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Marketing Practices and Challenges of Handloom Based Micro-Enterprises in Assam

Manuj Baruah, Paramita Saha and Mashud Ahmed

Abstract : *Handloom micro-entrepreneurial activity in the informal sector plays an important role in local economic development. Assam, a state of NER, has the highest number of handloom workers (12.84 lakh) among all the states of India. Wide varieties of products, such as Mekhela-Chadar, Gamosa, Riha, and other traditional attires, have been produced by weavers using different types of yarn and designs. In the current liberalised and competitive environment, the appropriate combination of marketing mix strategies is vital for the development of the sector. The present paper intends to analyse the marketing practises and problems of handloom enterprises in Assam. The study is based on primary data collected from 312 micro-level handloom enterprises in Assam through a multi-stage sampling technique. The 4Ps of marketing mix strategies, such as product, price, place, and promotion, are used for conceptualization. Promotional variables, lack of customer awareness, challenges from competitors, supply-side bottlenecks, demand fluctuation, intervention by intermediaries, and a lack of product diversity are identified as major marketing challenges for handloom enterprise in Assam.*

Keywords : Handloom Enterprises, Marketing Mix, Principal Component Analysis.

Introduction

Rural non-farm activities and rural industrialization in the informal sector are important for rural economic diversification through employment creation, income generation, and the prevention of rural-to-urban labour migration

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(Saith, 1992; Hazarika & Goswami, 2014). As an informal sector, the handloom industry in India is based on a large number of artisanal skill-based enterprises that contributed 11.79 percent of total textile production in 2019–20 and employed 35.22 lakh handloom workers in the same year (Ministry of Textile, 2020). The sector is also important in terms of export earnings. Indian textile and handloom products are exported to more than 100 countries around the world, and in 2019–20, the export earnings of the handloom sector amounted to Rs. 2248.33 crore (Ministry of Textile, 2021a). The top five major export markets for Indian handloom products are the USA, UK, Spain, Italy, and Germany (HEPC, 2022).

In India, handloom activities take place mainly in Assam, West Bengal, Tamil Nadu, Manipur, Uttar Pradesh, Andhra Pradesh, Tripura, Odisha, Arunachal Pradesh, Karnataka, Telangana, Nagaland, and Meghalaya, and 93 percent of the handloom workforce belongs to these 13 states (Baruah & Saha, 2022). More than half (52.62 percent) of handloom workers in India belong to the North East Region (NER). Assam, a state of NER, has the highest number of handloom workers (12.84 lakh) among all the states of India (Ministry of Textile 2020). In Assam, the majority of production units in the handloom sector are micro-enterprises, where the majority of the workers are self-employed micro-entrepreneurs. The weavers in Assam produce diversified handloom products using different types of yarn like cotton, mulberry silk, muga silk, eri spun silk, etc. Assamese handloom products have high demand at the local, regional, national, and international levels. Weaving activity also occupies an important space in Assamese culture. The weavers in the state are preserving their traditional arts and skills and representing culture through their weaving fabrics and designs. The level of artistry and complexity accomplished in handloom fabrics is unmatched, and it cannot be mechanically reproduced on a large scale.

The elimination of trade restrictions in the textile sector on January 1, 2005, increased competition among emerging economies like China, India, Bangladesh, Vietnam, Sri Lanka, and others to increase their market share. As a consequence, the Indian handloom industry, which is part of the textile industry, faced intense competition (Bortamuly & Goswami, 2015). In order to be competitive, the handloom sector needs to adopt effective marketing strategies. In the current liberalised and competitive environment, the appropriate combination of marketing mix strategies is vital for the development of the sector.

The government of India has undertaken many marketing programmes for increasing sales and reviving the handloom industry. The comprehensive

marketing promotion programme, handloom export promotion, organisation of fairs and exhibitions, urban haats, and brand building (Handloom Mark, Geographical Indicators, and Indian Handloom Brand) have been launched by the Ministry of Textiles, Government of India. Many well-known handloom items, including Benarasi saris, Ikat tie-and-dye saris from Andhra Pradesh, Kanchipuram saris from Tamil Nadu, Muga silk fabrics from Assam, and Santipur saris from West Bengal, are in high demand both domestically and abroad.

While price strategies, production efficiency, and cost minimization are often studied in economics, for designing an effective marketing strategy, product design, product promotion, product mix, marketing channels, and marketing problems are also important. Thus, it is important to analyse different dimensions of marketing practises in the handloom sector. In these contexts, the objective of the present paper is to analyse the marketing strategies of handloom microenterprises in Assam with a view to suggesting appropriate policies.

Review of Literature

Many studies have emphasised the adoption of appropriate marketing strategies to prevent the decline of the handloom sector. A study (Modak, 2006) observed that good business practises and the best product quality are the key reasons behind the success of Fab India. A case study (Niranjana, Annapurna, Syamasundary, & Uzrama, 2006) in Andhra Pradesh found that Anokhi, Fab India, Desi, Dastkar Andhra Pradesh Marketing Association, and Rehwa are the successful marketing agencies for weavers. A study (Vinayagamoorthy, 2018) in Thanjavur, India, observed that product, price, and place-related strategies were moderately effective and promotion was an ineffective strategy for the development of the handloom industry. A study (Rai & Srivastava, 2015) observed that wholesale, retail, and institutional forms are the important marketing channels for the Banarasi handloom cluster. A study (Ismail & Velnampy 2013) found that product mix and distribution strategy have a positive impact on the performance of the handloom industry in Sri Lanka. A study (Ramana, Reddy, Kumar, & Sirisha, 2019) in the Gunter District of Andhra Pradesh observed that the price of handloom products was determined by the cost-based pricing approach. Direct marketing, advertising, personal selling, quality, and discounts are the preferred promotional strategies for handloom entrepreneurs. A study (Hmangaihzuali & Ramswamy, 2015) was carried out in the Thenzawl handloom cluster in Mizuram to analyse the product policies of handloom weavers. It is

observed that the entrepreneur produced diversified handloom products, but they were not suitable for national and international markets. It is suggested that handloom entrepreneurs need government support with respect to the development of products, improvising design, brand building, creating networking with NIFT and NID, and setting up a common facility centre for testing the quality of the products. A study (Vadakepat & Khateeb, 2012) in Kerala used the product concentration index and competitive profile matrix to analyse the present market realities of traditional handloom products. The competitive profile matrix shows that out of the four success variables (product quality, convenient pricing, innovative distribution, and product awareness), product quality is the major strength of handloom products. Many studies identify that marketing is a common problem for the handloom industry in India. Studies (Narzari, 2013; Nadh & Harshavardhan, 2013; Ramswamy, 2013; Kumar &Sulaiman, 2017) observed that lack of availability of market information, awareness about product features, quality standards, insufficient promotion, improper management of handloom logistics, the poor role of the government, high competition, slackness in demand, and change in fashion and design were identified as the major marketing challenges of the handloom industry in India in studies carried out in Assam, Mizoram, Kerala, and Tamil Nadu.

Methodology

Sources of Data and Sampling Technique

The study is based on primary data collected from 312 handloom-based micro-enterprises spread over four districts of Assam, namely Kamrup (R), Barpeta, Sivasagar, and Nalbari, from October 2021 to February 2022. The study used a multi-stage sampling method at the district, block, village, and enterprise levels. At the first stage, four districts of Assam were selected purposefully on the basis of the highest number of weavers as per the data obtained from the Handloom Weaver Information System, Office of the Development Commissioner (Handloom), Ministry of Textile, Government of India. In the second stage, two development blocks from each selected district were selected based on the highest number of weavers. At the third stage, eight villages (one village from each selected block) were selected from the eight selected blocks on the basis of the commercial concentration of handloom activities as per information collected from the District Handloom and Textile Department. At the last stage, before collecting data at the village level, lists of handloom enterprise owners were prepared after discussions with the head of the village, master weavers, and ward members. For operational purposes, a "handloom

entrepreneur is defined as an individual who owns an enterprise with a minimum of one operating loom and has completed at least one year of operation. From the prepared list of each chosen sample village, 50 percent of handloom entrepreneurs were selected randomly.

Analytical Framework of Marketing Mix

Marketing is a social and managerial process through which individuals and groups obtain what they require and desire by creating, offering, and exchanging products of value (Kotler & Keller, 2016). The marketing process begins with the identification of consumers' specific needs and concludes only when those needs are satisfied. Marketing operations involved a large number of activities, including product planning, pricing, branding, channels of distribution, personal selling, advertising, promotions, packaging, display, service policies, physical handling policies related to warehousing and transportation, and fact-finding analysis (Borden, 1964). These marketing activities are typically referred to as the marketing mix, which is comprised of the 4Ps (product, price, place, and promotion) of the marketing mix model (McCarthy and Perreault, 2002; Kotler & Keller, 2016). The paper examines the marketing decision regarding product, price, place, and promotion, i.e., the 4 Ps of marketing strategy, from the producer's point of view with the help of simple descriptive statistical tools.

Principal Component Analysis (PCA)

To identify the marketing problems of the sample handloom enterprises in Assam, the PCA is used. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity are used to test sampling adequacy and correlation among the variables, respectively. The perceptions of handloom entrepreneurs about marketing problems are collected using a structured questionnaire with closed-ended options, in which respondents were asked to rank according to a five-point Likert scale ranging from most important to irrelevant. The most important marketing problem, according to the individual respondent, should be ranked highest, and the least important one should be ranked lowest.

Results and Discussions

Product Practices

Product variety, quality, design, features, brand name, packaging, etc. are important components of the product strategy of a firm (Kotler & Keller, 2016). The product mix combines all the product lines and items offered by a firm. A product line refers to a group of closely related product items that are distributed

through some channels to the same consumer groups (Krishnamacharyulu & Ramakrishnan, 2011). The diversity of handloom products in the sample enterprises is shown in Table-1. It is revealed that the handloom micro-enterprises produce 12 items, which are classified under four product lines: mekhela-chadar, gamosa, traditional attire, and other items.

The Mekhela-Chadar (MC) is a traditional fabric worn by Assamese women. It may be produced using different types of yarn like cotton, mulberry silk, muga silk, eri spun silk, etc. In the sample, Mekhela-Chadar is classified into four categories based on types of yarn, design, and the amount of labour used in its weaving process. The **Mekhela-Chadar (MC)-I** is made by using cotton yarn and a simple hand design. The MC-I is more common among the weavers because half of the sample enterprises are involved in producing this item of product. The price range of the product varies between Rs. 800 and Rs. 2200. It is mainly due to the variation of colour, quality, and design within this product. The **Mekhela-Chadar (MC) II** is a high-quality tusser silk fabric, and Jacquard machines are used for designing. The minimum price of the product is Rs. 6000, and the maximum is Rs.14000. The **Mekhela-Chadar (MC)-III** is also made of tusser silk yarn, but the design is moderate. The price range of the product lies between Rs.3500 and Rs. 5500. The price ranges of MC-II and MC-III are different due to only the cost of design being different between the products. Out of 312 sample enterprises, 54 are involved in producing MC-II and 78 are producing MC-III. **The Mekhela-Chadar (MC)-IV** is made of Muga silk yarn and is the most valuable handloom product in Assam. Muga silk is one of the rarest silks in the world, and it is produced within the geographical area of Assam. The production of Muga depends on many climate conditions, such as temperature, humidity, soil, rainfall, and terrain. Assamese Muga Silk also has a Geographical Indication (GI) tag. For producing Muga silk fabrics, a high amount of working capital is required. As handloom units in the sample are micro-level enterprises, only eight enterprises are involved in producing Muga mekhela-chadar. They sell the product for between Rs.25000 and Rs.35000.

Gamosa is the most prominent handloom product of the Assamese people, representing their culture and heritage. It is commonly used to honour people, and it is also used during cultural festivals and religious rituals. Assamese men and women use the gamosa in various ways, depending on the traditional or cultural occasion. It may be woven by using different natural fibres or yarns, such as cotton, muga silk, tusser silk, mulberry silk, etc. In the sample, gamosa is classified into three categories, such as gamosa I, II, and III, on the basis of the

Table 1: Product mix of sample handloom enterprise in Assam.

Product line	Product items	Descriptions	No. of Enterprises	Price range (in Rs)
Product line I Mekhela-chadar set	Mekhla-Chadar (MC)-I	Made by using cotton yarn 24 to 32 hours of labour employment for producing single set. Hand design	157	800-2200
	Mekhela-Chadar (MC)-II	Made by using tusser silk 56 to 64 hours of labour engagement for producing single set. Fine designing using Jacquard machine	54	6000-14,000
	Mekhela Chadar (MC)-III	Made by using tusser silk 24 to 32 mandays labour engagement for producing single set Moderate hand design	78	3500-5500
	Mekhela-Chadar (MC)-IV	48 to 56 hours of labour engaged for producing single set Fine designing using Jacquard machine	8	25000-35000
Product line II Gamosa	Gamosa-I	Made by using tusser silk 3 to 4 hours of labour engagement for producing a single piece Fine design using jacquard machine	34	900- 1200
	Gamosa -II	Made by using cotton 3 to 4 hours of labour engagement producing a single piece Fine hand design and jacquard machine design	203	110-550
	Gamosa - III	Made by using cotton 2 to 4 hours of labour engagement producing a single piece Moderate hand design	21	80-300
Product line III Other Traditional attire	Dhoti	Made by using cotton 12 to 15 hours of labour engagement producing a single piece No design	11	500-700
	Seleng Kapur	Made by using cotton / mulberry silk 7 to 10 hours of labour engagement producing a single piece Moderate hand design	14	400-1100
Product line IV Other items	Tangali	Made by using cotton or wool 3 to 5 hours of labour engagement producing a single piece Moderate hand design	2	400
	Shirt piece	Made by using cotton or muga silk 12 to 16 hours of labour engagement producing a single piece Hand design	3	1000 -2000
	Mufflar	Made by using cotton or wool 8 to 12 hours of labour engagement producing a single piece Moderate hand design	3	300-500

Source: Computed from primary data, 2021-22

types of yarn and techniques of design use. The Gamosa I is produced using tusser yarn, and the design is made with the help of a jacquard machine. In the sample enterprises, only 34 are producing Gamosa I, which they sell in the price range of Rs.900 – Rs.1200. Gamosa II and III are made by using cotton yarn, but the design is different between the two types. Gamosa II is made with either a fine hand design or a jacquard machine design. While moderate hand design is used for making Gamosa III. In the sample, the majority of enterprises (203) are producing Gamosa II and selling the product for a price between Rs.110 and Rs.550.

The dhoti and gamosa seem to be the traditional attire of the men of Assam. The dhoti is also a well-known garment in other Indian traditions and is used to cover the lower half of the body. In the sample, a few enterprises (11) are involved in producing dhoti, which is sold in the price range of Rs.500 to Rs.700.

Seleng Kapur (or chadar) is an important traditional attire for Assamese men and women. It is mainly used during traditional and religious festivals. In the sample, only 14 enterprises are involved in producing cheleng-chadar, which is produced only as per order. The price range of seleng chadar is Rs.400 – Rs.1100.

The other items, like tangali, shirt pieces, and mufflers, produced by other enterprises are limited in the sample. Among the sample enterprises, only 2 are producing tangali, 3 are producing shirt pieces, and 3 are producing mufflers. The enterprises only produce these three items in accordance with orders.

Table 2: Share of different products in total sales of sample enterprises during the survey year

Products Name	Estimated sales turnover (in lakhs)	Share in total sales turnover (in per cent)
Mekhela-Chadar-I	103.62	8.62
Mekhela-Chadar-II	419.25	34.89
Mekhela Chader-III	189.09	15.74
Mekhela-Chadar-IV	24.90	2.07
Gamosa -I	198.78	16.54
Gamosa-II	233.31	19.42
Gamosa-III	9.54	0.79
Dhoti	0.43	0.04
Cheleng Kapur	13.26	1.10
Shirt	0.60	0.05
Muffler &Tungali	8.79	0.73
Total	**1201.56**	**100.00**

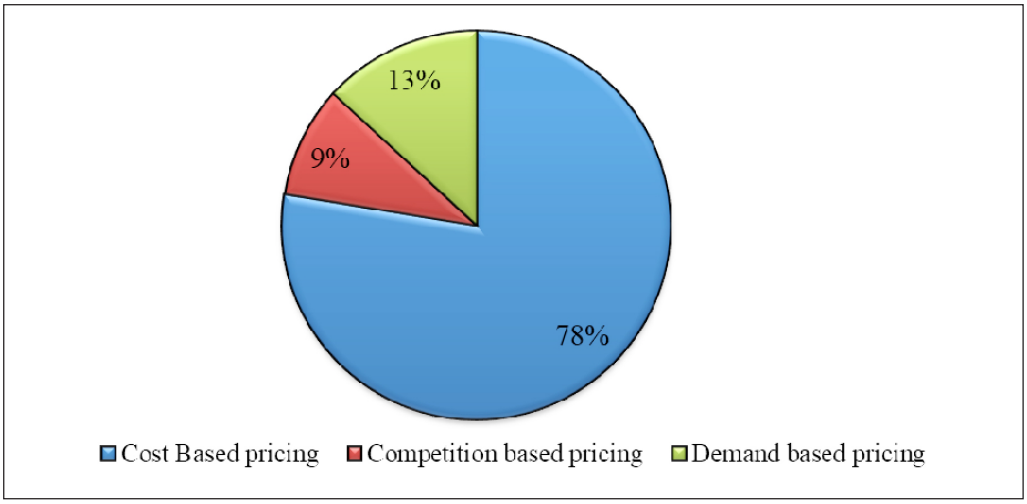
Source: Computed from primary data, 2021-22

Table-2 shows the share of the sales value of different handloom products in the total sales turnover of sample enterprises in Assam during the survey year. It is observed that the total sales turnover of the sample enterprises is Rs. 1201.56 lakhs, and different types of Mekhela-Chadar and Gamusa are the dominant handloom products in the sample. The highest sales value percentage belongs to Mekhela-Chadar II (34.89%), followed by Gamosa II (19.42%), Gamosa I (16.54%), and Mekhela-Chadar III (15.74%). These four items accounted for 86.59 percent of the total sales volume of the sample. Mekhela Chadar II is valued at Rs 419.25 lakhs, Gamosa II is valued at Rs 233.31 lakhs, Gamosa I is valued at Rs 198.78 lakhs, and Mekhela Chadar III is valued at Rs 189.09 lakhs. The shares of Gamosa III, Dhoti, Cheleng Kapur, shirt, muffler, and tangali are very low.

Pricing Practises

The price strategy is one of the most important components of the marketing mix. According to Kotler & Armstrong (2008), the pricing decision of a product is effected by both internal and external factors such as cost, marketing strategy, organisational consideration, nature of demand, competition, and other environmental elements. Krishnamacharyulu & Ramakrishnan (2011), state that the cost-based approach, the competition-based approach, and the demand-based approach are the three important methods followed by a producer for determining the price of a product. The cost-based pricing strategy determines the overall cost first and then adds the targeted profit. The term "competitive pricing" refers to the process of determining a strategic price for a product or service in order to maximise profit in a given market. According to the competition-based pricing method, the price is set depending on rivals who produce the same products. Under the demand-based pricing method, the producer looks to the needs of the customer's demand for the product, regardless of price or competition. The majority of handloom enterprises in Assam are run by self-employed microentrepreneurs, and they sell products through different marketing channels. So, the study investigates the methods of price determination adopted by handloom microenterprise units in Assam. Figure 1 shows that more than 75 percent of enterprises adopted cost-based pricing strategies. Again, 13 percent of enterprises set the price of products based on demand. About 9 percent of enterprises fixed the price based on competitor-based methods. Competition-based pricing is like oligopolistic market pricing, where smaller firms follow the leader firm. In the case of handloom enterprises, the micro-weaving units follow the master weavers or large enterprises that produce and sell similar products.

Figure-1 : Handloom Enterprises According to Methods of Price Fixation



Source : Computed from primary data, 2021-22.

Place Practices (Marketing Channels)

The channel of distribution is the important component of placement strategy, which is the third P of marketing mix. Distribution is concerned with the activities involved in bringing the goods from their place of original production to the place of their final consumption. Handloom products of sample enterprises are distributed through different marketing channels. The four marketing channels are revealed in sample handloom enterprises. These four marketing channels are

Channel I : Entrepreneurs → Direct consumer. It can be called zero level channel with no intermediary between producer and consumer.

Channel II : Entrepreneurs → Village Trader → Consumer. It can be called one level channel with one intermediary between producer and consumer.

Channel III : Entrepreneurs → Retailer → Consumer. It can be called one level channel with one intermediary between producer and consumer.

Channel IV : Entrepreneurs → Wholesaler → Retailer → Consumer. It can be called two level channels with two intermediaries between producer and consumer.

Table 3: Marketing Channels of Handloom Micro-enterprises in Assam

Marketing Channel	No. of enterprises	Percentage
Direct consumer (Channel I)	188	60.26
Village trader (Channel II)	212	67.95
Retail shop (Channel III)	29	9.29
Wholesaler (Channel IV)	63	20.19

Source: Computed from primary data, 2021-22

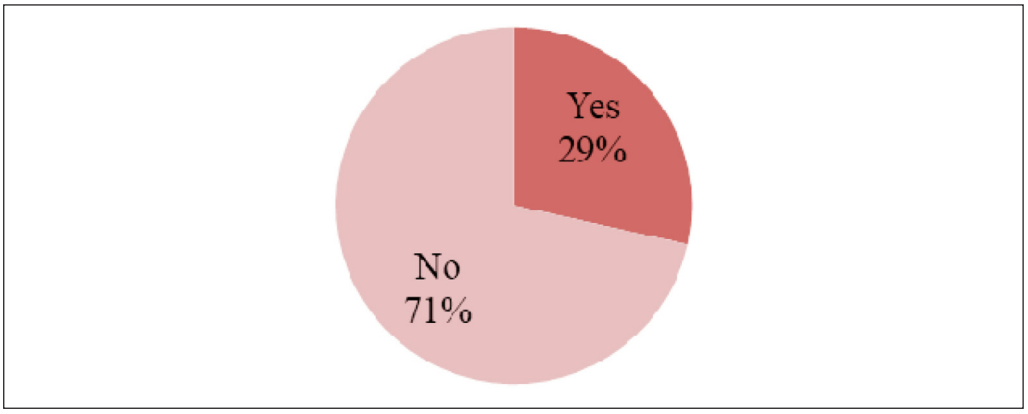
Note: Parentheses indicates percentage of total sample enterprises of each category.
The percentage does not add up to 100 as many respondents sells their product more than one marketing channels.

The handloom microenterprise owner uses their preferred marketing channels based on convenience. An entrepreneur typically uses multiple marketing channels. Table 3 revealed that about 60 percent and 67 percent of enterprises sell their products through channels I and II, respectively. About 20 percent of enterprise sales are through channel IV, and about 9 percent of enterprise sales are through channel III. As per a focus group discussion (FGD) with handloom entrepreneurs, it was observed that marketing channels I and II are more profitable.

Promotional Practices of Sample Handloom Enterprises :

Promotion is one of the most important components of the 4P marketing mix. Producers use the promotion to enlighten consumers about the characteristics and advantages of products and services and to encourage them to buy the products or services. The promotion mix, which includes personal selling, advertising, sales promotion, direct marketing, and public relations, is the primary tool for communicating with customers (Kotler & Keller, 2016). Since handloom is a household-based enterprise, all the enterprises are not adopting any promotional activities for selling their products. But some of the handloom enterprises are adopting promotional methods for selling their products. The enterprises practise promotional activities through advertisement (social media, banner display, etc.), participation in trade fairs and exhibitions, sales representatives, and promotional gifts and special discounts. Figure-2 shows that out of 312 sample enterprises, only 28.53 percent follow at least one type of promotional method.

Figure-2 : Distribution Sample Enterprises According to Adoption of Promotional Practices



Source : Computed from primary data, 2021-22.

Marketing Problems

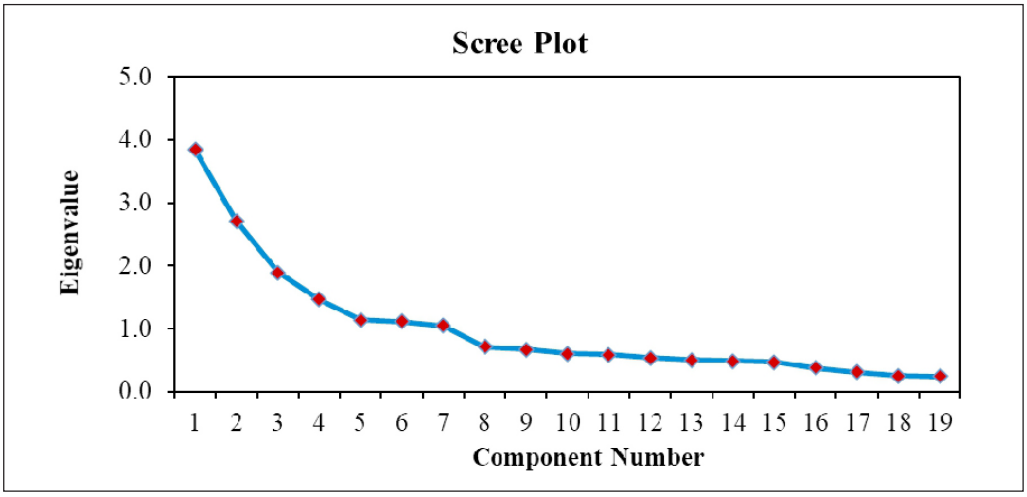
The PCA has been applied to analyse the key marketing problems of sample handloom enterprises in Assam. The result of KMO is 0.720, which is more than 0.50, and the chi-square value is 1762.77 with 171 degrees of freedom, which is significant at a 1 percent level. It implies that the PCA technique is appropriate for the analysis of the marketing problems of handloom enterprises in Assam.

According to a rule of thumb, factors with Eigen values greater than one are considered principal components (OECD, 2008). The Eigen value indicates the relative importance of each variable. The initial eigenvalues of all components are also shown with the help of the Scree plot in Figure 6.4. Seven factors are identified with an Eigen value greater than one.

The names of the perceived factors and the variance explained by the extracted factors are presented in Tables 6.17. The seven factors are extracted by a rotated component matrix, and these factors together explained 69.63 percent of the variance of the variables. The communality value of each variable is high, and it is greater than 0.5.

The factor I explained was 20.26 percent of the variance and was constituted by four variables, such as lack of exporting facilities, insufficient promotion, high advertisement costs, and lack of marketing support from the government. These

Figure-3 : Eigenvalue of Marketing Problems of Sample Enterprises



Source : Computed from primary data, October-February, 2021-22.

four variables share a common problem in the marketing of handloom enterprises in Assam. Hence, these four variables may be clubbed together and referred to as "promotional variables. Factor II explained 14.27 percent of the variance and is constituted by three variables: the existence of inferior handloom products in the market, a lack of customer awareness about the quality of handloom products, and a lack of marketing information. And these three variables club together and are referred to as lack of customer awareness. Factor III is loaded with three variables: difficulties in timely marketing of products, competition from rival enterprises, and the selling channel. Hence, the common problem reflected by these factors is the challenge from customers, which together accounts for 9.98 percent of variance.

Factor IV was formed by two supply-side variables, such as raw material problems and warehousing facilities, and explained the 7.71 percent variance. Factor V includes three variables: the effect of price fluctuations, a low margin on the selling price, and seasonal demand. So, the common problem reflected by this factor is demand fluctuation. The loaded variables of factor VI are exploitation by intermediaries and changes in fashion. So this factor can be termed "intervention by intermediaries. The last factor, VII, is constituted by two variables: lack of product diversification and accessibility of raw materials. The two variables may be grouped together and termed "lack of product diversity.

Table 4: Perceived Factors of Marketing Problems of Sample Handloom Enterprises

Factors and Variables Name	Factors						
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**
Factor I (Promotional variables)							
Lack of exporting facilities	**.730**	-.045	.244	.190	-.041	.052	.063
Insufficient promotion	**.873**	.015	.114	.163	-.011	.067	-.020
High advertisement cost	**.756**	.011	.221	.012	.078	-.143	-.020
Lack of marketing support from Government	**.758**	.147	-.038	-.035	-.063	.144	-.123
Factor II (Lack of Customer Awareness)							
Presence of lower quality handloom fabrics in the market	-.025	**.750**	-.018	-.018	.064	.128	.036
Lack of customer's awareness about the quality of product	.082	**.807**	.120	.130	.099	-.057	.147
Lack of marketing information	.066	**.794**	.044	.193	.116	.018	.048
Factor III (Challenges from competitor)							
Difficulties in timely marketing of products	.079	.033	**.801**	.018	.126	.149	.049
Competition from rival enterprises	.153	.135	**.716**	-.106	-.059	.208	.023
Selling methods/ channels	.254	-.049	**.718**	.211	.072	-.063	-.022
Factor IV (Supply side bottleneck)							
Limited supply of yarn by NHDC/SHDC	.127	.047	.072	**.883**	-.012	-.008	.090
Lack of warehousing	.124	.220	.005	**.840**	-.074	.088	-.054
Factor V (Demand fluctuation)							
Effect of price fluctuations	.046	.453	.013	-.104	**.643**	.023	.096
Low margin on selling price	-.066	.010	.214	.170	**.812**	.023	.121
Seasonal demand	-.001	.106	-.061	-.196	**.738**	.232	-.041
Factor VI (Intervention by intermediaries)							
Exploitations by intermediaries	.021	-.016	.053	.063	.168	**.887**	.114
Frequently changes in fashion and demand	.104	.157	.416	.022	.084	**.715**	-.037
Factor VII (Lack of product diversity)							
Limited product	-.118	.270	-.032	-.102	.117	.123	**.681**
Raw materials problems	.014	.002	.063	.121	.017	-.019	**.859**
Variance							
Percentage of Variance	**20.26**	**14.27**	**9.98**	**7.71**	**6.01**	**5.88**	**5.52**
Cumulative Percentage of Variance	**20.26**	**34.52**	**44.51**	**52.21**	**58.22**	**64.10**	**69.62**

Source: Computed from primary data, October-February, 2021-22

Note: Loading value above 0.5 are boldfaced

Rotation Method: Varimax with Kaiser Normalization

Conclusion

This paper provides a comprehensive discussion of the marketing mix adopted by sample handloom enterprises in Assam. Though the handloom enterprises in Assam produce a variety of product items, there is a need to provide provision for innovative design, brand building, and value addition in handloom fabrics. The majority of enterprises sold their products through direct consumer sales and village traders. Due to the low technology and household-based nature of the handloom industry, a very small proportion of enterprises adopted promotional strategies for selling their products. The majority of handloom enterprises in Assam follow a cost-based pricing approach for fixing the price of the product. Promotional variables, a lack of customer awareness, challenges from competitors, supply-side bottlenecks, demand fluctuation, intervention by intermediaries, and a lack of product diversity are the major marketing challenges facing handloom enterprises in Assam. Policymakers need to establish a government market hub for handloom products, create online marketing channels, low-cost advertisement platforms, etc. for the development of the rural handloom sector.

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Nexus Between Environmental, Social and Governance Scores and Corporate Performance : Evidence from Indian Information Technology Companies

Preeti Khatri, Tanya Gupta and Mani Bhatia

Abstract : *The aim of the study was to find the association between Environmental, Social, And Governance scores and components of financial and market performance. The sample of paper includes eight Information Technology companies listed on the National Stock Exchange for the period of 2017-2021. Panel regression was conducted to analyze the association between operating performance, return on assets, Tobin's Q, stock return, ESG score and control variables. Financial data was collected from the Prowess database and ESG scores from S&P Global Sustainable. ESG score positively impacts operating performance and ROA while negatively to Tobin's Q and stock return. This is the first paper that consider the effect of ESG scores on financial and market performance considering IT companies as a sample. Also, data on ESG scores were composed from S&P Global sustainable database. This study provides benefits for conducting social, philanthropic, and governance activities towards the positive performance of the companies.*

Keywords : ESG Scores, Financial Performance, Ecological Modernization, Market Performance, Panel Data.

1. Introduction

Many academicians, researchers, and policymakers are focusing on environmental-social-governance (ESG) activities because they contribute towards the sustainability of resources. Sustainability is also the demand of the current situation after the outbreak of Covid-19 (C-19). ESG reporting aids

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investors in evaluating the investments options (Saini et al., 2022). Some of the environmental activities conducted by business organization are reduction of greenhouse gas emissions, solutions towards climate change, recycling of waste water, and ensuring zero waste to landfill. It results a significant impact on corporate operations and regarded as key performance indicator for investors. Social activities comprise gender-diverse workforce, enable digital literacy, opportunities to local individual, disabled, and wellness services to employees. Furthermore, corporate governance includes a sustainable supply chain, safety of privacy of data, and the addition of women in C-suite. It has many positive benefits such as an increase in firm performance, sustainable economy, and benefits to various stakeholders. Shareholder value is also generated after investing in ESG activities (Singh et al., 2022). Additionally, consumers are looking for creating sustainable solutions, which is motivating the businesses to adopt ESG practices as a business strategy. The number of ESG activities are continue to increase which has a significant impact on management theory and business process (Nozawa et al., 2019). Environmental (E), Social (S), and Governance (G) or corporate social responsibility or sustainability are used interchangeably for performing any of above activities in the current situation to develop its optimistic impression on the society (Khan et al., 2016). A company can increase its performance by conducting objectives in accordance to good corporate governance practices and establishing strong relations with the community (Foote et al., 2010).

After implementation of UN Sustainable Development Goals (SDGs), Businesses are likewise worried about how their operations may affect society (Maas & Reniers, 2014). Nowadays, most of the business organization are practicing environmental, social, and governance activities for sustainability of the organization. It also leads to long-term survival of the business concern (Laskar & Maji, 2016). As far as various stakeholders are also interested in ESG reporting. Companies are also disclosing all their ESG activities performed within a financial year in the sustainability report annexed with annual report. ESG reporting assists in strengthening the brand of the business and consequently increases firm performance and reduces risk (Brammer & Pavelin, 2006). It is also a good indicator for augmentation in shareholder's wealth.

ESG and business financial performance have been widely studied in numerous earlier research reports (El Khoury et al., 2021; Chelawat & Trivedi, 2016; Ahmad et al., 2021, Duque-Grisales & Aguilera-Caracuel, 2021; Dalal & Thaker, 2019; Tamayo-Torres et al., 2019) and provided controversial results. Studies from the

previous academic literature indicate a positive relationship between ESG and CFP(Ahmad et al., 2021; Xie et al., 2019), some of them shows negative relationship between ESG and CFP (Duque-Grisales & Aguilera-Caracuel, 2021; Rajesh & Rajendran, 2020; Sachin & Rajesh, 2022). There was some research work that clearly indicate no relationship between ESG and CFP. Results can't be generalized due to numerous relationships occurred in the extant literature. This study is conducted to fill the gap w.r.t. Indian context. The study's primary goal is to determine how market value in the information technology sector relates to ESG and CFP of IT sector from the period of 2017-2021. The results show positive relationship between ESG scores and corporate financial performance and negative relationship between ESG score and market performance. This study analyses the additional key aspects from the literature yet studied very less as compared to CFP. Market performance is also important to identify the impact of ESG score. Tobin's Q ratio and stock return both are considered as components of market performance (Luo & Bhattacharya, 2006).

The study is outlined in five segments. Section 1 described the ESG and firm performance. Section 2 highlights the theoretical concept and previous literature, sections 3 explain the data and methodology part. Section 4 shows the outcome of the hypotheses, and section 5 discusses conclusion, research implications, and future scope of the research paper.

2. Theoretical Background and Literature Review

2.1. Theoretical Background

Our model was constructed based on the theory named as the ecological modernization theory (Hajer, 1995), which outlines the advantages of sustainability for the economy. This theory describes the implementation of environmentally friendly ways of business operations and economic growth and also builds the groundwork for many innovative processes like sustainable supply chain management, cleaner technologies and so forth. The theory also concludes the socio-cultural facets of economy (Mol & Spaargaren, 2000). The theory urges the heterogeneity, as the imprint of ecological modernization is operated in multilevel structure comprising market, entrepreneurs, society and government. Hence, considering the IT companies, the investors aims competitive advantage of the operations through sustainability and performing social responsibility (Rajesh & Rajendran, 2020).

