square method (DOLS)*	
	Dependent variable		*Dependent variable*	
	RDP (Volume)	*NDP (Value)*	*RDP (Volume)*	*NDP (Value)*
DI	0.23	-0.87**	-0.05	-0.86*
PCNNI	4.74*	9.79*	3.88*	8.35*
RMB (Volume)	-0.03	-	0.02	-
NMB (Value)	-	-0.31*	-	-0.30*
CIC	0.002***	0.03***	0.004*	0.01**
ACT	0.005	0.13**	0.001	0.09*
DV	0.32*	2.10***	0.19***	1.84**
C	-35.16*	-91.65*	-34.05*	-87.65*

Note: Selected model of RDP (1,0,0,0,0,0,0) and NDP (1,2,2,2,2,2,2) based on Schwarz criterion (SIC).
*significant at 1%,**significant at 5%, ***significant at 10%

Source: Authors' Calculation

Further, according to Mehta *et al.* (2016) and also as per RBI (2019), as a result of demonetisation, India experienced a transition from cash to digital cash. Similarly, the Covid-19 pandemic also led to increase in usage of digital payments mainly due to concerns about viral transmission from cash. Interestingly, growth in currency in circulation (M1), though is significant has the least impact both on real and nominal digital payments. This indicates that India still has bias for cash payments mainly because people want to keep some money on hand for contingency purposes. Mobile banking both in real and nominal terms in long-run has negative impact on digital payments (real and nominal) signifying a substitution effect. In other words, an increase in mobile payments/banking means less

use of cards and other digital payment instruments. Additionally, the long-run coefficient estimates of digital infrastructure though positive does not have impact on real digital payments whereas, it has negative and significant impact on nominal digital payments. This result is in line with the findings of Confederation of Indian Industry's (CII) report (2016), which concludes that the digital infrastructure in India is most suitable for mobile and online payments than for digital instruments like (cards usage at POS, ATMs, etc.), and hence mobile banking/payment is substitute of digital payment instruments.

Last but not the least is the growth in bank accounts, which does not have any impact on the real growth of digital payments, however, it has positive impact on nominal growth of digital payments in the country. This indicates that just opening of bank account will not lead to more adoption or usage of digital payment instruments. According to Mukhopadhyay (2016), there exists strong positive relationship between receiving payments in the accounts and usage of digital payments. In India, despite government's efforts to open accounts under Pradhan Mantri Jan Dhan Yojna (PMJDY) to achieve financial inclusion objective, quarter of these accounts have zero-balance or lie dormant. There is thus no motivation to use digital payments.

Overall, the results indicate that in the long-run, in real terms it is only the income and economic shocks which may lead to the sustainability of the digital payments in the country, though in nominal terms apart from these two factors, growth in the bank accounts may also lead to sustainable digital

Table 5: Short Run Error Correction Model

Variables	*Dependent Variable*	
	RDP (Volume)	*NDP (Value)*
DI	0.08	-0.80
PCNNI	2.73*	5.69**
RMB (Volume)	-0.03	-
NMB (Value)	-	-0.02
CIC	0.002***	0.005**
ACT	0.003	0.04*
DV	0.18**	0.28***
ECT (-1)	-0.48**	-0.63*
Model diagnostics		
F-statistics	8.76**	20.71*
R-squared	0.95	0.96
Adj. R-squared	0.91	0.92
DW statistics	1.97	1.98
Autocorrelation test	0.73	0.98
Heteroscedasticity test	1.51	0.76

Notes: *significant at 1%, **significant at 5%, ***significant at 10%

Source: Authors' Calculation

payments. The DOLS estimation is to greater extent in line with ARDL estimates. Lastly, subsequent to long-run coefficient estimation, short-run error correction model using equations (1) and (2) is estimated and this is supposed to complement long-run ARDL cointegration results.

Table 5 presents results of the short-run ARDL model. The short run results are to a greater extent in accordance with the long-run estimates except for digital infrastructure which is neither significant for real nor for nominal digital payments. Further, the coefficient of ECT_{t-1} for RDP and NDP is negative and significant at 5% and 1% respectively. The disequilibrium in the short run is adjusted in the long run at a rate of 48% for RDP and at a rate of 63% for NDP in the subsequent period. Additionally, the coefficient of determination (R^2) is between 0.95-0.96. The estimated short-run coefficients were exposed to diagnostics test for reliability under Lagrange multiplier (LM) tests. The LM test results indicates that at 5% level of significance, there is no issue of serial correlation and Heteroscedasticity.

In real terms, as is shown by error correction estimates it follows that the enablers of digital payment slowly converge to long-run equilibrium, whereas, in nominal terms the enablers of digital payment speedily converge to long-run equilibrium. It is hence deduced that in India, the substitution effect of currency in circulation on digital payment is lesser as compared to the stable positive income effect, suggesting that the digital transactions are increasing swiftly.

6. Conclusion

In this study, an attempt is made to understand whether the digital payments are sustainable in India by empirically investigating the factors contributing to it. This study tries to examine the factors leading to sustainability of digital payments over the period of 2011-12: Q1-2020-21: Q4. To explore this, the study uses ARDL bounds test to cointegration along with DOLS. The results indicate that in long run per capita net national income and economic shocks (demonetisation and pandemic) both emerge as main factors leading to sustainability of digital payments in real and nominal terms. Mobile banking/payments may not increase the usage of digital payments like cards etc. indicating that it is a substitute of digital payments. Also, digital infrastructure is not found to be an important factor for sustainability of digital payments. Lastly, financial inclusion as proxied by the growth in bank accounts not necessarily leads to sustainability of digital payments.

The payment system in India is moving from issuance stage to acceptance stage. The usage of digital payments basically depends on demand side factors like strong demand for digital payments and supply side factors like resilient digital infrastructure, growth in bank accounts, etc. The digital infrastructure is still low and so is the number of digital transactions, whereas the mobile transactions are rapidly increasing. Hence to increase the acceptance of digital payments, firstly, financial literacy is very important. People must be made aware of the benefits and risks of digital payments and should also be educated about operating their bank accounts. Secondly, all government services, fees, utilities, tolls etc. should have digital payment options. Thirdly, allowing to withdraw small amount of cash from POS/QR. The implication is that mere availability of technology neither makes individual adopt to it nor is it a substitute for financial inclusion. There has to be rigorous efforts both by the government and central bank to make digital payments a divine experience.

Paucity of usage of various instruments of digital payments before 2011 and lack of availability of mobile banking data has influenced the data period from 2011-12: Q1- 2020-21: Q4. Further research on linkages between the consumption pattern of households, usage of various instruments of digital payment and mobile banking can be undertaken to gauge the sustainability of digital payments.

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A Study on Work Environment, Work-life Balance and Burnout among Health Workers in Bangalore during COVID-19 Era

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Keywords

Healthcare workers, Work life balance, Stress and burnout, COVID-19, Work life climate factors, Workplace settings.

JEL Classification

I12, I31, J28, J81

Abstract: Recent outbreak of the global pandemic due to COVID-19 has led to a public health emergency, threatened human life and, created a worldwide economic challenge. Doctors, nurses and, health care workers from public and private sectors responded quickly to tackle the health crisis with stretched resources, shortage of personal protective equipment (PPE), and limited infrastructures. Physical exhaustion due to heavy workload, fear of getting infected, feeling powerless to handle a dying patient's condition and, lack of protective gears and infrastructures have created a situation of tremendous mental stress and high burnout among them. This empirical study investigated the sources of supports- the workplace and family and their impacts on the work-life balance based on a survey using pre-established constructs measured on the Likert scale on the healthcare professionals in Bangalore during November-December 2020. The result indicated that workplace settings have a significant impact on work-life balance (WLB). Unmarried women found to balance the work with less burnout and health workers at higher positions were supported in a better manner by the hospital management.