The theory of ecological modernization has confronted the traditional view of the business organizations in order to embark on a road of long-term sustainable development, it is imperative to re-organize the business organizations. The author has utilized this theory for testing the relationship of sustainability performance evaluated using ESG scores and financial performance of the IT companies. This theory also suggests that the mix of ecology and economy can improve the financial performance by making productive use of natural resources. The author's assumption is that a company's financial performance and its sustainability performance are positively correlated. The sustainability performance of the firm is measured using ESG scores provided by S&P Global database.

2.2. Literature Review

The effect of a company's ESG performance on its financial performance has been examined in many previous academic literatures. According to the literature, researchers have used a variety of terminologies that can be widely related as ESG scores. It was concluded from the studies that data for measurement of ESG score has been gathered through survey tools, annual reports from specific companies, Fortune 500 rankings, content analysis of CSR reports, and other approaches.

(Hemlata Chelawat, 2016) researcher collected data of ESG from S & P index which is the first company measures 127 indicators. The study helps investors in the identification of companies when ESG risk is less and good financial performance seen. All firms should be required to provide sustainability information, and reporting formats should be standardized to enable meaningful comparisons when a company assesses the ESG components' potential to generate value over the long run.

(Yaghoub Abdi, 2022) researcher categorize environmental in resource, innovation, emission used, and social in human rights, product, workforce, community, the government in Corporate social responsibility, management, and shareholders. Data collected from the Thomson Reuters database and annual reports of the airline industry. The involvement of ESG in the air-line in this project could benefit the company.

(Duque-Grisales & Aguilera-Caracuel, 2021) The researcher examines the relationship between ESG and the financial performance of MNCs in America. According to the researcher, ESG and FP is the negatively correlated but

moderating effects of diversification and financial slack is directly impact on FP of firm and ESG.

(Fatemi et al., 2018) It can be concluded that ESG strengths raise company value, while ESG deficiencies lower it. Disclosure of ESG factors lowers valuation. However, more importantly, we discover that disclosure moderates the impact of shortcomings and strengths by minimizing their negative effects.

(Ahmad et al., 2021) suggested that the relationship between ESG and financial success is moderated by firm size. Compared to low ESG enterprises, high ESG firms perform financially well.

(Tamayo-Torres et al., 2019)The researcher analysis positive relationship of sustainable supply chain management controversies and market value in addition ESG is a mediator. Further, environmental score and social score has a negative relationship to Tobin's Q and has positive relationship between governance score and Tobin's Q.

(Vanita Tripathi, 2022) The researcher examines this study is important for achieving sustainable goals through the financial tools in the era of globalization. The author assesses and contrasts the performance of socially conscious indices with that of their general and conventional counterparts in a few industrialized and developing nations using bull and bear market conditions over a 12-year period. Data is collected from the MSCI ESG Leaders index, MSCI IMI Index, and MSCI Country index.

(Huang, 2019) The findings indicate a negative relationship between ESG and CFP, with the control factors industry which is having a substantial influence on this relationship. According to the growing economy. The study offers insights and adds to management choice-making and policy formation. (Singh et al., 2022) suggests organizations that take steps to protect the environment through corporate social practices will have a better reputation with stakeholders.

In the current scenario, investor is searching green and social bonds for investment purpose. However, there are varied results from the previous literature of ESG and firm performance. While examining the ESG scores, the study seeks to provide answers to the following questions.

- Is ESG practices leads to increase in business performance?
- Is ESG practices leads to increase in market performance?

2.3.1. Objective of the Study :

To find out the relationship between ESG score and operating performance, Return on Assets, Tobin's Q and Stock return.

2.3.2. Hypotheses Development

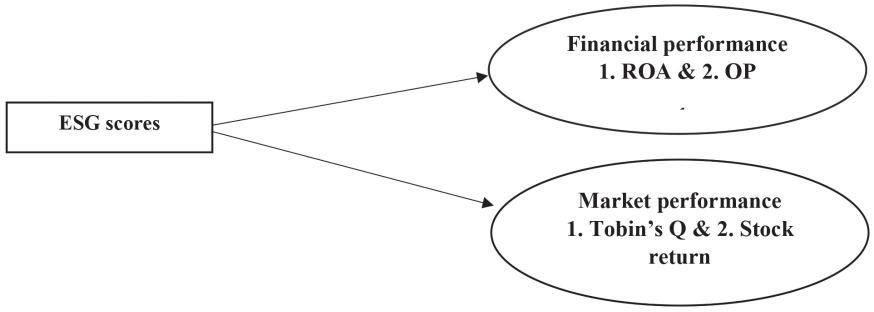
H01 : There is no significant difference between Operating performance and ESG scores.

H02 : There is no significant difference between ROA and ESG scores.

H03 : There is no significant difference between Tobin's Q and ESG scores.

H04 : There is no significant difference between stock return and ESG scores.

2.4. Conceptual Framework



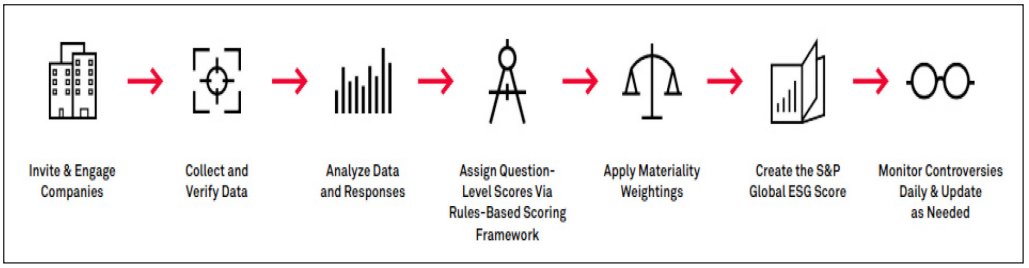
3. Variables and Research Methodology

3.1. Variables

The predictor variable of our study is ESG scores for five years. The scores are extracted from S&P Global Sustainable 1 fragment of S&P Global database, world's largest CSR ratings and information database. These scores measure the sustainable performance of companies. It is evaluated by merging three dimensions known as Environment (E), Social (S), and Governance (G) themes. Environmental theme includes biodiversity, waste management, recycling, and many more practices. Social theme includes human rights, labor practices, and asset closure management. Governance theme comprises corporate governance, customer relationship management, marketing, political aspects, risk management practices. Scores are produced through a combination of disclosure analysis and questionnaire analysis of companies via S&P Global Corporate Sustainability Assessment (CSA). It will help to company to understand the sustainability strength and weakness. The Lagged value of ESG score was considered as independent variable.

The outcome variable of our study is Corporate financial performance (hence CFP) and market performance. Operating profit ratio is assessed for operating performance. Operating performance and ROA are used as metric for financial performance. Tobin's Q and stock returns are employed to measure the market performance (Chelawat & Trivedi, 2016; Dalal & Thaker, 2019).

Figure-1 : Multi-Step Process to Create the S&P Global ESG Scores



Source : S&P Global ESG Scores 2022 pdf

Size of the firm, growth, leverage, interest ratio, R & D ratio, and dividend ratio are the control variables of this study (Abdi et al., 2022). Details of all variables is presented in (Appendix A1).

Here, variables of this study are briefly described:

Operating performance – operating performance is dependent variable of the study and measured as operating profits divided total assets. Operating performance indicates efficiency of fixed assets to earn revenue. A company that performs its functions efficiently can improve sales and cash inflows at a high rate. It also assesses the relative return of the revenue on the fixed assets of the company.

Return on Assets (ROA) – Return on Assets is dependent variable of the study which is measured as profits before interest and tax divided by total assets (Dalal & Thaker, 2019). Log of ROA was computed for better results. ROA is indicating the financial performance of company on the basis of total assets. Its assistances investors and all stakeholders to evaluate the efficiency of the company and the quantum of the earnings. It is presented in the form of percentage (Sachin & Rajesh, 2022).

Tobin's Q – Tobin's Q has been utilized as a market performance metric (Chelawat & Trivedi, 2016) and a dependent variable in the regression model to assess

how the ESG aspects affect financial performance. So, it has been calculated as the ratio of a company's total assets to its market capitalization plus all of its debt.

Stock return – Stock return is considered as metric of market performance (Luo & Bhattacharya, 2006) and a dependent variable. It represents the value change in the share prices of the any company. It is assessed as the difference between current year stock prices and previous year stock prices considering dividend also. It is assessed on the yearly basis.

Size - The size of the company is inferred from the logarithm of total assets. Size serves as a control variable in the study's regression model.

Leverage – When firm uses borrowed funds then it is called leverage. It is calculated by dividing total liabilities to total assets. Leverage is important to include because managers frequently disclose more ESG data as leverage rises due to increased scrutiny from financial institutions. Leverage signifies the company's external liabilities whether non-current or current.

Dividend ratio – It is defined as total dividend paid to shareholders of the company. It is assessed as dividend paid divided by total assets.

Growth – It will explain the annual rate of growth in terms of company's sales. It serves as a control variable while testing a model.

R & D expenditure – It is the amount spent on the expenditure on research and development aspect of the company. Additionally, it causes the company's revenue to increase. Therefore, it is used as the control variable for hypotheses testing. It is assessed as revenue and development expenditure divided by total assets.

Interest ratio - It is considered as control variable for this study. Interest means a fixed amount paid to long-term creditors of the company. Interest ratio is defined as yearly interest paid divided by total assets.

Sample

This study owned several criterions to determine the sample. First criteria was to include only Indian IT companies listed in the National Stock Exchange. Then, the researcher checked the ESG scores from the S&P Global database of the selected IT companies for the five years. Afterwards, companies which were indexed in NIFTYESG100 in the National Stock Exchange (NSE) were included

in the sample. After fulfilling all criterion, sample comprises 8 Indian IT companies for the time period of 2017 to 2021. Details of the companies is presented in Appendix A2. Financial data was collected from the Prowess database. This database is used in most of previous academic literature (Dalal & Thaker, 2019).

3.2. Regression Model

This part discusses the technique used for analyzing the hypotheses of sustainable business practices and firm performance by examining the existing empirical model. The author aimed to determine how ESG ratings influenced market and financial performance through the use of financial data. Further, using various control variables in the model gives a different effect on performance indicators. The author estimated following models :

$$OP_{it} = \alpha_i + \beta_1\, ESGS_{it} + \beta_2\, size_{it} + \beta_3\, growth_{it} + \beta_4\, leverage_{it} + \beta_5\, interest\ ratio_{it} + \beta_6\, dividened_{it} + \beta_7\, RD_{it} \quad (1)$$

$$ROA_{it} = \alpha_i + \beta_1\, ESGS_{it} + \beta_2\, size_{it} + \beta_3\, growth_{it} + \beta_4\, leverage_{it} + \beta_5\, interest\ ratio_{it} + \beta_6\, dividened_{it} + \beta_7\, RD_{it} \quad (2)$$

$$Tobin'sQ_{it} = \alpha_i + \beta_1\, ESGS_{it} + \beta_2\, size_{it} + \beta_3\, growth_{it} + \beta_4\, leverage_{it} + \beta_5\, interest\ ratio_{it} + \beta_6\, dividened_{it} + \beta_7\, RD_{it} \quad (3)$$

$$Stock\ Return_{it} = \alpha_i + \beta_1\, ESGS_{it} + \beta_2\, size_{it} + \beta_3\, growth_{it} + \beta_4\, leverage_{it} + \beta_5\, interest\ ratio_{it} + \beta_6\, dividened_{it} + \beta_7\, RD_{it} \quad (4)$$

Where, OP is operating performance, ESGS is score of ESG from S&P Global database, size, growth, leverage, interest ratio, dividend, and RD represents research and development expenditure were all control variables for model 1. ROA is return on assets, whereas Tobin's Q and stock return were measured for market performance.

Author used panel data regression to evaluate above model 1 to model 4. The author has used two sets of performance criteria – Operating performance and ROA (Financial performance) and Tobin's Q and stock return (Market performance). Fixed Effects (FE) and Random-Effects (RE) models were applied. We first applied the diagnostics test for pre-testing results. The Hausman test

was applied to select the best-suited model for hypotheses testing. The null hypothesis of the Hausman test examines the consistency of Random model over Fixed model (Wooldridge, 2009). The dependent variable must be linked to the omitted time-variant variable in order for the Fixed-Effect (FE) model to yield results that are fair and consistent. However, if the omitted time-variant variable is not associated with the dependent variable, the Random Effect (RE) model will produce results that are unbiased and consistent.

4. Results

4.1 Summary Results

The author considered 40 firm-level observations for five years from 2016 to 2020 for the study. The descriptive statistics for our variables—dependent, independent, and control—are compiled in Table-1. The sample's mean ESG score is 1.523, whereas the OP, ROA and Tobin's Q, stock return for the sample's financial performance are 0.342, -1.398, 0.561, and 1.071 respectively. The following section contains descriptive statistics for control variables, with mean values of .209 for leverage, .005 for interest, .032 for dividend, .007 for RD.

Table 1. Summary statistics of control, independent and dependent variables

	Mean	Median	Std. Dev.	skewness	kurtosis	N
OP	.342	.275	0.275	2.818	9.96	40
ROA	-1.398	-1.386	0.288	.072	2.14	40
TobinsQ	.561	.584	0.270	-1.975	10.533	40
return	1.071	.08	2.646	.613	3.199	40
ESGS	1.523	1.704	0.486	-1.894	6.606	32
size	11.39	11.517	0.530	-.26	1.432	40
growth	9.968	7.795	10.157	1.209	4.647	40
leverage	.209	.22	0.074	.383	3.813	40
interest	.005	.004	0.005	1.59	6.038	40
dividend	.032	.003	0.085	3.661	16.119	40
RD	.007	.004	0.012	3.117	11.528	40

Source: Author's own

4.2. Hausman Test Results

In the study, the choice between the fixed effects model and the random effects model was made using the Hausman test. The null hypothesis of Hausman test is random effect model is consistent. The results of the Hausman test are shown in Table-3 for Models 1, 2, 3, and 4, respectively, with the dependent variables operating performance, ROA, Tobin's Q, and stock return on independent variable ESG score. It shows the p-value less than 0.05 for model 1 and model 2. Hence, null hypotheses were rejected and fixed effect model is applicable in model 1 and model 2. P-value is more than 0.05 for model 3 and model 4 therefore, null hypotheses were accepted and random effect model was applied in model 3 and model 4.

Table 2. Summarizes correlation matrix for control, independent and dependent variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) OP	1.000										
(2) ROA	0.508	1.000									
(3) TobinsQ	0.324	0.498	1.000								
(4) Return	-0.023	-0.135	-0.278	1.000							
(5) ESGS	-0.102	-0.183	-0.149	0.011	1.000						
(6) Size	-0.262	-0.127	-0.126	0.024	0.728	1.000					
(7) Growth	-0.223	0.033	0.024	0.090	-0.131	-0.048	1.000				
(8) Leverage	-0.270	-0.417	-0.079	0.313	0.245	0.175	0.211	1.000			
(9) Interest	-0.260	-0.236	-0.192	0.270	0.039	-0.134	0.061	0.473	1.000		
(10) Dividend	0.289	0.470	0.180	-0.215	-0.193	-0.311	-0.270	-0.408	-0.214	1.000	
(11) RD	0.915	0.329	0.190	-0.102	-0.098	-0.257	-0.318	-0.295	-0.251	0.443	1.000

Source: Author's own

Table – 3. Hausman (1978) specification test

	Model 1	Model 2	Model 3	Model 4
Chi-square test value	22.224	20.247	10.047	1.92
P-value	.001	.003	.123	.927

Source: Author's own

4.3. Regression Analysis

Table-4 presents the findings of the static panel regression model considering Fixed Effect (FE) and Random Effect (RE) models for the dependent variables, operating performance, ROA, Tobin's Q, and stock return. The contribution of

each independent variable to predicting the variance in the dependent variable, given that the other predictor variables are held constant, is shown in the coefficient column. The coefficient values read with the p-value show a substantial positive relationship between the ESG scores on two of the dependent variables, OP, ROA, and negative relationship with Tobin's Q, and no relationship with stock return at a 0.05 level. Results provided by static model shows firm-level observations, assuming that these observations remain unchanged over time.

The following equations illustrate the model-established link between the dependent and predictor variables.

$$OP_{it} = 4.28 + (0.053)\ ESGS_{it} + (–0.371)\ size_{it} + (0)\ growth_{it} + (0.661)\ leverage_{it} + (–3.942)\ interest\ ratio_{it} + (–1.274)\ dividened_{it} + (19.063)\ RD_{it} \quad (1)$$

$$ROA_{it} = (9.207) + (.115)\ ESGS_{it} + (–.963)\ size_{it} + (–.001)\ growth_{it} + (1.087)\ leverage_{it} + (–3.389)\ interest\ ratio_{it} + (1.09)\ dividened_{it} + (–2.208)\ RD_{it} \quad (2)$$

$$Tobin's\ Q_{it} = (.651) + (–.068)\ ESGS_{it} + (–.007)\ size_{it} + ?(.002)\ growth_{it} + (.522)\ leverage_{it} + (–11.722)\ interest\ ratio_{it} + (.593)\ dividened_{it} + (3.13)\ RD_{it} \quad (3)$$

$$Return_{it} = (–5.14) + (–.721)\ ESGS_{it} + (–.44)\ size_{it} + (–.004)\ growth_{it} + (9.926)\ leverage_{it} + (108.786)\ interest\ ratio_{it} + (–5.673)\ dividened_{it} + (16.725)\ RD_{it} \quad (4)$$

Table 4. Regression results

Variables	Model 1 FE OP		Model 2 FE ROA		Model 3 RE Tobin's Q		Model 4 RE Return	
ESGS	0.039**	0.053	.074*	.115	-.418	-.068	.679	.721
Size	.005***	-.371	0.004***	-0.963	-.348	-.007	.796	.44
Growth	0.788	0	.766	-.001	-.011	.002	.953	.004
Leverage	0.008***	.661	.072*	1.087	-1.675	.522	.365	9.926
Interest	0.061*	-3.942	.507	-3.389	-40.697	-11.722	.452	108.786
Dividend	0.00***	-1.274	.005***	1.09	-1.704	.593	.621	-5.673
RD	0.00***	19.063	.288	-2.208	-7.906	3.13	.761	16.725
Constant	.004***	4.28	.011**	9.207	-2.969	.651	.776	-5.14
Observation	32		32		32		32	
R-squared	0.986		0.570		0.094		0.135	
chi2					2.496		3.730	
p-value	0.000		0.012		0.927		.810	
F-test	175.312		3.223					

Note: t statistics in parenthesis *** p<.001, ** p<.05, * p<.10

Source: Author's own

5. Conclusion

The research marks a substantial contribution to the body of knowledge on ESG in the Indian context. Overall, using Return on Assets and Operating Performance of Financial Performance, it can be inferred that there is a relationship between ESG Score and Financial Performance. The analysis is more effective when financial performance is evaluated using a variety of metrics like market and accounting measures used in this study. The author attempts to find out the relationship between ESG scores, financial and market performance to assists managers in formulating business strategies for both short-term and long-term. Long-term plans have been successful and profitable for the business organizations. Sustainable business practices are being carried out in nations like India, benefiting the society and the environment. The aim of our study is to provide managers with knowledge on how to increase the value of their business by establishing policies for corporate social responsibility, environmental, social, and governance activities. This can be achieved by including innovative sustainable practices of business operations through different ways like social supply chain management, greenwashing, and reduction in the usage of carbon components. This study also confirms the improvement of business reputation through investing in environmental, social and governance activities (Sachin & Rajesh, 2022; Tamayo-Torres et al., 2019). The findings unambiguously show that investors choose businesses with environment benefits like lower carbon footprints, climate change solutions, carbon neutrality, conservation of water through 3Rs approach, minimizing landfills, preserving the environment through biodiversity near office premises, and open governance practices. Social includes enabling digital talent and employee wellness programmes. Lastly, Governance includes data privacy and following ethically corporate governance values. Companies with reduced ESG risks are more likely to provide a sustainable financial performance and, as a result, can draw investors for a longer period of time. Corporates will have to support sustainable business models and good governance procedures in order to enjoy the investor's preference. Researcher includes in this study ESG scores and effect on financial performance. Further ESG scores can be taken with consumer behavior and investor's perception. ESG includes environmental, social, governance which can be studied independently in a better way.

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Appendix 1. List of variables

Type of variable	Name of variable	Measures
Dependent variable	a) Operating performance b) Return on assets c) Market performance d) Stock return	a) Operating profit/total assets b) EBIT/ total assets c) Tobin's Q d) Return on stock prices
Independent variable	ESG score	Values directly from S&P global database
Control variable (Saini et al., 2022)	a) Size b) Leverage c) Dividend ratio d) Growth e) R & D ratio f) Interest ratio	a) Log of total assets b) Total liabilities/total assets c) Dividend paid/total assets d) Based on sales e) R & D expenditure / total assets f) Interest paid/ total assets

Appendix 2 - Description of sample

Name of Companies	Core activity	Symbol in NSE
Tata Consultancies Services Limited	Software & Consulting	TCS
Infosys Limited	Software & Consulting	INFY
Wipro Limited	Software & Consulting	WIPRO
Tech Mahindra Limited	Software & Consulting	TECHM
Larsen & Turbo InfoTech Limited	Software & Consulting	LTI
Mphasis Limited	Software & Consulting	MPHASIS
Oracle Financial Services Software	Software & Products	OFSS

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Influential Role of Social Media' Travel Reviews in Trip Planning Decisions of Domestic Tourists in India

Jasveen Kaur and Jobanjeet Kaur

Abstract : *Social media's role in travellers' trip planning processes is crucial. Travellers generally utilise user-generated content to reduce travel risk, which impacts their travel plans. The purpose of this research paper is to investigate the impact of social media's reviews on Indian tourists' trip planning. Also, the general trip-planning behaviour of Indian travelers has been studied. The study has examined the divergence of social media demand-and-supply patterns in India and social media usage for trip planning and their impact on Indian travellers travel plans. Descriptive Analysis, Exploratory Factor Analysis, and Logistic Regression techniques have been followed. It has been stated that people look for information on social media related to accommodations when travellers have already decided on a destination. The reason-result link of the travel review for trip planning has predicted travel review significance predictors, which caused tourists to modify their trip plans.*

Keywords : Social Media, Travel Planning Process, Online Travel Reviews, Information Sources, Trip Planning Stages.

Introduction

People use information and communication technology (ICT) to search for, organize, share, and create material on online platforms, which has progressed from a broadcast source to a public network (Parra-Lopez et al., 2011). Tourism is one of the key industries in many cities and the primary force of economic development (Chong et al., 2018). Social media can make businesses more

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efficient in developing and managing tourism-related ICT. Cities nowadays compete with one another as urban destinations to maintain the profitable viability of tourism due to greater mobility of people and money (Dinnie, 2011). Social media is an effective tool for businesses in the public and travel industries (Ali & Frew, 2010). Social media has been reaffirmed as a way to distribute and promote products and services (Akehurst, 2009). The ubiquitous use of social media by governments, destination marketers, and tourism authorities helps them adjust their strategies while understanding their markets (Noone et al., 2011). Travellers use social media to make their travelling risk-free (Gretzel et al., 2008). Consumer-generated content (CGC) on social media is determined to be a crucial basis of reliable material by several studies (Xiang et al., 2017). Social media platforms have also allowed travellers to share their travel experiences, influencing other travellers' travel choices. This influence of social media on travellers' decision-making shows their digital belief for this online content (Noone et al., 2011).

Five billion people accessed the internet as of April 2022, making up 63% of the world's population; 4.65 billion people used social media. China, India, and the United States have more internet users than others. As of February 2022, there were over 658 million internet users in India. 3.96 billion users were projected for social networking sites (SNS) by 2022, with these numbers likely to rise as mobile device use and social networks become more common in previously untapped regions. Telecom Regulatory Authority of India reported (2022) that India had 833,710,000 internet users, ranking second in the world behind China, which has 1,010,740,000 internet users. The United States is third, with 312,320,000 internet users (Performance Indicator Report, 2022). Social media impacts travelers' trip-planning behaviour. The more significant social media influence depicts the travellers' digital trust in using travel reviews for their trip-planning decisions. By providing visitors with technologically improved experiences, social media has the ability to elevate destinations to a greater level of sustainability (Chan et al., 2019).

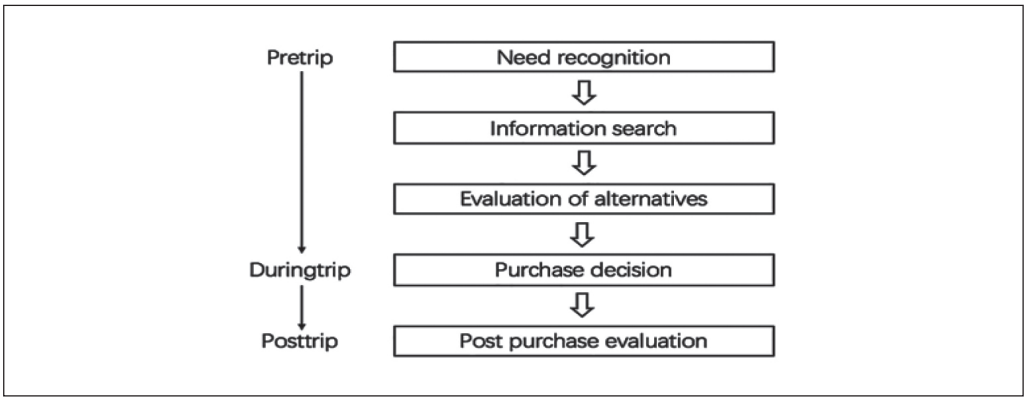
Literature Review

Social media is a class of network apps built on Web 2.0's ideas and technological foundations and allows for the creation and distribution of CGC (Kaplan & Haenlein, 2010). Obar and Wildman (2015) investigated the social media literature further and discovered four distinctive parameters: CGC, Creativity, Interaction, and Web 2.0.

Prior research has revealed a need for consistent social media categorization methods (Chong et al., 2018). Using media research theories and social process theories, Kaplan and Haenlein (2010) categorised social media users into six groups depending on how they used the platform.

Social media and trip planning process *:* As illustrated in Figure-1, the existing literature (Choe et al., 2017; Fotis et al., 2011) follow generic consumer behaviour theories and models (Woodside & Lyonski, 1989). The trip planning process has been divided into pre, during, and post-trip stages. In the pre-trip stage, travellers understand the desire to travel and begin to analyze their alternatives and look for travel-related information. In the second stage, tourists make distinct buying judgments during their trip. Finally, in the last stage (post-trip), travellers assess their excursions by writing about their experiences on online platforms (Cox *et al.*, 2009). Still, the supreme trip planning stage of using a single platform is yet to be recognized (Ge & Gretzel, 2018; Xiang & Gretzel, 2010). Cox et al. (2009) asserted that social media is mostly utilised for information gathering prior to travel but is hardly ever used while travelling or after returning from a trip. However, Fotis et al. (2011) discovered that social media was primarily utilised to share memories after the trip. Despite the fact that Cox et al. (2009) acknowledged the crucial part social media plays in acquiring knowledge about tourism before travelling. Huang et al. (2010) claimed that social media's primary purpose is to acquire travel-related information. Additionally, Yoo and Gretzel (2010) found that social media is more productive than conventional sources of information for disseminating thorough tourism-related information.

Figure-1 : Process of Travel Planning



Source : Woodside & Lyonski, 1989 and Cox et al., 2009.

According to Tussyadiah and Fesenmaier (2009), social media dramatically impacts trip planning. Fotis et al. (2011) found that prospective travellers are likelier to change their vacation plans as social media influences trip plans. Additionally, Liu et al. (2020) have recently identified some social media roles and functions in the context of travel activities, including supporter and guide. Further research into travel decision-making and technology adoption has been recommended (Liu et al., 2020) and included in the present paper.

Research Gap and Objectives

The trip planning function must be thoroughly investigated (Liu et al., 2020). This supports the claims made by Xiang and Gretzel (2010) and Boley et al. (2013) on social media's role in travellers' searches for trip-related information. It was seen that the function of social media in planning the trips of Indian tourists is still little understood by researchers and practitioners. More theoretical and empirical evidence regarding India's expanding social media usage is required. Even if the influence of social media on travel planning process has been commonly debated, travel markets vary in countless ways across countries (Hajli, 2014). As a result, Fotis et al. (2011) advocated for more studies on individual nations. There is an empirical gap in analyzing the significance and influence of social media on the trip-planning process of Indian travellers (Ráthonyi, 2013). Therefore, bridging this knowledge gap would give tourist marketers more significant opportunities to innovate in social media marketing. Considering these gaps, following objectives have been developed:

1) To study the trip-planning behaviour of the tourists

2) To determine social media's travel reviews impact on tourists' trip planning.

Methodology

Purposive and snowball sampling have been used. The research design of the paper has been exploratory and descriptive. The sampling unit has been travellers who use social media before planning a trip. Two hundred fifty questionnaires were collected offline between February and May 2022, of which 228 were deemed valid, giving a validity percentage of 91.2%. After a thorough review of the literature, a questionnaire has been created. The perspectives of academics and researchers from the tourism and hospitality industries have been compiled, providing the questionnaire's content validity. There are three sections in this study's questionnaire. The first part of the questionnaire

addressed how people generally arrange their travel plans, including how many trips they take and how long it takes them. The trip planning stages at which travellers use social media have been evaluated in the second part. Next, social media's potential influence on travellers' trip planning has been asked. The third segment evaluated the socio-demographic characteristics of the respondents. Constructs adopted from prior authors have been: "Number of trips" (Gretzel & Yoo, 2008), "Advance time to plan a trip" (Yoo et al., 2009), "Trip planning stages" (Cox et al., 2009), "Impact of social media on trip planning" (Yoo et al., 2009). Descriptive statistics and Exploratory Factor Analysis (EFA) have been followed to extract the factors of review significance on trip planning. Next, the significance of travel reviews has been examined for their impact on trip planning using the Logistic Regression model. It has effectively established the causal relationship between independent factors and binary dependent variables (Cheng Hua, 2021). Logistic regression has been utilized as the dependent variable is binary (0 or 1) (Malhotra et al., 2017). The dependent variable has been measured in yes or no (yes = 1, no = 0), while the independent variable has been measured through an interval scale (seven-point Likert scale). The model has been defined as: Li = l n (Pi/ (1 - Pi) = f (X1, X2, X3, X4, X5 ..... Xi) where, i = 1, 2, 3....k, Pi = probability of occurrence of an event, 1-Pi = probability of non-occurrence, Li = dependent variable, and Xi = independent variable,.

Results

Respondents' Profiles : Most respondents were females (53.5%) compared to males (46.5%). The maximum number of respondents aged 31-40 (36%) in comparison to 21-30 (21.9%), 41-50 (26.3%) and 51 and above (15.8%). The education level of the respondents has been post-graduation (49.1%), graduation (46.1%), and secondary school (4.8%). The annual family income in descending order has been 6 to less than 10 lakh (46.1%), 3 - less than 6 lakh (26.3%), 10 and above (21.1 %), and less than 3 lakh (6.5%).

Number of trips & advance time of trip planning : Significantly higher share of respondents (51.3%) have travelled 1-2 times, 3-4 times (40.8%), 5-6 times (3.9%), and 7-8 times (2.6%). In contrast, no respondent reported for 9 or more times. Next, advance time of trip planning was considered, where 38.2% of respondents had begun planning their vacations one to less than three weeks in advance, 23.7% three to less than eight weeks, 16.7% 2 to less than 4 months, 10.5 % 1-6 days in advance, 7% 6 or more months in advance, and 2.6% during the trip, and 1.3% have used social media for trip planning 4 to less than 6 months.

Information sources used for trip planning : Social media sites (80%) have been the significant information source, followed by the reviews of fellow travellers (70%) and friends and relatives (46%), travel guide book/magazine (45%), official websites of the destination (37%), travel agents (35%) whereas tv/radio/ newspapers (32%) have been the least imperative among these sources.

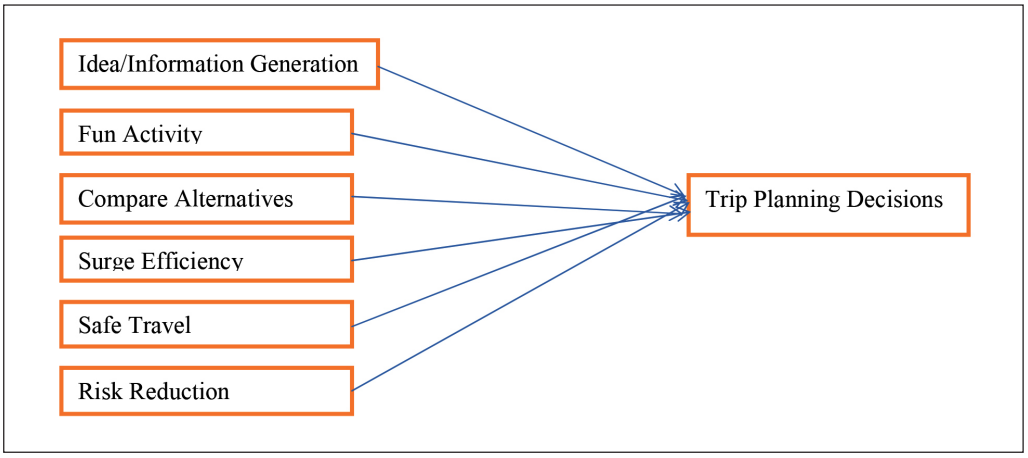
Stages of travel planning process : According to mean scores of the three stages, social media has often been employed in the first stage (pre-trip) of trip planning (mean = 5.32) in comparison to the during–trip stage (mean = 5.09) and post–trip stage (mean = 4.85). In the pre-trip stage, social media has been chiefly utilized to seek information on accommodation possibilities (mean = 5.75) and to screen out attraction options (mean = 5.53). The lowest mean score of 4.86 was for destination search options and 5.14 for screening choices of destination. At the during-trip stage, people have primarily utilized social media to get material about a particular holiday activity (mean = 5.47), and connect with their friends (mean = 5.36). Lowest mean score of 4.56 has been provided to develop a relationship with other travellers on social media. Next, social media has been extensively utilized in the last stage (post-trip) to share videos/images with their friends (mean = 5.32), followed by providing reviews about their travel experience (mean = 5.03). However, social media has been used less at this stage to get inspiration for the next trip (mean = 4.32).

Influence of online travel reviews on trip planning : To study the fundamental driving elements influencing the significance of travel reviews, Principal Component Analysis (PCA) with varimax rotation was calculated to analyze the impacts of online reviews on the planning of the travellers. The analysis has identified six factors with significant factor loadings, accounting for 73.379% of the total variation across twenty-four variables. The Kaiser-Meyer Oklin (K.M.O.) sample adequacy score (0.727) and Bartlett's test were also significant (X^2 = 3218.421, p = 0.000). The dependability of these parameters has been analyzed to establish the degree of scale consistency, which has been greater than the allowed level of 0.70 (Hair et al., 2009). The factors include Idea/Information Generation, Compare Alternatives, Fun Activity, Surge Efficiency, Risk Reduction, and Safe Travel, and The first factor (Idea/Information Generation) covered eight variables with factor loadings as : 'Travel reviews help me to learn about a travel destination (0.793)', 'I seek ideas on best time/season to travel (0.752)', 'I find more information about a destination that I had already planned to go (0.722)', 'I get to learn from others' experiences (0.681)', 'Travel reviews help to imagine trips more vividly (0.665)', 'I can easily imagine what the place

will be like (0.631)', 'I get a clear idea of what to expect from my trip (0.558)', 'Travel reviews provides ideas for my trip (0.568).' The explanatory power of this factor was 22.79%, with an Eigenvalue of 6.34 and a Cronbach's Alpha of 0.87. The second factor (*Fun Activity)* comprised three items: 'Travel reviews make my planning more enjoyable (0.710)', 'Travel reviews add fun to the planning (0.686)', and 'I feel more excited about traveling after reading travel reviews (0.569)'. This factor explains 16.46% of the variance with an Eigenvalue of 5.17 and a Cronbach's Alpha of 0.84. The third factor, *Compare Alternatives*, includes**:** **'**I can evaluate different alternatives for accommodation (0.708)', 'I can evaluate different alternatives of attractions/leisure activities and select the best option (0.707)', and 'I can evaluate different alternatives for destination and select the best option out of them (0.587)'. This factor has contributed 12.39% to explaining the variations, 4.52 Eigenvalue, and Cronbach's alpha of 0.753. The fourth factor (*Surge Efficiency)* covered- 'Travel reviews save time in planning my trip (0.801)', 'Travel reviews help to plan trips efficiently (0.676)', and 'Travel reviews help me to reach a decision (0.663)'. The Eigenvalue of this factor was 3.41, and it explains 8.12% of variance with Cronbach's Alpha of 0.87. The fifth factor (*Safe Travel)* covered – 'To know whether safety norms are followed at accommodations/hotels during this pandemic (0.828)', 'To know which destination is safe to travel to during a pandemic (0.755)', and 'To know whether safety norms are followed at destinations during this time of pandemic (0.503)'. The Eigenvalue of this factor was 2.16, and it explains 6.38% of the variance with Cronbach's alpha of 0.76. The sixth factor (*Risk Reduction)* covered: **'**Travel reviews help to avoid services I would not enjoy (0.869)', 'Travel reviews reduce the risk involved in travel decisions (0.852)', 'Reduce the likelihood, I will later regret (0.802)', and 'Travel reviews increase confidence in decision-making (0.670)'. The Eigenvalue of this factor was 1.45, and it explains 4.77% of the variance with Cronbach's alpha of 0.83.

For confirmatory factor analysis results, factor loading of each variable was greater than 0.6, demonstrating internal consistency and convergent validity (Bagozzi & Yi, 1988). The average variance recovered for these constructs was larger than 0.50, and Cronbach's alpha value for each factor was more than 0.70, showing composite reliability. The model has substantial fit indices (CMIN/D.F. = 3.010, NFI = 0.902, TLI = 0.917, AGFI = 0.911, GFI = 0.927, RMSEA = 0.045, p = 0.000).

Figure-2 : Measurement Model



(Author's elaboration)

Results of Logistic Regression : The respondents who have changed their trip plan have been classified as 1, and those who did not made changes have been coded as 0. The model's fit was then tested using omnibus tests of its coefficients, which indicated a significant value of 0.000, showing model fits well. Similarly, the Hosmer and Lemeshow test has reported a value of 0.832, more than the required value of 0.05 (Hosmer et al., 2013), which shows that the model correctly described the data. Next, the pseudo-R-square has also been utilized as an approximation variation in the criteria variable. Nagelkerke's R^2, a modified version of the Cox & Snell R^2, reported a 14.2% variation in the criterion variable accredited to the model's predictor variables. The overall model adequately categorized 66.7% of cases; this shows the percentage of correct categorization in circumstances where it is anticipated that respondents may alter their trip plans. The percentages have revealed the 38.8% specificity and 83.2% sensitivity of the model when attempting to predict group membership based on the dependent variable (Malhotra et al., 2017). The overall accuracy percentage has been 66.7%, which is quite excellent. 83.3% of people who made modifications based on the model have been accurately predicted compared to those who did not; the model shows strong sensitivity.

Table 1: Equation variables

								95% C.I.for EXP(B)	
Factors	Xi	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Idea/Information Generation	X1	.322	.334	.928	1	.335	1.380	1.217	2.657
Fun Activity	X2	.835	.240	12.060	1	.001	1.434	1.271	1.695
Compare Alternatives	X3	.486	.250	3.763	1	.052	1.615	1.376	1.705
Surge Efficiency	X4	.737	.241	9.379	1	.002	2.091	1.304	3.351
Safe Travel	X5	.150	.205	.532	1	.466	1.161	1.107	1.736
Risk Reduction	X6	.349	.182	3.653	1	.056	1.706	1.493	1.809
Constant		2.950	1.588	3.452	1	.063	19.098		

(Source: Based on primary data)

The model written as: Li = 2.950 + .322X1 + .835X2 + .486X3 + .737X4 + .150X5 + .349X6

Next, the correlation between the predictors and the result is displayed in Table 1. Here, (B) denotes the anticipated change in log odds, which indicates that for every unit change in the predictor; the likelihood of the result will vary by Exp (B). For X1, the odds of travellers making changes in their trip plans are 1.380 times higher than those who did not make changes when they got ideas for their trips. This implies that the factor 'Idea/Information Generation' is significant in the probability of an event occurring, i.e., to make changes in travellers' initial trip plans. Similar is the case with other factors, i.e., X2, X3, X4, X5, and X6, as their odds ratio is also greater than 1, i.e., 1.434, 1.615, 2.091, and 1.161, respectively. Hence, these factors significantly influence the trip planning of travellers. Also, the p-values of factors 'Fun Activity' and 'Surge Efficiency' are less than 0.05, which shows that these variables significantly impacts trip planning of the travellers in contrast to other factors, i.e., 'Idea/Information Generation' (X1), 'Compare Alternatives' (X3), 'Safe Travel' (X5), and 'Risk Reduction' (X6) as the p-value of these factors is greater than 0.05. These factors have an influential role in impacting the trip-planning decisions of travellers.

Discussion

It has been seen through the results of the data analysis that travellers are very cautious while planning their trips. Concerning the information sources used for trip planning, it has been seen that the services a particular social media provides influence its selection and usage. Some social network applications focus on more specific purposes, such as information search, travel reviews,

experience and narrative sharing, and general factual platforms. Users have specified and defined a clear offering of travel-related services. Rather than downloading only one or two applications, travellers install and use many social networking platforms simultaneously. Furthermore, multi-functional social media platforms have been increasingly popular among users. These platforms are primarily utilized during the pre-trip stage for collecting information, as indicated by Cox et al. (2009). Social media sites, reviews of other travellers from travel review websites have been the extensively used information sources. It may be attributed to the reason that social media is overloaded with the latest information, which has been written by an ordinary man from the customer's point of view since ordinary people have no selfish interest while posting such information in contrast to marketers, who have profit-related interests. As per the usage of online platforms at various stages of trip planning, it was found that social media has been extensively utilised at the first stage (pre–trip) to seek ideas for the destination, lodging, and other leisure activities. This finding has been similar with the prior research (Cox et al., 2009; Yuan et al., 2022), which suggested that most travellers look for other accommodation choices via travel reviews after deciding on a particular destination. The reason behind the maximum use of social media in the pre–trip stage is that travellers seek new ideas for their trips. Also, to minimize the risk involved in trip planning, travellers try to collect every unit of information from different social media platforms before their trips. Additionally, it has been observed that social media has been utilised chiefly to search for lodging-related information at the pre-trip stage. It implies that travellers do not want to take the hassle of finding hotels at their destination later. It would be a waste of time and involve the risk of inefficient services, which could have been avoided otherwise. At the same time, social media was minimally used for searching for ideas about the destination at the pre-trip stage. It might be because travellers had decided to visit a specific destination in advance from other sources such as friends, TV, or past experience. At the during–trip stage, social media has been extensively utilized to seek ideas about leisure activities. It might be attributed to the reason that to explore the destination and to have a better experience; travellers try to visit the specific attractions and places of the particular destination. Further, in post–trip stage, social media has been utilized for the maximum time for sharing their trip photos/videos with friends and other travelers. This outcome has been consistent with that of Yuan et al. (2022). It is because people relive their trip while sharing their photos/videos on social media. It is a sharing their experience with their known.

According to PCA findings, social media has been utilized for six new reasons in India, including Idea/Information Generation, Risk Reduction, Fun Activity, Compare Alternatives, Safe Travel, and Surge Efficiency. The first factor (Idea/ Information Generation) describes that travellers often use social media to get new ideas about destination choices, accommodation choices, and leisure activities. Travellers also use social media to get a vivid idea of what their trip will be all about. Hence, travellers try to extract maximum information from social media. The second factor (Fun Activity) depicts that travel reviews adds fun to the travelling experience. The travellers could easily explore different trip options, making this process more enjoyable. The third factor (Compare Alternatives) implies that social media is overloaded with travel information, providing immense information and options for travellers to evaluate the options and select the best out of them. The fourth factor (Surge Efficiency) describes that travel reviews on different social media platforms help travellers quickly decide from the various alternatives, which fastens the trip planning process. Hence, this readily available information on social media saves the time and effort of travellers. The fifth factor (Safe Travel) describes that information regarding various safety norms being followed at the destination and accommodation during the pandemic can be searched from various social media platforms. This helps the travellers to ensure their safety and health concerns. The sixth factor (Risk Reduction) implies that travel reviews help travellers to reduce the uncertainty involved in the trip planning process. Since services offered at the destination and accommodation cannot be felt in advance, the travellers could read the reviews provided by other travellers for various services on social media platforms.

Next, the empirical results of Logistic Regression have demonstrated that the extracted factors are influential factors in altering the trip planning of travellers. This implies that most travellers read travel reviews for ideas or information about the destination, accommodation, or other leisure activities. Due to this, the travellers might alter their travel plans. Similarly, travellers consider travel reviews to add fun to their trips. They compare different alternatives and choose the best to get better trip experiences. Also, travellers make every effort to minimize the cost of travelling and maximize the benefits. In this way, travellers can increase the efficiency of their trip. Furthermore, travellers make every effort to ensure safety at the destination and accommodation, which is the fundamental reason behind considering other travellers' reviews in their trip planning, particularly post-COVID. Hence, the extracted factors are influential in impacting the trip planning of travellers.

Theoretical / Research Implications

This research has filled a knowledge gap by examining the impact of travel review significance on travellers' travel plans. The findings have established the cause-effect nature of the link between travel review significance predictors and travel planning. The research's conclusions have called for diversifying the methods people use to access social media pre, during, and after travel. Further, scholarly research on the distinct effect of social media platforms is required for how fragmented and localized the Indian social media market is. Next, using data mining and big data tools to explore how CGC from social media affects travellers' behaviour, innovation, and destination sustainability is required. It is essential to comprehend how much CGC contributes to the economy, destination image, and local communities, among other facets of sustainable tourism futures. Also, specific strategies for particular user categories should be carefully examined when making policy sanctions for urban destinations or concrete ramifications in the tourist industry.

Managerial / Practical Implications

Considering the digital trust for social media to increase the number of visits to a website, it is essential to include the relevant social media platforms in marketing initiatives. For instance, tourist marketers should successfully promote relevant information on the associated platforms while identifying the separation of social media duties (e.g., self-directed sources of agents on micro blogs, blogs, and SNS; direct product-oriented promotion on commercial travel groups). As travellers do not obtain information from a single source, they gather information from numerous sources to extract more information and reduce travel risk. Hence, CGC has to be managed more effectively and integrated into more extensive systems of smart tourist destinations, as the deluge of information on online platforms may put the authenticity and dependability of such sources under scrutiny.

Research Limitations and Scope of Future Research

By comparing pre- and post-COVID perspectives, more research must be done to recognize the social media usage on shifting behaviour of travellers. Secondly, thorough interviews can be conducted to evaluate the theoretical model's applicability using extensive quantitative data analysis and cross-national comparison.

Conclusion and Recommendations

The study's results have revealed how Indian travellers use social media to plan their vacations and the potential for innovative thinking to influence the tourist industry. Tourists use various online platforms, including SNS and travel review websites, to plan their trips. These platforms have enabled more varied functions of information provision and social networking. This research has scientifically evaluated this tendency, which also looks at the trip-planning behaviour of travellers. The results of this study have concluded that people are risk-averse. By lowering the likelihood of risk and uncertainty associated with trip planning, people attempt to optimize money and time efficiency. Particularly after COVID-19, people have been increasingly concerned about their safety. Hence, the study of post-COVID travellers' trip planning behaviour is highly recommended to understand the probable shift in their general trip planning behaviour, where the variables of this study could be studied comparatively to the two scenarios, i.e., pre- and post-COVID. Lastly, this research has shown how social media contributes to sustainable tourism through a quantitative analysis of travellers' social media use.

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Kerala Cultural Symbolism-Impact and Influence on Purchase Intention

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Abstract : *Kerala, known as "God's Own Country," boasts a unique cultural heritage deeply rooted in traditions, art forms, and iconic elements. This study investigates how cultural symbolism in Kerala affects consumers' intent to buy. The study shows that cultural symbolism is crucial in influencing consumers' views and purchase decisions by using a qualitative research approach. The findings offer insightful information for marketers, decision-makers, and advocates of cultural preservation by deepening our understanding of the connection between cultural symbolism and consumer behaviour. Consumer purchase intentions and various elements responsible for cultural symbolism were analysed in detail. Non parametric statistical tools such as Mann Whitney U test, Kruskal Wallis H test and Fried man test were employed for the analysis of the data.*

Keywords : Cultural Symbolism, Purchase Intention.

Introduction

Kerala, also known as "God's Own Country," is a land of incredible diversity and a deep cultural history. Despite only making up a small portion of South India, Kerala is renowned for its rich past, which is a result of considerable interaction between many groups. The culture of Kerala is distinct and rich in cultural artefacts. Classical performing arts that date back to centuries, vibrant folk-art forms, folklores and rituals, martial arts, Festivals, Ayurveda, Agriculture, Language and Literature, Gold, the Spices, Cuisine, Clothing style, Crafts, Coconut products, Aranmula metal mirror etc are a few among the quintessential symbols of Kerala culture. Kerala is one of the world's top tourist destinations

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because of its distinctive culture and customs, as well as its distinctive demographics.

Traditions can have a significant and long-lasting influence on how people think. Marketers are becoming more conscious of the need to enhance communications with groups from various cultural backgrounds in this period of fierce competition. Advertising has a close relationship to the prevailing cultural context in society and is frequently claimed that advertising from that era represent contemporary culture of society. The viewers may be drawn to the content of commercials for a variety of reasons, such as the values that the ads promote, the inventiveness with which the content is presented, the humour present, the similarity to the viewer's real life, or other considerations. Due of the emotional attachment that Keralites have to their cultural past, the portrayal of these symbols in product advertisements is seen to have a big impact on consumer purchase intentions. Therefore, it will be useful to know whether such symbols will be able to significantly catch consumer attention from the advertiser's perspective.

As customers are exposed to an overwhelming volume of commercials everywhere they turn, the idea of incorporating symbolic effects into advertisements is becoming more important and may increase consumer memory. Each brand has a distinctive symbol and when used properly, it can convey the intended values to the target market. Whether the cultural symbols employed in advertisements have the desired effect on influencing customers' purchase intentions is to be examined as advertising is a cultural product in that it both impacts and is impacted by society.

Kerala's marketing environment undergoes unmatched developments. The brand strategies used today should adjust to the Kerala framework adding functional value to a brand due to how distinctive and reflective these changes are. Any brand's strategy that connects consumers with the brand's offer must take into account cultural factors. In recent years, a few prominent companies have found success by fusing cultural significance with functional utility highlighting how these cultural prides are symbolized, how they are used in product ads, and how effective they are at swaying consumer choice.

Theoretical Review

The review of literature supported in the proper evaluation of various aspects of the topic and was useful in gaining more clarity and consciousness on the

cultural symbolism in commercials. Various research works and scholarly journal articles were studied, and the topic's context was developed. *Sharma Sangeetha (2020)* aimed to create a paradigm for depicting culture in commercials by taking into account rituals, attire, language, jingoism, festivity, religion, and so on and a model was constructed, and the impact on recall was established. *Michaelidou, N., Micevski, M., & Halkias, G (2020)* investigated how advertisers employ consumer culture positioning tactics in advertising across nations and product categories. To explore the use of such tactics and symbols, a content analysis approach was used. According to the findings of this study, global consumer culture positioning and local consumer culture positioning commercials rely more on implicit symbols.*Chiorean DM (2018)* interpreted the dynamics of symbols and their functions in advertising and explains that symbols offer a range of values to the viewers and in case of brands, symbols convert the target messages to a standing code. *Srivastava, E., Maheswarappa, S.S. and Sivakumaran, B. (2017)* examined how the nostalgia presented in TV advertisements influences information disclosure, level of involvement, type of products and stages in product life cycle. 700 advertisements from top five TV channels were selected based on the gross viewership and its content were analysed. The study found out that nostalgic ads use low information disclosure and are more commonly used for low involvement products, experience products and non-durables. Also, nostalgic appeals are more commonly used at maturity stage of PLC. *Eiman Negm, Passent Tantawi (2015)* investigated the impact of visual designs on consumer's perception and analysis suggested that pictorial elements in advertisements evoke a diverse set of meanings and it helps in developing viewers perspectives on the brands. *Petrovici Iasmina (2014)* revealed that Ad images represents a social context strongly confused with cultural values. Furthermore, author opined that symbol are effective means of conveying advertisement message and ultimately it will capture target audience attention.

Research Gap and Rationale of the Study

Consumer views, attitudes, and behaviours are heavily influenced by cultural symbolism. It is an effective instrument for people to express their cultural identities and affiliations. Consumers frequently identify cultural symbols with distinct meanings, feelings, and experiences, which can influence their assessment and choice for products or services. Previous research has shown the impact of cultural symbolism on several elements of consumer behaviour, including brand selection, product evaluation, and purchase intent. Furthermore, a significant body of literature was found elucidating the relationship between

cultural values and message strategies, culture specific market communications etc. Through the review of literatures, it was identified that the key question of impact of Kerala Cultural Symbols and Purchase intentions remain unexplored. The propensity or willingness of consumers to purchase a specific product or service is referred to as purchase intention. By invoking emotions, providing a sense of authenticity, and harmonising with consumers' cultural identities, cultural symbolism can dramatically affect purchase intention. Consumers generally regard products or brands related with cultural symbols as more significant, real, and desired, according to research. Cultural symbols can operate as cues, eliciting pleasant associations and increasing purchase desire. Furthermore, cultural symbolism can increase the perceived worth of a product or service, making it more appealing and engaging to consumers Hence the study is titled as ***Kerala cultural Symbolism, its impact and influence on purchase intention.***

Statement of the Problem

Academic research has largely acknowledged the impact of cultural symbolism on consumer behaviour. Cultural symbolism refers to the meanings, values, and connotations attached to cultural components such as traditions, rituals, art forms, and symbols. The study is titled as ***Kerala cultural Symbolism, its impact and influence on purchase intention.*** The purpose of this study is to investigate the relationship between Kerala's rich cultural symbolism and its impact and influence on customer purchasing intent. The study revolves around how cultural symbolism influences consumer behaviour and influences buying decisions by evaluating relevant studies. Signs and symbols represent the meaning of communication, and culture is a vital aspect of consumer perception. As a result, the study attempts to solve is whether Kerala culture-related symbols utilised in product marketing are helpful in influencing consumer purchasing decisions. Addressing this problem will give much insight to the level of influence to traditionality in the modern advertisements and the effectiveness of cultural symbols in successfully capturing the consumer's mind**.**

Objectives of the Study

- To analyse the impact of Kerala Cultural Symbolism in product advertisements.
- To identify the elements connected with Kerala Traditional Culture in product advertisements.

- To evaluate the influence of Kerala Cultural Symbols in the Purchase Intention of consumers.

Scope & Significance of the Study

Most marketing activities are essentially concerned rendering of ordinary into something special. Accordingly, successful advertisements are about creating an emotional connection between the products and the customers. The present study examines the impact of Kerala cultural symbolism in the advertisements and whether it conveys the product message to the target market along with creating a sense of trust and confidence regarding content transferred. The study also throw light on the aspect whether there is any emotional influence attached with Kerala Cultural symbolism and also will give details on the level of appeal such symbols are able to evoke in relation to the Ad effectiveness.

Hypotheses

H0 : There is no significant difference in the opinion of consumers on the impact of Kerala Cultural Symbolism in Purchase intentions based on Product Knowledge, Product Preference, Emotional Connectivity and Brand Attractiveness on the basis of a) Gender b) Age.

H0 : There is no significant difference in the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of a) Gender b) Age.

H0 : There is no significant difference among consumers in identifying the elements connected with Kerala Cultural Symbolism in Product Advertisements.

Research Methodology

The research presented here is a descriptive and analytical study to examine the impact of Kerala Cultural Symbolism impact and influence on purchase intentions using a sample survey method. Analyses of impact on purchase intention was based on four variables such as product knowledge, product preference, emotional connectivity and brand attractiveness. Efforts were also put into to analyse the elements connected with Kerala cultural symbolism. Twelve factors such as Traditional Performing Arts, Rituals, Values and Beliefs, Agriculture, Ayurveda, Monuments, Festivals, Handicrafts, Ethnic Cuisine, Spices, Dressing and Language were analysed for understanding the most influencing factor for the purchase. The data was gathered using both primary

and secondary sources. Structured questionnaires were used to collect primary data. Secondary data sources included books, research papers, journal articles, previous theses, websites, and so on. The population for the study was consumers in the Kottayam district. The study's samples were drawn through google form from the Kottayam district's population using the non-probability convenience sampling method. The sample size was set at 280. Statistical software such as SPSS 20 and Microsoft Excel served for analysis. Non parametric tests such as Mann Whitney U Test, Kruskal Wallis H Test and Friedman test were applied.

Limitations of the Study

The study faced constraints as it was confined to selected sample respondents from the Kottayam district. The inherent limitations of statistical tools also affected degree of accuracy of results. Only the consumers were approached for the study. The advertising agencies and the Companies were not included.

Analysis and Discussion of the Results

The objectives were analysed using hypotheses on impact of Kerala cultural symbolism in Purchase intentions based on four variables such as product knowledge, product preference, emotional connectivity and brand attractiveness. Efforts were also put into to analyse the elements connected with Kerala cultural symbolism. Mann Whitney U test Kruskal Wallis H test and Fried man test were used for proper analysis and arriving at conclusions.

H0 : There is no significant difference in the opinion of consumers on the impact of Kerala Cultural Symbolism in Purchase intentions based on Product Knowledge, Product Preference, Emotional Connectivity and Brand Attractiveness on the basis of a) Gender b) Age

Table-1 highlights the impact of Kerala Cultural Symbolism on the basis of gender. As per the mean score of the responses about Product Knowledge, Product Preference, Emotional Connectivity and Brand Attractiveness, the mean score variation between male and female is not statistically significant at 5 percent level of significance ($p > 0.05$). Hence the researcher fails to reject the null hypothesis.

Table-2 detail out the impact of Kerala Cultural Symbolism on the basis of age. As per the mean score of the responses about, Product preference, Emotional connectivity and Brand attractiveness the mean score variation between ages is not statistically significant at 5 percent level of significance ($p > 0.05$). But it is

found statistically significant for Product Knowledge where the mean score shows that age group of 40- 60 years have better product knowledge than other groups. ($p<0.05$, 77.50). Hence it can be concluded that impact is equal with respect to gender and age.

H0 : There is no significant difference in the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of a) Gender b) Age

Table-3 shows the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of gender. As per the mean score of the responses about purchase intention, the mean score variation between male and female is not statistically significant at 5 percent level of significance ($p > 0.05$). Hence the researcher fails to reject the null hypothesis

Table-4 shows the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of age. As per the mean score of the responses about purchase intention, the mean score variation between ages is not statistically significant at 5 percent level of significance ($p > 0.05$). Hence the researcher fails to reject the null hypothesis. Hence it can be concluded that purchase intention is equal with respect to gender and age.

H0 : There is no significant difference among consumers in identifying the elements connected with Kerala Cultural Symbolism in Product Advertisements.

It is evident from Table 5 that the element Traditional Performing Arts shows the lowest mean (3.2167) followed by Rituals (4.6333). Variable having lowest mean should be ranked first. Hence it may be concluded that, in the opinion of consumers, Traditional Performing Arts and secondly Rituals are best in representing Kerala Culture in product advertisements. This mean rank variation is significant at 5 percent level of significance. (Value of Chi-Square is 366.436 with p 0.000<0.05). Hence the researcher rejects the null hypothesis.

Conclusion:

The current study on Kerala Cultural Symbolism in Product Advertisements demonstrates that cultural symbols have a major influence on customer mindset. An examination of the impact of Kerala cultural Symbolism on the basis of demographic characteristics was performed, and the results revealed that there is no significant difference in gender and age of respondents. Impact was

evaluated using four variables such as product knowledge, product choice, emotional connectivity, and brand attractiveness but the variable product knowledge showed a significant difference in the age wise analysis and it was spotted among the age group of 40-60years. Numerous aspects associated with cultural symbolism in advertising were identified, and the feelings associated with these symbols were assessed. Traditional performing arts were discovered to be the most popular Kerala cultural symbol and a sense of belonging. There are more areas to be explored in the topic as one can study each element with purchase intention.

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Appendices:

Table-1 : Test Statistics on the Impact of Kerala Cultural Symbolism on the basis of Gender

Variables	Gender of the Respondents	Mean Rank	Sum of Ranks	Mann Whitney U	z	Sig.
Product Knowledge	Male	60.05	2462.00	1601.000	-0.103	0.918
	Female	60.73	4798.00			
Product Preference	Male	57.90	2374.00	1513.000	-0.593	0.553
	Female	61.85	4886.00			
Emotional Connectivity	Male	59.18	2426.50	1565.500	-0.300	0.764
	Female	61.18	4833.50			
Brand Attractiveness	Male	59.98	2459.00	1598.000	-0.120	0.905
	Female	60.77	4801.00			

a. Mann Whitney U Test b. Grouping Variable: Gender of Respondents

Table-2 : Test Statistics on the Impact of Kerala Cultural Symbolism on the basis of Age

Variables	Age of Respondents	Mean Rank	Chi-square	df	Sig.
Product Knowledge	Below 20 years	50.67	8.658	3	**0.034***
	20-40 years	56.46			
	40-60 years	77.50*			
	Above 60 years	66.92			
Product Preference	Below 20 years	54.97	2.271	3	0.518
	20-40 years	58.51			
	40-60 years	68.02			
	Above 60 years	69.33			
Emotional Connectivity	Below 20 years	50.11	3.771	3	0.287
	20-40 years	60.35			
	40-60 years	70.08			
	Above 60 years	53.58			
Brand Attractiveness	Below 20 years	55.58	2.204	3	0.531
	20-40 years	58.82			
	40-60 years	69.38			
	Above 60 years	58.17			

a. Kruskal Wallis H Test b. Grouping Variable: Age of Respondents

Table-3 : Test Statistics on the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of Gender

Variable	Gender	Mean Rank	Sum of Ranks	Mann Whitney U	Z	df	Sig.
Purchase Intention	Male	62.02	2543.00	1557.000	-0.348	1	0.728
	Female	59.71	4717.00				

a. ***Mann Whitney U Test b. Grouping Variable: Gender of Respondents***

Table-4 : Test Statistics on the Purchase Intention of consumers and Kerala cultural symbolism in Product Advertisements on the basis of Age

Variable	Age of Respondents	Mean Rank	Chi-square	df	Sig.
Purchase Intention	Below 20 years	57.22	0.409	3	0.938
	20-40 years	61.63			
	40-60 years	61.04			
	Above 60 years	54.75			

a. Kruskal Wallis H Test b. Grouping Variable: Age of Respondents

Table-5 : Statement showing Mean Rank and Table showing Test Statistics

Elements	Mean Rank	N	Chi-Square	df	Asymp. Sig.
Traditional Performing Arts	3.2167	280	366.436	11	**0.000***
Rituals	4.6333				
Values and Beliefs	4.7917				
Agriculture	5.0083				
Ayurveda	5.3000				
Monuments	7.2083				
Festivals	6.1750				
Handicrafts	7.2750				
Ethnic Cuisine	8.4750				
Spices	8.5417				
Dressing	8.6583				
Language	8.7167				

Friedman Test

https://doi.org/10.5281/zenodo.11146817

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Role of ICT Ecosystem in Leveraging Start-up Business, Atmanirbharta, Socio-Economic Status through Mediating Role of ICT-Daily Hassles

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Durgesh Kumar Patel and Ravi Kumar Mishra

Abstract : Purpose : *The purpose of the study is to analyse the impact of Information Communication Technology Eco-System (ICTES) on Business Up-Scaling (BU), attainment of Atmanirbharta (AN) and leveraging Socio-Economic Status (SES) within Start-Up Organizations.*

Research Methodology : *The study is exploratory, and cause and effect based in nature. After the refinement process, eighty-three Start-Ups have been included in the data analysis. The study area of this research comprises the Anuppur and Shahdol Districts of Madhya Pradesh and the Gaurella-Pendra-Marwahi (GPM) District of Chattisgarh. Fundamental Descriptive Analysis, Correlation, Regression Analysis and Mediation Analysis with Hayes Process Macro have been used to evaluate the hypothesis and reach the results.*

Results : *Study results reveal that the Information Communication Technology Eco-System positively impacts the Start-Up's Business Up-Scaling, Atmanirbharta, and Socio-Economic Status deliverables. At the same time, Mediation results of Information Communication Technology Daily Hassles have yet to yield any significant impact on Business Upscaling, Atmanirbharta, and Socio-economic Status within Start-Ups. The study results will be helpful for new start-up owners, as it will guide them towards the significance of imbibing the ICT Eco-System in their business process for optimising rewarding outcomes.*

Keywords : Start-Ups, Information Communication Technology Eco-System, Information Communication Technology Daily Hassles, Business Up-Scaling, Atmanirbharta, Socio-Economic Status.

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1.0. Introduction

The Information Communication Technology (ICT) ecosystem drives business growth through ICT infrastructure, digital transformation, data-driven decision-making, global market access, and operational efficiency. The ICT ecosystem can significantly impact Atmanirbharta (self-reliance) economically and technologically. ICT has the potential to empower economies, foster innovation, and boost digital self-reliance despite its challenges. Government policies, digital inclusivity, and cyber security measures help Atmanirbharta realise the ICT ecosystem's potential.

Start-ups' socio-economic status can be affected by the ICT ecosystem. Cybersecurity threats and skills gaps are challenges, but advanced technologies, digital entrepreneurship, data-driven decision-making, and government support can improve start-ups' socio-economic outcomes. ICT Daily Hassles can affect start-up ICT Ecosystems. These issues can disrupt operations and require creative problem-solving. Start-up ICT Ecosystems must manage and resolve daily problems to be robust and adaptable. (Smith 2019)

ICT Daily Hassles may mediate the ICT Ecosystem-Business Up-scaling relationship for start-ups. Daily challenges cause complexity but can also spur innovation and adaptation in start-ups. ICT Daily Hassles may mediate the ICT Ecosystem-Atmanirbharta (self-reliance) relationship for start-ups. Daily challenges add complexity but can spur innovation and transformation in self-reliant start-ups.

ICT Daily Hassles may mediate the ICT Ecosystem and Socio-Economic Status (SES) relationship. Daily challenges can complicate emerging businesses' socio-economic well-being and discourage innovation, resilience, and adaptability. ICT Daily Hassles may influence start-up business upscaling. These daily challenges can curb innovation, strength, and adaptability in the fast-paced start-up environment.

ICT Daily Hassles may influence start-ups' Atmanirbharta (self-reliance). As start-ups seek autonomy in the digital age and strive to be independent, these daily challenges may spur innovation, resilience, and adaptability if taken earnestly for steady growth and development of the business. ICT Daily Hassles may influence Socio-Economic Status positively. Daily challenges can add complexity and foster innovation, strength, and adaptability as people and communities work to improve their socio-economic well-being in a digital world. (Jackson 2021)

Business Up-Scaling may mediate the ICT Ecosystem-Atmanirbharta relationship among start-ups. However, it is one of many factors that complicate entrepreneurial self-reliance. Business Up-Scaling may mediate the ICT Ecosystem-start-up socio-economic status relationship. It should be considered part of a complex ecosystem of factors that affect emerging businesses' socioeconomic well-being.

The impact of Business Up-Scaling on Atmanirbharta can be minimised by strategically managing dependencies (self-reliance). Businesses seeking growth while maintaining autonomy must strike a balance.

Business Up-Scaling can improve start-up socioeconomic status, depending on context. Upscaling strategies must consider inclusivity and equitable benefit distribution to maximise socioeconomic benefits.

1.1. The Rationale of the Study

The study titled is highly pertinent in today's global context. It delves into the pivotal role of Information and Communication Technology in supporting start-up businesses, fostering self-reliance (Atmanirbharta), and influencing socio-economic status. This research addresses a notable gap in the existing literature by investigating the intricate relationship between ICT, start-up development, Atmanirbharta and the mediating impact of daily hassles. The outcomes of this study hold the potential to inform policy decisions, providing valuable insights into how ICT ecosystems can either mitigate or exacerbate daily hassles and, in turn, affect socio-economic well-being. Moreover, this research contributes significantly to the academic community by enriching the understanding of this multifaceted domain. It is an invaluable resource for scholars and researchers interested in ICT, entrepreneurship, self-reliance, and socio-economic development.

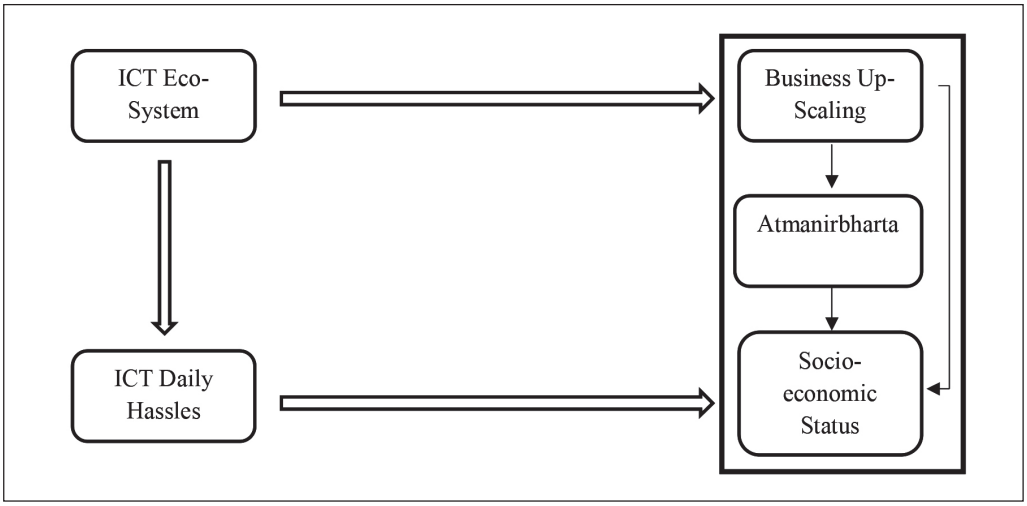
1.2. Objectives

Based on the premises of the background review of the literature, the following Objectives and later Hypotheses have been framed.

- To determine the role of Information Communication Technology Eco-System on Start-Up effectiveness parameters, i.e., Business Up-Scaling, Atmanirbharta and Socio-Economic Status.
- To determine the impact of Information Communication Technology Daily Hassles on Start-Up Effectiveness parameters, i.e., Business Up-Scaling, Atmanirbharta and Socio-Economic Status.

1.3. Conceptual Model

Figure-1 : Proposed Model of the Independent and Dependent Variables of the Study



2.0. Review of literature

Focusing on the significance and objectives of the study, the following literature review was carried out for various related studies published from 2016 to 2023.

Robust ICT infrastructure, including high-speed internet and cloud computing, helps firms grow efficiently (Smith, 2018).

Johnson and Brown (2019) found that ICT ecosystem enterprises that embrace digital transformation have better upscaling possibilities. Adopting digital tools and platforms improves operations and opens new markets.

The researchers framed the following null hypothesis based on the abovementioned literature review.

$H_0$1 : The ICT Ecosystem will not significantly impact Business Up-scaling.

Rao and Sharma (2020) also show how digital infrastructure promotes self-reliance. Self-sustaining digital ecosystems require robust ICT systems like broadband and cloud services. They believe the ICT ecosystem can boost technical self-reliance by encouraging innovation and R&D. However, ICT ecosystem problems and constraints must be acknowledged to achieve Atmanirbharta.