1. Introduction

WHO declared the novel coronavirus as a severe respiratory syndrome on 11 March 2020 with the publication of public health guidelines to reduce the rapid transmission of the deadly virus As a quick response, the Government of India treated it as a public health emergency and took several steps including lockdowns to get prepared to fight the pandemic and to stop the chain of infection of the extremely contagious virus through human transmission. During the lockdown, all the people were safe at home but the people who struggled by keeping the lives under risk were the health workers which include doctors, nurses, administration staff, housekeeping staff, paramedical staff, ward boys, and ambulance service personnel. Due to the pandemic, their lives were heavily disrupted due to the

high level of work pressure and high level of stress. The mental well-being of the healthcare providers has been impacted due to erratic work schedules, physical exhaustion, feeling helpless in front of dying patients, fear of getting infected, and lack of protective gears and infrastructure. India has both government and private hospitals to render medical services. Due to the fear of the spread of viruses, private hospitals either shut their doors for the treatment or used to charge exorbitant bills, mostly unbearable by the public. On the other hand, at the initial stage of the pandemic, government hospitals were not well equipped to treat the patients (TOI, April 2, 2020). Despite that, due to the disease outbreak and to tackle the crisis, the health workers were forced to render the service without taking leaves. There were no exact medications to treat the Corona, using a PPE kit and protective gears were very uncomfortable at the beginning, and news on a continuous surge of cases and deaths of the general public and health care providers created extreme tensions and uncertainties among them (TOI, March 4, 2020). They have to undergo great pressure, stress, burnout, family issues, etc. Even after 15 months, the spread of the virus has not stopped and cases of new variants with higher rates of infection and mortality are spiking up. Situations became more stressful with the fear of their family members getting infected as well. Fortunately, the private hospitals started getting involved in treating the Corona patients and the vaccines started rolling. Doctors have been trying various combinations of available medications to treat based on the severity of the disease and at present reached a position to treat and cure the patients and able to reduce the death rate of the patients. Even in Bangalore, the COVID situation was handled well in the first wave by making necessary arrangements. But in the case of second-wave, there was less preparedness by the city which leads to a struggle for ICU beds for COVID patients and the city has observed a large number of deaths. Currently, the Health Ministry has formed a COVID 19 task force committee to predict 3rd wave situation and suggest for valuable solution. Considering the alarming guidelines BBMP prepared well to avoid the third wave and moving towards successful vaccination of the public (TOI September 29, 2021).

So, this paper has attempted to study the working conditions, work-life balance, burnout, and stress among health workers in continued COVID-era.

2. Review of Literature

A plethora of studies was carried towards the wellbeing of health workers across the globe. Some of these studies focused on understanding workplace challenges and fear of COVID, few concentrated on understanding mental and psychological stress, and few more made a study on the work-life balance of women employees especially.

The present study focused on three aspects- work environment, work life balance and burnout and a formal investigation on each terminology is essential to understand them better.

Work life balance (WLB) and work life integration (WLI) are interchangeably used by researchers and it describes the fact that the work schedule should leave enough time for personal and family life (Shanafelt *et al.,* 2012). Due to the uncertain and erratic work schedule WLB of health care workers are always strained (Schwartz *et al.* 2019). A work setting is the office or workplace climate characterized by safety, communication, operational reliability and engagement. It also includes leadership style, organisation's readiness to change and team work culture present in any organisation (Profit et al.,

2014; Schwartz *et al*., 2017). A prolonged exposure to occupational stress which leads to a state of psychological, emotional and physical stress is called Burnout. (Maslach and Jackson, (1996). Emotional exhaustion, apathy towards patients and negative attitude towards professional accomplishments might be the resulting factors of burnout. Burnout causes serious health impacts among health care providers and they are poor health condition, lack of motivation and low morale (Dewa *et al*. 2017). Research showed that improper care to patients is given by high burnout medical professionals and there are other series consequences in the society (Dewa *et al*. 2017; Shanafelt *et al*. 2016).

Dasgupta (2012) made a study in Kolkata to understand how the role of overload, ambiguity, conflict impacts the work efficiency of nurses. It was found from the study that the factors overload, ambiguity and conflict made the nurses to disengage and exhausted. If they are self-efficient these factors can be easily managed. Shah *et al*., (2021) made a study in U.S. on burnout impact toward job turnover and it was found that major nurses had quit the job and those who are willing to quit is because of burnout which was led by 20 working hours in a week. If at all hospitals frame a proper strategy to reduce the working hours the problem may be resolved Ngoc *et al*., (2020) carried a study in Vietnam to assess the prevalence of occupational stress and found that there was an existence of occupational stress and it differs based on the nature of the job, age, qualification and so on. So, there is a need to the hospitals to analyze the reason for the stress at all the job levels to understand it in better manner otherwise it affects the hospital work. Niks *et al.* (2018) made a study in Dutch using a discovery method considering the three components job stress, job resources and detachment from job which was shown a positive impact on the employees who were involved in the study. Kieft *et al*., (2014) made a study in Dutch to understand the influence of patients experience on nursing staff and found that always the nurses were struggle in identifying the influencing factor of patient and fulfilling the work load requirement of hospital administration. Er and Sökmen (2018) investigated working conditions of nurses in public hospitals using nurse friendly hospital criteria. The investigation resulted that the nurses found to have friendly environment but pointed out that the proper hospital infrastructure should be organized and more involvement of nurses in the administrative activities will be an added advantage. Liu *et al.,* (2020) has researched in China regarding the health care provider's experiences during the COVID-19 crisis. It was found that patients took maximum care with more responsibility to stop the spread of the virus. But with heavy workloads, fear of infection, and feeling powerless to handle dying COVID patients, health care providers faced a high level of stress. Another study was carried on by Mhango *et al.,* (2020) on risk factors and occupational hazards of health workers in South Africa. It indicated that the major risk for health care workers was lack of protection equipment, treating infected patients, working long hours, etc. Kuo *et al.,* (2020) in Taiwan attempted to understand perceived work stress among all categories of health workers. They found that nurses who were caring for infected patients faced more stress compared to the administrative and medical technicians. It showed that medical technicians had a higher degree of stress due to difficulties and anxieties on infection control.

Recent research was conducted in the USA by Aiyer (2020) on mental health and the impact of COVID-19 among health workers. Perceived stress of nurses and possibilities of depression and anxiety due to patients' health was studied by the researchers. It was found that registered nurses were

faced major mental stress compared to the physicians and even the patients with COVID were found mostly depressed. Kansal (2020) empirically developed research in Nepal to understand mental health impact and found that anxiety, depression level has increased among health care workers in COVID era compared to pre COVID time. Depression also showed a higher impact on work performance. Li & Miao *et al*., (2020) tried to understand the psychological impact on women employees during COVID; it was found that those who are working in isolation wards, women with more than one child are more psychologically impacted than the other women employees in hospitals. Vaghar and Masrour (2019) in Tehran tries to know about satisfaction and family conflict among married nurses with different working hours found that the women who work in rotating shifts were more satisfied and happy compare to women working in the morning shift. Marcinkus *et al*., (2006) carried on a study on the relationship of social support with work-family balance among middle-aged women and was able to identify that the women will get personal social support than work-based social support. If the organizational policies, social surroundings, and organizational environment render positive support women can easily balance both families and work with ease. Sexton *et al*., (2018) developed a Work-Life Integration Scale to study work-life balance behaviours cluster in work settings and relate to burnout and safety culture. The measure on a scale indicates that the work-life Integration differs among health workers based on the job position, work timing, etc., and also found that burnout and job dissatisfaction were more among them. If work place settings in the organization are positive it leads to better teamwork and safety climate.

Nelson (2010) tries to know work scheduling satisfaction and Work-Life Balance for Nurses. It was found that proper scheduling of work and positive perception towards work schedule will give satisfaction to nurses. Kansal (2020) in his study tries to identify the positive and negative impacts during COVID-19. The positive aspects identified were Family time, flexible working hours, vocational learning and focus on health and negative impact identified on working women like Workload, Monotonous routine, Stress and Bleak future aspects, etc. Vageha (2017) understands the maintaining the balance between health and work by comparing working women with non-working women. The non-working woman is healthier and having more than a kid but is denied financial freedom compared to the working women. Patil (2012) observed the prevailing infrastructure, working conditions, and policies in India. The study found that the numbers of working hours are more like 11 to 12 hours despite which no extra pay and personal benefits were provided to encourage the staff. Sowjanya *et al*., (2015) in the study Work Place Issues and Challenges Faced by Women Doctors in Clinical departments. The major challenges faced by women doctors in ate workplace were invisible hurdles, motherhood, lack of family support, career growth, failing to maintain the balance between career development and lifestyle. Dhadave *et al*., (2012) made a study on working problems among nursing staff. The main reason for a woman to work is to gain financial stability and identified the major problem while working is less health-conscious.

Existing works of literature were much focused on work-life balance, the psychological well-being of health care workers and working conditions, and the availability of proper infrastructures in the hospitals across the globe during the pandemic. Several pieces of research were carried on mental health and the impact of COVID-19, perceived work stress, traumatic experience of health care workers during COVID.

Aiken *et al.*, (2011) conducted a study in 9 different countries like South Korea, Japan, and Germany to understand the effect of the work environment on hospitals outcome. The poor work environment was commonly found in all observed countries which impacted much on hospital outcomes. Reith (2018) carried research in US to understand the burnout among healthcare professionals. It was found that those who were directly involved in caring for the patients were facing more burnout compare to other medical staff. In China, Japan, Taiwan, European countries, and the USA multiple studies are carried on the health care providers on the burnout issues and lack of work-life integration because of improper Workplace settings and Work-life climate during the COVID era.

Work-life balance, psychological well-being, workplace issues, mental health impact on Nurses, doctors, and other health care providers are very contemporary topics of research across the globe.

3. Objectives and Hypotheses of the Study

3.1. Objectives of the Study

In India, there is a dire need to research work-life balance, psychological well-being, workplace issues, mental health impact on nurses, doctors, and other health care providers as many studies are not observed so far. There is a scope to study the workplace challenges faced by health care workers during the COVID-19 pandemic in India. Keeping this in view, the present study is designed to investigate the various sources of supports- both from workplace and family support and their impact on the work-life balance.

a) To analyse various dimensions of Workplace settings, Work-life climate provided by Hospitals during the COVID-19 era in terms of Safety norms (safe from infection, managing the COVID situation in the workplace, sanitation carried on in the hospital); Quality measures in a work setting (work adjustment & co-operation from colleagues & supervisors, number of working hours in a company, leaves facilities and flexible timing); and Work-life climate factors (disturbed sleep due to heavy work and stress, balancing work household and family, anxiety and anger varies because of work stress, time spent with family, timely consumption of food, other demographics factors).

b) To measure the impact of all the above-mentioned factors on work-life balance.

c) To assess the impact of demographic factors on the work-life balance of the health workers.

3.2. Hypotheses of the Study

Hypothesis 1: Work Place settings (Cooperation from Management, Training provided, PPE kit availability and usage, Cooperation from Patients and Family Support) affect the Work-life balance of healthcare professionals.

Hypothesis 2: Workplace settings (Cooperation from Management, Training provided, PPE kit availability and usage, Cooperation from Patients and Family Support) affecting the Work-life balance vary across demographics like gender, marital status, income, age, and qualification of the health care professionals.

Hypothesis 3: Workplace settings (Cooperation from Management, Training provided, PPE kit availability and usage, Cooperation from Patients and Family Support) affecting the Work-life balance vary across public and private hospitals.

Hypothesis 4: All the factors related to safety norms, workplace settings, work-life climate factors have a significant impact on the work-life balance of the health care professionals.

4. Research Methodology

Empirical research was done to measure the work-life balance and burnout of health care professionals in hospitals during the pandemic.

4.1. Construct Building

Constructs were built to measure cooperation from management, support from family, Training, Cooperation from Patients, and PPE kit utilization by various statements prepared on a 5-point Likert scale (1 = totally disagree and 5=totally agree). Work-life climate factors (disturbed sleep due to heavy work and stress, balancing work household and family, anxiety and anger vary because of work stress, time spent with family, timely consumption of food, etc.) were measured on a ten-point rating scale. Different literatures are reviewed and referred in this regard.

4.2. Sampling and Sample Size

Data was collected through the structured questionnaire in Google form as well as directly through the printed copies. The study population consisted of all level employees in both private and government hospitals in and around Bangalore. The researcher collected data from October to December 2020 from 123 respondents. A convenience sampling method was used.

4.3. Analytical Tools

T-test, ANOVA, Multiple Linear Regression was applied after checking its pre-testing assumptions to test the hypotheses. For regression assumptions, Chan (2004) and Panda *et al.*, (2021) are being referred. Constructs are used for such analysis. Data was analysed using Excel and Python software.

5. Data Analysis

Table 1: Demographic Profile of the Respondents

Variables	*Frequency (n=123)*	*Percentage*
Gender		
Male	30	24%
Female	93	76%
Age		
20-30	41	33%
31-40	53	43%
41-50	27	22%
50 & above	2	2%
Marital Status		
Married	88	71%

contd. table 1

Variables	*Frequency (n=123)*	*Percentage*
Unmarried	35	29%
Designation		
Doctors	13	11%
Para-medical Staff	17	14%
Nurse	43	35%
Front Office	11	9%
Office Administration	33	26%
House Keeping	6	5%
Type of Hospital		
Government	41	34%
Private	82	66%
Qualification		
SSLC	4	3%
PUC	5	4%
Diploma	45	37%
Degree	37	30%
PG	26	21%
MD	6	5%
Income (Monthly in Rs)		
Less than 50 thousand	41	33%
50,000-1,50,000	29	24%
1,50,000-2,50,000	33	27%
2,50,000-3,50,000	11	9%
3,50,000-4,50,000	7	6%
4,50,000 and above	2	1%

Source: Authors' own calculation

Table 2: External Factors Influencing Work Life Balance: Descriptive Analysis

Variables	*Mean*	*Std. Dev.*	*Description*
Cooperation from Management	3.13	1.11	As the mean value is more than 3 it indicates that the majority of the employees are getting support from management.
Family Support	3.38	0.64	The mean value of family support is comparatively higher than the other variables and it indicates there is manageable support from the family to balance work and life.
Training	3.26	1.09	The mean value indicates that the hospitals are taking little initiative to train the employees towards managing stress.
Cooperation from patients	3.22	0.94	The majority of the employees felt that they were able to get a moderate level of support from patients.
PPE Kit availability and usage	3.23	1.19	As the mean value is more than 3 indicates that the employees are a little uncomfortable to get PPE kit and its usage.

Source: Authors' own calculation

5.1. Analysis of Factors of Work Place Settings Affecting the Work - life Balance

H_0 : Rating on factors related to Work Place Settings at Hospitals like Cooperation from Management, Training provided, PPE kit availability and usage, Cooperation from patients and Family support do not differ among healthcare professionals with good work-life balance vs. poor work-life balance.

Table 3: Analysis of Factors of Work Place Settings Affecting the Work - life Balance

Factors	*Mean*		*T-statistic*	*T-critical*	*P -value*
	Poor WLB	*Good WLB*			
Co-operation from Management	2.9	3.544	-3.1854	1.6575	0.0009**
Support from family	3.3160	3.501	-1.552	1.6575	0.061**
Training	3.045	3.651	-3.0352	1.6575	0.001**
Co-operation from patients	3.070	3.496	-2.4441	1.6575	0.007**
PPE Kit	3.067	3.527	-2.2509	1.6592	0.013**
Mean of means	3.0796	3.5438			

Source: Authors' own calculation

The above table portrays that the overall average of employees who are not able to balance their work is less than that of those who can balance their work and life. The overall P -value is less than the significant value so, the null hypothesis is rejected. There is a difference in co-operation of management, support from family, training to handle stress, Cooperation from patients, PPE kit utilization, etc. Schwartz (2018 has also indicated in his study that Lack of PPE, exposure to infected patients, work overload, and poor infection control are considered as the risk factors.

5.2. Analysis of External Factors Affecting the Work- life Balance V/S Demographic Factors

H_0 : There are no significant differences between the external factors that lead to work-life balance across demographics like Gender, Marital Status, and Types of Hospitals.