Government policies and regulations affect Atmanirbharta through the ICT environment (Verma & Reddy, 2016). Supportive policies can boost indigenous tech development.

Digital literacy and inclusivity in the ICT environment are critical to Atmanirbharta (Choudhary & Mishra, 2019). All populations must have access to and benefit from ICT.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$2 : The ICT Ecosystem will not significantly impact Atmanirbharta (self-reliance).

The ICT ecosystem offers opportunities, but start-ups require help embracing and using it. Cybersecurity, resource constraints, and digital skills gaps might impede socioeconomic advantages (Rao & Sharma, 2020).

Govt. programs fostering ICT use and digital entrepreneurship can increase start-ups' socioeconomic standing. Tax incentives and digital infrastructure can support growth (Johnson & Brown, 2019).

Global market access through the ICT ecosystem can also affect start-ups' socioeconomic standing. Martin (2020) shows how e-commerce and internet platforms help start-ups expand their consumer base and compete globally.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$3 : The ICT Ecosystem will not significantly impact Socio-Economic Status (SES).

Smith and Johnson (2019) found that start-up ICT Ecosystems may be vulnerable to daily issues. ICT Daily Hassles—technical issues, software flaws, and network disruptions can interrupt digital infrastructure and services. Disruptions can upset start-ups' fragile resource and capability balances.

Instead, Gupta and Brown (2018) indicate that ICT Daily Hassles can spur innovation in start-up ICT Ecosystems. These difficulties may spur the creation of new technology, techniques, and solutions to reduce and prevent them. This could boost start-ups' resilience and agility in the changing digital ecosystem.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$4 : ICT Daily Hassles will not significantly impact the ICT Ecosystem.

Mitchell and Carter (2020) emphasise the importance of ICT Daily Hassles as mediators in start-ups. Technical issues, software vulnerabilities, and data security concerns, including ICT Daily Hassles, can ripple through the ICT Ecosystem. These disturbances may hinder digital operations' stability and security, affecting Business Upscaling.

Baker and White (2018) believe ICT Daily Hassles may mediate the relationship and spur innovation. These issues may encourage start-ups to adapt, innovate, and streamline processes, enabling Business Up-scaling.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$5: ICT Daily Hassles will not significantly mediate the ICT Ecosystem and Business Up-scaling relationship.

Smith and Turner (2021) recommend using ICT Daily Hassles as mediators for Atmanirbharta start-ups. Daily technological issues, software vulnerabilities, and data security concerns can disrupt the ICT Ecosystem. Disruptions limit start-ups' digital autonomy, which indirectly affects their self-reliance.

Gupta and Carter (2020) indicate that ICT Daily Hassles may mediate the relationship and encourage inventive problem-solving in start-ups. These issues could inspire adaptive methods, technological advances, and streamlined operations, encouraging self-reliance.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$6 : ICT Daily Hassles will not significantly mediate the ICT Ecosystem and Atmanirbharta (self-reliance) relationship.

Anderson and Mitchell (2022) recommend considering ICT Daily Hassles as mediators in start-ups and Socio-Economic Status. ICT Daily Hassles technical issues, software vulnerabilities, and data security concerns—can disturb the ICT Ecosystem. These disturbances may indirectly affect socioeconomic status by reducing digital resource availability, market reach, and start-up growth, especially in lower SES groups.

Patel and Turner (2021) also show how ICT Daily Hassles and Socio-Economic Status interact. According to their research, resolving and controlling these issues is crucial to start-ups' socioeconomic standing. Timely and effectively resolving daily issues may attenuate socioeconomic status impacts, encouraging start-up economic growth.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$7 : ICT Daily Hassles will not significantly mediate the relationship between ICT Ecosystem and Socio-Economic Status.

Carter and Anderson (2022) emphasise the importance of ICT Daily Hassles in Business Upscaling for start-ups. ICT Daily Hassles—technical issues, software vulnerabilities, and data security concerns—can impede ICT infrastructure operations. Delays, higher operating costs, and worse customer satisfaction can hurt Business Up-scaling, essential for start-up growth.

Gupta and Mitchell (2019) indicate that ICT Daily Hassles may challenge and inspire start-ups to solve problems creatively. These issues could spur adaptive tactics, technical advances, and streamlined processes, enabling Business Up-scaling in a competitive context.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$8 : ICT Daily Hassles will not significantly impact Business Up-scaling.

Sharma and Patel (2023) emphasise the importance of ICT Daily Hassles in start-up self-reliance. ICT Daily Hassles technical issues, software vulnerabilities, and data security concerns can hamper digital operations. By affecting a start-up's technological autonomy, these disruptions may affect Atmanirbharta.

Smith and Anderson (2022) also show how ICT Daily Hassles affect self-reliance. Their research reveals that addressing and minimising these issues is crucial to start-up self-reliance. Resolving daily issues quickly may help start-ups traverse the digital terrain independently.

The researchers framed the following hypothesis based on the literature review mentioned above.

$H_0$9 : ICT Daily Hassles will not significantly impact Atmanirbharta (self-reliance).

Davis and Turner (2023) emphasise the importance of ICT Daily Hassles as SES influences. ICT Daily Hassles—technical issues, software vulnerabilities, and data security concerns—can impede ICT infrastructure operations. These disruptions may limit digital resources, career possibilities, and financial stability, especially for disadvantaged communities.

Patel and Mitchell (2022) also show how ICT Daily Hassles and SES are linked. Their research reveals that resolving and managing these issues significantly impacts socioeconomic position. Timely problem-solving can reduce SES impacts and improve economic and social well-being.

The researchers framed the following null hypothesis based on the above mentioned literature review.

$H_0$10 : ICT Daily Hassles will not significantly impact Socio-Economic Status.

Turner and Anderson (2022) also emphasise the complex relationship between Atmanirbharta and Business Up-Scaling. According to their research, effective scaling techniques help shape start-ups' self-reliance goals. Scaling allows start-ups access to new resources and possibilities, boosting operational and commercial independence.

Gupta and Mitchell (2021) argue that Business Up-Scaling may moderate the relationship, although additional factors may exist besides Atmanirbharta. They suggest that regulatory environment, resource access, and entrepreneurial skills may also affect start-up self-reliance.

3.0. Research Methodology

The design of this research is exploratory and cause-and-effect based. A data size of 83 samples extracted from the study area Anuppur, Shahdol and Gaurella-Pendra-Marwahi (GPM) Districts has been utilised for pulling results. Secondary data was gathered through research papers, journals, newspapers, and websites, whereas primary data for this study was collected through convenience sampling. Descriptive Statistics, Correlation and Regression Analysis were performed to test the below hypotheses. SPSS Software 26 Version is utilised for data analysis.

Table 1: Demographic Profile of the Respondents

	Items	Frequency	Percent
Gender	Male	81	97.6
	Female	02	2.4
	Total	**83**	**100**
Age	18 to 27	18	21.7
	28 to 37	44	53
	38 to 44	15	18.1
	45 and above	6	7.2
	Total	**83**	**100**
Sector	Retail	37	44.6
	Dealership	15	18.1
	Food Processing	16	19.3
	Digital Services	6	7.2
	Health & Fitness	9	10.8
	Total	**83**	**100**
Start-up Age (years)	0-1	21	25.3
	2-3	30	36.1
	4-5	10	12
	6 and above	22	26.5
	Total	**83**	**100**
Start-up Nature	Self-Funded	68	78.3
	External	15	21.7
	Total	**83**	**100**
No. of Associates	0	64	77.1
	1	13	15.7
	2	3	3.6
	3	1	1.2
	4 and above	2	2.4
	Total	**83**	**100**
Start-up Investment (in lakhs)	0-1	9	10.8
	2-5	41	49.4
	6-10	21	25.3
	10 and above	12	14.5
	Total	**83**	**100**
Investment in ICT (in %)	0-10	76	91.6
	10-20	7	8.4
	Total	**83**	**100**

Source : Field Study.

Convenient samples of Start-ups were obtained with the help of a questionnaire. Participants in this study were taken from the Start-ups from Shahdol, Anuppur and GPM regions of Madhya Pradesh and Chhattisgarh. 100 questionnaires were distributed, and 83 were returned, yielding a response rate of 83.00 %. The Entrepreneurs in the study mainly represented the age group 28 to 37 (53%). Females constituted 2.4% of the total participants, whereas Males represented 97.6%.

In the Sector of start-ups, most businesses were from retail, representing 44.6%, followed by dealerships 18.1%, food processing 19.3%, digital services 7.2%, and health & fitness related start-ups, representing 10.8% of total start-ups included in the study. Most start-ups reported to be self-funded 78.3%, and only 21.7% of businesses were externally funded. Considering the investment in these start-ups, 49.4% of businesses had 2-5 lakh initial investment, whereas only 14.5% of start-ups had invested more than 10 lakh by the commencement of business. Only 8.4% of businesses were found to have taught 10-20% of their initial investment in ICT-related equipment and tools. The results of the demographic profiles of the start-ups are mentioned in Table-1.

3.1. Measurement Instruments & Reliability

Five self-developed and modified scales consisting of items related to measuring Information Communication Technology Eco-System (ICTES), Information Communication Technology Daily Hassles (ICTDH), Business Up-scaling (BU), Atmanirbharta (AN) and Socio-Economic Status (SES) appended with Five-point Likert scales ranging from 1-5 (Strongly Agree 05-Strongly Disagree 01). All five scales are weighed for their reliability by application of the Cronbach alpha reliability test. All five scales show reliability coefficient values of .7, above the accepted value. A description of the Scales used along with their Authors, Dimensions and Total Items of the Scales are presented in Table 2.

Table 2: A description of the Scales used along with their Authors, Dimensions and Total Items of the Scales

Sr. No.	Scales	Authors	Dimension	Variable/Items	Reliability of the Tool
1	**Information Communication Technology Eco-System(ICTES)**	Self-Developed	ICT Awareness ICT Adaptability ICT Infrastructure	Original 12 Items Reduced to 8 Items	.754

(Contd...)

2	**Information Communication Technology Daily Hassles (ICTDH)**	Modified and reworded from *Thomas Fischer Martin Reuter and René Riedl (*The Digital Stressors Scale: Development and Validation of a New Survey Instrument to Measure Digital Stress Perceptions in the Workplace Context, Frontiers in Psychology)	Daily Hassles related to ICT	Original 11 Items Reduced to 8 Items	.726
3	**Business Up-scaling (BU)**	Self-Developed	Business growth & Development	4 Items	.912
4	**Atmanirbharta (AN)**	Self-Developed	Atmanirbharta of Start-ups	3 Items	.925
5	**Socio-Economic Status (SES)**	Self-Developed	Socio-Economic impact of Start-up in Community	3 Items	.818

Source : Field Study.

3.2. Hypotheses of the study

Based on the above literature review objectives, the following hypotheses were developed.

- $H_0$1 : The ICT Ecosystem will not significantly impact Business Up-scaling.
- $H_0$2 : The ICT Ecosystem will not significantly impact Atmanirbharta (self-reliance).
- $H_0$3 : The ICT Ecosystem will not significantly impact Socio-Economic Status.
- $H_0$4 : ICT Daily Hassles will not significantly impact the ICT Ecosystem.

- $H_0$5 : ICT Daily Hassles will not significantly mediate the ICT Ecosystem and Business Up-scaling relationship.
- $H_0$6 : ICT Daily Hassles will not significantly mediate the ICT Ecosystem and Atmanirbharta (self-reliance) relationship.
- $H_0$7 : ICT Daily Hassles will not significantly mediate the relationship between ICT Ecosystem and Socio-Economic Status.
- $H_0$8 : ICT Daily Hassles will not significantly impact Business Up-scaling.
- $H_0$9 : ICT Daily Hassles will not significantly impact Atmanirbharta (self-reliance).
- $H_0$10 : ICT Daily Hassles will not significantly impact Socio-Economic Status.

4.0. Data Analysis

4.1. Descriptive Analysis and Correlations

The descriptive statistics, the number of items used in the scales, and the correlation coefficient of the scales are displayed in Table-3.

Table 3: Descriptive Statistics and Product Movement Correlation

Scales	Items (n)	1	2	3	4	5
1. Information Communication Technology Eco-System (ICTES)	8	1				
2. Information Communication Technology Daily Hassles (ICTDH)	8	-.338**	1			
3. Business Up-scaling (BU)	4	.620**	-.076	1		
4. Atmanirbharta (AN)	3	.428**	-.055	.896**	1	
5. Socio-Economic Status (SES)	3	.299**	.017	.379**	.258*	1

***Correlation is at the 0.01 significant level*

**Correlation is significant at 0.05 level*

The analysis of product movement correlation statistics suggests that ICTES and ICTDH are negatively correlated (-.338**), which is evident as they are inverse in their composition and item structure. The ICTES and BU, AN and SES are positively correlated, which means that if the Information Communication Technology Eco-System (ICTES) is nurtured, it will carry a positive association with Business Up-Scaling (BU), Atmanirbharta (AN) and Socio-Economic Status (SES) within Start-up Eco-system.

Table 4: Regression Analysis Results

Hypotheses	Variables/Model	R^2	F	Beta	t-Value	Hypothesis Status
$H_0$1	Model-I: ICTES → BUS	.384	50.516	.620	7.107**	Rejected
$H_0$2	Model-II: ICTES → AN	.183	18.139	.428	4.259**	Rejected
$H_0$3	Model-III: ICTES → SES	.089	7.396	.299	2.817**	Rejected
$H_0$8	Model-IV: ICTDH → BUS	.006	.477	-.076	-.690	Accepted
$H_0$9	Model-V: ICTDH → AN	.003	.250	-.055	-.500	Accepted
$H_0$10	Model-VI: ICTDH → SES	.000	.023	.017	.153	Accepted
$H_0$4	Model-VII: ICTES → ICTDH	.114	10.459	-.338	-3.234**	Rejected

***Significant at .01 level.*

4.2. Testing of Hypotheses

This study used simple regression analyses to test the hypotheses. Different models have been conceived and tested based on the objectives and hypotheses of the study Table-4 . Results of various tested regression analysis models are presented below.

Information Communication Technology Eco-System is found to have been positively impacting Business Up-scaling (β = .620, t =7.107, F= 50.516, R^2 =.384); therefore, based on t-value it is concluded that null hypotheses $H_0$1 is rejected, and alternative hypotheses are also accepted that R^2 values R^2 =.384 states that ICTES significantly predicts 38.4 per cent variation in Business Up-scaling within start-ups.

Information Communication Technology Eco-System is found to have been positively impacting Atmanirbharta (β = .428, t = 4.259, F= 18.139, R^2 =.183); therefore, based on t-value it is concluded that null hypothesis $H_0$2 is rejected, and alternative hypotheses are also accepted that R^2 values R^2 =.183 states that ICTES significantly predicts 18.3 per cent variation in Atmanirbharta within start-ups.

Information Communication Technology Eco-System is found to have been positively impacting Socio-Economic Status (β = .299, t= 2.817, F= 7.396, R^2 =.089); therefore, based on t-value it is concluded that null hypotheses H03 is rejected, and alternative hypotheses are also accepted the R^2 values =.089 states that ICTES significantly predicts .8 per cent variation in Socio-Economic Status in the community.

Results of the study related to the impact of Information Technology Daily Hassles (ICTDH) on the Business Up-Scaling, Atmanirbharta and Socio-Economic Status do not carry any significant impact as per various indicating values, therefore null hypotheses $H_0$8, $H_0$9 & $H_0$10 are accepted. (Refer to Table-4)

Results related to ICTES and ICTDH confirm a negative relationship, and the R^2 values =.114 confirm the 11.4 per cent predictive abilities of ICTES on ICTDH; therefore, null hypothesis $H_0$4 is rejected.

Table 5: Regression Analysis with Mediation Effect of ICTDH

Hypotheses	Variables/Model	Total Effect	Direct Effect	Indirect Effect	Boot LLCI	Boot ULCI	Hypotheses Status
$H_0$5	Model-VIII: ICTES*ICTDH → BUS	.5082	.5499	-.0417	-.1205	.0121	Accepted
$H_0$6	Model-II: ICTES*ICTDH → AN	.2636	.2846	-210	-.862	.0240	Accepted
$H_0$7	Model-III: ICTES*ICTDH → SES	.1042	.1200	-.0157	-.0506	.0179	Accepted

4.3. Mediation Analysis:

The study assessed the mediating role of ICTDH on the relationship between ICTES and Business Up-scaling. The results revealed an insignificant indirect effect of the impact of ICTDH on Business Up-scaling (b = -.0417, Boot LLCI = –.1205 & Boot ULCI = .012) supporting H5. Furthermore, the direct effect of ICTES on Business Up-Scaling in the presence of a mediator was also found insignificant (b =.5499, P >.001). Since a Zero (0) value is recorded between Boot

LLCI & Boot ULCI values, it is concluded that ICTDH does not mediate significantly between ICTES and Business Up-Scaling.

The study further assessed the mediating role of ICTDH on the relationship between ICTES and Atmanirbharta. The results revealed an insignificant indirect effect of the impact of ICTDH on Business Up-scaling (b = –.210, Boot LLCI= -.862 & Boot ULCI= .0240) supporting H6. Furthermore, the direct effect of ICTES on BU in the presence of a mediator was also found insignificant (b = .2846, P >.001). Since a Zero (0) value is recorded between Boot LLCI & Boot ULCI values, it is concluded that ICTDH does not mediate significantly between ICTES and Atmanirbharta.

The mediating effect of ICTDH between ICTES and Socio-Economic Status is also assessed within the study. The results revealed an insignificant indirect effect of the impact of ICTDH on Socio-Economic Status (b = –.0157 Boot LLCI= –.0506 & Boot ULCI = .0179) supporting H7. Furthermore, the direct effect of ICTES on Socioeconomic status in the presence of a mediator was also found insignificant (b = P>.001). Since there is a Zero (0) value recorded between Boot LLCI & Boot ULCI values it is concluded that ICTDH does not mediate significantly between ICTES and Socio-Economic Status.

5.0. Discussions

The purpose of this research was to find out the potential factors that contribute to the success of start-ups and bring effectiveness to their business operations from the perspective of various business deliverables. The life of start-up ventures is very vulnerable to various business intricacies and contingencies; therefore, start-ups' survival, growth and development depends on business development initiatives adopted by start-up owners. The technology adoption and process-related initiatives are considered significant actions towards business up-scaling and achieving Atmanirbharta. Therefore, through this research study, an overview of start-ups located within borderline districts of MP and CG is conducted, and it is tried to find out how the ICT Eco-System has helped Start-ups in their Business Up-scaling, achieving Atmanirbharta and helped in improvising community Socio-Economic Status by promoting economic activities in the locality. Further in the study, daily technological hassles are analysed to check whether they negatively impact start-ups. It is found that daily hassles hamper Business Up-scaling, Atmanirbharta and Socioeconomic Status as it restricts normal business flow, mainly if the business volumes are also technology dependent. The outcomes of the study will undoubtedly be beneficial for new

start-up initiators as ICT is going to play a significant role consistently over a more extended period.

6.0. Limitations of the Study

Due to the changing start-up landscape and technological breakthroughs, the predictions made now may or may not apply to the future. To consistently achieve a competitive bent, start-up organisations must be updated with new and advanced tools and techniques that predict business growth and development. Therefore, the study results are subject to time continuum and constrained within the area of the study and type of business activities covered within this study. However, a more comprehensive study area with more predictive variables other than ICTES may be included in future start-up research's gambit.

7.0. Conclusion

It is concluded that the success of start-ups is linked to the adoption of technology, and every start-up needs technological updating to scale up its capacity. Start-up owners must invest in technology in their business processes for better competitive advantages. Start-up owners need to believe and practice the theory of entrepreneurial resourcefulness by investing in business technology upgradation to generate further resources. Resourcefulness helps design further business goals, and achieve self-reliance (Atmanirbharta), along with helping the community enhance its socio-economic status by engaging in start-up activities.

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An Analytical Study of Credit Risk Management and Financial Performance of Commercial Banks in India : A CAMEL Model Approach

Jigyasa Sharma and Arvind Kumar

Abstract : *This paper explores and analyses the financial performance and credit risk management practices of selected private sector and public sector banks in India. The paper encompasses the study six Indian commercial banks including three from each public sector and private sector. The data for the period of 15 years, commencing from accounting year 2007-08 to 2021-2022 has been taken into consideration. The dependent variable for the study is ROE and the CAMEL components are the independent variables. A standard multiple regression model has been applied for assessing the relationship between the CAMEL model parameters and the performance indicator (ROE) of the banks since there are several independent variables in the study. The overall performance ranking of selected banks during the study period reveals that the HDFC Bank is ranked first in the overall financial performance followed by Axis Bank while Punjab National Bank sits on the last rank. It is evident from the data analysis that the capital adequacy, asset quality and earning capacity has a statistically significant effect on the performance (ROE) of the selected banks for the period under study.*

Keywords : CAMEL Model, ROE, Credit Risk Management, Financial Performance, Commercial Banks.

1. Introduction

Banks have by far been one of the most significant and oldest institutions fuelling the development of the Indian economy (Rostami, 2015). Banks have been rendering unmatched financial assistance to most of the businesses. The activities of the bank lie around accepting deposits and channelizing those deposits into loans and advances and investments in the capital market. The Indian banking

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industry has witnessed magnanimous growth and development in the last two decades over innovation and technology. Like any other business activity, banks require funds to carry out their business operations (Balasundaram, 2008). This involves management of funds and ensuring its effective channelization to avoid any crunch. The banks while carrying out their operations are exposed to multiple risks at various facets. These risks involve market risk, credit risk, liquidity risk and operational risk (Roy, Nanda, & Goswami, 2020). It becomes imperative for a bank to effectively manage the risks it is exposed to so that financial efficiency can be maintained. This paper explores and analyses the financial performance and credit risk management practices of selected public sector and private sector banks in India. The asset quality of the banks has continually been tapered down, which makes it important to measure and analyse the performance of Indian banks.

1.1. Credit Risk Management

Lending credit forms one of the focal activities of the banks in which banks form an agreement with the lender to grant something of value today with the promise of receiving the same value along with some predetermined rate of interest at a future date. Credit lending activities of the bank give birth to credit risk. Credit risk refers to the probability of loss that will be incurred by the bank if the borrower fails to repay the debt and become insolvent. Credit risk management is a tool which helps the banks to reduce credit risk related losses by giving an understanding of maintaining adequate capital and credit loss reserves at every point of time (Selvaraj & Devi, 2022). Credit creation is the primary income generating activity of the banks and involves taking sizable credit related risks.

1.2. CAMEL Model

CAMEL is a global rating system employed by regulatory banking authorities to evaluate financial institutions based on the five factors denoted by its acronym. The Federal Financial Institutions Examinations Council (FFIEC) of the United States of America first embraced the CAMEL model of the Uniform Financial Institutions Rating System (UFIRS) on November 13, 1979. In an effort to determine a bank's overall financial status, the Federal Deposit Insurance Corporation (FDIC) later updated the UFIRS to include a sixth indicator (Sensitivity) in 1997 (Selvaraj & Devi, 2022). CAMEL is an abbreviation that represents the following five critical factors in assessing financial institutions: "Capital adequacy, Asset quality, Management, Earnings, and Liquidity."

In this study, five set of ratios has been applied according to CAMEL model and are summarised in a relative model of that category. The following group of ratios are mentioned as under:

1.2.1. Capital Adequacy

The level of capital adequacy measures the degree to which an organisation complies with rules regarding the required minimum capital reserve. The grade is determined by regulators by considering the capital status of the financial institution both now and in the past. The following indicators have been considered for the study:

Capital adequacy ratio (CAR) : The Capital Adequacy Ratio (CAR), also referred to as the Capital to Risk (Weighted) Assets Ratio (CRAR), is a measure that assesses a bank's capital relative to the level of risk it holds. Central banks and banking regulators determine this ratio to mitigate the risk of commercial banks overleveraging themselves and potentially facing insolvency. CAR quantifies the proportion of a bank's capital compared to its risk-weighted assets and current liabilities.

$$\text{CAR} = \frac{\text{Tier 1 Capital + Tier 2 Capital}}{\text{Risk weighted Assets}} \qquad (1)$$

Equity multiplier ratio : The equity multiplier indicates a risk indicator that calculates the percentage of a company's assets that are funded by equity rather than debt. The equity multiplier is computed by dividing the entire asset value of a firm by the total equity held in the company's shares.

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Shareholder's Equity}} \qquad (2)$$

1.2.2. Asset Quality

This classification rates the value of a bank's assets. Asset quality is crucial because high-risk assets might see rapid decline in their value. It addresses the loan's quality, which indicates the institution's profits. When evaluating asset quality, banks must rank the potential investment risks. The following ratios have been considered for the study:

Net NPA ratio : NPA is a loan or advance that becomes overdue for 90 days or more. The amount of GNPA left after deducting unpaid and doubtful debts is called net NPA (Vinayak Hagargi, 2023).

$$\text{Net NPA} = \text{Gross NPA} - \text{Provisions} \quad (3)$$

$$\text{Net NPA Ration} = \frac{\text{Net NPA}}{\text{Net Advances}} \quad (4)$$

Return on assets (ROA) : ROA is the measure of profit that can be earned from a bank's assets. The return on assets ratio or ROA measures how efficiently a bank can manage its assets to produce profits during a period (My Accounting Course, 2023).

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} \quad (5)$$

1.2.3. Management

The ability of an institution's management team to recognise and respond to financial crisis is determined by management competency. This classification is based on the effectiveness of a bank's internal controls, financial performance, and business strategy. The following ratios have been considered for the study:

Cost to income ratio : The cost to income ratio, calculates operating expenses as a share of operating income. The ratio should be as low as feasible, but not so low that it compromises customer service. The banks anticipate, lowering their cost-to-income ratio as their business expands in order to achieve the economies to scale. It is a measure of operating efficiency of a bank and signifies the cost as a proportion of its income.

$$\text{CIR} = \frac{\text{Operating Expense}}{\text{Operating Income}} \times 100 \quad (6)$$

Operating expense to total asset ratio : The ability to observe changes in operating costs in relation to asset changes makes the operating cost to asset ratio an essential efficiency measure. It also serves as a gauge of the business mix of the bank. In order to evaluate the efficiency of the banks, it may be compared across time and with other banks (Stock Edge, 2019).

$$\text{Operating Expense to Asset Ration} = \frac{\text{Operating Expense}}{\text{Total Assets}} \quad (7)$$

1.2.4. Earnings

Earnings are an excellent tool for assessing an institution's long-term sustainability. A bank requires a reasonable return in order to expand its business and keep up its competitiveness. The core earnings are the most significant when evaluating earnings of the banks. The core earnings of an institution are its long-term, steady earnings, which are impacted by the cost of one-time items. The following ratios have been considered for the study:

Net interest margin (NIM) : A financial firm's net interest income is measured using the term net interest margin. It is generated by credit products like loans and mortgages and the interest that is charged to those who have savings accounts and deposit certificates. (CDs). The NIM, which is an indicator of profitability, expressed as a percentage, predicts the likelihood that a bank or investment business will be successful over the long term (Annapoorna, 2023). The total interest received left with the bank after making interest payments as a proportion of interest yielding assets of the bank.

$$\text{NIM} = \frac{\left(\text{Interest Received - Interest Paid}\right)}{\text{Average Earning Assets}} \qquad (8)$$

Operating profit to total asset ratio (OP/TA) : Operating profit to total asset ratio is the proportion of the total asset base of the banks. It is a profitability ratio that assesses how well a bank utilizes its assets to produce net income. It shows a bank's profitability in relation to its total assets. A high ratio indicates that a bank's primary business is its only source of income, revealing the management's ability to generate profits. It shows that a bank is utilising its assets more efficiently when its earnings are higher in relation to its assets (M & Rajan.K., 2016).

$$\text{Operating Profit to Total Assets Ration} = \frac{\text{Operating Profit}}{\text{Total Assets}} \qquad (9)$$

1.2.5. Liquidity

Liquidity is crucial for banks since it can prevent bank failures if there is enough liquid capital. This CAMEL category investigates interest rate risk and liquidity risk. Earnings from the capital markets business section of a bank are influenced by interest rates. The value of the institution's investment and loan portfolio will fluctuate if there is a significant exposure to interest rate risk. Liquidity risk

is the possibility of not being able to fulfil current or future cash flow requirements without interfering with regular business operations (CFI Team, 2022). The following ratios have been considered for the study.

CASA ratio : The CASA ratio reveals the percentage of current and savings accounts in a bank's total deposits. A higher ratio indicates cheaper cost of funds since a greater proportion of a bank's total deposits are in current and savings accounts. Therefore, the cost of handling the money will be cheaper, the bigger the deposits are in each of these accounts (StockEdge, 2018).

$$\text{CASA Ratio} = \frac{(\text{Current Deposit} + \text{Savings Depoist})}{\text{Total Deposits}} \qquad (10)$$

Loan to deposit ratio (LDR) : The loan-to-deposit ratio measures a bank's total loans to its total deposits for the same time period. LDR is expressed as a percentage and is employed to figure out the liquidity status of a bank. The bank may not have adequate liquidity to meet any unanticipated funding needs if the ratio is too high. If the ratio is too low, on the other hand, the bank could not be making as much money as it might (Murphy, 2020).

$$\text{LDR} = \frac{\text{Total Loan}}{\text{Total Deposits}} \qquad (11)$$

1.2.6. Return on equity (ROE)

Return on equity, often known as ROE, is a metric used to assess a bank's performance over a specific time period. The bank's ability to generate returns on the investments it received from its shareholders is measured by its return on equity. As a result, before investing their money in a financial institution, potential investors frequently take the ROE into consideration. A bank is better at turning its equity funding into profits, if the ROE is higher (Groww, 2022).

$$\text{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \qquad (12)$$

2. Review of Literature

Chhetri (2021) put forward that the impact of non-performing loans (NPLR) on financial performance is adverse and statistically significant. (ROA). Financial performance is negatively impacted by capital adequacy ratio and bank size;

however, this influence is statistically insignificant. The association between credit to deposit (CDR) and financial success is favourable but not very substantial. The study also found a substantial and positive association between the management quality ratio (MQR) and the financial performance (ROA) of Nepal's commercial banks. In order to protect their assets to the greatest extent possible, Nepalese commercial banks are advised to practise scientific credit risk management, enhance the effectiveness of their credit analysis, and manage their loans more effectively. This will help to reduce the high incidence of non-performing loans and their detrimental effects on financial performance.

Boateng & Nagaraju, (2020) had conducted a study to examine the productivity levels of 12 PSBs in India. According to the findings of the ANOVA analysis on the parameters relating to management efficiency, there were different levels of management efficiency across the banks. Three of the four variables used in the study—PPE, BPE, and salaries to costs ratio—were statistically significant at the.05 level of significance, according to the findings of an ANOVA on employee efficiency characteristics. As a result, it is advised that public sector banks in India raise employee and management productivity at each of their individual institutions in order to boost output and, by extension, profitability.

Boateng (2019) has applied the CAMELS rating model to evaluate the performance of Ghanaian banks. Following an analysis of the ratios derived from the financial statements of the chosen banks, it was discovered that earnings was the most significant factor influencing the performance of Ghanaian banks. A change in earnings as a percentage will result in a staggering 82.5% improvement in bank performance as determined by ROE. Liquidity, asset quality, managerial effectiveness, and capital sufficiency were all shown to have a similar substantial impact on the performance of Ghanaian banks.

According to Rauf (2016), the banking industry is one of the most competitive industries in the current economic climate. It has been suggested that CD Bank and GH Bank have better liquidity ratios than other banks, indicating that these banks have a greater ability to meet their customers' obligations. Therefore, before choosing the best bank for their investment and other banking needs, the consumer should take into account interest rate, credibility, good will, and other facilities & perks.

Erol (2017) employed the CAMEL model to compare the performance of Islamic banks in Turkey to that of regular banks. The findings demonstrated that Islamic banks outperformed conventional banks in terms of profitability and asset management ratios, but lagged behind in terms of sensitivity to market risk criteria.

Majumder & Rahman (2016) adopted the CAMEL Model to assess the financial performance of 15 Bangladeshi banks. He came to the conclusion that there had been a substantial difference in the performance of the chosen banks using Composite Ranking, average, and ANOVA. The researcher recommended that banks must take the necessary action to fix these flaws.

3. Statement of the Problem

In recent years, the management of credit risk has become increasingly difficult for the Indian banking sector, including both banking and Non-Banking Financial Companies (NBFCs) which led to the failure, liquidation, and consolidation of the nation's banks and NBFCs. As a result, the public is beginning to lose faith in the banking industry. In light of this situation, the current study has been designed to use the CAMEL model to figure out the link between credit risk management and the performance of Indian commercial banks.

4. Objectives of the Study

The study aims to achieve the following primary objectives:

- To assess the viability of the selected Indian banks from a financial standpoint.
- To assess the relationship between the parameters of CAMEL model and the performance of the selected banks.

5. Research Methodology

5.1. Research Design

The study relies solely on an empirical research methodology. The research that is based on empirical observation and measurement of occurrences as they are really experienced by the researcher is known as empirical research design.

5.2. Scope of the Study

The present study is restricted to six Indian commercial banks including three from each public sector and private sector. The data for the period of 15 years, commencing from accounting year 2007-08 to 2021-2022 has been taken into consideration.

5.3. Sample Profile

The random sampling technique has been used to select the sample banks. The sample size includes a total of six banks namely AXIS, HDFC, KOTAK Mahindra,

BOB, PNB and Union bank. A regression analysis of the parameters of CAMEL model has been performed, in order to clearly identify the institutional strengths and shortcomings of the selected banks in all the dimensions of financial and management capabilities.

5.4. Variables of the Study

The financial performance of the banks, as determined by the Return on Equity (ROE), was utilized as the dependent variable and the CAMEL model components represented the independent variables for the study.

5.5. Research Model

A standard multiple regression model has been applied for assessing the relationship between the CAMEL model parameters and the performance indicator (ROE) of the banks since there are several independent variables in the study. The following equation served as the research model for the study:

$$ROE = \beta_0 + \beta_1 C + \beta_2 A + \beta_3 M + \beta_4 E + \beta_5 L + \varepsilon \qquad (13)$$

Where, ROE = Return on Equity (performance indicator); C = Capital Adequacy; A = Asset Quality; M = Management Efficiency; E = Earning Capacity; L = Liquidity; β_0 = Intercept (constant term); ε = the error term; β_1, β_2, β_3, β_4, β_5 are the coefficients of the respective independent variables.

5.6. Sources of Data Collection

The research work relies on secondary data sources which have been compiled from the various annual reports, RBI bulletins, journals, websites, etc.

5.7. Statistical Tools and Analysis

Several statistical techniques, including mean, standard deviation, and others, were used to analyse the data. To investigate the relationship and ascertain the effect of the independent variables on the dependent variables, the linear regression approach has been applied. The study hypothesis has been put to the test, and the results have been validated, using the Independent Sample t-test and the ANOVA.

5.8. Hypothesis of the Study

H_0 : There is no significant relationship between the CAMEL parameters and the performance indicator (ROE) of the selected banks.

5.9. Limitations of the Study

The study has a few limitations as it is based radically on secondary data. The data has been taken as at balance sheet date. The research work is time bound and the findings may differ for different set of banks as only certain criteria has been taken up.