Table 4: Analysis of External Factors Affecting the Work life Balance V/S Demographic Factors

External factors	*Mean*		*T stat*	*T Critical*	*P -Value*
Gender	*Men*	*Women*			
Co-operation from Management	3.65714	2.9539	3.1238	1.6575	0.00**
Support from family	3.5857	3.3149	2.0557	1.6765	0.02**
Training	3.7778	3..0896	3.9007	1.6643	0.00**
Co-operation from patients	3.5444	3.1146	2.2148	1.6575	0.014**
PPE Kit	3.81111	3.0394	3.2060	1.6575	0.00**
Mean of means	3.67522	3.10248			

contd. table 4

Marital Status	*Married*	*Unmarried*			
Co-operation from Management	3.0665	3.2734	-.1330	1.6603	0.12**
Support from family	3.3717	3.4040	- .2864	1.663	0.38**
Training	3.1287	3.5809	-2.7058	1.6585	0.00**
Co-operation from patients	3.1856	3.3047	-0.6335	1.6575	0.26**
PPE Kit	3.0454	3.6444	-2.413	1.658	0.00**
Mean of means	3.15958	3.44148			
Types of hospital	*Gov.*	*Private*			
Co-operationfrom Management	2.445	3.465	-5.30	1.657	.00**
Support from family	3.090	3.526	-3.77	1.657	0.00**
Training	2.552	3.609	-5.684	1.657	.00**
Co-operationfrom patients	2.764	3.447	-4.034	1.657	.00**
PPE Kit	2.569	3.556	-4.703	1.657	.00**
Mean of means	2.684	3.5206			

Source: Authors' own calculation

The table above reveals that significant differences are observed in all the external factors like Cooperation from Management, Support from Families, Training, Cooperation from Patients, PPE kit availability. Male rated higher in all the factors than females. So, male workers can balance their work better than female workers. Even Aiyer (2020) had also observed that the male is less stressed compared to female. Male can spend more time the work compares to females, as in the Indian social set up males are less responsible for household chores. Whereas women have to take care of family, children, and also to work with the fear of infection. Vageha (2017) observed that the working women get good support from family and enjoy financial independence.

Again, all external factors were rated significantly higher by unmarried health workers than married employees. Kuo *et al.*, (2020) indicates that married women with young children were more stressed compare to unmarried women.

The comparison of external factors with the type of hospitals reveals the average mean score of private hospitals employees is more than government hospital employees which indicates that the private employees can get good support from management and family and even they are well trained to handle stress. Comparatively, government employees are not able to access the advanced equipment, working in the far location from their homes, and even the hospital infrastructure is not upgraded with the latest technologies and equipment. There is a difference in external factors influence on work-life balance of gender, marital status, and type of hospital.

5.3. Impact of Demographic Factors on External Factors

Anova is applied for such analysis. The hypothesis which is tested by applying anova is as follows.

H_0: There are no significant differences in external factors that lead to work-life balance across demographics variables like qualification, age, and income.

Table 5: Application of ANOVA to Process External Factors with the Demographic Factors

External Factors	*SS*	*Df*	*MS*	*F*	*P -value*
Qualification					
Co-operation from Management					
Between Groups	22.88883	2	11.444	10.77791	.00**
Within Groups	127.4208	120	1.0618		
Support from Family					
Between Groups	4.047103	2	2.0235	5.366868	0.00**
Within Groups	45.24541	120	0.37704		
Training					
Between Groups	15.76088	2	7.88044	9.840301	0.00**
Within Groups	96.1	120	0.80083		
Co-operation from Patients					
Between Groups	12.12932	2	6.06466	7.629442	0.00**
Within Groups	95.38829	120	0.79490		
PPE Kit					
Between Groups	29.01034	2	14.5051	12.12937	0.00**
Within Groups	143.5046	120	1.19587		
INCOME GROUP					
Co-operation from Management					
Between Groups	4.476026	2	2.23801	1.841562	0.16
Within Groups	145.8336	120	1.21528		
Support from Family					
Between Groups	3.542698	2	1.77134	4.64618	0.01*
Within Groups	45.74982	120	0.38124		
Training					
Between Groups	13.08057	2	6.54028	5.956239	0.00**
Within Groups	131.7668	120	1.09805		
Co-operation from Patients					
Between Groups	16.52772	2	8.26385	10.89861	0.00**
Within Groups	90.9899	120	0.75824		
PPE Kit					
Between Groups	10.2213	2	5.11065	3.778819	0.03**
Within Groups	162.2936	120	1.35244		

contd. table 5

External Factors	*SS*	*Df*	*MS*	*F*	*P -value*
Age					
Co-operation from Management					
Between Groups	0.880940	2	0.44047	0.353724	0.71
Within Groups	149.4286	120	1.24523		
Support from Family					
Between Groups	0.069777	2	0.03488	0.085055	0.92
Within Groups	49.22273	120	0.41018		
Training					
Between Groups	7.401171	2	3.70058	3.230867	0.04*
Within Groups	137.4461	120	1.14538		
Co-operation from Patients					
Between Groups	0.169478	2	0.08473	0.094726	0.91
Within Groups	107.3481	120	0.89456		
PPE Kit					
Between Groups	4.268710	2	2.13435	1.461632	0.23
Within Groups	160.6280	110	1.46025		

Source: Authors' own calculation

From the Table 5, it is clear that when we observe the qualification with the external factors the overall P-value is less than the significant level. This indicates the null hypothesis is rejected. So, there is a relationship between the qualification and external factors. Higher the qualification higher will be the job position and more will be the support from the management, more safety will also be provided. When we look at the comparison of income and external factors P-value is more than significant level only in case of co-operation from management but the other factors it's less than significant level, which indicates that higher salaried employees are getting good support from the management and from family to some extent compared to the slightly low income generated employees. In a similar comparison of age and external factors, P-value is more than the significant level so, the null hypothesis is accepted. Based on age there is no difference in co-operation of management, support from family, training, PPE kit utilization towards the employees.

5.4. Correlating Workplace Settings, Work Life Climate Impact and Health Worker's Work Life Balance

The following hypothesis is tested for tracing the relationship among these factors.

H_0: All the factors related to Safety norms (safe from infection, managing the COVID situation in the workplace, sanitation carried on in the hospital), quality measures in a work setting(work adjustment & co-operation from colleagues & supervisors, number of working hours in a company, leaves), as well as work-life climate factors (disturbed sleep due to heavy work and

stress, balancing work household and family, anxiety and anger varies because of work stress, time spent with family, timely consumption of food, other demographics factors), have equal impact on the Work-life Balance of health care workers.

Bivariate Correlation among all the factors

Heatmap shows the relationship between variables and it is observed that safety, sanitation, COVID management at workplace, working hours, and colleagues have high correlation with WLB.

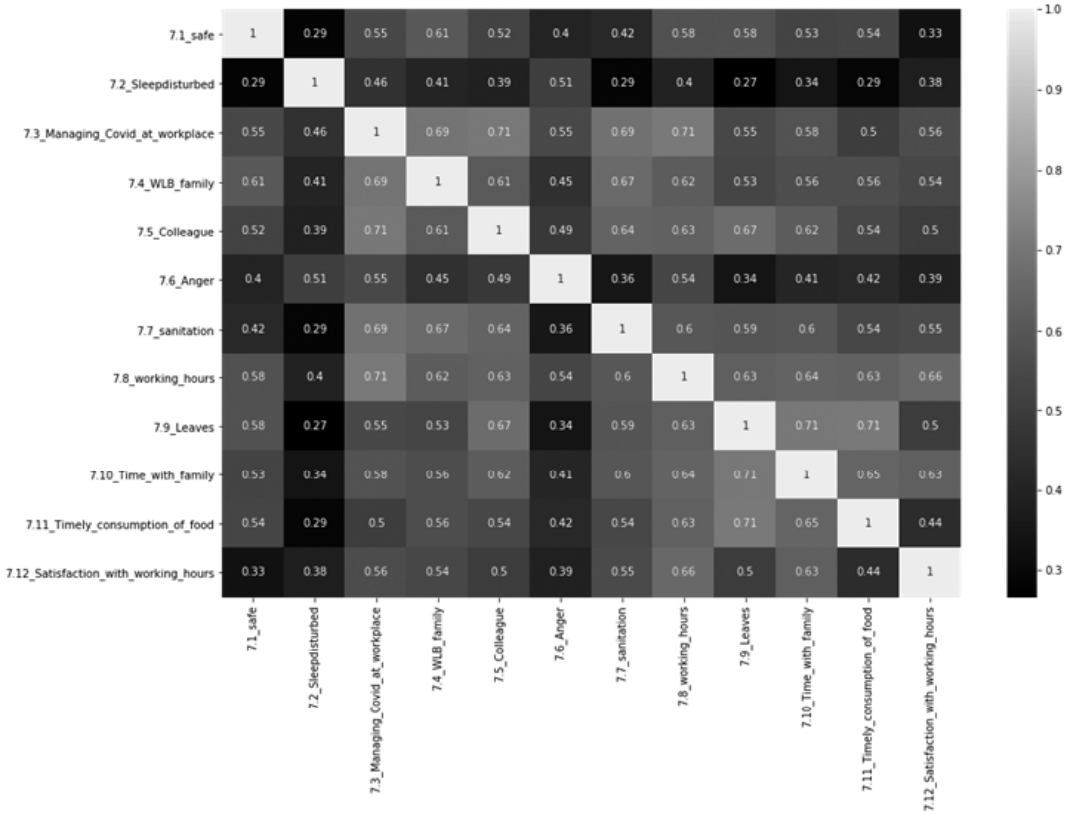

Figure 1: Heatmap; Bivariate Correlation

Source: Authors' own calculation

5.5. Factors Impacting Work Life Balance

Regression model is applied for assessing the quantum of impact of deferent factors on work life balance. R square value of the model is 0.65 which depicts that all independent variables together have 65% explaining efficiency in the model. All other assumptions of regression model are quite satisfactory.

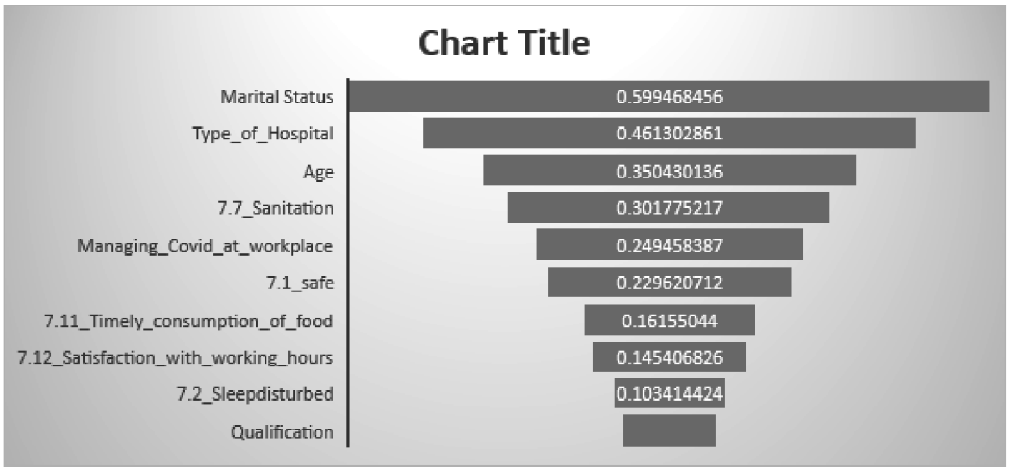

Figure 2: Regression Predictors

Source: Authors' own calculation

The figure above traced that Martial Status makes a lot of difference in WLB, primarily because of dual responsibilities at both work and home for a married person. Type of hospital whether Government or private is another significant factor in influencing WLB. The age of the healthcare worker plays an important role in work-life balance. Quality measure at work settings which includes Sanitation, Safety, and COVID Management has been associated with WLB. Linkage was found between work-life climate factors namely timely consumption of food, working hours, and sleep with WLB.

6. Conclusion and Managerial Implications

Doctors, nurses, and health care workers from both Government and private hospitals responded quickly to tackle the health crisis due to COVID 19 in Bangalore with stretched resources, shortage of personal protective equipment (PPE), and contributed to the maximum possible to overcome the challenges. They are the frontline warriors with an extraordinary sense of responsibility who have been serving humanity relentlessly by keeping their own lives at risk.

Current study based in Bangalore indicated that factors related to Work Place Settings at Hospitals (Cooperation from Management, Training provided, PPE kit availability and usage, Cooperation from Patients) and Family Support have a significant impact on the Work-life balance of Health care professionals. Ratings on all the above factors are significantly higher among healthcare professionals with good work-life balance than those with poor work-life balance (Schwartz, 2018).

All the above factors vary among Health care professionals across different qualifications. It seems qualified professionals might receive better treatments in the workplace.

Aiyer (2020) stated that since healthcare workers at all levels are equally exposed to the Coronavirus, hospitals should ensure equal treatment, providing safety equipment and cooperation from management to employees irrespective of their designations.

Gender, Marital status (Vaghar and Masrour, 2019) and Age play a very important role in Work-life balance; as they have shown the highest impact. Another very important factor is the Types of hospitals. Employees from private hospitals used to get good support from management as well as training to handle stress.

Safety norms, quality measures in a work setting (Marcinkus *et al.*, 2006), and work-life climate factors together have around 65% impact on the WLB of the health workers.

COVID-19 has indeed created a lot of anxiety and uncertainties among health care professions. Several studies around the globe have investigated the high stress, burn out and other psychological impacts of the pandemic on health workers, and several programs are organized on stress management, mindfulness, and wellbeing. Both hospitals and the government need to take much more initiatives to protect the front-line warriors. Support and encouragement from Hospitals and Society should not be discriminant based on the position of health care professionals.

7. Limitation and Future Scope of the Study

The strength of the present study lies in understanding various components of the Work-life balance of health care professionals and the recent challenges faced by them due to prolonged pandemics starting 2020. One limitation of the study is the sampling method, which is convenience sampling, a non-probability sampling method. Since for any non-probability sampling, generalization of the result could be an issue, future researchers can make use of some probability sampling, especially stratified sampling to get the representation of health care professionals at all levels. Larger sample size would give more generalized research outcomes. Future researchers should attempt to make the research area more comprehensive by adding additional predictors and influencers impacting work-life balance. This paper did not consider the intrinsic motivation of the doctors, nurses which motivate them to work relentlessly despite their life risks. Research could be conducted to check whether individual engagement with a job, sense of duties, and responsibilities of doctors, nurses, and other health care professionals make significant differences in their performance and work-life balance or not. The medical profession is a very noble profession; further study may demonstrate various other motivators influencing the medical professionals to be motivated all the time. This research also sheds some light on a comprehensive understanding of workplace settings and workplace climate factors and how do they differ between private and public hospitals and between different designations in the health care sector. This study is focused only on Bangalore and therefore to get a holistic view on the current situation of workplace setting, work life balance and burnout of the health workers, there is a huge scope to conduct the study in the rest of the country.

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Tourists' Expectations and Satisfaction towards Ecotourism in Goa: An Empirical Study

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Abstract: Goa is famous for its sun and sand and is also blessed with natural beauty along with various heritage sites, churches and temples. Goa is marketed worldwide as a beach tourism destination, which reached its optimum level. Therefore, there is a need to promote other avenues of tourism. The current study focuses on ecotourism in Goa. For the growth of a specific tourist destination through strategic planning, it is necessary to understand the nature of tourist contentment and discontent. This research is necessary as it will provide a clear image of satisfaction and unhappiness with certain facilities. Gap analysis is used to examine the gap between tourists' expectations before visiting and satisfaction level after the visit at various ecotourism sites with reference to the various ecotourism services available. A negative gap was found with respect to all the 29 variables used to measure tourists' satisfaction with the ecotourism services. The ecotourism services available in Goa need proper attention, so that Goa can be promoted as a world class tourism destination. There is a need for destination planners to undertake measures for improving and maintaining appropriate ecotourism services in Goa.

1. Introduction

Tourism industry has been growing drastically over the years. It possesses a tremendous growth potential. Most of the countries earning and economic development is largely supported by tourism. Indian tourism industry performs an essential role in the economic progress of the nation by generating employment and earning foreign exchange etc. (Kamat, 2013). Goa, a tiny state in India has many species of birds and animals. According to the Goa Tourism Department, the Western Ghats also known as the Sahyadris in Goa with a total length of 3702 kms out of which 600 kms is in Goa which provides a green cover to Goan eco systems. Goa enjoys high rainfall which accounts to a wide belt of forests along the Western Ghats. During the monsoons large number of north Indian tourists visit Goa for enjoying Goa's natural beauty during monsoon. The springs and waterfalls are gushing, there's

plenty of greenery, and the beaches are desolate. In addition, excellent off-season savings are available. This is why an increasing number of tourists are flocking to Goa during the monsoon season. Goa is home to a variety of unusual flora and trees, some of which were introduced by the Portuguese. The coastal areas provide the tropical climate. The tropical location of Goa is responsible for its warm humid climate. Many foreign tourists visit Goa during these humid months, especially from October to February to enjoy this humid climate in order to avoid the extreme cold climate in their home countries. Retired foreign tourists live in Goa for a longer period to enjoy this humid weather. According to the Goa tourism department, Goa is endowed with over 1512 species of plants and there are many spice plantations where tourists can experience how to grow various spices. There are more than 275 subdivision of birds, over 48 subdivisions of animals. Therefore, Goa has a great deal of promise as an ecotourism destination. The Government of Goa is working on promoting hinterland and ecotourism through various projects and making an attempt to promote entrepreneurship. The tourism department of Goa is trying to attract high-end tourists and provide them with a satisfying experience.