6. Data Analysis and Interpretation

Table 1. Overall Performance Ranking of Selected Banks during the Period 2008-2022

Rank	ROE	C	A	M	E	L	Average	Rank
HDFC	6	2	6	2	5	5	4.33	1
Axis Bank	4	3	5	3	4	4	3.83	2
Kotak Mahindra	5	1	4	1	6	6	3.83	2
BOB	3	5	3	6	2	2	3.50	4
Union Bank	2	6	2	5	1	1	2.83	5
PNB	1	4	1	4	3	3	2.67	6

Source: All the figures are computed with the help of SPSS20 version

Table-1 presented above illustrates the comprehensive ranking of the financial performance of selected public sector and private sector banks spanning from 2008 to 2022.. The individual performance indicators are ranked in descending order while the overall ranking is computed in ascending order. The overall financial performance of private sector banks is stronger than that of the public sector banks. HDFC Bank has the maximum return on equity followed by Kotak Mahindra Bank while Punjab National Bank has the least return on equity. Union Bank of India and Bank of Baroda have stronger capital adequacy than that of private sector banks. HDFC bank and Axis Bank possess good quality assets while the asset quality of Punjab National Bank is the weakest. Bank of Baroda possess maximum managerial efficiency while Kotak Mahindra Bank enjoys maximum earning as compared to other selected banks. Private sector banks enjoy greater liquidity than that of public sector banks. Kotak Mahindra Bank has major liquidity followed by HDFC Bank whereas Union Bank of India is ranked the lowest in terms of liquidity. HDFC Bank is ranked first in the overall financial performance followed by Axis Bank while Punjab National Bank is placed on the last rank.

Table 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
ROE	15	0.94	1.21	1.11	0.08	0.01
C	15	12.68	14.10	13.21	0.46	0.21
A	15	1.37	5.44	3.06	1.48	2.20
M	15	0.04	0.05	0.04	0.00	0.00
E	15	2.50	3.09	2.72	0.14	0.02
L	15	48.93	59.59	52.54	3.49	12.21

Source: All the figures are computed with the help of SPSS20 version

It is evident from the Table 2 that throughout the research period, the banks have registered a minimum ROE of 0.94% while the maximum reached to 1.21%. A mean result of 1.11% shows that most banks are doing well in their use of equity to produce profit for the investors. The average capital adequacy is 13.21%, which is more than the legal minimum of 9%. Asset quality of 3.06% is within the permitted range which indicates lower NPLs. The average earning capacity of the banks was 2.72%, which is a high return and shows that the management of the banks is wisely using the assets that are being used. The average liquidity level was 52.54%, indicating that the banks' lending operations are financed in part by the mobilised deposits.

Table 3. Pearson Coefficient of Correlation

Pearson Correlation	**C**	**A**	**M**	**E**	**L**
ROE	0.79	0.80	0.25	0.77	-0.73
Sig. (1-tailed)	0.00	0.00	0.19	0.00	0.00

Source: All the figures are computed with the help of SPSS20 version

Regression analysis makes the premise that there should not be any multicollinearity among the variables being studied. According to Nagaraju & Boateng (2018) a correlation coefficient between any two variables should not be greater than 0.80 to rule out the collinearity. Table 3 above shows that none of the correlation coefficients are more than 0.80 and thus, the variables under study are not multicollinear.

The Capital Adequacy was shown in the above table to have an unstandardized coefficient of 0.202 and a p value of 0.032. It implies that there is a strong correlation between the capital adequacy of selected banks and its performance.

Table 4. Multivariate Regression Analysis

Variable	Unstandardized Coefficients		Sig.
	B	Std. Error	
(Constant)	0.536	0.583	0.382
C	0.202	0.065*	0.032
A	0.309	0.025*	0.000
M	0.388	2.469	0.120
E	0.269	0.150*	0.000
L	-0.131	0.060	0.502
F- Statistics (Model Fit)	10.737		
D-W Statistics	1.836	$\mathbf{R^2}$ = 0.985	

Source: All the figures are computed with the help of SPSS20 version
Note: *Significant at 5 percent level

The ROE of the selected banks will improve by 20.2% for every unit increase in capital adequacy parameters.

Asset Quality showed a 0.309 coefficient with a 0.000 p value. It demonstrates that there is a link between asset quality and the performance of banks. The evidence suggests that a 1% reduction in non-performing assets will result in a 30.9% rise in the ROE of selected banks.

The unstandardized coefficient for management effectiveness was 0.388 with the p-value of 0.120. This indicates that, even a unit improvement in management effectiveness will result in 38.8% rise in ROE. However, it is not statistically significant.

Earning capacity had an unstandardized coefficient of 0.269 at a p value of 0.000. It showed a strong correlation between earnings and performance of the banks under study. It is evident from the data that with a unit increase in bank's earnings equate to a 26.9% increase in ROE.

With a p value of 0.502, the coefficient of liquidity was -0.131. This shows that there is a clear and inverse relationship between profitability and liquidity. It indicates that a unit drop in liquidity will cause a 13.1% increase in the ROE of the selected banks.

The table also provides the value of model summary (R^2) wherein the independent variables predict the dependent variable (ROE) to a level of 98.5 percent based on the R-square value 0.985.

The D-W statistic value is 1.836 which clearly indicates that there is no auto-correlation detected in the sample.

7. Hypotheses Testing

Hypothesis	Sig.	Remarks
H01: There is no significant relationship between Capital adequacy and ROE	0.032*	Rejected
H02: There is no significant relationship between Asset quality and ROE	0.000*	Rejected
H03: There is no significant relationship between Management efficiency and ROE	0.120	Accepted
H04: There is no significant relationship between Earning capacity and ROE	0.000*	Rejected
H05: There is no significant relationship between Liquidity and ROE	0.502	Accepted

Note: *Significant at 5 percent level

8. CONCLUSION

The primary objective of the study is to explore and assess the financial performance and credit risk management practices of the selected Indian commercial banks using the CAMEL model approach. The overall performance ranking of selected banks during the study period reveals that the HDFC Bank is ranked first in the overall financial performance followed by Axis Bank while Punjab National Bank sits on the last rank. It is evident from the data analysis that the capital adequacy, asset quality and earning capacity has a statistically significant effect on the performance (ROE) of the selected banks for the period under study. However, the relationship of management efficiency and liquidity with ROE is found to be statistically insignificant.

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Business Incubator's Success Factors : Scale Development and Refinement

Syed Ahmed Saad and Parvaiz Talib

Abstract : *Business incubators/incubation centers have been recognized globally in fostering innovation and developing entrepreneurial ecosystem. They have evolved as highly efficient systems for the economic development of industrialized nations. This study tries to identify the measures of incubation performance and further delves into developing a research instrument comprising measures of Business incubator performance. From the literature it was found that the role of networking is critical and influences business incubator performance, other factors such as University linkage and incubation facilities provided to the startup firms also play an important role as far as business incubator performance is concerned. Further, research scale was refined and tests for reliability and validity were performed through CFA for assessing the measurement model, where scales were found unidimensional. The present study thus develops a conceptual model and a research instrument that would help managers in executing their functions by focusing on these critical areas for the enhancement of business incubator performance.*

Keywords : Business Incubators, Entrepreneurship, Startup, University Linkages, Networking.

1. Introduction

Every country tries to focus on knowledge & technology augmentation for innovation and entrepreneurship. These areas are on the priority in their development agenda as they are critical for advancement. Developing countries are always in search of new inventions which are going on around the globe and try to innovate indigenously that can be adapted to their local conditions.

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Majority of them now focus on trying to create conditions in which entrepreneurship and innovation lead to socioeconomic development. The importance of entrepreneurship in creating employment opportunities, innovative products/services and the formation of new business firms is seen as the engine of economic growth and progress (Lalkaka and Abetti, 1999; Khalil and Oiafen, 2010;Audretsch et al., 2016). Developing countries realised the potential of startups, started implementing policies to encourage entrepreneurs by offering financial and non-financial incentives through a variety of sources (Lalkaka and Abetti, 1999). These initiatives support the startup culture and assist small and medium-sized businesses in acquiring cutting-edge equipment and management techniques.

Back in 1960s, first incubator was established in the United States back in the 1960s to stimulate innovation and encourage entrepreneurship (Lewis, 2003). By providing infrastructure and other support services, business incubation, a sub-discipline of entrepreneurship, aids in the development of new businesses, their early survival, sustainment, achievement of growth, and improvement of the chances of progress in nascent years (Bergek and Norman 2008; Ramussen 2011). Business incubators are now viewed as an effective platform by the authorities and decision-makers at various levels for fostering innovation-ledeconomic growth. In emerging countries, Incubators can significantly benefit entrepreneurs by increasing human capital and developing their networking (Abdelgawad, 2022). Additionally, business incubators' significant role in the formation of new technology-based growth enterprises has set the ball rolling across nations. The aim of incubator is to facilitate the entrepreneurial team with various tangible and intangible resources in the development of a new company (Churchill and Lewis, 1983; Birley, 1986; Pals, 2006;Nair and Blomquist, 2019; Al Sharif, 2022; Mohan and Chinchwadkar, 2022). In order to achieve this, they offer their services and participate in endeavours that aid in the creation of high-tech startups with a scalable business model.

By using a business incubation mechanism, which offers specialised services like shared office space, business counseling, and knowledge sharing, new firms are nurtured and closely watched in the early stages of growth (Birch, 1979; Gissy, 1984; Allen and Rahman, 1985; Deyanova*et al.*, 2022). It is crucial to determine the success elements for effective incubation. Management doyen Peter Drucker once said *"you can't improve what you don't measure"*. In the context of business incubation, it has become imperative to measure the performance of the incubators because they are either publicly funded or financed by non-

government/private agencies. This study tried to develop and refine a research instrument comprising antecedents and measures of Business incubator performance.

2. Literature Review

An elaborative and orderly literature related to business incubation was keenly reviewed by various authors such as Allen and Rahman (1985), Mian (1996), Hackett and Dilts (2004,) Theorakopoulos *et al*. (2014) in order to provide a systematic platform for entrepreneurial activities by doing a critical assessment of business incubation.

Despite the consistent definition of a business incubator, it converges three dimensions as business incubation model itself, its very purpose and the support services it provides to startups (Ayyash *et al.*, 2020). As stated in the description of business incubators, these organisations assist entrepreneurs in combining their concepts into a cohesive whole and sustaining business by mentoring and guiding them from the starting so that the new venture can transform into a growing and a successful business enterprise (NBIA 2010).

Business incubators become an essential policy tool for promoting the growth and development of entrepreneurship and business start-ups. Through its external networks, business incubators assist tenant companies in generating entrepreneurial value (Nair and Blomquist, 2019). The focus of incubator is to provide an environment to enhance the survival rate followed by scaling up of newly launched businesses by offering a method for identifying companies that are constrained by a lack of resources and managerial assistance (Ayatse et al., 2017; Pattanasak, 2022). It includes the provision of facilities ranging from physical infrastructure, guidance and mentorship, seed capital to expertise for optimal utilization of creativity and the ability to market the entrepreneurial idea (Gandhi et al., 2021). After reviewing the relevant literature, it has been inferred that the purpose of an incubator is to nurture the nascent ventures. In order to achieve the same it needs various inputs such as infrastructure, financial resources and managerial staff.

The researchers find it critical for the policies regarding selection should be positively connected with the achievement of their (business incubators) goals (Hackett and Dilts, 2004; Totterman and Sten, 2005). Therefore, tenant startup firms should disclose correct details regarding their proposed business and company while seeking admission in the business incubator (Pals, 2006). It was

also ascertained through literature that business incubators should implement a stringent selection process. With regard to the selection process, it is also mentioned that those who are ambitious should be given preference during selection for admission to a business incubator (Dvoulety et al., 2018). In this context, the stages of business development become important to mention. There are four stages of business development such as the idea stage, the attempt stage followed by the development stage, and finally the commercialization stage (Bricks, 1986). This study also sheds light on the relationship between conception of an idea & its implementation, where smaller the gap between two, greater the likelihood of establishing a new enterprise. Because of this, incubation aims to minimise the gap between these two stages and inspire independence by providing new business ideas. By offering them a variety of services, such as working space, business support and professional networking, business incubators are removing the factors that causes to failure for new and small businesses.

A business incubator/incubation center thus tries to offer proper services and structure to the tenant firms by sometimes managing their affairs partially and assisting in new venture creation (Smilor, 1987;Lalkaka and Abetti, 1999; Aernoudt, 2004; Chan and Lau, 2005; Gozali, 2020). The major components of business incubators often enumerated and studies in earlier research are as follows:

- Physical Infrastructure and shared office space
- Common services to tenant firms for controlling expenses
- Mentoring and Professional supervision
- Financial Support and Marketing assistance
- Networking with other stakeholders

Thus, it can be concluded that business incubators provided support in introduction new startups as well as strengthen them in their formative years when the chances of their failure are higher than survival. The business incubator helps new ventures and provides them the goodwill in view of stakeholders as well as its clients (Yannopoulos, 2017; Leitao, 2020). There are various kinds of incubators and the functions/role of these incubators depends upon the type to which they belong.

3. Research Methodology and Design

3.1. Objectives

Based on reviewed literature on business incubation, it is tried to establish the relationship between existing exogenous factors such as university linkages, infrastructural facilities, and networking and their relationship with endogenous variables i.e. business incubation performance, is the goal of evaluating the research.

3.2. Sample Frame

Through literature review a conceptual model has been developed (Refer to Figure 01) for measuring the performance of factors which leads to the success of for incubation centers. This is a pilot study to further develop and refine the measurement scale for performance assessment of business incubators, which is based on primary data collected from managers of thirty-two business incubators. Joreskog and Sorbom (1993) devised a formula for sample size determination for estimating structural models as follows:

K (K-1)/2, where K = no of variables under study

For this pilot study, a sample size of 6 is required for the four variables, but this study carried out on 32 samples. Pilot surveys are primarily conducted for feasibility instead of hypothesis testing. Studies show that for conducting a pilot study, data collected from 20 respondents is sufficient (Birkett and Day, 1994) and even it can be 30 or in the range of 20 to 40 respondents would serve the purpose (Browne, 1995; Kieser and Wassemer, 1996; Julious, 2005). The sampling is Judgmental as the responses were collected from business incubation units. The collected data is analyzed and with the aid of SPSS 20.0® and Lisrel 9.00 software, measurement model has also been assessed.

3.3. Research Constructs and Conceptual Relationships

Researchers argued that the basis for measuring the success of a business incubator is different in every country i.e. it is not a universally accepted criterion (Phan et al., 2005). Some indicators such as the formation of a network and, support of financial institutions for tenant capitalization are important measures of performance (Campbell and Allen,1987). The sustainability and growth of the incubator itself and the tendency to provide services are the mean indicators of incubator performance (Mian, 1997).

As far as India as a developing nation is concerned, it's on a growth and development path and at this very stage, significance of business incubators becomes pivotal, therefore is included in the government's economic strategy post-2000s. As a result, the current study aims to pinpoint the key success elements influencing incubator outcomes and suggest strategies for improving business incubator performance. This study looks into how connections to universities, infrastructure, and networking might improve the performance of business incubators.

a) University Linkages

Business incubators linked with academia emphasizes on innovation and growth. Universities are redefining themselves as an entrepreneurial educational hub. Credit goes to their well-developed infrastructure, presence of expert faculty members, access to various databases through libraries, laboratories for R&D, and alumni connect. Business incubation centres are important for fostering an entrepreneurial culture among students and growing entrepreneurship in a nation, in addition to providing entrepreneurial education and training (Mian, 1997; Grimaldi and Grandi, 2005; Aerts et al., 2007; Pauwels et al., 2016). Studies emphasize on university linkage and advocates that this construct plays an important role as far as the performance of business incubator is concerned. It is also argued that the type of business incubator depends upon the country in which it is operating and most of the incubators act as research centres under the influence of the university. The incubators in developing nations are either government-funded or foreign-country-funded (Koshi, 2011). The performance and behaviour of business incubators are influenced by interaction among academia, industry, and government in a knowledge-based economy (Etzkowitz, 2009).

b) Incubation Facilities

The incubation facilities are the set of tangibles provided to the tenant firm like physical space, shared offices, laboratories for R&D for developing prototypes, and access to databases for patent search etc. before starting a business. Studies put emphasis on the role of size on the influence of incubation facilities in order to enhance the performance of business incubators. The facilities include preparation of business plan, development & testing of prototype and further product improvement, financial assistance, and soft skill training to incubates (Mavuri et al. 2020). These facilities are of immense importance at different incubation phase. In the pre-incubation phase when the business incubators

are facilitating new business plans, knowledge-intensive business techniques are being provided. In the incubation phase financial services and business development services are being provided and in post incubation stage a business incubator extends its support to the firms successfully graduated from the business incubator (Fernandez et al., 2015).

C) Networking

Another important construct behind success of any business incubator is a network with the different agencies for knowledge sharing, obtaining finance and smooth operations, stems from the network theory (Nohria and Eccles, 1992). This theory advocates the idea that the main role of an incubator is to channelize the technical know-how to its clients and find out ways to commercialize the innovations. The use of networks for the enhancement of the performance of business incubator/incubation centres is well mentioned in several studies and considered that networking can be used as a major strategy to benefit both incubator and incubatee (Akcomak, 2009). Like other incubator facilities, networking facilities also helps business incubator/incubation center in different stages of the incubation process and the exploitation of networks acts as a critical success factor for any business incubator (McCann, Reuer and Lahiri, 2016). Networking can be made efficient both internally as well as externally, the robustness of internal networks enhances the competitiveness of a business incubator (Hughes, Ireland and Morgan, 2007; Leitão, 2022) on the other hand the robustness of external factors encourage entrepreneurs in getting and procuring many important resources needed to survive in the market (Eveleens, van Rijnsoever and Niesten, 2017).

d) Business Incubator Performance

Till date, there is no consensus on the definition and the way to measure business incubator performance but many researchers show interest in this area. Few studies tried to define and assess the performance of business incubators (Ayatse, Kwahar, and Iyortsuun, 2017; Eveleens, vanRijnsoever and Niesten, 2017; Gozali, 2020;Pattanasak, 2022). We have to consider some definitions of the performance of a business incubator for developing a conceptual model as the performance is generally considered as the objective attainment activity vis-à-vis its expected outcome (Mosselman and Prince, 2004). So, it is important to highlight that the objective of a business incubator should be centered on the clients' successful graduation in order to accommodate new admissions.

The number of successful graduates is therefore regarded as a sign of a constructive incubation process. Survival rate and graduation rate become significant when evaluating the effectiveness of a business incubator. In a similar view, business incubators are renowned for producing jobs (Brooks, 1986; Al-Mubaraki and Busler, 2010). Consequently, an incubator should foster an inventive culture and provide support for technology transfer (Mian, 1997; Phillips, 2002). Studies also argued that business incubators are crucial in the development of industry clusters and economic growth (Hansen et al. 2000; Fukugawa, 2013). The items pertaining to all these sub-constructs can be added to the scale while measuring the performance of a business incubator.

3.3. Conceptual Model of Research

A Conceptual model should have both independent and dependent variables (Anderson & Gerbing, 1991). The model specification of present study is as follows:

$$\mathbf{BIP} = f\,\mathbf{\{UL, NG, IF\}}$$

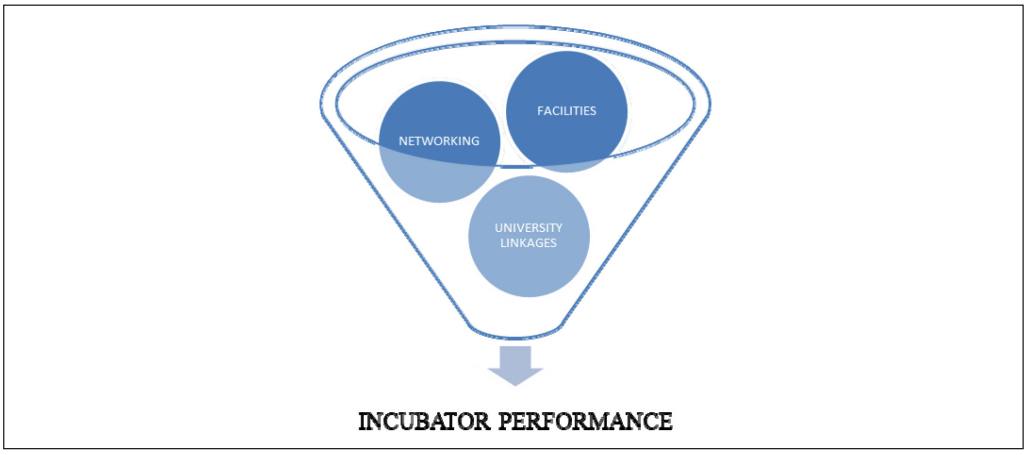
BIP = Business Incubator Performance (Endogenous/Dependent variable).

UL = University linkage (Exogenous/Independent variable).

IF = Incubator Facilities (Exogenous/Independent variable).

NG = Networking (Exogenous/Independent variable).

Figure-1 : Conceptual Model for Study Constructs



Source : Author's Contribution.

3.4. Respondents Profile

The data for this pilot study has been collected through a sample of 32 respondents, in which 56.2 percent of the sample of 32 people were women, 75.4 percent were single, and 20.8% of people were married, and the average age was 30. Regarding education levels, 14.1 percent finished higher education, while the highest level of education held by 10% of those was a postgraduate degree. We created the first goal of the article to validate the components utilized by factorial confirmatory analysis once we knew the profile of the respondents.

4. Analysis, Results and Discussion

Response Bias and Non-Response Bias Assessment

Before beginning the data analysis, the data's response and non-response bias were evaluated.

Response Bias Assessment

Response bias can steer participant replies in self-reporting research away from the ideal response. Additionally, it undermines the survey instrument's validity (Hair et al, 2012).

Non-Response Bias

This bias developed as a result of some respondents responding slowly or not at all. To examine the differences between respondents (early) and late or non-responders, independent sample t-tests can be used. If no differences were found, as stated by (Malhotra, 2012), response bias does not exist.

Table-1 : Group Statistics for Estimation of Non-Response Bias.

	Constructs	N	Mean	Std. Deviation	Std. Error Mean
UL	Early	12	2.4425	1.22250	0.22173
	Late	20	2.0625	1.22269	0.22110
NG	Early	12	2.8626	1.345260	0.24102
	Late	20	1.2521	1.4251	0.25197
IF	Early	12	2.6324	1.4282	0.25123
	Late	20	1.7027	1.4258	0.26118
BIP	Early	12	1.6425	1.3250	0.27173
	Late	20	2.1625	1.3269	0.25110

Source : Field Study.

To assess the normality of data in Table-2, a *z*-test is applied to test normality, using skewness and kurtosis. A *Z* score can be obtained by dividing the skewness values or excess kurtosis values by their standard errors. Z value of ± 1.96 and absolute z value of ± 3.29 are sufficient to establish the normality of data in case of small sample (n < 50) and medium sized sample (50 d" *n*<300) respectively. In this research, the Z statistic is greater than 3.50 for all research parameters ensuring the normality of the data.

Table-2 : A Z score for Testing Normality

Construct	Mean	Std. Deviation	*Z* Value
UL	4.566	1.34	4.45
NG	5.434	1.08	3.89
IF	4.555	1.56	5.76
BIP	4.098	1.24	6.04

Source : Field Study.

Assessment of Unidimensionality, Reliability and Validity

The magnitude of the factorial load must also be observed in CFA, and variables with low loadings should be eliminated from the model. Cronbach's alpha (Cronbach, 1951) was used to assess the construct's dependability, with values greater than 0.7 being acceptable. By analyzing standardized residuals, it is possible to confirm the construct's unidimensionality. The results for CFA are shown in Figure-2.

Convergent validity was also established through independent t-tests. The values for all the scales were above recommended 1.96. The results are shown in Figure-3.

Figure-2 : CFA for All Study Scales

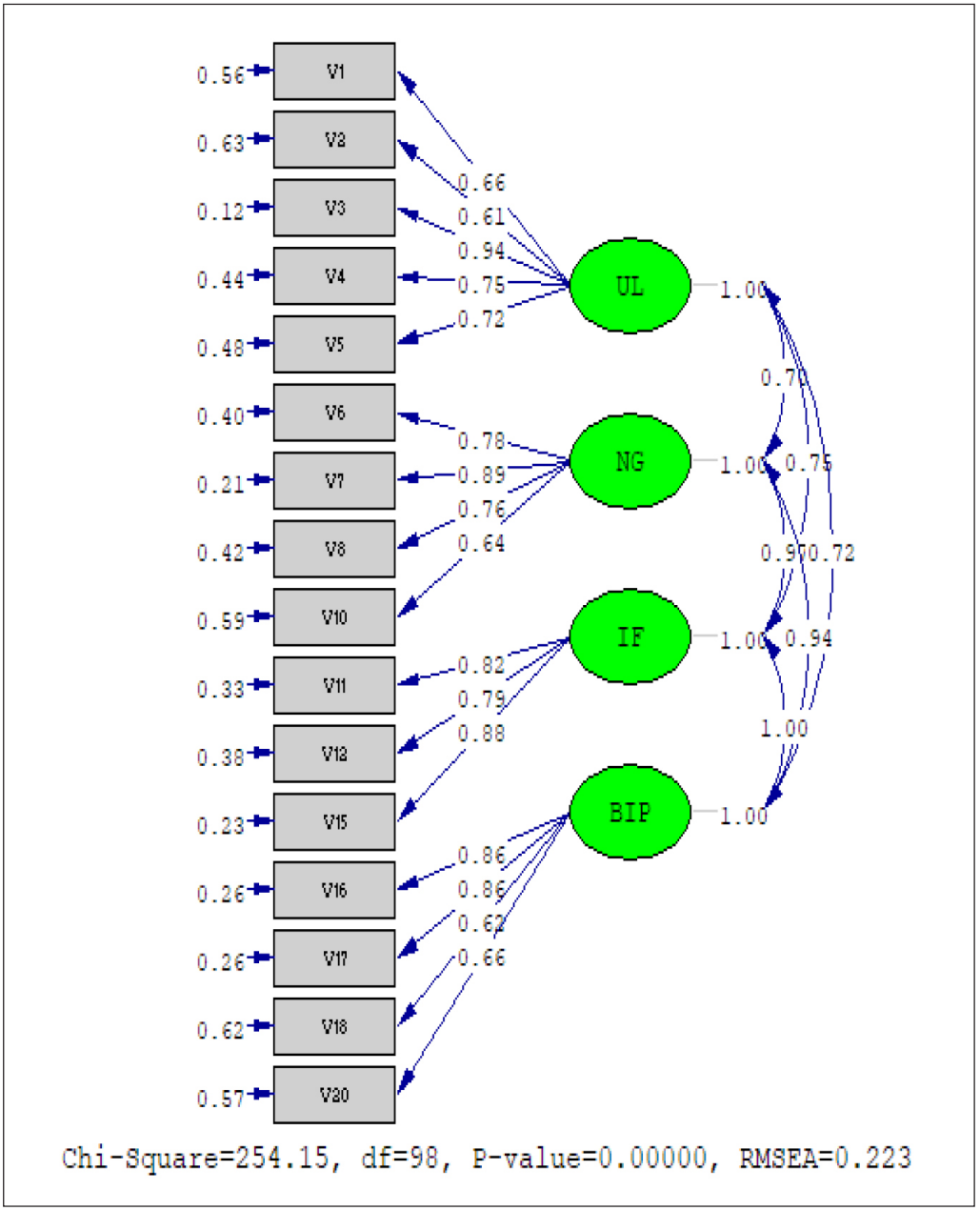


Figure-3 : t Values to Establish Convergent Validity

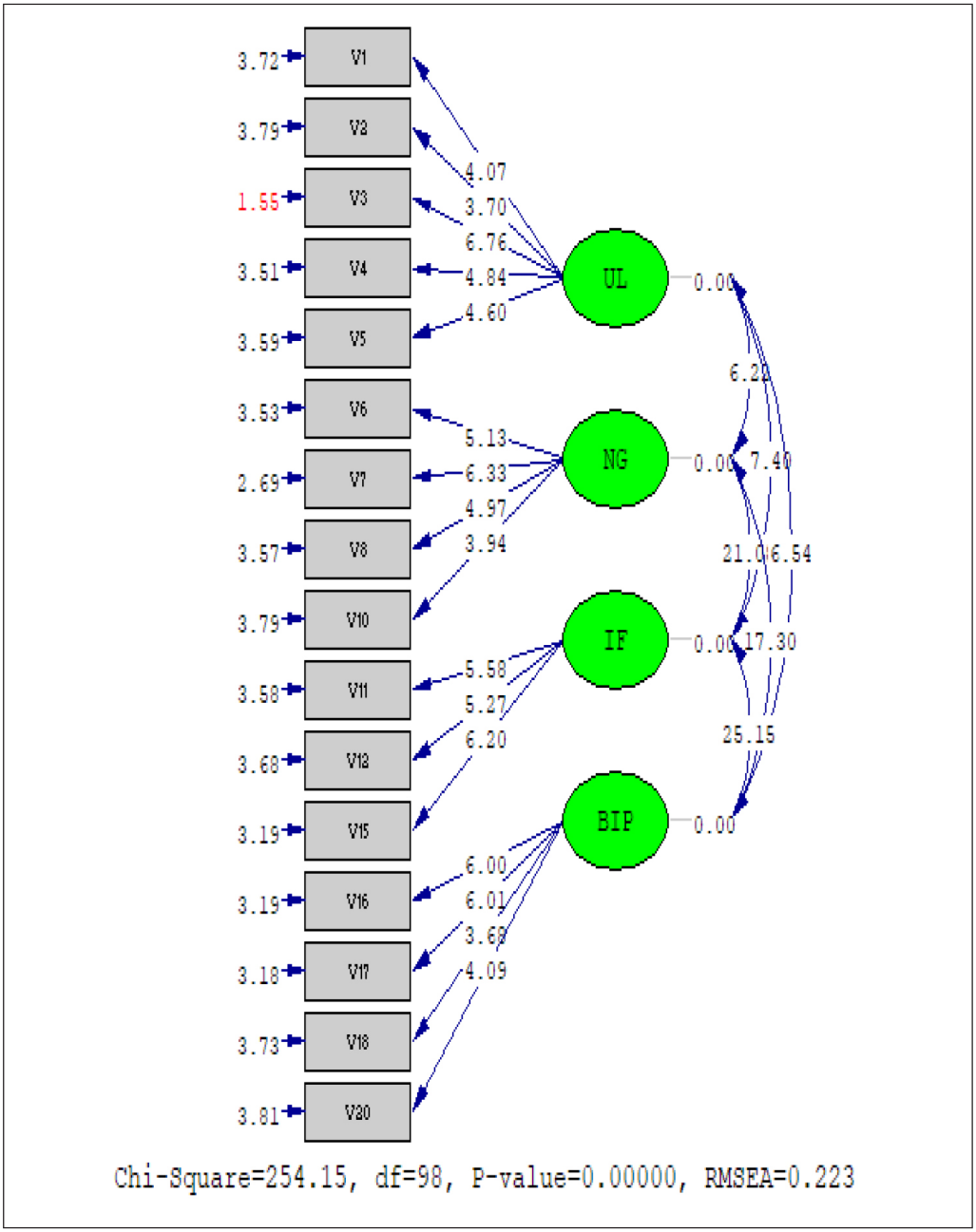


Table-3 : Cronbach Alpha, Construct Reliability, and Variance Extracted for exogenous variables

Construct	Cronbach Alpha	Construct Reliability	Variance Extracted
UL	.77	.79	.46
NG	.84	.96	.80
IF	.88	.89	.67
BIP	.85	.85	.55

Source : Field Study.

The above Table-3 shows different values of Cronbach Alpha, Construct Reliability, and Variance Extracted for exogenous variables such as University Linkages, networking and incubator facilities provided for incubatee firms as well as for endogenous variable i.e. Business Incubator Performance. In Cronbach's Alpha if value of 0.7 or higher is found the items are considered sufficiently consistent to measure the reliability, which indicates responses are consistent between items.

5. Conclusion

This study is useful for further investigation on the condition of incubators right now and what initiatives are required for the advancement of business incubators in the future. The research instrument is established from the comprehensive literature review and measures are identified as university linkages, networking, and incubator facilities that impact the Incubator performance. Only a conceptual model is developed in this pilot study from data which is obtained from thirty-two incubation managers. It can be empirically tested in future research by conducting a quantitative survey of a subset of Indian BIs. Through this data the research scale was refined and testing required for the assessment of the measurement model was performed. Initially, CFA was performed and all the scales were found unidimensional. Further, tests of validity and reliability were also performed, where the scale was found valid and reliable. The existing research serves as a foundation and identifies relationships that could be enhanced and reinforced by a cross-sectional/longitudinal or even a case-based analysis of business incubators' best practices. Therefore, we propose that this scale can be used for further research and the findings obtained can be generalized.

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"Go Green Model" – A Study on HRM Practices in NLC India Ltd, Neyveli

R.Ramachandran

Abstract : *The present research paper emphasis on 'Go Green' concept application in Human Resource Management in Neyveli Lignite Corporation (NLC) India Ltd. Neyveli. It is significant and need of the hour that public enterprise with the status of 'Navaratna' has come under the umbrella of Technology Inclusion system in all its functions to rationalize their organizational growth and development through employee efficiency and up skill practices in their operations. In this context the study made an analysis of select HRM practices through Green Technology and the study is descriptive in nature. Data collected on both sources, primary and secondary. The sample population was chosen on snowball sampling method. The size of sample is 915 and data collected through well-structured Interview Schedule The interview schedule was used different sample size of each category employee worked in the study organization. Finally, the study concluded that the firm strictly following of Go Green practices in all aspects, as a result, employees demonstrate green behaviour leading to green organizational outcomes. At the corporate level, the firm benefits from cost advantages and improve financial performance. The firm's also enjoy a positive brand image of a green employer, attract talented worker, create a green culture environment and achieve their sustainability goals. If the above steps are followed correctly, there is no doubt that NLC India Neyveli will be the leading company in the world in the future.*

Keywords : Go Green, Employee Performance, Human Resource Management. Organization, Worker and Environment.

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Introduction

Human Resource Management (HRM) is a pivotal factor and fixed continuous phenomenon in business management. Each and every organization emphasis more attention on this element, due to it, working and operating aspect in all of its activities. Hence it is called a human capital for every enterprise to accomplish its desire course of alternatives. Due to transformation of technology the organization strives to maximise the output, increase employees efficiency and apply digital and scientific way of performance. In this present scenario, the organization is coming forward to function of human resource through 'Go Green' model.

Review from Earlier Studies

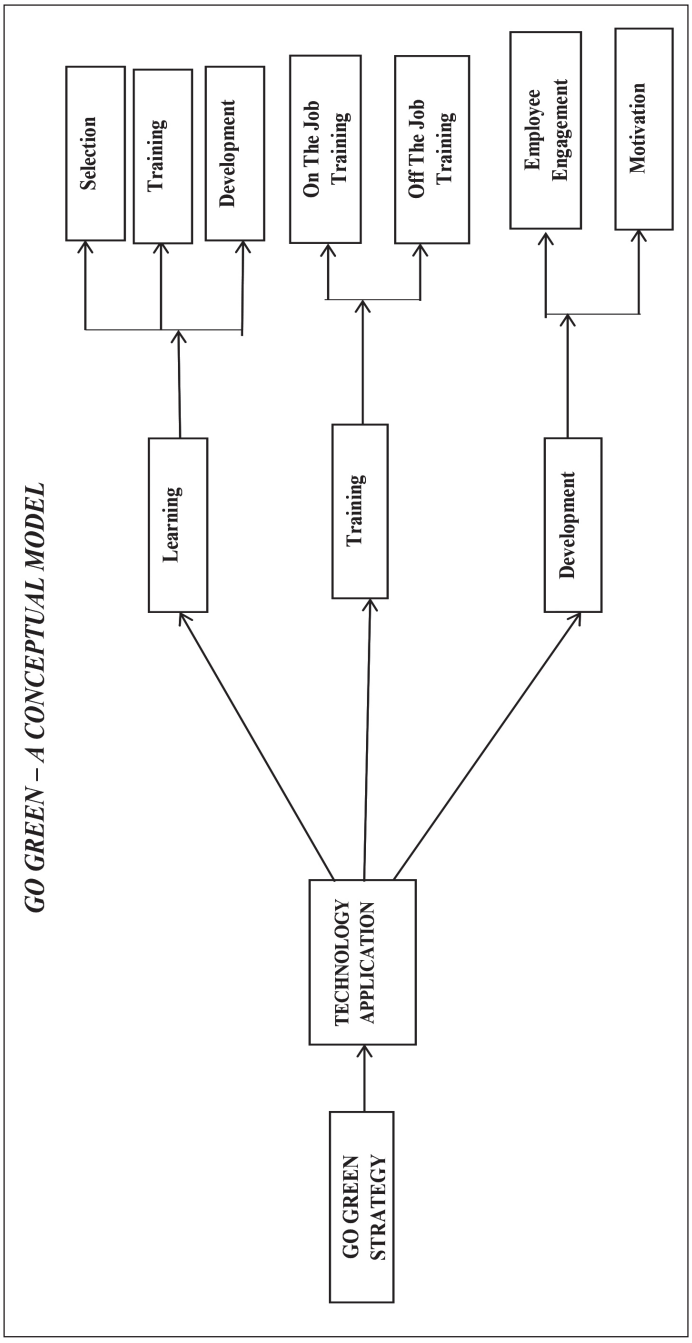
Paula Benevene * and Ilaria Buonomo (2020) this research study emphasis on greening the organization through human resource and move forward for greater effectiveness and organizational development.