For many countries, tourism is an important source of revenue. Extensive research is being carried out worldwide with an intention to explore the competitive advantages of a particular destination. There has been research done to assess the economic, socio-cultural and environmental effects of tourism in a particular destination. Sustainable tourism (Ahmed, 1991), ecotourism (Butler and Boyd, 2000), tactics for sustainable progress (Clarke, 1997), community participation in the decision making process (Puczkó and Rátz, 2000). The studies related to tourism are increasing. However, just a few recent studies have looked into the significance of tourists' revisit intentions (Oppermann, 1999) of which some have concentrated on tourists' satisfaction at various destinations (Kozak and Rimmington, 2000). There is a need to understand a destinations attraction or service components which plays a major role in tourism satisfaction and provides the destination management with useful information to develop a destination particularly in the protected areas (Doucouliagos and Hall, 2010).

Customer satisfaction is a major objective of any service provider. There is a need to understand nature of tourists' satisfaction and dissatisfaction for the development of a particular tourist destination through strategic planning. Understanding consumer's response to various products and services, motivating new consumers, encouraging revisits is necessary to reveal areas that require improvements. It is critical to understand the expectations of tourists visiting a destination in order to assess its strengths and weaknesses and improve its competitive advantage. It is a difficult task to evaluate the tourism industry in quantitative terms; satisfaction is a largely accepted indicator to determine whether a particular destination is successful in the tourism front. Satisfaction in the tourism industry as well as other sectors determines consumer loyalty and acts as a source of competitiveness (D'Mello and Subhash, 2016).

Goa is an attractive destination for tourism and related activities and yet no research has been conducted to assess tourists' satisfaction towards ecotourism services in Goa using Gap Analysis. The present study is an attempt towards the same which is unique and novel.

This study makes an attempt to fill this gap by evaluating the tourists' expectations towards ecotourism in Goa and identify factors that require improvement to enhance the quality of products and services offered keeping in mind the tourists' expectations. The study uses the tiny state of Goa as

a research site to learn about tourists' expectations and contentment with the ecotourism services available in the state as thousand tourist – national as well international tourists visit Goa. This study is needed, as it will provide a clear picture of satisfaction and dissatisfaction with the various attributes and strategies to improve these services, which can be developed to promote the growth of ecotourism. The current study will provide information, new insights and possibilities and therefore is essential. This knowledge can be used by tourism planners, government, various stakeholders, tourism related businesses to develop adequate strategies to promote ecotourism in the study region. The study made an attempt to gauge the gap between tourists' expectations and satisfaction towards ecotourism services in Goa.

2. Review of Literature

Tourists' satisfaction is essential to successfully market of a tourist destination as it affects the destination choice, selection of products/services and return decision (Kozak and Rimmington, 2000). As tourism is an important part of the service industry, research focuses on marketing tools for evaluation of customer satisfaction, since satisfaction influences expectations and intentions for future purchase or destination selection decision (Fuchs and Weiermair, 1993). The most fundamental method for evaluating the quality of a tourist's experience is satisfaction (Tonge and Moore, 2007).

Once tourists' actual experience is recognised, destination planners can supply the necessary facilities to meet the tourists' expectations and verify whether the tourists have had a satisfying experience. Various theories and outlooks have been used to study tourism satisfaction. Many researchers have used expectation-disconfirmation models, where consumers have certain expectations from a product of service before buying it and they make a comparison between the actual performance and expectations (Oliver, 1980).

Consumers will have a positive disconfirmation if the performance exceeds their expectations, which may lead to subsequent purchases. On the other hand, consumers will feel a negative disconfirmation if the performance falls short of expectations. The consumer will not be satisfied and will search for other alternatives. This model suggests that consumer satisfaction depends on the comparison between destination image before visitation and actual experience at the destination (Chon, 1986). Attitude-based approach is based on the gap between the expectation and experience. As per the expectation disconfirmation paradigm, satisfaction depends on whether tourist's pre-purchase expectations are met by the services available at the destination.

Managers of eco-sites are realizing the importance of meeting the needs of tourists and providing them with notable experience (Fletcher and Fletcher, 2003). This has resulted in increased emphasis on service quality of various attributes such as walking tracks, safari vehicles, canopy walkways and tourist centres that increase the possibility of satisfying the eco-tourists (Adam *et al.*, 2019). Eco-visitors display high levels of satisfaction with their eco-experiences (Buckley, 2009). Hui *et al.* (2007) assert that high levels of satisfaction of eco-tourists with their experiences are seen in the global appeal of cultural and nature-based attractions. This notion has been equally supported by some studies. For example, 66 percent of eco-tourists in New Zealand's Pirongia Forest Park were pleased with their visit experience (Pan and Ryan, 2007). Similarly, 60% of eco-visitors that visited Kenya's Ambo-seli

National Park were satisfied whereas only 4% were unsatisfied, thus indicating a high levels of satisfaction among eco-visitors (Okello *et al.*, 2008). Prior research pointed out that perceived value can lead to satisfaction and behavioural intentions (Chua *et al.*, 2015; Kim *et al.*, 2015). Repurchase and word of mouth suggestions indicate customer loyalty, which is an outcome tourist satisfaction (Prayag and Ryan., 2012; Prebensen *et al.,* 2014). Tourist satisfaction is a forecaster of customer loyalty, which leads to success of the tourist destination, it also relates to selection of a destination, purchase of products and services and the revisit (Prayag and Ryan, 2012; Žabkar *et al.,* 2010).

Since no such research has been done in Goa to assess the tourists' expectations towards the ecotourism services available in the state using Gap Analysis, this study intends to give destination planners with information on how to improve ecotourism services in order to improve the destinations' long-term competitiveness and sustainability. This current research work tries to examine the expectations of visitors at various ecotourism sites across Goa to gauge their expectations and level of satisfaction with the services available for ecotourism. To determine the most important variables and areas for improvement in order to raise the quality of the ecotourism products and services given to meet tourists' expectations. Conclusions can be drawn with relation to these aspects and the need for development to increase ecotourism in the state based on the evaluation of tourist expectations and satisfaction. Therefore, the current study will fill this gap by contributing through additional knowledge, new perspectives and possibilities for consideration.

3. Objectives and Hypothesis of the Study

3.1. Objectives of the Study

The main objectives of this study are:

- To assess the expectations of tourists' visiting various ecotourism sites in Goa in order to determine their expectations and level of satisfaction with the ecotourism services available in the state.
- To identify the most important variables and areas for improvement in order to raise the quality of ecotourism products and services to meet tourists' expectations.

3.2. Hypothesis of the Study

- H_0: There is no significant difference between tourists' expectations and level of satisfaction with the ecotourism services available.

4. Research Methodology

The aim of this study is to find out tourists' expectations towards ecotourism in Goa. Data was collected between November 2019 and January 2020. A structured questionnaire was used and data was collected from tourists visiting various ecotourism sites in the state, which included spice plantations and a bird watching sanctuary. Convenience random sampling was used. Around 500 questionnaires were provided, 423 of which were returned by visitors, 21 of which were incomplete, leaving only 402 acceptable surveys with an 80.4 percent response rate. For a given population of 10,00,000 and above

the adequate sample size is 384 (Krejcie and Morgan, 1970). According to the tourist arrival statistics by the Government of Goa, in any given year since 2001 the tourist arrivals in Goa has been more than 10,00,000. Therefore, the current study used a sample of 402 respondents. The survey instrument was split into two sections. The first section attempted to examine tourist demographic data. The second part deals with the services available for ecotourism in the state. Twenty nine statements were designed to assess the expectations of tourists and their level of satisfaction with ecotourism services available. The statements used in the study were based on past literature (Sörensson and Friedrichs, 2013; Boley *et al.,* 2017; Khan, 2003; Ngoc and Phuong, 2019; Coghlan, 2012).