José F. Molina-Azorin (2021) it emphasis on environmental and eco system importance and found that organization lead high growth in productivity with exercise of green technology. In this context, the study takes into relationship on environmental strategy and green human resources policy and practices.

Prakash Chandra Bahuguna (2022) it enforces on sustainability through Green human resource practices and emphasis on green work environment in the organization for improving morale and high productivity.

Identification of the Research Gap

'Go Green' model practices different ways in varying different levels of analysis through considering engagement motivation and job satisfaction. As an evident from the many earlier and recent studies conducted which have recognized by engagement, motivation and job satisfaction in innovative part particularly organizational participation. Workers work together with two or three dimensional factors for the survival and sustainability of them and enterprises through keeping relationship among superiors and subordinates over to work for well to achieve management desired goals. These are all the studies to provide base for the researcher to getting new idea and design for the present study to do the "**Go Green Model" – A Study on HRM Practices in NLC India Ltd, Neyveli.**



Source: Model Developed by Researcher

Problems that have been Focused on the Study

Organization strives for their work success with employee's spectrum of factors involved to growth and development. The management practices for their economic inclusiveness and sustainability is in the lime light technology transformation. Digitalization in business organization may lead in various forms namely - IoT, Machine Learning, Business Analytics, GHRM, Block chain and Fin Tech. It emphasis that key factors of human resource management concentrates on 'Go Green' practices in recruitment, selection and training and development process and employee engagement for outreaching the efficiency to maximum effort. In this process of streamline there are many issues negatively impact the organization. It emphasis that organizations of public enterprises of which Neyveli Lignite Corporation (NLC) Limited with Navaratna status has to go for benchmark, success and challenges in exercising the Go Green model practices in human resource particularly. On this backdrop, the researcher has undertaken the research study on 'Go Green' Model- A study on HRM practices in NLC India Limited (NLCIL). In this Context, the following research questions are framed :

i. How to help 'Go Green' practices improve the level of employee engagement at NLC India Limited, Neyveli ?

ii. Is there any impact of 'Go Green' practices of employee engagement in the organization ?

Research Objectives

The following are the study objectives:

1. To examine with the 'Go Green' practices to improve the level of employee engagement at NLC India Limited, Neyveli

2. To analyses the association with on 'Go Green' practices of employee engagement study organization.

Research Hypothesis

$\mathbf{H_{01}}$ = There is no association between demographic profile and the impact of 'Go Green' practices of employee engagement in NLC India Ltd, Neyveli.

Research Methodology Adoption and Execution of Analytical Tools

a) Sources of Data

This research paper is based on descriptive and primary and secondary data are used for the research study. The primary data collected from 24th January, 2022 to 28th February 2022 on interview schedule technique. Secondary sources include print and e-resources.

b) Techniques of Analysis

The collected data have been used for analysis with the help of statistical tools. The statistical techniques such as, percentage analysis, cross tabulation with chi-square tests and the mean score ranking method are applied.

c) Sampling Design

Using Snowball sampling technique the data of a sample population is 915 respondents through a well-structured interview schedule. The interview schedule was used different sample size of each category employee worked in NLC India Ltd, Neyveli. The category was identified by the researcher is ***Executives Interview Schedule (n=348), Non-Unionised Supervisor Interview Schedule (n=200) and Workers Interview Schedule (n=367).*** The questions of interview schedule were asked by the Executives, Non-Unionised Supervisor and Workers.

Analysis and Interpretation

a) Select Dependent Variables

This analysis considers for select demographic factors profile of the respondents' as they are; gender, age, educational qualification, experience in the field of NLC India Ltd, Neyveli.

b) Select Independent Variables

This chapter consider select 'Go Green' practices followed by the NLC India Ltd, Neyveli as follows;

Employee performance relate with 'Go Green' of Learning, Training and Development Practices in NLCIL.

c) Ranking Variables

The assigning rank by the executives, non-unionized supervisor and workmen for engagement and motivation of 'Go Green' practices followed by the NLC India Ltd, Neyveli as follows;

1. Ranking for Engagement on 'Go Green' Learning, Training and Development Practices in NLCIL
2. Ranking for Motivation on 'Go Green' Learning, Training and Development Practices in NLCIL.

a) Cross Tabulation with Chi-Square Test

Table – 1

Cross Tabulation of Gender and Satisfied with Online Selection Process

Gender		Satisfied with Online Selection Process				Total	Chi-Square
		Excited	Excellent	Good	Average		
	Male	87	418	254	16	**775**	.703 (NS)
	Female	17	68	52	3	**140**	
Total		**104**	**486**	**306**	**19**	**915**	

Source: Primary Data. **S/NS:** Significant / Not Significant

$H_{03(a)}$ = There is no association between Gender and Satisfied with Online Selection Process in NLC India Ltd

Table-1 makes it clear that the cross tabulation of Gender and Satisfied with Online Selection Process. The calculated value is higher than the 0.05 level and it is not significant. Hence the stated hypothesis is accepted. It implies that there is smooth understanding and awareness exists in this intension between the factor, gender and online selection base.

Table – 2
Cross Tabulation of Age and Satisfied with Online Selection Process

Age (In Years)	Satisfied with Online Selection Process				Total	Chi-Square
	Excited	Excellent	Good	Average		
Up to 35	9	46	24	2	**81**	**.001 (S)**
36-40	18	144	92	5	**259**	
41-45	21	88	83	6	**198**	
46-50	12	55	47	3	**117**	
51-55	11	55	22	0	**88**	
56-58	30	78	30	2	**140**	
59 and Above	3	20	8	1	**32**	
Total	**104**	**486**	**306**	**19**	**915**	

Source: Primary Data.

$H0_{3\,(b)}$ = There is no association between Age and Satisfied with Online Selection Process

Table-2 shows that the cross tabulation of Age and Satisfied with Online Selection Process in the study organization. H0 is rejected due to that the calculated value less than the significant level 0.05 and it is from that there is an association between age and satisfied of online process. Hence, it is concluded that there workers aware and they prefer to green practices of selective at all level of age groups.

Table – 3
Cross Tabulation of Educational Qualification and Satisfied with Online Selection Process

Educational Qualification	Satisfied with Online Selection Process				Total	Chi-Square
	Excited	Excellent	Good	Average		
Primary School	10	10	7	0	**27**	**.000 (S)**
Higher Secondary / Diploma	37	118	53	2	**210**	
Undergraduate	32	158	109	9	**308**	
Postgraduate	18	159	100	7	**284**	
Professional	7	41	37	1	**86**	
Total	**104**	**486**	**306**	**19**	**915**	

Source: Primary Data.

$H_{03\,(c)}$ = There is no association between Educational Qualification and Satisfied with Online Selection Process

Table-3 depicts that the cross tabulation of Educational Qualification and Satisfied with Online Selection Process it emphasis that determined value is less than significant value at 0.00. level it shows that null hypothesis is rejected and exhibits that there is an awareness and understanding among the factors at all categories of learners in the organization.

Table – 4
Cross Tabulation of Experience in the field of NLC and Satisfied with Online Selection Process

Experience in the field of NLC	Satisfied with Online Selection Process				Total	Chi-Square
	Excited	Excellent	Good	Average		
Less than 5 years	35	184	88	5	**312**	**.006 (S)**
5-10 years	50	216	174	11	**451**	
11-20 years	19	71	39	1	**130**	
More than 20 years above	0	15	5	2	**22**	
Total	**104**	**486**	**306**	**19**	**915**	

Source: Primary Data.

$H_{03\ (d)}$ = There is no association between Experience in the field of NLC and Satisfied with Online Selection Process.

Table-4 analyse that the cross tabulation of Experience and Satisfied with Online Selection Process. The stated H0 is rejected that the computed value is 0.006 which is for behind that 0.005 level. It emphasis that the workers with different years of experience prefer with online selection technique in the study organization and also likes to go for greening environment.

Table – 5
Cross Tabulation of Grade and Satisfied with Online Selection Process

Grade in the field of NLC	Satisfied with Online Selection Process				Total	Chi-Square
	Excited	Excellent	Good	Average		
Executives	32	208	101	7	**348**	**.000 (S)**
Non- Unionized Supervisors	20	62	110	8	**200**	
Workmen	52	216	95	4	**367**	
Total	**104**	**486**	**306**	**19**	**915**	

Source: Primary Data.

$H_{03\,(e)}$ = There is no association between Grade and Satisfied with Online Selection Process

Table-5 reveals that the employees of study organization are satisfied with online selection for which chi-square value is significant for and less than the 0.05 level. Hence H0 is rejected and found that the workers at different grades are aware and likes over the method of green environment.

b) Mean Score Ranking Analysis

Table – 6

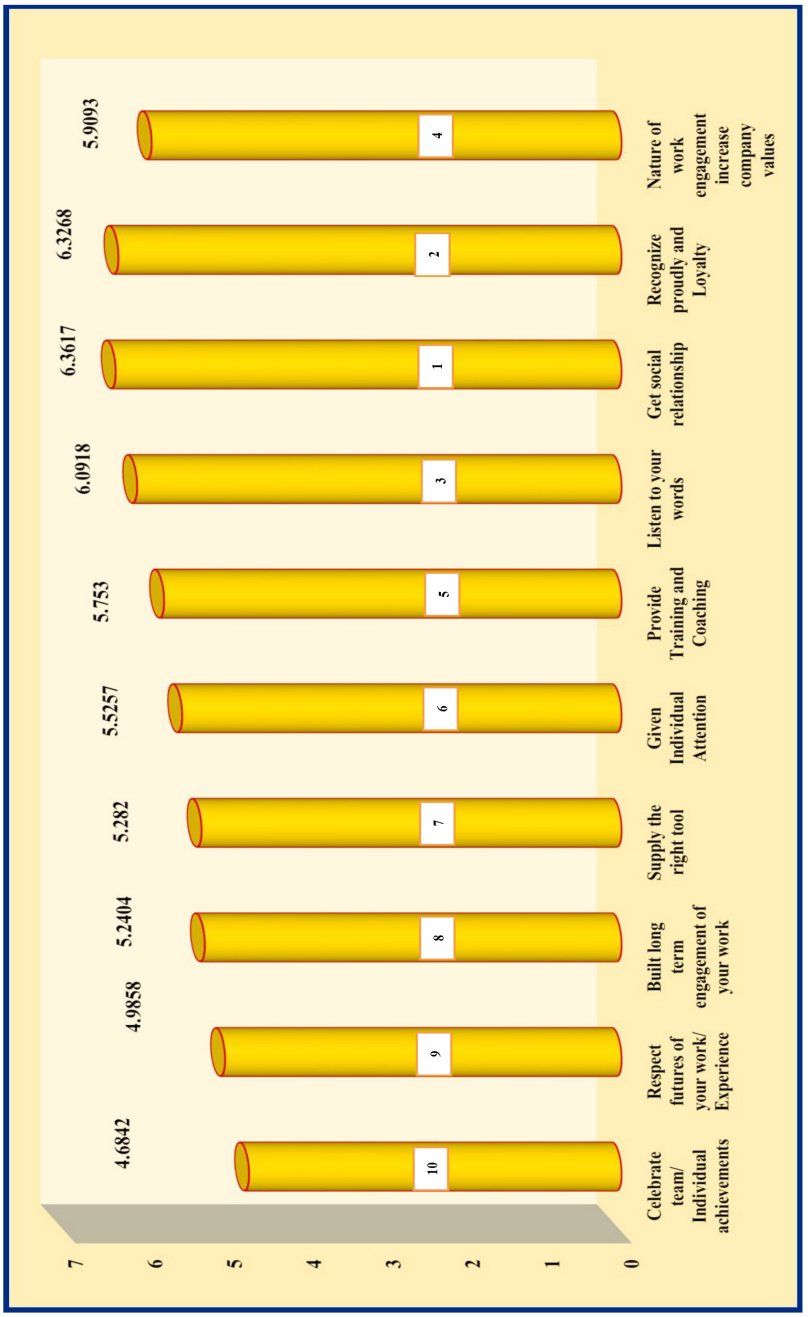
Mean Score Ranking of Engagement on Go Green Practices

	Variables	N	Mean	Rank
Valid	Celebrate team/ Individual achievements	915	4.6842	X
	Respect futures of your work/ Experience	915	4.9858	IX
	Built long term engagement of your work	915	5.2404	VIII
	Supply the right tool	915	5.2820	VII
	Given Individual Attention	915	5.5257	VI
	Provide Training and Coaching	915	5.7530	V
	Listen to your words	915	6.0918	III
	Get social relationship	915	6.3617	I
	Recognize proudly and Loyalty	915	6.3268	II
	Nature of work engagement increase company values	915	5.9093	IV

Source: Primary Data.

Table-6 denote that the Mean score rank of Engagement on Go Green the result indicates that the various stages of Engagement on Go Green Practices followed and assigning the rank by the respondent in all the three categorized employees in NLC India Ltd, Neyveli. On the basis of ultimate rank as suggested by mean score it can be concluded that get social relationship is occupying the first rank and followed by Recognize proudly and Loyalty is second rank, listen to your words is third rank. From the least of Celebrate team/Individual achievements is occupying the tenth rank.

Exhibit - 1 – Mean Score Ranking of Engagement on Go Green Practices



Source: Primary Data

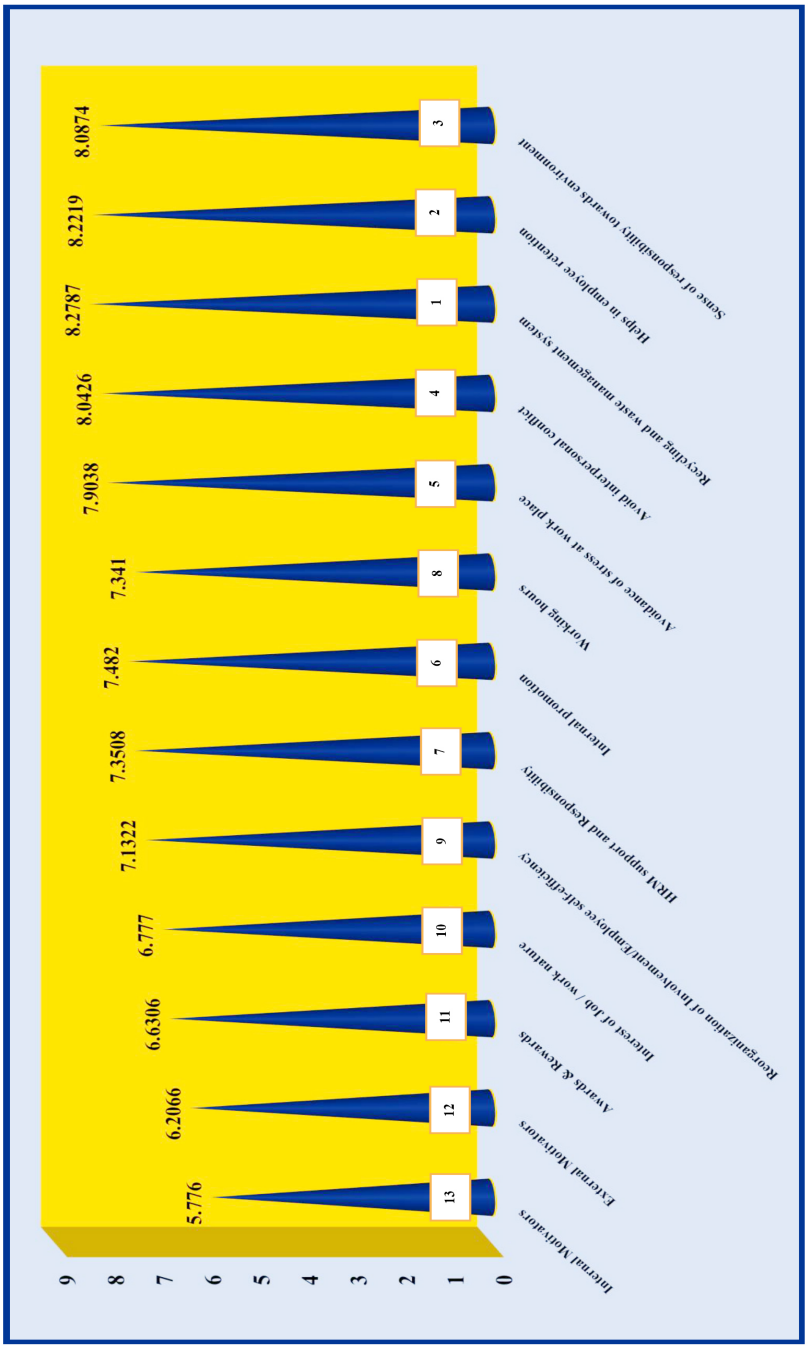
Table – 7
Mean Score Ranking of Motivation on Go Green Practices

	Variables	N	Mean	Rank
Valid	Internal Motivators	915	5.7760	XIII
	External Motivators	915	6.2066	XII
	Awards & Rewards	915	6.6306	XI
	Interest of Job / work nature	915	6.7770	X
	Reorganization of Involvement/Employee self-efficiency	915	7.1322	IX
	HRM support and Responsibility	915	7.3508	VII
	Internal promotion	915	7.4820	VI
	Working hours	915	7.3410	VIII
	Avoidance of stress at work place	915	7.9038	V
	Avoid interpersonal conflict	915	8.0426	IV
	Recycling and waste management system	915	8.2787	I
	Helps in employee retention	915	8.2219	II
	Sense of responsibility towards environment	915	8.0874	III

Source: Primary Data.

Table-7 analyse that the Mean score rank of Motivation on Go Green and the result indicates that the various stages of Motivation on Go Green Practices followed and assigning the rank by the respondent in all the three categorized employees in NLC India Ltd, Neyveli. On the basis of ultimate rank as suggested by mean score it can be concluded that Recycling and waste management system is occupying the first rank and followed by Helps in employee retention is second rank, Sense of responsibility towards environment is third rank. From the least of Internal Motivators is occupying the thirteenth rank.

Exhibit - 2 – Mean Score Ranking of Motivation on Go Green Practices



Source: Primary Data

Policy for Implications and Conclusion

The following implications are outcome of the analysis and interpretation of data.

1. It was found with the help of percentage analysis that all the respondents had intellectual knowledge about the concept of green learning, training and development and related tasks in NLC India Limited. Therefore, the company should expand its green learning and related activities with full features in the coming years.

2. The result of cross-tabulation and chi-square test should be interpreted by, there is no relationship between the intention to conduct the learning program at NLC India Limited, Neyveli and the gender, age and educational qualification of the respondent. it was an integral part of Go Green contribution was due to employee dissatisfaction. So, the organization should conduct frequent orientation about the aspects of Go Green benefits to the selected employees and remove the barriers from them. This will improve employee integration and productivity.

3. Analysis of the mean score ranking of commitment to Go Green practices by the organization during the study period reveals that celebrating team/ individual achievements is ranked lowest. This shows that employee engagement is very low. Therefore, the company monitors the performance of the employees frequently and motivates them. As it is the same for motivation on Go Green Practices have there is no space of internal motivators is occupying the thirteenth rank. The organization should collaborate with the HR department to integrate employee achievements and review their innovative ideas. This will drastically improve the employee in their field.

The firm run periodic refresher training to employees and leaders about the green procedures and policies, connecting with NLC goals. The firm strictly following of Go Green practices in all aspects, as a result, employees demonstrate green behaviour leading to green organizational outcomes. At the corporate level, the firm benefits from cost advantages and improve financial performance. The firms also enjoy a positive brand image of a green employer, attract talented worker, create a green culture environment and achieve their sustainability goals. If the above steps are followed correctly, there is no doubt that the organization will be the leading company in the world in the future.

Scope for Further Research

1. Effectiveness of Green Technology Applications in HRM practices in Public Sector enterprises between Interstate – A Study

2. An Comparative study on Green Behaviour Impact on Organizational Development

3. Employees Awareness and Perception towards Green Technology in Public and Private Sectors – A Study

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Social Commerce : Investigating Impact of Social Media on Consumer Buying Behavior

Nitu Sharma and Sidra Hayath.S

Abstract : *The dynamic evolution of social media and internet networking has significantly transformed consumer behavior, reshaping contemporary marketing strategies. This shift, driven by the rise of social commerce, amplifies social media's influence in the digital marketing sphere. Our investigation delves into the profound impact of these platforms on shaping purchasing decisions and emphasizes the crucial role of understanding consumer demographics in strategic planning. Furthermore, this comprehensive study scrutinizes the influence of user generated content on consumer trust, a vital factor in the evolving realm of social commerce. Employing a data-driven methodology and questionnaires, the study analyzes consumer demographics, purchasing patterns, engagement, and involvement in social commerce. The findings enhance understanding for businesses aiming to optimize their social commerce strategies and adapt to evolving consumer landscapes. These insights are valuable for marketers, policymakers, researchers, and consumers, offering a deeper comprehension of social commerce.*

Keywords : Social Commerce, Consumer Behavior, Social Media, User-generated Content, Trust, Challenges, Engagement, Purchasing Decisions.

INTRODUCTION:

Social media's ever-changing viewpoint has fundamentally changed how people engage, communicate, and make decisions about what to buy in today's linked society. The word "Social Commerce," which skillfully blends social media and online buying to enable firms in influencing customer choices, has emerged as a result of this revolutionary shift and driving economic growth (Abaid Ullah

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Zafar, 2019). Certainly, social media exerts a noteworthy influence on consumer behavior. People are progressively turning to these platforms to uncover products, gather suggestions from peers, and narrate their own encounters. These social media channels have transformed into digital marketplaces featuring an extensive and varied group of users. These users play an active role in shaping their purchasing choices and engaging with brands. E-commerce has distinctly molded the business environment, bringing forth seven effective online business frameworks that cater to different market sectors. These models encompass B2C, B2B, C2C, D2C, C2B, B2A, and C2A, addressing a wide array of customer interactions and transactions. (Nitu Sharma, 2023). These frameworks enable online transactions and fundamentally transform the methods through which products and services are both presented and acquired.

A study conducted by (Zaryab Sheikh, 2019) reveals that a considerable portion of digital consumers, approximately 67%, favor suggestions from the virtual community, and a notable 83% of online buyers are eager to share information about their purchases with friends. Additionally, research carried out by (Faradewi Bee A.Rahman, 2023) underscores how social commerce not only revolutionizes a firm's activities but also has a substantial impact on consumer actions within the domain of online shopping encounters.

In addition, social commerce brings the convenience of immediate online purchases to consumers, granting them the ability to acquire products and services that may not be locally available, at their preferred time, as highlighted by (Faradewi Bee A.Rahman, 2023). This level of accessibility has revolutionized the way businesses promote their offerings. Nowadays, companies harness social media platforms to connect with a wider audience, interact with customers, and establish a more robust brand presence. Interactive content, collaborations with influencers, and contributions from users are employed to attract and retain shoppers, cultivating a feeling of community akin to brand communities. In today's digital era, social media assumes a pivotal role, as influencers, friends, and family exert significant influence over consumer inclinations. Social validation and positive appraisals on these platforms wield a profound impact on purchase choices.

As outlined by (Hajli, 2017), Customers use their social media profiles to help them make well-informed decisions when they shop. Social media platforms include features such as the "Like" button on Facebook, the "Tweet" option on Twitter, and the "Share" feature on Plurk, which allow users to quickly share commercial content with their social network. The sharing process mostly focuses

on friends exchanging insights on social media sites, rather than offering conventional feedback to anonymous online shoppers, as elucidated by (Ting-Peng Liang, 2011). Studies demonstrate that consumers actively participate in social commerce (s-commerce) with the intention of enhancing their shopping efficiency, as indicated by research conducted by (Kim, 2013; Liang, Ho, Li, & Turban, 2011; Liang T. a., 2011). They capitalize on a range of advantages, including convenience, social endorsements, personalized experiences, immediate access to information, seamless checkout processes, real-time customer assistance, time-limited promotions, and enticing deals, along with the contagious nature of social sharing. By harnessing these elements, consumers strive to make more informed and improved purchasing choices when utilizing social commerce platforms, as highlighted by (Xi Hu, 2019).

Due to the widespread popularity of social commerce, numerous websites catering to a large user base have arisen, as mentioned in the work of (Tredinnick, 2006). Nonetheless, social commerce still grapples with several design challenges. A notable challenge stems from the two distinct paths along which social commerce is evolving, leading to the emergence of two distinct categories of social commerce applications. The first category integrates e-commerce functionalities into social networking websites, while the second category embeds social networking features into e-commerce websites, as discussed by (Curty, 2011).

Recent years have witnessed a rapid surge in the growth of social commerce, attributed to the important impact that user engagement—a key component of social media applications—has for organizations. For instance, the case of Threadless.com illustrates how involving users in submitting T-shirt design concepts through an online community effectively drives product development, identifies emerging market trends, and bolsters sales, as highlighted by (Benyoucef, 2013). The objective of this study is to have a thorough understanding of the functioning of social commerce through the alignment of company objectives with social media platform. To achieve this, the study investigates how the perceived characteristics of social vendors influence trust and social commerce. Additionally, it delves into how users perceive platform utilization and the presence of other users, as explored by (Yahia, 2018).

A key distinction between e-commerce and social commerce lies in how users are perceived and engaged. In traditional e-commerce, users are often seen as isolated individuals, disconnected from their communities, and acting independently. The flow of information is mostly one-way, with businesses conveying messages to users, and little opportunity for users to provide feedback

to the platform (Benyoucef Z. H., 2013).On the flip side, within the realm of social commerce, the interaction between users and the platform is perceived as a collaborative process driven by the community. Users and prospective users participate in online commerce services and applications as active members of a larger community. This engagement enables users to express their preferences and endorse products within their networks, potentially impacting the buying choices and actions of fellow community members, as elucidated by (Huang, 2013).

In a comprehensive overview, this research is committed to shedding light on the transformative impact of social commerce on consumer behavior, profoundly reshaping the traditional shopping landscape. This paradigm shift seamlessly grants individuals access to an extensive spectrum of products and services via online platforms. Additionally, businesses strategically harness the power of social media to establish meaningful connections, elevate user experiences, and provide enhanced value. A salient trend emerging is the increasing reliance of consumers on social media for peer-endorsed product insights and feedback, significantly shaping their purchasing choices. This trend highlights social commerce's changing role in consumer decision-making, and investigating it is a primary area of interest. The emergence of social commerce, a multitude of advantages are introduced, including the convenience of personalized recommendations, real-time support, and empowerment for consumers to make well-informed decisions. While the rise of social commerce has led to the emergence of numerous online platforms, it concurrently presents design challenges due to its multifaceted evolution. However, the burgeoning influence of user engagement within social commerce has proven to be a boon for businesses, fostering innovation, imparting profound market insights, and propelling increased sales. The primary objective of this research is to align business strategies with social media tactics, delving into the ways perceived vendor traits influence trust and social commerce. Additionally, the study underscores the pivotal role of interactions that facilitate the exchange of preferences and recommendations among users.

This comprehensive exploration aims to provide a holistic understanding of the intricate relationships between different social media platforms, user-generated content, social media platform features, and consumer buying behavior. This research contributes significant insights to a diverse range of stakeholders. For market researchers, it provides a nuanced understanding of how social commerce dynamics impact consumer behavior, enabling them to refine their methodologies and generate more accurate insights. Business leaders

stand to gain actionable insights into effectively leveraging social commerce strategies, optimizing customer engagement, and navigating challenges in this evolving landscape. Moreover, policymakers and industry regulators can benefit from an informed perspective on how social commerce is reshaping consumer interactions and transactions. Ultimately, this study not only navigates the paradigm shift brought by social commerce but also endeavors to provide empirical insights into the multifaceted interplay of these variables, thereby making a substantial contribution to the realm of consumer behavior, market research practices, and the evolving business landscape at large.

Review of Literature :

Panpan Wang, Qian Huang (2023) Their research reveals digital influencers enhance social commerce. Information and expertise are digital influencers' social powers. Both powers affect client participation. Interactions impact social commerce purchases. A survey reveals digital influencer-based businesses leverage social commerce to boost consumer engagement and revenue.

Pejman Ebrahimi, et al, (2023) In their study, Strategic social networking characteristics alter online customer purchase behavior, according to authors. The key variables for ISM methodology and experts are "consumer engagement," "value perception," and "risk perception." Also stressed: "Trust," "Social influence," "Social support," and "Value co-creation". Platforms employ analytics to engage users and inform purchases. This data can be used to develop new social networking user engagement concepts or study variable correlations.

Ahmad Samed Al-Adwana, Husam Yaseen, et al, (2023) Their research, E-commerce and social media lessen product uncertainty. Data quality, seller reputation, and positive product uncertainty evaluations are assessed. These attributes reduce vendor uncertainty, per 471 consumer reviews. These features and social commerce consumers' product uncertainty perceptions are mediated by seller uncertainty. Their research impacts social commerce uncertainty theory and practice.

Jian Wang, et al, (2022) This study examines social commerce purchasing intent and trust. The study of 19 studies found that trust increases customers' buying intentions. Trust in sellers influences consumers' purchasing intentions more than other believe objects, and these consumers trust forums and communities more. The data show that trust-building tactics increase social commerce client loyalty and engagement.

Abaid Ullah Zafar, et al, (2019). In their research, The authors analyze how social media influencers and interactive features affect social commerce and impulsive buying. They examine how celebrity posts affect 452 Pakistani Facebook users' sincerity, contradicting views, observation, and impulsive buying. These traits greatly reduce impulsive spending and most relationships except negative emotions. Their research on social commerce and impulse buying offers theoretical and managerial insights into consumer behaviour.

Xi Hu, et al, (2019) In this paper, Interactivity and social media influencers affect social commerce impulsive buying, according to the study. They examined 452 Facebook Pakistanis. According to the study, celebrity posts affect genuineness, competing ideas, observation, and impulsive buy. Except for negative emotions and reckless expenditure, these elements regulate most associations. This study examines social commerce and impulsive buying theoretically and managerially.

Objectives :

1. To examine the extent to which social media platforms influence consumer buying behavior.

2. To identify the key factors that drive the consumers to engage in social commerce activities.

Research Methodology :

In this research, a rigorous and systematic methodology is employed to examine how social media affects customer buying behavior in social commerce. A quantitative approach is adopted, with data collected through structured survey questionnaires distributed to a diverse sample of consumers actively engaged in customer buying patterns.

The sampling technique used for participant selection ensures that the sample is representative and diverse, comprising individuals from different demographics. Data analysis techniques, such as regression analysis and correlation analysis, are applied to test the hypotheses formulated for this study.

Descriptive statistics, including mean, median, and standard deviation, are calculated to summarize and describe the main characteristics of the collected data. The data analysis results are interpreted to derive significant implications about the impact of media on consumer purchasing behavior, as well as the influence of user-generated content and social media platform features on customer trust and purchase decisions within the context of social commerce.

The study admits sample size and data gathering techniques, which may restrict generalizability. Despite these constraints, the study tries to illuminate the dynamic relationship between social media, consumer behaviour, and social commerce.

Based on the research findings, the study will offer recommendations to businesses, marketers, and social media platforms to optimize their social commerce strategies and enhance customer engagement approaches. The study's findings, contributes to the body of knowledge on social commerce and consumer behavior. The research outcomes hold potential implications for businesses and stakeholders seeking to capitalize on the opportunities presented by the evolving digital marketplace

Statement of Problem :

Social commerce is a concept that has emerged in the modern business environment as a result of the combination of social media and consumer behaviour. But the complex interaction between social media and consumer purchasing patterns continues to be a riddle with many layers. The main issue this study attempts to solve is the need to determine how much influence social media platforms have over customer preferences and purchase behaviour. This analysis goes further to pinpoint the crucial elements that encourage customers into engaging in social commerce activities. The study also intends to analyse how user-content affects customer trust and decision-making in the context of social commerce. In addition, it aims to investigate how consumers view products, which in turn affects how actively they engage in social commerce. This research aims to clarify the intricacies of social commerce, providing crucial insights for firms and marketers navigating this changing environment as the digital revolution redefines the dynamics of customer purchase intentions.

Significance of the Study :

This study has significant implications for business due to the social commerce industry's changing environment. To improve their digital marketing approach, firms must understand how social media affects customer buying behavior. The findings of this study can help organizations allocate resources among social media channels to engage potential customers more effectively.

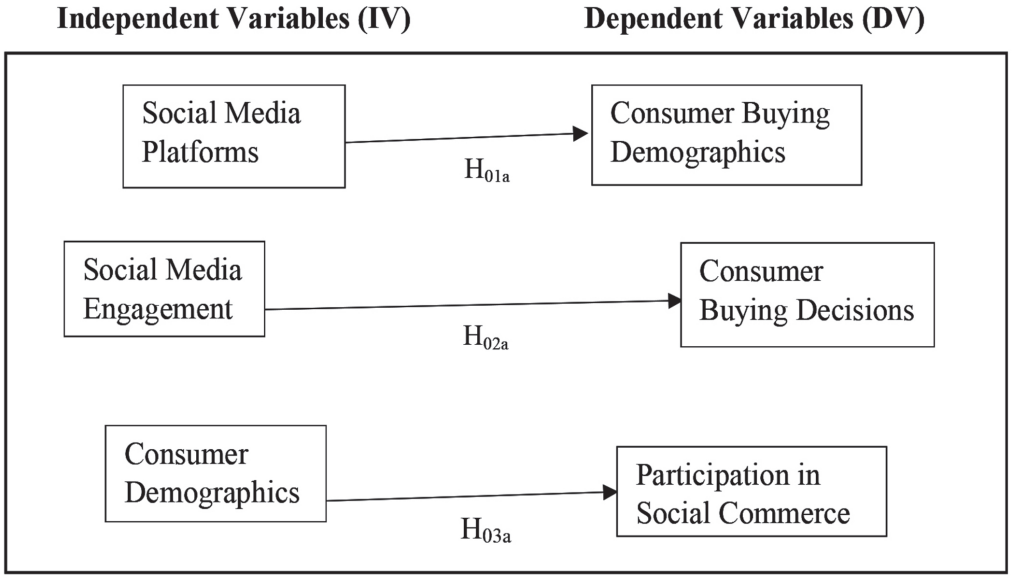
To create more personalized and engaging online experiences, businesses must first identify the major drivers of social commerce activity participation. Businesses should tailor their client interactions to these factors to build stronger relationships and encourage social commerce involvement.

In conclusion, this study helps organizations make strategic decisions by revealing the complex interaction between social media and customer behavior in social commerce. The study may impact corporate strategies, marketing efficacy, and the scholarly debate on digital commerce's evolution.

Scope of the Study :

The purpose of this research is to analyse, in as much depth as possible, how the influence of social media on consumer buying habits connects to the field of social commerce. This entails investigating various social media networks, determining the important characteristics that drive customer engagement. The research was conducted with the intention of providing a nuanced understanding of the complex processes that shape consumer behaviours in social commerce. The research aimed to encompass a broad spectrum of geographic regions and demographic groups.