Various statistical techniques were used to analyse the data, based upon the models used to carry out studies elsewhere. Gap Analysis was carried out to find the answer for: what were the tourists' expectations about the ecotourism services in Goa and what they experienced while participating in ecotourism activities with respect to various services provided for ecotourism. The goal of this study was to determine whether tourists to Goa are happy with the ecotourism services available.

SPSS was used to examine the data. The researchers employed descriptive statistics, mean analysis, gap analysis (expectations–satisfaction of ecotourism services in terms of before and post visit), and paired t-test. Cronbach's Alpha was used to assess the scale's and data's reliability. The mean analysis, which is based on visitor responses on a 5-point Likert scale, shows tourists' expectations and satisfaction with the state's ecotourism offerings where 1 being least important/poor and 5 is most important / excellent. If the mean value is between 3 and 5, it means that the service is important/satisfactory to the tourists. They deem it unimportant / unsatisfactory if the value is between 1 and 2. The difference in values between the Satisfaction Mean (performance mean after the trip) and the Expectation Mean is indicated by Gap Analysis (expected mean before trip) (Tonge and Moore, 2007; Hanim and Redzuan, 2010). If the Gap value is zero or positive, it means that the tourists' actual experience with ecotourism services matches or exceeds their expectations, showing contentment. If the value is negative, it suggests they had higher expectations than what they got, showing disappointment. Paired t-test has been carried out to determine whether the Gap (difference in mean values) was significant or otherwise. Statistically it was used to test the following hypotheses:

5. Data Analysis and Discussion

5.1. Demographic Profile Analysis

Table 1: Demographic Profile of Tourists

Demographic Profile of Tourists (N=402)					
Demographic Profile	*Number*	*%*	*Demographic Profile*	*Number*	*%*
Gender			Marital Status		
Male	197	49.0	Married	215	53.5
Female	205	51.0	Unmarried	170	42.3
Age			Separated	17	4.2

contd. table 1

Demographic Profile of Tourists (N=402)					
Demographic Profile	*Number*	*%*	*Demographic Profile*	*Number*	*%*
18-29	98	24.4	Educational level		
30-39	174	43.3	Upto S.S.C	111	27.6
40-49	58	14.4	Upto H.S.S.C	58	14.4
50-59	38	9.5	Graduation	206	51.2
Above 60	34	8.5	Post-Graduation	27	6.7
Monthly Income			Social class		
Less than 25,000	68	16.9	Individual	170	42.3
25,001-50,000	134	33.3	Couple with no kids	105	26.1
50,001-75,000	129	32.1	Family with children	127	31.6
Above 50,000	71	17.7			

Source: Compiled from Primary Data

The demographic profile of respondents indicates an approximately equal distribution in terms of Gender - Male (49%) and Female (51%). As per age, the largest group of participants aged 30-39 years (43.3%), followed by the second largest group aged 18-29 years (24.4%). Only 8.5% of the respondents were above 60 years of age. Most of the respondents has income of 25000 to 75000 per month, married people covered 53.5% of the share. More than 51% of the respondents were graduates, most of the tourists were individual travellers.

5.2. Factor Analysis

Table 2: Factor Analysis and Gap Analysis

Factor Analysis & Gap Analysis (N=402)							
Variables		*Loading*	*Expectations*	*Performance*	*Gap (P)-(E)*	*t*	*p*
F1	Sustainable tourism; Eigen Value 14.360; % of Variance Explained 49.517; (α=0.965)						
1.	Improvement in the standard of living of local community	0.846	4.87	3.82	-1.04	22.360	0.00
2.	Preservation of water quality	0.846	4.56	2.92	-1.65	27.363	0.00
3.	Protection of natural environment	0.835	4.44	2.73	-1.71	29.364	0.00
4.	Increase of tourism related employment	0.825	4.46	2.73	-1.73	29.400	0.00
5.	Preservation of air quality	0.821	4.71	3.20	-1.51	30.653	0.00
6.	Availability of local goods	0.780	4.76	3.44	-1.32	30.377	0.00
7.	Contribute to local tourism businesses	0.774	4.76	3.56	-1.20	29.736	0.00
8.	Chance to interact with local people	0.762	4.29	2.90	-1.40	25.518	0.00

contd. table 2

Variables	*Loading*	*Expectations*	*Performance*	*Gap (P)-(E)*	*t*	*p*
9. Opportunity to view life of locals	0.743	4.54	3.21	-1.33	25.105	0.00
10. Hospitality of residents	0.731	4.58	3.29	-1.29	25.182	0.00
11. Environmental commitment of staff	0.591	4.61	3.32	-1.30	25.374	0.00
Factor Mean		4.60	3.19	-1.41		
F2 Customer Service Attributes; Eigen Value 2.993; % of Variance Explained 10.321; (α=0.945)						
12. Food	0.854	4.75	3.59	-1.16	26.218	0.00
13. Accommodation	0.807	4.78	3.56	-1.22	27.190	0.00
14. Entertainment	0.804	4.77	3.55	-1.22	26.637	0.00
15. Comfort	0.793	4.73	3.42	-1.32	25.939	0.00
16. Guides with great knowledge	0.708	4.73	3.41	-1.33	27.155	0.00
17. Greenery	0.661	4.70	3.49	-1.21	25.216	0.00
18. Excellent communication skills of guides	0.622	4.65	3.49	-1.16	23.694	0.00
Factor Mean		4.73	3.50	-1.23		
F3 Environmental friendly; Eigen Value2.575; % of Variance Explained 8.880; (α=0.918)						
19. Energy saving measures	0.837	4.64	3.46	-1.18	23.579	0.00
20. Recycling of waste	0.823	4.54	3.21	-1.33	27.375	0.00
21. Water saving initiatives	0.780	4.57	3.17	-1.39	27.294	0.00
22. Flexibility	0.663	4.58	3.20	-1.38	27.662	0.00
Factor Mean		4.58	3.26	-1.32		
F4 Health care services and security; Eigen Value 1.545; % of Variance Explained 5.328; (α=928)						
23. Access for disabled	0.899	4.66	3.30	-1.36	29.050	0.00
24. Health care services	0.881	4.72	3.35	-1.37	29.767	0.00
25. Security	0.824	4.68	3.39	-1.29	27.321	0.00
Factor Mean		4.69	3.35	-1.34		
F5 Ecosite utilities; Eigen Value 1.306; % of Variance Explained 4.504; (α=816)						
26. Accessibility	0.771	4.64	3.39	-1.25	24.015	0.00
27. Calm environment	0.770	4.57	3.21	-1.36	25.946	0.00
28. Use of containers made of natural materials	0.662	4.64	3.18	-1.46	27.676	0.00
29. Hygiene	0.635	4.69	3.21	-1.48	27.911	0.00
Factor Mean		4.63	3.25	-1.38		
KMO: 0.911		Bartlett's Test of Sphericity 15022.789				

Source: Compiled from Primary Data

Exploratory factor analysis was applied for 29 variables, which generated 5 factors. There were five factors with Eigen values more than 1 and attribute loadings greater than 0.3 reported. The statistical

probability and test revealed a substantial connection between the variables, indicating that Factor Analysis was necessary. The overall measure of sample adequacy calculated by Kaiser-Meyer-Olkin was 0.911, which was commendable, and the Bartlett test of sphericity yielded a result of 15022.789 (Hair *et al.,* 1999). The Cronbach's alpha of each factor was calculated to determine its dependability. The Cronbach's Alpha coefficients of subscales ranged from 0.816 to 0.965 for the five variables, according to the findings. Because 0.70 is the minimum figure for passing the dependability test, the result was deemed acceptable (Nunnally, 1967).

The first factor, F1-Sustainable tourism had an alpha of 0.965 and includes the following variables - improvement in the standard of living of local community, preservation of water quality, protection of natural environment, increase of tourism related employment, preservation of air quality, availability of local goods, contribute to local tourism businesses, chance to interact with local people, opportunity to view life of locals, hospitality of residents and environmental commitment of staff. The second factor F2 - customer service attributes had 7 variables and an alpha of 0.945 and includes the following variables – food, accommodation, entertainment, comfort, guides with great knowledge, greenery and excellent communication skills of guides. The third factor F3 – environmental friendly had 5 variables and an alpha of 0.918 and includes the following variables–energy saving measures, recycling of waste, water saving initiatives and flexibility. The fourth factor was F4 – Health care services and security having 3 variables and an alpha of 0.928 and includes the following variables access for disabled, health care services and security and finally, the fifth factor F5 Ecosite utilities had 4 variables and an alpha of 0.816 and includes the following variables –accessibility, calm environment, use of containers made of natural materials and hygiene.