Research Variables and Conceptual Framework :



Source: primary

Hypotheses Formation:

This study formulates and tests hypotheses to understand the complex interaction between social media platforms, consumer purchasing behavior, personality factors, and social media involvement. A comprehensive literature assessment yields two possibilities for investigation:

Hypothesis 1

H_{01} : Social media platforms have no significant impact on consumer purchasing behavior.

H_{01a} : Social media platforms have a significant impact on consumer purchasing behavior.

Hypothesis 2

H_{02} : There is no relationship between social media engagement and consumer buying decisions.

H_{02a} : There is a positive relationship between social media engagement and consumer buying decisions.

Hypothesis 3

H_{03} : No correlation exists between consumer demographics and their participation in social commerce.

H_{03a} : Consumer demographics are related to their engagement in social commerce activities.

Data Analysis :

H_{01} : Social media platforms have no significant impact on consumer Buying behavior.

H_{01a} : Social media platforms have a significant impact on consumer Buying behavior.

Social Media Impact on Consumer Purchasing : Regression Analysis

Table 1(a): Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.684	0.467	0.463	0.722
Source: Primary				

a. Predictors: (Constant), Social Media Platforms

Table 1(b): ANOVA[b]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.517	1	58.517	112.273	.000
	Residual	66.714	128	0.521		
	Total	125.231	129			
Source: Primary						

Predictors: (Constant), Social Media Platforms

a. Dependent Variable: Consumer Buying Behavior

Table 1(c): Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.757	0.228		3.320	0.00
	Social Media Platforms	0.743	0.070	0.684	10.60	.000
Source: Primary						

a. Dependent Variable: Consumer Buying Behavior

Interpretation:

X-axis- Independent variable = social media platforms.

Y-axis Dependent variable = consumer buying behavior.

The regression study in Table-1(a) shows that social media platforms explain 46.7% of customer purchase behavior. The regression analysis revealed a

significant positive correlation between social media platforms and consumer buying behavior (coefficient = 0.743, F(1,130) =112.273, p<0.05), supporting alternative hypotheses. The R square value of 0.467 from Table 1(a) shows that social media platforms (independent variable) affect customer buying behavior (dependent variable) by 46.75. A positive correlation exists between social media platforms and customer buying behavior (R = 0.743, F(1,130)= 112.273, p<0.05).

According to Table-1(c), the regression constant was 0.757. The regression coefficients show a 0.743 unit change in consumer buying behavior for every unit change in social media (p< 0.05). The regression slope line, Y=a+Bx, where a=0.757, B=0.743, X= Social Media Platforms and Y= Consumer Buying Behavior, shows that as the value of X (social media platforms) increases by 1, the value of Y (consumer buying behavior) increases by 0.743.

Hypotheses 2:

H_{02} : There is no relationship between social media engagement and consumer buying decisions.

H_{02a} : There is a positive relationship between social media engagement and consumer buying decisions.

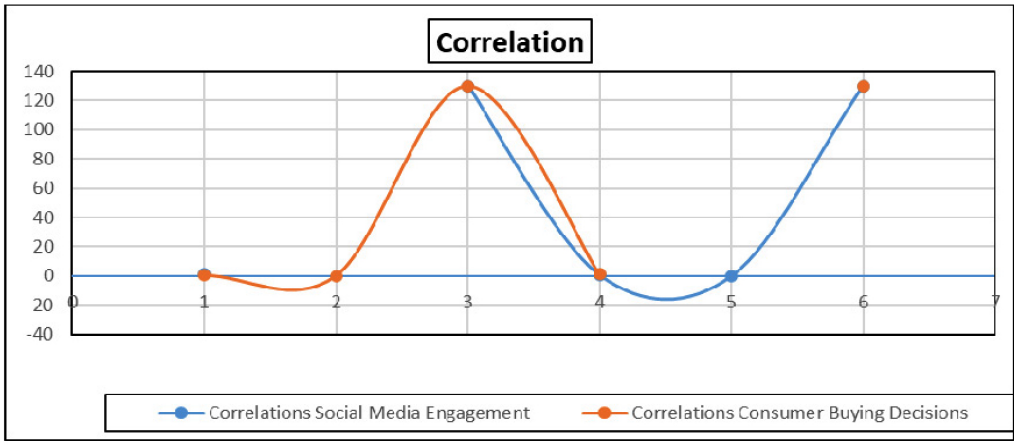
Table 2: Correlation Analysis between Social Media Engagement and Consumer Buying Decisions

		Social Media Engagement	Consumer Buying Decisions
Social Media Engagement	Pearson Correlation	1	0.554
	Sig. (2-tailed)		0
	N	130	130
Consumer Buying Decisons	Pearson Correlation	0.554	1
	Sig. (2-tailed)	0	
	N	130	130

Source: Primary

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 2: Relationship Visualization between Social Media Engagement and Consumer Buying Decisions



Source: Primary

Interpretation:

According to Table-2, social media increases consumer expenditure by 0.554. Specific social media purchases rise. Consumer purchase decisions are increased by social media use, since both correlations had 0.00 p-values (Sig. 2-tailed). Previous research has shown that social media greatly influences customer purchases (Zirena-Bejarano, 2023; Dhar, J., & Jha, A. K. (2014); Barhemmati & Ahmad, 2015). In 2023, Zirena-Bejarano found social media greatly influenced purchases. Researchers found that social media makes product reviews, testimonials, and peer input accessible. Peer-reviewed information drives current buying, therefore social media is vital. According to Dhar & Jha (2014), social media affects purchases. According to our analysis, social media influences customer purchases. Sales rise with consumer interaction, say Barhemmati & Ahmad (2015). (2017) Zhang et al. observed social media boosts shopping. Social media substantially influences client purchasing. Studies suggest that social media influences client selections, making it vital to marketing.

Stats disprove H_{01} that social media does not effect consumer purchase behavior. We promote H_{01a}.

Figure-2 displays this link using a marker data scatter plot. Purchases are positively and modestly correlated with social media activity. Sales increase with social media, as shown by the growing Y-axis.

Objective 2 : To identify the key factors that drive consumers to engage in social commerce activities.

H_{03} : No correlation exists between consumer demographics and their participation in social commerce.

H_{03a} : Consumer demographics are related to their engagement in social commerce activities.

Table 3: Correlation Analysis between Consumer Demographics and Consumer Buying Behavior in Social Commerce

		Consumer Demographics	Consumer Buying Behavior
Consumer Demographics	Pearson Correlation	1.00	0.47
	Sig. (2-tailed)		0.00
	N	130	130
Consumer Buying Behavior	Pearson Correlation	0.47	1.00
	Sig. (2-tailed)	0.00	
	N	130	130

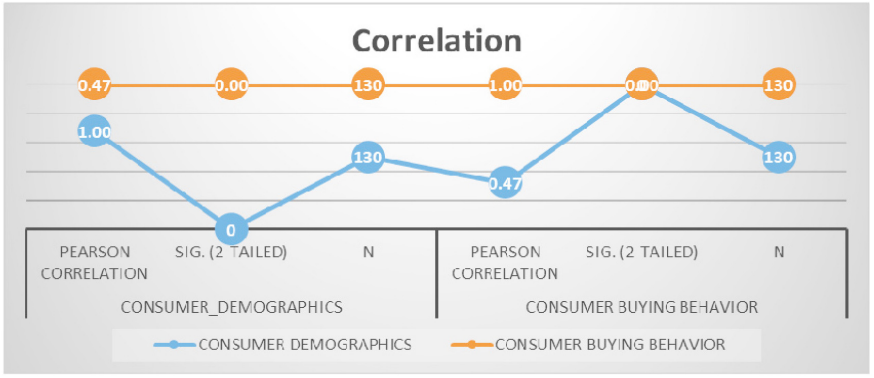
Source: Primary

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

Consumer demographics positively correlate with purchase behavior by 0.47 in Table 3. Consumer qualities moderately affect purchase decisions, as evidenced by the statistically significant p-value (sig. 2 tailed) of 0.00. The results reveal that demographics greatly influence consumer purchasing behavior. Demographics like age, wealth, geography, and others may influence client purchases. The statistically significant p-value and moderate correlation coefficient of 0.47 suggest a substantial connection.

Figure-3 : Visualization of the Relationship between Consumer Demographics and Consumer Buying Behavior in Social Commerce



Source: Primary

Social commerce participation depends on user demographics (Colicev, Kumar, & O'Connor, 2019). This emphasizes consumer qualities and social commerce.

The scatter plot in Figure 3 reveals a moderate positive association between demographics and buying behavior. Consumer purchase decisions grow as demographics improve, as shown by the trend line's increased slope along the X-axis. Demographics influence consumer buying decisions on the Y-axis. This graph illustrates the relationship's strength and direction beyond statistical data. In Conclusion, **we accept the alternative hypothesis (H1), indicating that consumer demographics are related to their engagement in social commerce activities. The null hypothesis (H0), which stated no correlation exists, is rejected based on the findings from this analysis.**

Practical Implications:

This study has major ramifications for social commerce businesses. It emphasizes user-centric platform design for engagement and happiness. Marketing efficacy can be improved by demographically targeting content. Adaptability is essential in the ever-changing social media landscape. These implications help businesses engage users and succeed in social commerce.

Managerial Implications and Conclusion :

In conclusion, Social commerce platform study shows that platforms, user attributes, and dynamic settings strongly influence consumer behavior. The

association between customer demographics and buying behavior and the positive correlation between social media involvement and consumer purchase decisions show how important user attributes are. The widespread assumption is that demographics are crucial to understanding consumer behavior. These findings suggest that social commerce requires constant change and a user-centric approach. Social commerce systems should monitor social media changes because they influence consumer behavior. However, these findings are context-specific and may not apply in all cases. The study emphasises longitudinal research to capture changing trends in social commerce, which is dynamic.

Our research suggests a flexible and nuanced approach to understanding social commerce's intricate interaction across platforms, user attributes, and changing environments. In "The Only Constant in Life Is Change," Mutambara (2022) correctly stated that social commerce requires constant change and a deep understanding of user dynamics.

Limitations and Future Directions:

Survey data and demographic focus may restrict generalizability of this study. Dynamic digital landscape may alter findings over time.Future studies may explore several techniques to overcome these issues and make a significant contribution to the subject. Longitudinal studies of user behavior and platform dynamics would help scholars understand how social commerce is changing. To make the study more thorough, the demographic range must be increased. Using objective behavior data and survey data could reveal user engagement. Exploring how AR and VR effect social commerce might create new fields of study. Social commerce privacy and data security raise ethical concerns. This will clarify how these issues effect user trust and engagement. Comparing social commerce platforms or social commerce and traditional e-commerce may reveal unique user behavior and preferences. These guidelines outline future social commerce research, which is expanding.

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A Study on the Impact of Socio-Economic Factors and Perception of Tribals towards the Growth and Development of Tribal Businesses in the Nilgiris District

Anumol P T and M. Gomathi

Abstract : *This study investigates the impact of socio-economic factors and perception on the growth and development of tribal businesses in the Nilgiris district. The study aims to understand the demographics of the respondents, the types of tribal businesses, the marketing strategies adopted, and the level of satisfaction towards the availability and accessibility of resources. A quantitative research design was used to collect data from a sample of 112 tribal business owners in the Nilgiris district. The data were analyzed using descriptive and inferential statistics to draw conclusions and make recommendations. The study found that the majority of respondents were in the age group of 26 to 45 years, had no formal education, and resided in pucca or semi-pucca houses. Animal husbandry, handicrafts, and agriculture/horticulture were the most common types of tribal businesses, and social media marketing was the most popular marketing strategy adopted by tribal businesses. The perception of marketing strategies adopted by tribal businesses was positive, with innovative and modern marketing strategies being considered the most effective. Additionally, the availability and accessibility of physical resources, technical assistance, and marketing assistance were found to be crucial for the success of tribal businesses. The study concluded that demographics did not play a significant role in the perception of marketing strategies adopted and the level of satisfaction towards the availability and accessibility of resources. Therefore, businesses should focus on adopting effective marketing strategies and improving their access to resources to increase their chances of success, regardless of their target audience's demographics.*

Keywords : Tribal Businesses, Socio-economic Factors, Perception, Nilgiris District, Growth and Development.

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1.0. Introduction

The Nilgiris district is home to several tribal communities, each with its unique culture, traditions, and economic activities. Tribal businesses in the district face several challenges in terms of accessing resources, marketing their products effectively, and expanding their businesses. These challenges are further compounded by the socio-economic factors that affect the growth and development of tribal businesses in the region. Therefore, it is essential to understand the impact of these factors and the perception of tribals towards the growth and development of tribal businesses in the Nilgiris district.

This study aims to investigate the impact of socio-economic factors and perception on the growth and development of tribal businesses in the Nilgiris district. The study will focus on understanding the demographics of the respondents, the types of tribal businesses, the marketing strategies adopted, and the level of satisfaction towards the availability and accessibility of resources. The study will also explore the association between demographics and perception of marketing strategies and level of satisfaction towards the availability and accessibility of resources for tribal businesses in the district.

The study will use a quantitative research design to collect data from a sample of tribal business owners in the Nilgiris district. The data will be collected through a structured questionnaire, which will be distributed to the respondents using convenience sampling. The questionnaire will include questions on demographics, types of businesses, marketing strategies, and resources. The data will be analyzed using descriptive statistics and inferential statistics to draw conclusions and make recommendations for tribal businesses in the Nilgiris district.

The findings of the study will provide valuable insights into the socio-economic factors and perception of tribals towards the growth and development of tribal businesses in the Nilgiris district. The study will help tribal business owners and entrepreneurs to understand the challenges and opportunities in the region and design their marketing strategies accordingly. The study will also inform policymakers and other stakeholders about the resources needed to promote the growth of tribal businesses in the region.

This study is essential for understanding the impact of socio-economic factors and perception on the growth and development of tribal businesses in the Nilgiris district. The study will provide valuable insights into the demographics of the respondents, types of tribal businesses, marketing strategies adopted, and level of satisfaction towards the availability and accessibility of resources.

1.1. Objectives of the Study

1. To examine the impact of demographic variables on the marketing strategies adopted and the level of satisfaction towards the availability and accessibility of resources for tribal businesses in the Nilgiris District.

2. To analyze the perception of marketing strategies adopted by tribal businesses and their impact on the growth and development of tribal businesses in the Nilgiris District.

2.0. Review of Literature

R.Rubini and Dr.K.Mangayarkarasi. (2021), The objective of this study was to examine the socio-economic status of Toda Tribal Women in Nilgiri District and to estimate their level of empowerment through education, employment, income, and ownership. The research methodology employed involved selecting 110 empowered women through convenient sampling from five settlements, namely Garden Mund, ManjakalMund, FurnelMund, TamizhagamMund, and Glen Morgan Mund. The data obtained from the women respondents were analyzed using basic statistical methods, such as frequency, cross-tabulation, chi-square, and t-test. The study found that education and employment are crucial factors affecting the social and economic empowerment of Toda tribal women. The government can help improve their status by providing support and grants for education and employment opportunities. The study concludes that increasing the literacy rate and providing opportunities for gainful employment for tribal women will be instrumental in bringing about a change in the status of tribal women in India and to handle the challenges successfully.

Selva Kumar D.S and Siva Kumar S. (2014), the objective of this study was to identify the current socio-economic conditions of tribal populations in the Nilgiris district and suggest possible solutions to improve their per capita income, GDP, social status, expenditure pattern, and lifestyle. The research methodology involved surveying a random sample of 100 households, with the data collected from reliable sources like Census of India, Times of India Newspaper, BPL survey 2002, etc. The study found that illiteracy is still prevalent among the SC and ST populations, poverty is more among the ST population, and the government spending on their welfare needs attention. The study suggests the need for a separate organization to address the requirements of the SC and ST populations for equalitarian growth in society. Unless progress is made, the progress in Human Development Index (HDI) cannot be achieved.

D.Kasturi. (2019), The objective of this study was to determine the factors that affect women empowerment among Kurumba tribes in Nilgiris, including socio-demographic and socio-economic factors. The research methodology involved an explanatory research design using quantitative analysis to establish the relationship between independent and dependent variables. Primary data were collected through a survey instrument prepared for the study, with 150 samples selected from a small village with a total population of 240 in Nilgiris District. The study found that the lack of access to knowledge and job opportunities were major drawbacks for tribal women, and suggested implementing skill development, entrepreneurial training, microfinance, and participation in SHG activities to improve their socio-economic status. The study concludes that efforts and support from government agencies and NGOs are crucial in increasing knowledge and awareness among tribal women, which directly improves their socio-economic levels and women empowerment.

M. Panneerselvam et al. (2020), The objective of this study was to assess the quality of life of Todas, a Scheduled tribe in Nilgiri district, and to identify the factors influencing their quality of life. The research methodology involved collecting data from 50 Todas households in Nanjanadu village, Udhagamandalam block, using parameters such as housing, water source, sanitation facilities, food and nutrition intake, health status, education, fuel and energy availability, assets, transportation, and per capita income. Chi-square analysis was used to analyze the data. The study found that 48% of Todas were involved in business and the average monthly income was Rs. 7521. Majority of Todas lived in joint families and in Kacha houses with their own toilet facilities. The study recommended increasing access to education facilities and income generation programs targeting women to improve the quality of life of Todas. The study concluded that quality of life is a crucial aspect of development, and that efforts must be made to improve the quality of life of all Scheduled tribes in India.

Arunmozhi M. S. (2016). This study examined the financial inclusion services provided by banks and their awareness among the tribal community in a selected sample of villages, in comparison to government policies. The research methodology included the collection of primary data through questionnaires from 639 respondents selected through purposive sampling. The findings revealed that 70% of respondents had a bank account, and 52.9% had awareness of the no-frill account scheme. However, more than half of the account holders did not exhibit saving behavior. The study suggested increasing awareness of the benefits of no-frill saving accounts, providing financial literacy centers in

every place, and increasing awareness among illiterate and poor people. The study concluded that while the financial inclusion scheme had a strong social mission, it had not been fully translated into satisfactory action on the ground, and more efforts were needed to improve the awareness and standard of living of the tribal community.

3.0. Research Methodology

The research methodology for this study involved the collection of primary data through a survey conducted among 112 respondents in the Nilgiris district. The sampling technique used for this study was convenience sampling, where respondents were selected based on their availability and willingness to participate in the survey. The survey questionnaire was designed to collect information on the demographic variables, marketing strategies adopted by tribal businesses in the Nilgiris district, the perception of marketing strategies adopted by tribal businesses, and the level of satisfaction towards the availability and accessibility of resources for the tribal businesses. The data collected was analyzed using statistical tools such as frequency analysis, descriptive statistics, Correlation Analysis and Anova Analysis tests to draw conclusions and make recommendations.

4.0 Analysis and Interpretation

Table No.1: Table displaying the Demographic details of respondents

Demographic factors	Variables	No. of Respondents	Percent
Age Group	Upto 25 years	13	11.6
	26 to 35 years	40	35.7
	35 to 45 years	40	35.7
	Above 45 years	19	17.0
Gender	Male	61	54.5
	Female	51	45.5
Monthly income	Upto Rs.15000	49	43.8
	Rs.15001 to Rs.30000	43	38.4
	Rs.30001 to Rs.45000	14	12.5
	Above Rs.45000	6	5.4
Education	No formal education	73	65.2
	Completed primary education	27	24.1
	Completed high school education	12	10.7

(Contd...)

House Type	Pucca house (concrete or brick walls with a concrete roof)	48	42.9
	Semi-pucca house (concrete or brick walls with a thatched or tin roof)	49	43.8
	Kutcha house (mud walls with a thatched roof)	15	13.4
Tribal Community	Todas	32	28.6
	Kurumbas	18	16.1
	Irulas	15	13.4
	Paniyas	17	15.2
	Kotas	15	13.4
	Badagas	15	13.4
Location	Gudalur	15	13.4
	Kotagiri	39	34.8
	Coonoor	23	20.5
	Ooty	23	20.5
	Kundah	12	10.7

Source: Primary data

Interpretation: The table no. 1 displays the demographic details of the respondents and provides insights into their characteristics and behavior. The age group distribution of the respondents indicates that the majority (71.4%) fall under the age group of 26 to 45 years, while only a small percentage (17%) are above 45 years, and the youngest age group, up to 25 years, had the least number of respondents (11.6%). The gender distribution of the respondents is almost equal, with 54.5% being male and 45.5% being female. In terms of monthly income, more than 80% of the respondents have a monthly income of up to Rs. 30,000, with the majority (43.8%) earning up to Rs. 15,000, and only a small percentage (5.4%) having an income above Rs. 45,000. The majority of the respondents (65.2%) have no formal education, while 24.1% have completed primary education, and only 10.7% have completed high school education. The majority of respondents (86.7%) have pucca or semi-pucca houses, while only a small percentage (13.4%) have kutcha houses. Todas (28.6%) and Kurumbas (16.1%) are the two largest tribal communities represented in the survey. Finally, the largest number of respondents come from Kotagiri (34.8%), followed by Coonoor and Ooty (both 20.5%), while the smallest number of respondents come from Gudalur (13.4%). Overall, this data provides valuable insights into the demographic profile of the respondents, which can be useful in understanding their characteristics and behavior.

Table No.2 : Types of Tribal Business

Types of Tribal Business	No. of Respondents	Percent
Agriculture and Horticulture	22	19.6
Handicrafts	27	24.1
Animal Husbandry	35	31.2
Forest Products	22	19.6
Tourism	6	5.4
Total	112	100.0

Source: Primary data

Interpretation: The table no. 2 suggests that the most common type of tribal business in the Nilgiris district is animal husbandry, followed by handicrafts and agriculture/horticulture. Forest products and tourism are less popular.

Table No.3: Marketing strategies adopted by tribal businesses in the Nilgiris District

Marketing strategies adopted by tribal businesses in the Nilgiris District	No. of Respondents	Percent
Cultural and traditional marketing	50	20.8
Social media marketing	60	25.0
Collaborative marketing	40	16.7
Event marketing	25	10.4
Eco-tourism marketing	23	9.6
Eco-tourism marketing	42	17.5
Total	240	100.0

Source: Primary data

Interpretation: The table no.3 provides a breakdown of the marketing strategies used by tribal businesses in the Nilgiris district, with social media marketing being the most popular method, followed by cultural and traditional marketing, collaborative marketing, and eco-tourism marketing. Event marketing and eco-tourism marketing had the lowest percentages.

Table No.4 : Perception of marketing strategies adopted by Tribal businesses in Nilgiris District

Factors	Mean	Std. Deviation
Tribal business strategies effectively promote products.	2.26	1.05
Tribal business strategies reflect cultural heritage.	2.35	1.19
Tribal business strategies meet target market preferences.	2.47	1.08
Tribal business strategies are sustainable and eco-friendly.	2.14	1.04
Tribal business strategies are affordable and feasible.	2.37	0.82
Tribal business strategies adapt to changing markets.	2.24	0.93
Tribal business strategies are innovative and modern.	2.54	1.06
Tribal business strategies prioritize customer satisfaction.	2.43	1.06
Tribal business strategies are accessible to customers.	2.28	1.25
Tribal business strategies increase product visibility and reach.	2.23	1.00

Source: Primary data

Interpretation: From the above table no.4, the descriptive statistics for the Perception of marketing strategies adopted by Tribal businesses in Nilgiris District are ranked from 'Tribal business strategies are innovative and modern.' stood at first with the highest mean score 2.54, followed by 'Tribal business strategies meet target market preferences.' stood at second with the mean score 2.47, 'Tribal business strategies prioritize customer satisfaction.' stood at third with the mean score 2.43, 'Tribal business strategies are affordable and feasible.' stood at fourth with the mean score 2.37, 'Tribal business strategies reflect cultural heritage.' stood at fifth with the mean score 2.35, 'Tribal business strategies are accessible to customers.' stood at sixth with the mean score 2.28, 'Tribal business strategies effectively promote products.' stood at seventh with the mean score 2.26, 'Tribal business strategies adapt to changing markets.' stood at eighth with the mean score 2.24, 'Tribal business strategies increase product visibility and reach.' stood at ninth with the mean score 2.23, and finally'Tribal business strategies are sustainable and eco-friendly.' stood at tenth with the mean score 2.14.

Table No.5 : Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District

Availability and Accessibility of resources	Mean	Std. Deviation
Financial resources (Ex:credit, microfinance, and other financial resource)	2.50	0.94
Physical resources (Ex: land, water, electricity, and other infrastructure required)	2.61	0.99
Technical assistance (Ex: product design, quality control, and packaging)	2.61	1.23
Marketing assistance (Ex: branding, advertising, and market research)	2.59	1.28
Government policies and support (Ex: subsidies, tax incentives, and training programs)	2.37	1.10
Economic conditions (Ex: inflation and exchange rates)	2.48	1.00

Source: Primary data

Interpretation: From the above table no.5, the descriptive statistics for the Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District are ranked from 'Physical resources (Ex: land, water, electricity, and other infrastructure required)' stood at first with the highest mean score 2.61, followed by 'Technical assistance (Ex: product design, quality control, and packaging)' stood at first with the mean score 2.61, 'Marketing assistance (Ex: branding, advertising, and market research)' stood at second with the mean score 2.59, 'Financial resources (Ex:credit, microfinance, and other financial resource)' stood at third with the mean score 2.50, 'Economic conditions (Ex: inflation and exchange rates)' stood at fourth with the mean score 2.48, and finally'Government policies and support (Ex: subsidies, tax incentives, and training programs)' stood at fifth with the mean score 2.37.

Hypothesis Testing

Null Hypothesis (H_0) : There is no significant correlation between marketing strategies adopted and satisfaction with the availability of resources for tribal businesses in Nilgiris.

Alternative Hypothesis (H_1) : There is a significant correlation between marketing strategies adopted and satisfaction with the availability of resources for tribal businesses in Nilgiris.

Table No.6 : Correlations			
		Perception of marketing strategies adopted by Tribal businesses in Nilgiris District	Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District
Perception of marketing strategies adopted by Tribal businesses in Nilgiris District	Pearson Correlation	1	.635**
	Sig. (2-tailed)		.000
	N	112	112
Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District	Pearson Correlation	.635**	1
	Sig. (2-tailed)	.000	
	N	112	112
**. Correlation is significant at the 0.01 level (2-tailed).			

Inference : The table No.6 shows that the Pearson correlation coefficient between these two variables is 0.635, which indicates a moderately strong positive correlation. However, the p-value (sig. 2-tailed) is 0.000, which is less than the significance level of 0.01. This means that the null hypothesis (H0) of no significant correlation is rejected, and the alternative hypothesis (Ha) of a significant correlation is accepted. Therefore, the data suggests that there is a significant correlation between the perception of marketing strategies adopted and the level of satisfaction towards the availability and accessibility of resources for tribal businesses in the Nilgiris district. This indicates that businesses that adopt effective marketing strategies are more likely to be satisfied with the availability and accessibility of resources.

Null Hypothesis (H_0) : There is no significant association between the demographic variables and Perception of marketing strategies adopted by Tribal businesses in Nilgiris District.

Alternative Hypothesis (H_1) : There is a significant association between the demographic variables and Perception of marketing strategies adopted by Tribal businesses in Nilgiris District

Table No.7 : ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Age Group	Between Groups	16.104	17	.947	1.185	.292
	Within Groups	75.173	94	.800		
	Total	91.277	111			
Monthly income	Between Groups	11.832	17	.696	.929	.543
	Within Groups	70.444	94	.749		
	Total	82.277	111			
Education	Between Groups	9.766	17	.574	1.285	.219
	Within Groups	42.011	94	.447		
	Total	51.777	111			
House Type	Between Groups	9.505	17	.559	1.201	.279
	Within Groups	43.772	94	.466		
	Total	53.277	111			
Tribal Community	Between Groups	44.604	17	2.624	.789	.701
	Within Groups	312.503	94	3.325		
	Total	357.107	111			
Location	Between Groups	19.013	17	1.118	.717	.779
	Within Groups	146.665	94	1.560		
	Total	165.679	111			
Types of Tribal Business	Between Groups	26.351	17	1.550	1.190	.288
	Within Groups	122.426	94	1.302		
	Total	148.777	111			

Inference: The table no.7 shows that the p-values (sig.) for all the demographic variables are greater than the significance level of 0.05, indicating that there is no significant association between the demographic variables and the perception of marketing strategies adopted. Therefore, the null hypothesis (H0) of no

significant association is accepted, and the alternative hypothesis (Ha) of a significant association is rejected. The data suggests that the demographic variables do not play a significant role in determining the perception of marketing strategies adopted by tribal businesses in the Nilgiris district.

Null Hypothesis (H_0) : There is no significant association between the demographic variables and Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District.

Alternative Hypothesis (H_1) : There is a significant association between the demographic variables and Level of satisfaction towards the Availability and Accessibility of resources for the Tribal businesses in Nilgiris District.

Table No.8 : ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Age Group	Between Groups	16.843	25	.674	.778	.758
	Within Groups	74.434	86	.866		
	Total	91.277	111			
Monthly income	Between Groups	17.892	25	.716	.956	.532
	Within Groups	64.385	86	.749		
	Total	82.277	111			
Education	Between Groups	6.814	25	.273	.521	.967
	Within Groups	44.963	86	.523		
	Total	51.777	111			
House Type	Between Groups	9.314	25	.373	.729	.814
	Within Groups	43.963	86	.511		
	Total	53.277	111			
Tribal Community	Between Groups	41.147	25	1.646	.448	.987
	Within Groups	315.960	86	3.674		
	Total	357.107	111			
Location	Between Groups	57.736	25	2.309	1.840	.020
	Within Groups	107.942	86	1.255		
	Total	165.679	111			
Types of Tribal Business	Between Groups	34.562	25	1.382	1.041	.427
	Within Groups	114.215	86	1.328		
	Total	148.777	111			

Source : Field Study.

Inference : The table no.8 shows that the p-values (sig.) for age group, monthly income, education, and house type are greater than the significance level of 0.05, indicating that there is no significant association between these variables and the level of satisfaction towards resource availability and accessibility. Therefore, the null hypothesis (H0) of no significant association is accepted, and the alternative hypothesis (Ha) of a significant association is rejected for these variables. However, for the location variable, the p-value is 0.020, which is less than the significance level of 0.05. This suggests that there is a significant association between location and the level of satisfaction towards resource availability and accessibility. The data suggests that the location of tribal businesses in the Nilgiris district may have a significant impact on their level of satisfaction towards the availability and accessibility of resources. Other demographic variables do not appear to have a significant association.

5.0. Discussion on Findings :

Majority of the respondents were in the age group of 26 to 45 years (71.4%). Male respondents were slightly higher than female respondents (54.5% vs. 45.5%). Majority of the respondents had no formal education (65.2%). Semi-pucca houses were the most common type of housing (43.8%). The largest tribal communities represented were Todas (28.6%) and Kurumbas (16.1%). Kotagiri had the highest number of respondents (34.8%).

Based on the findings of the study, it can be concluded that the majority of respondents engaged in Animal Husbandry (31.2%), followed by Handicrafts (24.1%) and Agriculture and Horticulture (19.6%). The most commonly adopted marketing strategy by tribal businesses in the Nilgiris district was social media marketing (25%), followed by cultural and traditional marketing (20.8%). The perception of marketing strategies adopted by tribal businesses was generally positive, with the highest mean score for "tribal business strategies are innovative and modern" (2.54), while the lowest mean score was for "tribal business strategies are sustainable and eco-friendly" (2.14).

The study also found a significant positive correlation between the perception of marketing strategies adopted by tribal businesses and the level of satisfaction towards the availability and accessibility of resources. However, there was no significant association between demographic variables and either the perception of marketing strategies or the level of satisfaction towards the availability and accessibility of resources.

6.0 Conclusions:

The primary data analysis of a survey conducted in the Nilgiris district reveals key recommendations and conclusions that can help businesses targeting the local tribal population. The majority of the respondents are between 26 to 45 years old, have a monthly income of up to Rs.30,000, and reside in pucca or semi-pucca houses. Animal husbandry is the most common type of tribal business, followed by handicrafts and agriculture/horticulture. Social media marketing is the most popular marketing strategy adopted by tribal businesses. Innovative and modern marketing strategies are effective in promoting products, meeting target market preferences, and prioritizing customer satisfaction, according to tribal businesses. Moreover, the availability and accessibility of resources play a crucial role in the success of tribal businesses, especially physical resources, technical assistance, and marketing assistance.

There is no significant association between demographics and the perception of marketing strategies adopted and the level of satisfaction towards the availability and accessibility of resources. Therefore, businesses should focus on adopting effective marketing strategies and improving their access to resources to increase their chances of success, regardless of their target audience's demographics. The government and other stakeholders should focus on providing resources to promote the growth of tribal businesses in the Nilgiris district. To maximize their chances of success, businesses should adopt innovative marketing strategies and improve their access to physical resources, technical assistance, and marketing assistance. Overall, this analysis provides valuable insights into the demographic profile of the respondents, types of tribal businesses, marketing strategies, and availability and accessibility of resources for tribal businesses in the Nilgiris district.

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Migration of Construction Labour in India : A Social Security Perspective

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Abstract : *In India, the Disaster Management Act (DMA), 2005 was used to impose a complete lockdown for 21 days beginning on March 25, 2020. Following then, the lockdown was expanded in stages. The COVID19 administration executed by a centralised method inside the institutional framework of the DMA Act for various state and central regions. It was during Covid the migrant workers were most exposed to the vulnerable conditions. The present paper attempted to study various policies of central and state government on interstate migrant workers, challenges faced during construction, social security measures to protect the interest and the observations.*

Keywords : Migration, Migrant, Covid, Labour, Disaster Management.

Introduction

Any person who relocates in quest of employment is considered a migrant worker. Internal and foreign migration are the two categories: international migration occurs across borders while, internal migration is an interstate migration within a nation. Since they are the poorest and most vulnerable interstate migrant workers, they were in need to receive special attention from social safety nets. A conventional definition of migration is the "relatively permanent movement of a person over a significant distance" (Shaw, 1975). Migration is defined as involving a change in place of abode which criterion has practically related the notion of performance. The concept of migration has both 'distance' and 'time' as two components (Woods, 1982). In general migration is also defined as the crossing a spatial boundary by one or more persons involved in a change of residency.

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World Economic Forum estimates 139 million migrants in the India (Sharma 2017). According to International Labour Organization (ILO) about 400 million workers suffered(Nair, 2020). In India most migrants' workers originated from Uttar Pradesh and Bihar, followed by Rajasthan and Madhya Pradesh. Mumbai and Delhi attract the highest migrants in India. Majority of migration occur due work in the case of men while women migrate due to marriage (Jha, 2020).

Migration of workers in Construction Sector

In India, construction sector attracts labour from various states especially from norther regions as migrants. India Census 2011 reveals (Roy et al., 2017), that around 14.6 million construction workers and 10% of internal non-agricultural migrants worked in the construction business. The census data does not include the number of migrants who are called the seasonal and transient migrants. This segment is very important as the number are high and they all settle in construction sector (Srivastava, 2014, 2018).

Most migrant labourers are low-skilled and workers from the unorganised sector. The states of West Bengal, Assam, Bihar, Uttar Pradesh, Odisha, Jharkhand, and Chhattisgarh are the most common states that send migrant labour across state lines. A portion of migrant labourers are considered child labourers, and some may take part-time jobs while attending school. In India, migrant workers travelling across large distances face a variety of challenges. These include not receiving government benefits, having trouble accessing programmes and services, having inadequate or inappropriate safety measures in place at work, having poor-quality housing, having long workdays, earning less than local labourers, having limited access to health care, being socially excluded, having little social interaction, and not being integrated into the community.

The majority of migrant labourers are daily wage workers who are employed in the construction and industrial sectors. Since many of them are employed in the unorganised sector, they frequently lack access to proper housing, food, healthcare, and sanitation. From primarily rural areas, they spend most of the year living in cities because of their jobs. Many stayed in factory dorms that were closed because of the lockdown and had no money. Furthermore, notwithstanding the Inter-State Migrant Workers Act of 1979, there was no central registry for migrant workers. The table-1 depicts the trends in migration in construction sector for pre and post covid 19 period.