5.3. Mean Analysis

The Grand Mean Value of the scale, according to mean analysis, is 4.64 in terms for Expectation. For F1, (Sustainable tourism) it was 4.60 (Above average) for most of the variables except preservation of water quality, protection of natural environment, increase of tourism related employment, chance to interact with local people, opportunity to view life of locals and hospitality of residents was somewhat less than 'above average expectation' values. For F2, (Customer service attributes) it was found to be 4.73 (Above average) with greenery and excellent communication skills of guides having somewhat less than 'above average' expectations. F3 (Environmental friendly) received a score of 4.58 (above average), with waste recycling and water conservation programmes scoring slightly lower than the 'above average expectation' levels. It was 4.69 (Average) for F4 (Health Care Services and Security), with two out of three factors (access for disabled and security) having 'below average' expectations.

It was 4.63 (Above average) for F5 (Eco-site utilities), with only calm environment having somewhat lower than 'above average expectation' values.

Thereby indicating Sustainable tourism, Customer service attributes, Environmental friendly and Ecosite utilities (F1, F2, F3 & F5) are thought to be 'above average' Expectations in a destination's charm in the minds of the tourists. Whereas, Health care services and security (F4), had 'average' Expectations.

The actual performance of these factors has a Grand Mean Value of 3.3. For F-1 (Sustainable tourism) it was 3.19, showing 'average' level of satisfaction with 3 variables (improvement in the standard

of living of local community, availability of local goods and contribute to local tourism businesses) inclining towards the higher end of 'average satisfaction', with 4 variables (preservation of water quality, opportunity to view life of locals, hospitality of residents and environmental commitment of staff) inclining to the lower end of 'average satisfaction'. 4 variables (preservation of water quality, protection of natural environment, increase of tourism related employment and chance to interact with local people) had 'below average' values.

For F2 (Customer service attributes) with three variables (food, accommodation, entertainment), it was 3.50, suggesting a 'average' degree of satisfaction inclining towards 'above average' satisfaction. 2 variables (comfort, guides with great knowledge) had slightly 'below average' values. For F3 (environmental friendly) it was 3.26 overall, indicating 'below average' performance, with 3 variables (recycling of waste, water saving initiatives, flexibility) having 'below average' satisfaction and only 1 variable (energy saving measures) having 'above average' satisfaction. For F4 (Health care services and security) it was 3.35 with most of the variables having 'average satisfaction' levels except access for disabled.

For F5 (Ecosite utilities) it was 3.25 overall, showing 'below average' performance, with 3 variables (calm environment, use of containers made of natural materials and hygiene) having slightly 'below average' satisfaction and only 1 variable (accessibility) having 'above average' satisfaction.

Thereby indicating Sustainable tourism, Customer service attributes and Health care services and security (F1, F2 & F4) are normally thought to have 'average' performance/ satisfaction by the tourists. Whereas Health care services and security (F4) tends towards the higher end of 'average' performance. However, Environmental friendly (F3) & Ecosite utilities (F5) have a 'below average' performance.

5.4. Paired t-test

The Paired t-test (Table 2) reveals thatin all the variables there exists a significant difference in expectation of tourists with the importance specified to ecotourism services and satisfaction, thus fail to accept the null hypothesis and accept the alternate hypothesis.

5.5. Gap Analysis

Gap Analysis (Refer Table 2) revealed that the gap was negative for all parameters, both overall and for individual variables, showing that expectations were higher than the satisfaction/performance achieved at the destination, and that satisfaction was low, resulting in a less-than-satisfactory experience that may not be repeated.

The highest gap were found in 'Increase of tourism related employment, Protection of natural environment and Preservation of water quality', which belong to (F1 Sustainable tourism). Followed by 'Hygiene and use of containers made of natural materials' which belong to F5 Ecosite utilities and 'Water saving initiatives, Flexibility' that belong to F3 – Environmental friendly. The lowest gap was found in the variable 'Improvement in the standard of living of local community' which is a part of F1 Sustainable tourism. Followed by food and excellent communication skills of guides that belongs to F2 - Customer service attributes.

However, there was a negative difference between expectation and performance for all 29 statements showing that initiatives and resources should be invested to improve tourist satisfaction. The overall picture demonstrates that ecotourism services in the state of Goa are essentially non-existent, or are poorly managed. This is a severe problem that needs to be addressed quickly by the relevant authorities, or else the bad effects of tourism would outnumber the favourable ones in the Goan tourism industry. Thus the hypothesis is rejected and it points out that the ecotourism services provided to visitors to the state are unsatisfactory.

6. Conclusion

The study revealed that there is a need for planning and developing policies to provide effective ecotourism services in Goa. The findings have revealed areas which require improvements to provide quality services. Inappropriate and unsatisfactory ecotourism services are being provided, therefore, it is recommended that planners and policy makers need to take decisions to improve tourists satisfaction towards the various ecotourism services available in the state. To promote tourism-related jobs in the state, initiatives must be undertaken. More stringent measures are needed to maintain the natural environment, preserve water quality, and implement water-saving efforts. Containers made of natural materials can be used.

As a result, we may conclude that there is a disconnect between what people expect and what they get after participating in ecotourism activities in Goa. Therefore, it leads to the conclusion that majority of the tourists are of the opinion that most of the services available for ecotourism in Goa are inadequate, not well maintained and not up to their expectations. Expectations and performance gaps that were highlighted clearly indicate that the various stakeholders, service providers and government tourism departments need to standardize and upgrade the services they offer. The study provides guidelines and highlights areas that require attention.

In Goa, careful attention is required towards the ecotourism services available, or else the appeal to Goa as a tourist destination may suffer irreversible damage in the coming years. There is a need to improve the ecotourism services available in Goa to sustain the destinations competitiveness.

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Manuscript Guidelines to Contributors/Authors

We invite academicians, researchers and executives / industry practitioners to submit original and unpublished research papers/articles in the area of Commerce, Economics, and Management for publication in **Orissa Journal of Commerce**. Following guidelines should be followed:

a) The manuscripts should be typed in MS Word and 1.5 spaces with margin of 1 inch on all side. An **Abstract of 150-160 words, 5-6 Keywords and 4-5 JEL Classification codes** should be provided in the first page of the paper. **The length of the paper should not exceed 6,000 words.**

b) The title of the paper should be followed by name, designation, affiliation, email and mobile number of the author(s). The surname of the author(s) should be marked in blue colour.

c) The main body of the paper should contain: **1. Introduction, 2. Review of Literature, 3. Objective and Hypothesis of the Study, 4. Research Methodology, 5. Data Analysis, 6. Result and Discussion, and 7. Conclusion.** The conclusion should include research outcomes, implications of research on industry, academia and policy making, Limitation of study if any, and future scope of research if any. The subheadings under each of the main headings should also be numbered accordingly.

d) The tables and figures with their sources should appear in the manuscript near/after where they are referred in the text. All figures and tables should be numbered **(Table 1, 2, 3… & Figure 1, 2, 3…)** and cited in the text with proper headings.

e) It is the author's obligation to provide complete references with the necessary information. **References should be according to APA latest edition arranged in alphabetical order.** The list of all references must be placed at the end of the manuscript.

f) Papers received in the prescribed journal format only will be processed for review. (**For paper template/format, please refer January-March 2021 Journal Issue)**

g) Every paper should accompany a similarity index report in Turnitin antiplagiarism software. **The plagiarism percentage should not exceed 10-12 per cent** (excluding 8 words). Further it should not be more than one per cent from one source.

h) The Editorial Board reserves the right to accept a manuscript for publication. Papers are processed and reviewed through a blind referral system by experts in the subject areas. To ensure anonymity, the author(s) name, designation and other details should appear only on the first page along with the title of the paper and should not be repeated anywhere else. Accepted manuscripts are subject to editorial changes. All the correspondences including acceptance/revision/rejection will be made to the corresponding author.

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