Table 1: Trends in Migration in Construction Sector

Year	Migration Trend in Construction Sector
2018	Influx of construction workers in urban areas due to demand for labour in infrastructure projects
	Rural to urban migration for construction jobs and opportunities
2019	Increased demand for labour in construction industry
2020	Disruption due to Covid Pandemic
	Mass migration halted
	Reverse migration to rural area
2021	Gradual resumption of construction of activities
	Adoption of technology in the construction sector
	Changes in living conditions and safety protocol on sites
2022	Ongoing recovery adaption to new normal in construction
	Continued emphasis on health and safety measures
	Potential shifts in construction practices and technologies

(Source: Compiled by author from various report)

The fixation of minimum wage rates can vary across states and union territories in India, and they are subject to periodic revisions. The following Table-2 depicts the wage pattern of skilled and unskilled and highly skilled workers.

Table 2: Minimum wages for construction workers

Category of Worker	Minimum rates of wages per day (in Rs.) including V.D.A as last revised on 01.10.21		
	Area-A	Area-B	Area-C
Unskilled	654.00	546.00	437.00
Semi-Skilled	724.00	617.00	512.00
Skilled	795.00	724.00	617.00
Highly Skilled	864.00	795.00	724.00

(Source: https://pib.gov.in/PressReleasePage.aspx?PRID=1810536)

The most accurate and current information regarding minimum wages for construction workers during the designated period can be found on official government websites, especially those run by the Ministry of Labour and Employment at the federal level or the corresponding State Labour Departments. These sources usually issue announcements or circulars outlining modifications to the minimum wage rates applicable to various worker groups, including construction workers.

- State Labour Department Websites: regular notifications on labour law notifications, circulars, and minimum wages.
- Central Ministry of Labour and Employment, provides links to pertinent notifications or compiled data.
- Government Notifications: describe modifications to minimum wage amounts.
- Legal Databases, Government document online repositories and legal databases provide useful sources of historical minimum wage data.

Due to urbanisation process and developing of smart cities, there has been huge requirement of migrant workers in various sectors. The broad factors that motivate workers to migrate include new job opportunities, regional labour demands, economic situations, etc. The following are some of the important reasons that influence workers to move from their homeland:

- Migration from Rural to Urban Areas: Many Indian construction workers originate from rural regions and relocate to urban areas where there is a significant labour shortage in the construction sector. The possibility of more pay and work prospects frequently drives this relocation.
- Infrastructure Development: India has seen a considerable increase in both urban and rural infrastructure. This includes building housing, bridges, roads, and other infrastructure projects. Because of this, the construction industry always needs labor—both skilled and unskilled.
- Seasonal Migration: Construction labour is frequently seasonal, and labourers may relocate to another area in response to project availability. For instance, construction activity may decrease in some locations during the monsoon season, forcing workers to relocate to areas where work is still being done.
- Informal Employment: Many Indian construction workers hold jobs in the unorganised sector. They could not be under long-term, steady work agreements, which could increase their mobility when they relocate to places with better employment opportunities.

Although there are many advantages, there are drawbacks to construction workers migrating to India. Workers frequently deal with problems like subpar

accommodation, a lack of social security, and perhaps being taken advantage of. A few welfare programmes for construction workers have been implemented as part of efforts to address these issues. The Indian government has implemented schemes and policies to address the welfare of construction workers, such as the Building and Other Construction Workers' Welfare Cess Act, which aims to provide financial assistance, healthcare, and other benefits to construction workers. When it comes to offering migrant workers welfare benefits, neither governmental organisations at the state nor federal levels give it any thought. The current legal and social security safeguards are not well known. Social security, welfare, and health care programmes are inaccessible to migrant labourers. The Central Government and home State's failure to provide entitlements and transfer benefits is what causes issues for migratory workers.

Objectives of the Study:

The following are the major objectives of the study:

- To study the various policies of Central and State governments on interstate migrant workers.
- To highlight various challenges that the migrant construction faced during covid.
- To throw light on the social security measures that have been provided to protect the interest of the migrant workers.
- To make recommendations addressing the needs of the interstate migrant workers in construction sector.

Research Methodology

The paper used both primary and secondary sources to collect information. A questionnaire was circulated among the workers in the local area to study the reasons for migration, challenges faced during the process, basic salary, understanding social-economic conditions of the workers -pre and post, etc. During the process the authors had an opportunity to conduct FDGs among the workers to understand their living conditions. A detailed analysis has been drawn basing on parameters.

(Picture of a construction worker on the site)

Government Policies on Construction Working in India.

The migration and welfare of construction workers in India are addressed by a number of government laws and efforts as of my last knowledge update in January 2022. Please be aware, though, that following my last update, policies might alter or be added. Here are some key policies and measures related to the migration of construction workers in India:

- The Building and Other Construction Workers' Welfare Cess Act: requires a cess (tax) to be collected from the cost of construction; the money raised is used to support the welfare of the workers. Welfare measures consist of pensions, educational programmes for kids, health and maternity benefits, and cash support during unemployment.
    - Section 179 in The Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Central Rules, 1998: The employer shall ensure at a construction site of a building or other construction work that a safe net with adequate strength to be provided; ensures safe fixing of safety net and take enough care of workers in all ways.
- The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act of 1979 was enacted with the intention of protecting and regulating migrant workers who are employed between states. To stop exploitation, it establishes guidelines for pay, work hours, and other crucial terms of service.

- Smart Cities Mission: The goal of the Smart Cities Mission is to produce cities that are more inclusive and liveable. This includes the development of infrastructure, which may lead to job openings in the construction industry.
- Pradhan Mantri Shram Yogi Maan-dhan (PMSYM): Workers in the unorganised sector, such as those in construction, who make up to a specific monthly salary threshold are the target audience for this pension plan. Its goal is to give workers financial security as they age.
- Skill Development Initiatives: Construction workers' employability is increased by a variety of skill development efforts and programmes, which lessens their need to migrate in search of employment. Keeping abreast with the most recent government declarations and policy modifications concerning the well-being and migration of Indian construction labourers is vital. State governments may also have their own programmes and policies that cater to the requirements of construction workers in their areas.

In addition to these programs, the Indian government introduced numerous other initiatives, such as the Pradhan Mantri Awas Yojanas (Gramin and Urban), which were both introduced in 2015, and the Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY), which provided insurance coverage for workers' life and disability. To meet the housing needs of migrant workers, the Ministry of Housing and Urban Affairs (MoHUA) recently introduced the Affordable Rental Housing Complexes (ARHC) program. The One Nation One Ration Card Scheme has made it easier for migratory workers and their families to carry with them ration supplies via PDS stores all over the nation. **Challenges faced by Migrant Workers**

Interstate migrant workers receive little social protection or health treatment, even though a sizable portion of them live in hazardous environments and face several health hazards. A significant portion of them reside in housing complexes and work camps in unsanitary conditions. The majority of migrant labourers, particularly those employed in construction, are housed in cramped quarters with the barest of amenities. The disease is spreading because migrant workers do not have proper access to healthcare services. A considerable portion of interstate migrant workers experience many health issues because of working overtime. In order to guarantee that migrant workers can effectively manage their risks, specific social security safeguards are needed for their normal life cycle.

They move between States and hence between it is difficult to understand the difference which effect more i.e is it market or social security systems. Since they have no access to safety nets or social networks and are separated from their home community, recently arrived migrant workers are particularly vulnerable. Additionally, immigrants feel confined in their new host state primarily because of their dietary and linguistic preferences when it comes to social behavior and basic amenities. The matter with interstate migrant workers' lack of understanding and accessibility to essential services and social security portability gives rise to grave worries regarding their vulnerability. Another significant issue is that migrant workers are not able to obtain their rights and entitlements.

COVID-19 Lockdown and Migrant Workers

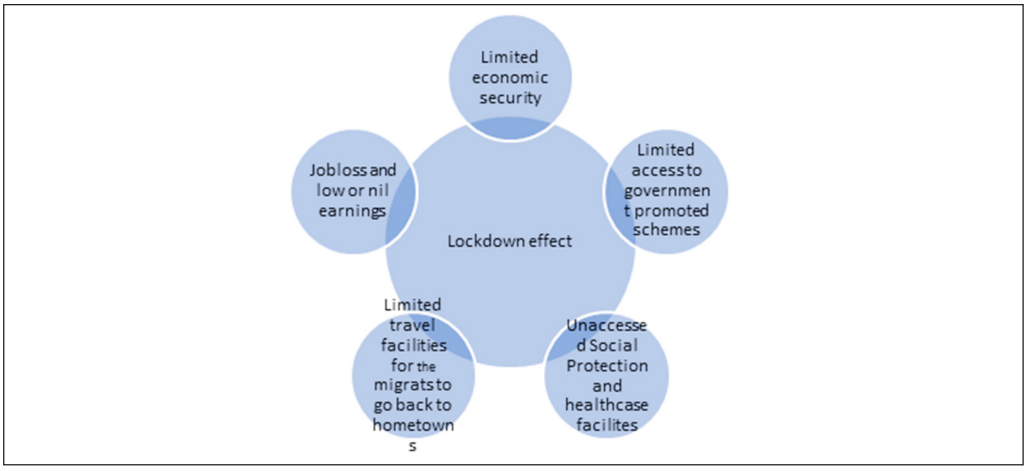
Covid-19 has been the worst pandemic in a century, pushing policymakers to unprecedented heights. While responding to the global health crisis has unavoidably taken priority and a significant portion of that response has involved significantly altering people's freedom of movement, which has profound impact on human mobility worldwide. Governments around the world implemented various measures to limit the spread of the virus, and a range of restrictions were introduced from early 2020, evolving over time. COVID-19 lockdown had exposed vulnerabilities of interstate migrant workers in all the four States covered by our survey. Even though host States tried to provide economic security, they could not provide any social security to migrant workers. Moreover, their access to existing government schemes was poor.

Case-1 : Success Story Suraj Singh a 40-year construction worker who hailed from Odisha State. He had a big family of seven dependents. To sustain his families' basic needs, he and his wife moved to Hyderabad along with few families in 2018. Through a middleman they started working in a infra development project. After first year, he has brought other family members to help him, and they also migrated. The children were admitted to the local government school for their primary education. Since then, they were able to meet their family needs. During Covid, the family went back to their hometown and returned in 2022. Once in two years the family visited their village.

(Primary Survey by Author, Construction Site in Kukatpally, Hyderabad)

The sudden announcement of lockdown led to shut down of factories, hotels and other businesses leaving millions of interstate migrant workers in vulnerable condition. The most effected people are daily labour. The major consequences that impacted the migrant workers during lockdown are depicted in figure 1.

Figure-1 : Effects of Lockdown on Migrant Workers



Source : Compiled by the Author.

However, during Covid – 19 pandemic period, Union Government has taken several additional measures for the benefits of workers, such as creation of 39.51 lakh new job opportunities by crediting Rs.2583 crores in EPF accounts under Atmanirbhar Bharat Rozgar Yojana (ABRY), benefit to retain 38.91 lakh low wage employees under Pradhan Mantri Garib Kalyan Yojana (PMGKY), financial assistance of Rs.7413 crore to Building & other Construction Workers (BOCW), unemployment benefit under Atal Beemit Vyakti Kalyan Yojana (ABVKY), Pradhan Mantri Garib Kalyan Rojgar Abhiyan (PMGKRA), etc.

A scheme of cash transfers and in-kind assistance was put in place by the Indian government to give construction workers some form of sustenance stipend and temporary respite during the crisis. Majority of the states have provided special train and bus for migrant workers to go back to their home regions and offered in-kind help to construction workers. MoLE advised states to develop a plan under Section 22 (1) (h) of the Act for the transfer of funds in the accounts of construction workers through DBT mode from the cess fund collected by CWBs in order to provide cash assistance to workers in the construction industry (PIB, 2020a). This was done in accordance with Section 60 of the BOCW Act 1996. The

table below details the distribution of the DBT to the construction workers during Covid-19 in Southern states.

Table 3: Distribution of DBT to construction workers during wave-1 of COVID-19 in Southern States

Major states	Assistance received by workers		Total disbursed amount		% of workers cash received (as on 25–11–2019)#	% cash disbursement against cess collection (as on 31–03–2019)*
	(In million)	% Share	(Rs. billion)	% Share		
Andhra Pradesh	01.97	10.78	01.97	03.50	65.80	08.29
Karnataka	01.36	7.47	06.81	12.10	88.30	13.43
Kerala	0.69	3.80	0.69	1.20	45.50	03.58
Tamil Nadu	01.37	7.51	02.74	04.90	48.50	09.27
Telangana	0.83	4.55	1.25	2.2	70.6	10.29
All India	18.24	100.00	56.18	100.0	52.3	11.31

(Source : Ministry of Labour and Employment, Unstarred question no. 8, answered on 19.07.21 in Lok Sabha)

Social Security of Migrant Workers

Policies and activities aimed at lowering poverty and vulnerability by providing social security. Social security consists of social insurance, social assistance, labour laws, microfinance, and essential services like healthcare and education by the respective interstate governments for the migrant workers. Social insurance systems offer shock protection and demand monthly contributions. Programmes for social assistance typically target the impoverished and non-contributory. Most migrant workers are low-income, but others are extremely vulnerable and in bad health, requiring support from various social assistance programmes. Most of the times these workers are not qualified to utilize the schemes that were made available of the state where they reside.

In India, social security measures for construction workers are primarily governed by the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. The act has aimed at regulating the employment and working conditions of building and other construction workers and providing for their safety, health, and welfare.

Construction Safety Management

Construction Safety Management is a structured management approach to managing safety, considering the organisation's specific structures and processes related to safety of operations, including accountabilities, policies and procedures. This begins with setting the organisational safety policy. Based on the management's safety policy and strategy, the safety organisation proceeds with planning, organising, staffing, co-coordinating, communicating, budgeting for safety. The following are some of the social security measures for construction workers in India have been facilitated with:

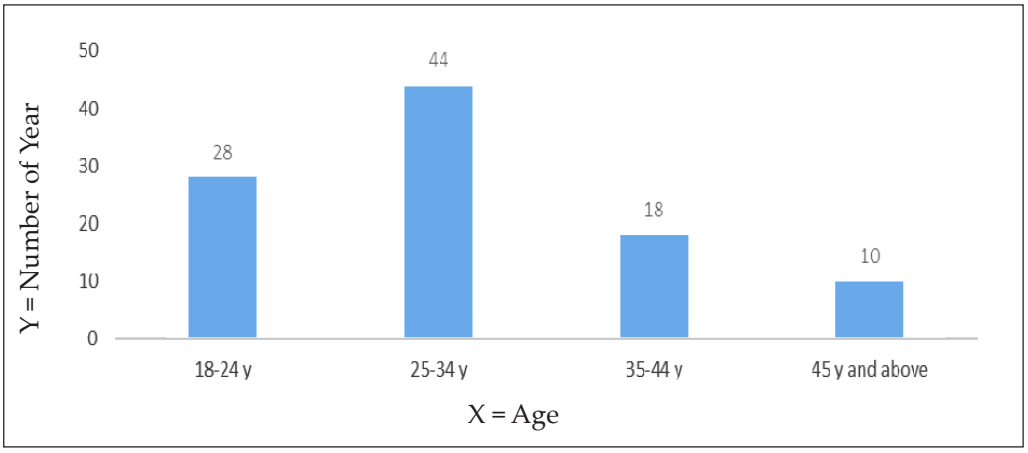
- Welfare Cess Fund : A cess (tax) on building costs must be collected in accordance with the Building and Other building Workers' Welfare Cess Act of 1996. The Welfare Fund, which is used to support the welfare of construction workers, receives contributions from the money raised through this cess.
- Registration of Workers : Under the Building and Other Construction Workers' Welfare Cess Act, workers in the construction industry must register with the relevant authorities. It is necessary to complete this registration to get Welfare Fund benefits.
- Social Security Benefits: Registered construction workers are eligible to receive a range of social security benefits from the Welfare Fund, including pensions, maternity, disability, and financial help during unemployment.
- Health and Safety Measures : The Act lays out guidelines for making sure construction workers are safe and healthy. Workers have the right to a safe workplace, and employers must abide by safety regulations.
- Education and Skill Development : Programmes pertaining to the education and skill development of children of construction workers may be funded by the Welfare Fund. This covers efforts for vocational training and scholarship programmes.
- Homes & Accommodation : In an effort to give construction workers access to reasonably priced homes, several state governments have implemented housing programmes.
- Identity Cards : Construction workers receive identity cards upon registering under the statute. These cards help with access to numerous social benefits and act as documentation of registration.

- State-Level execution : Welfare programme execution frequently differs between states. The Welfare Fund's use and the act's execution are supervised by the State Building and Other Construction Workers' Welfare Boards.

Data Analysis and Findings

A questionnaire was circulated between the age group of 18-44 and above. 44% of respondents were age group of 25 to 34 years, which was the highest percentage of age group among all age groups. 10% of people belonged to the age group of 45 years and above, which was the lowest percentage of age group among all age groups. 28% of respondents, whose age group was 18 to 24 years, was the second highest age group participated in the survey. The remaining 18% of people had the age group of 35 to 44 years. Figure …. depicts the age group of migrant workers.

Figure-2 : Migrant Workers' Age Group in Years

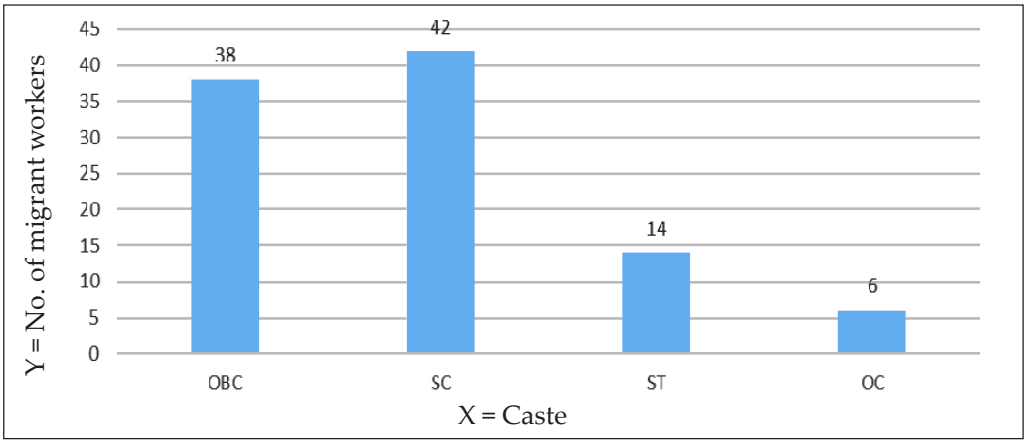


Source : Field Study.

Migrant Workers' Socio-Economic Status

42% of respondents belonged to the scheduled caste community, whose percentage was highest among all castes. Only 6% of people, the lowest, were OC caste, among all castes. 38% of respondents fell under the OBC community, and the remaining 14% of survey respondents were concerned with Scheduled tribes.

Figure-3 : Migrant Workers' Socio-Economic Status (Caste)



Source : Field Study.

Reasons for Migration:

34% of respondents migrated from their village to cities because they did not possess any farming land, which was the highest percentage response reasons for people migrating from villages to cities. 18% of people migrated owing to non-availability of work. 16% of respondents migrated to cities because of a lack of basic amenities and facilities in their villages. The same 16% of people migrated to other places because of no work available in their villages. 12% of respondents migrated to cities only because of drought in their villages. Only 4% of people migrated to other places due to domestic violence in their villages.

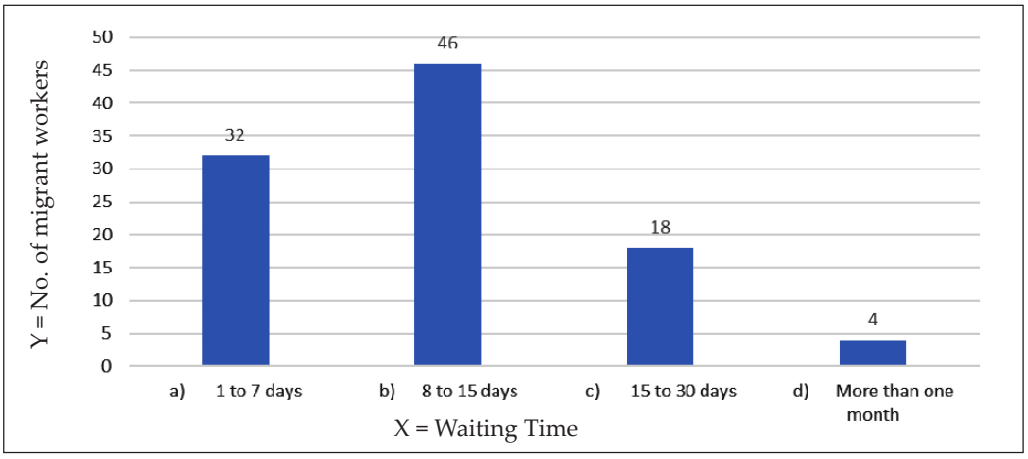
Figure-4 : Migrant Workers' Reasons far Migration

Source : Field Study.

Migrant Workers' Waiting Time for Getting the Work

46% of people took 8 to 15 days to get their employment, 32% of respondents were placed in 1 to 7 days, and 18% of people waited 15-30 days to grab their jobs. Only 4% of respondents got job opportunities after one month.

Figure-5 : Migrant Workers' Waiting Time for Getting the Work

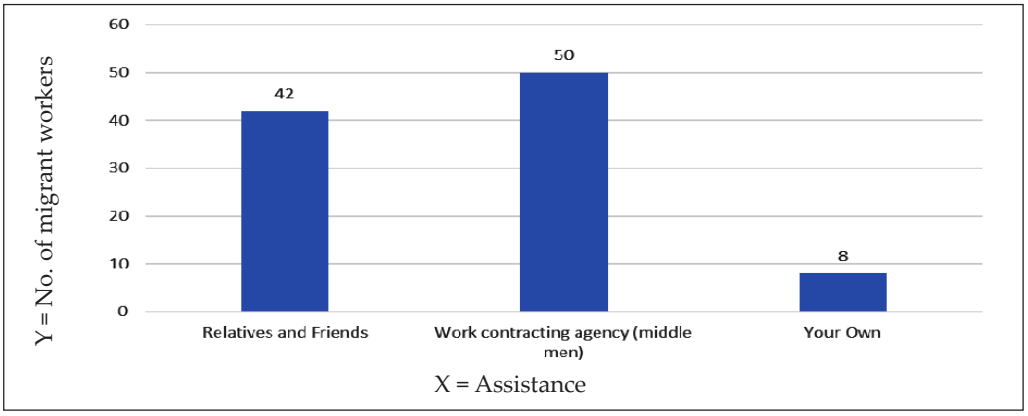


Source : Field Study.

Assistance to Migrant Workers to get the Job:

50% of people got job opportunities through work contracting agencies. 42% of respondents took the help of their friends and relatives to get their employment opportunities, and only 8% of people had confidence and grabbed their job opportunities individually.

Figure-6 : Assistance to Migrant Workers to get the Job

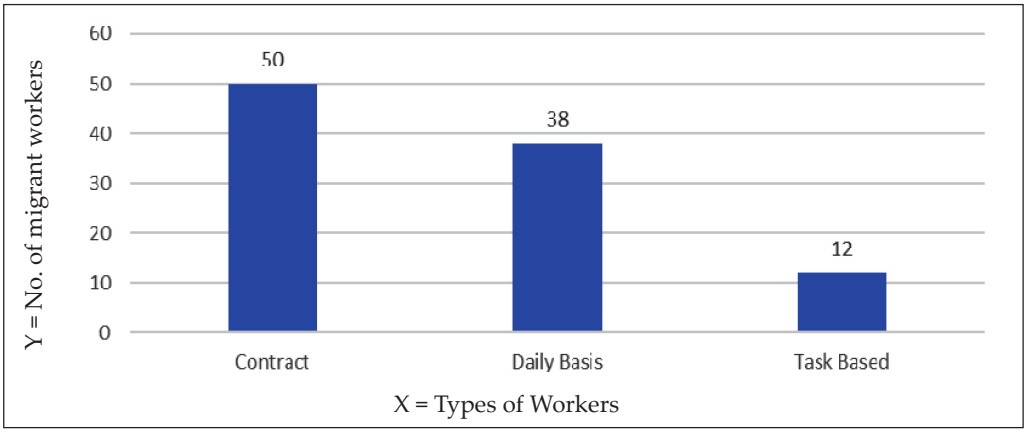


Source : Field Study.

Type of work of Migrants

50% of respondents were contract workers, while 38% of people sought daily basis work and 12% of people engaged with task-based works.

Figure-7 : Type of Work of Migrants

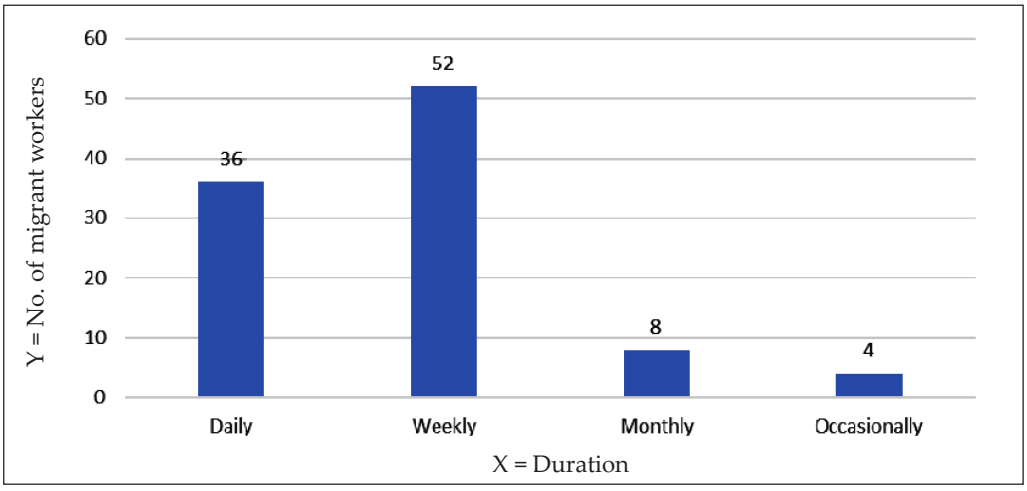


Source : Field Study.

Duration of Wages Received by Migrant Workers :

52% of respondents got their wages once in 7 days, while 36% of people received their wages daily, and 8% of respondents drew their wages after one month. Only 4% of people collected wages occasionally whenever they required money.

Figure-8 : Duration of Wages Received by Migrant Workers

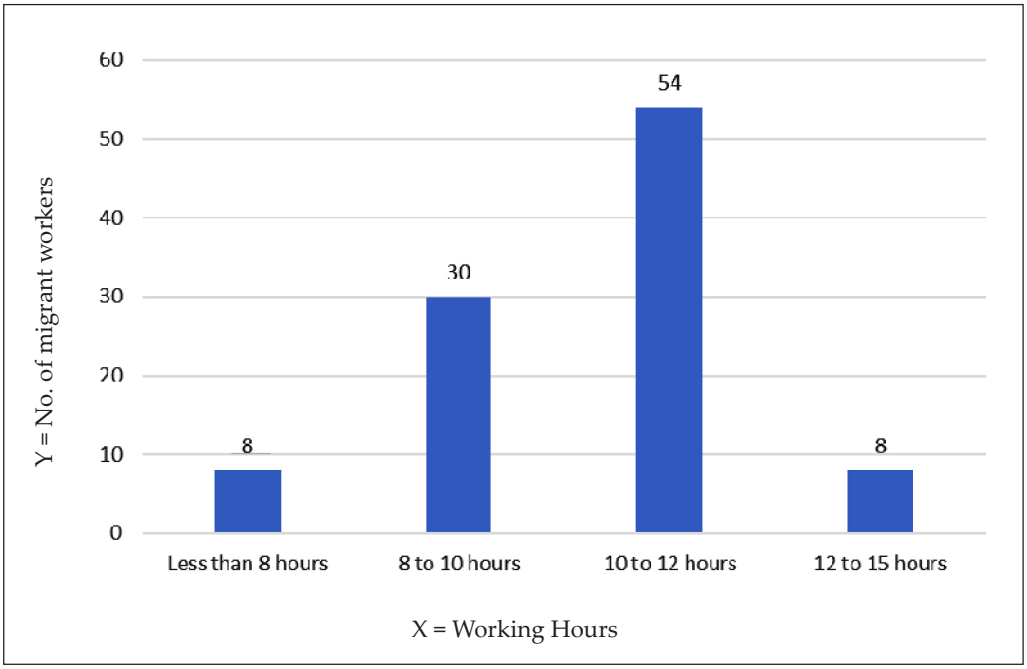


Source : Field Study.

Total Working Hours of Migrant Workers:

54% of respondents engaged 10-12 hours daily with their work. 30% of people spent 8 to 10 hours in their work daily, 8% of respondents allocated 12 to 15 hours for their daily work, they would go to work early in the morning and return home after the late-night hours. The same 8% of people spared their time at work for less than 8 hours.

Figure-9 : Total Working Hours of Migrant Workers

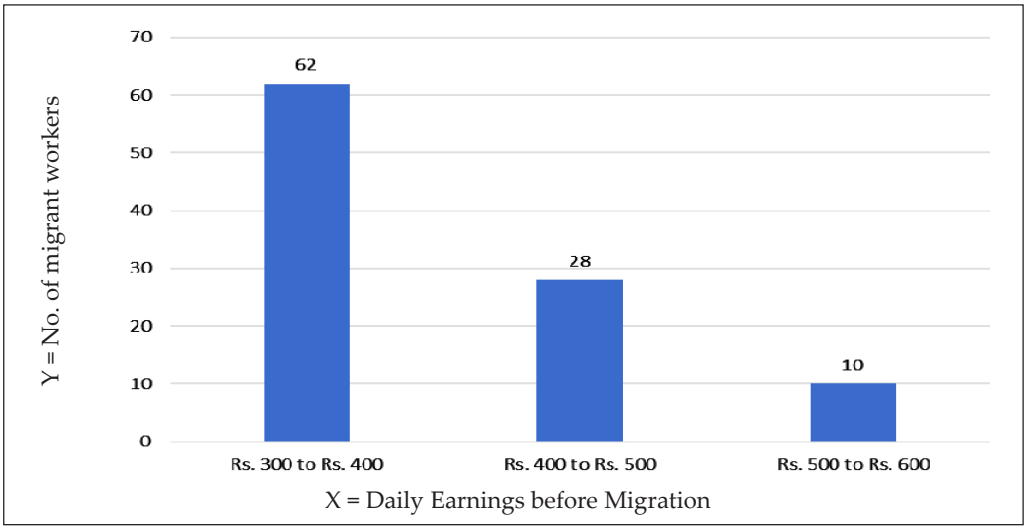


Source : Field Study.

Daily Earnings of Migrants before Migration:

Most respondents (62%) would earn only Rs. 300 to Rs. 500 per day before their migration, while 28% of respondents' daily earning were Rs. 400 to Rs. 600 per day and 10% of respondents got their daily wages between Rs. 500 to Rs. 600 every day.

Figure-10 : Daily Earnings of Migrants before Migration

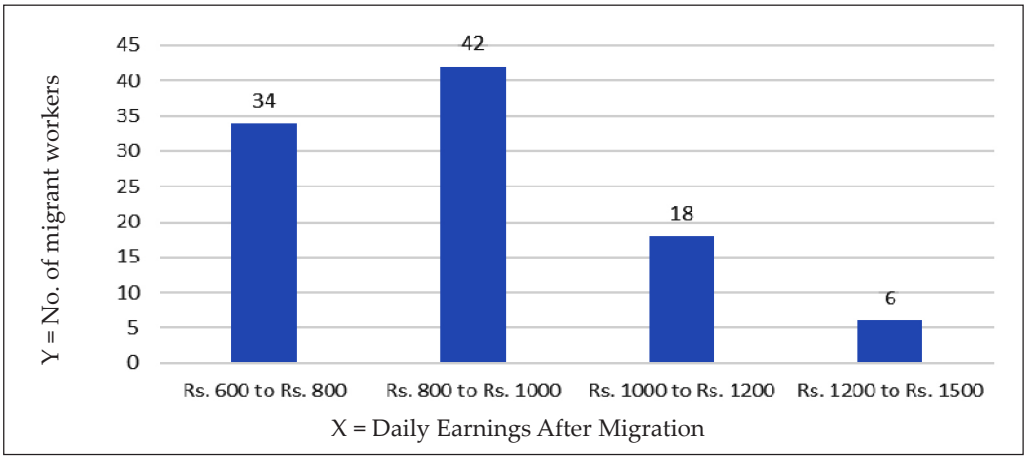


Source : Field Study.

Daily Earnings of Migrants after Migration:

42% of people would earn daily wages ranging between Rs. 800 to 1000, while 34% of respondents' daily earnings were between Rs. 600 to Rs. 800, 18% of people got their daily earnings between Rs. 1000 to Rs. 1200 and 6% of respondents were high skilled people who had daily wages between Rs. 1200 to Rs. 1500.

Figure-11 : Daily Earnings of Migrants after Migration



Source : Field Study.

Findings and conclusions

One of the major limitations on implementation of social security measures was that the workers do not have any permanent identification and residence proof. The migrant workers carried mostly identification proof of their hometown. Another major reason for non-payment to the construction workers is the frequent updates and modifications to the law. There is a need for a strong legal framework to address various health and welfare needs of interstate migrant workers. The study reveals that there are many provisions that the government has created but the workers have not been able to access through those schemes. The workers are ignorant about various health schemes and entitlements that they are eligible in the state when they reside. They are also unaware of the various social security measures such as insurance facilities, free education for children, vocational training, small entrepreneurship funding and other self-employment measures for the dependents.

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Exploring the Convergence of Distributed Ledger Technology, and Quantum Computing : Implications for Accounting in the Technology 4.0 ERA

Komal .S and M. Muniraju

Abstract : Background: *The fourth industrial revolution—often referred to as "Technology 4.0"—has brought about a paradigm shift in the business environment as a result of developments in Distributed Ledger Technology (DLT) and Quantum Computing. This article examines the interesting intersection of DLT with quantum computing (QC) in the era of Technology 4.0 and its substantial implications for the accounting sector. Through its ability to create an immutable and transparent ledger, distributed ledger technology, which is exemplified by block chain, has the potential to enhance the accuracy and traceability of financial transactions.*

Methodology: *Financial information, transaction records, professional judgments, market research, and other information are collected. To measure the possible effects of adopting DLT and QC in accounting, methodology includes a combination of qualitative and quantitative methodologies, such as Case Studies, Surveys/ Questionnaires, and Data Analysis.*

Findings and Implications: *High-security cryptographic techniques might be created as a result of the convergence of DLT and QC. Anomalies and errors could be found with a level of accuracy never before seen in complex financial audits. Real-time, tamper-proof transaction recording might be possible with DLT and QC integration. New financial products, services, and business models might appear as a result of the integration of DLT and QC.*

Model: *The elements that affect transaction costs, the adoption rate of DLT and quantum computing, prospective security improvements, legislative changes, etc. are all identified via financial modeling. To examine the interactions between variables and test intricate theoretical models, structural equation modeling (SEM), a statistical method, will be utilized.*

Results: *SEM is used to quantify the financial effects, including possible cost savings, revenue growth, and operational risk reduction. Sensitivity analysis is used to comprehend how changes in particular variables might affect the results as a whole.*

Keywords : Distributed Ledger Technology, Quantum Computing, Technology 4.0, Accounting, SEM.

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1. INTRODUCTION :

The fourth industrial revolution, sometimes known as "Technology 4.0," has arrived because to the 21st century's tremendous technological growth. The widespread adoption of digital technologies in many spheres of our lives and businesses at this time has radically changed how we conduct business, communicate with one another, and engage with the outside world. Quantum computing (QC) and distributed ledger technology (DLT) are two game-changing innovations at the vanguard of this revolution. Traditional transaction and record-keeping procedures have been upended by distributed ledger technology, which is well-known for its use in blockchain networks like Bitcoin and Ethereum. It delivers immutable, decentralized ledgers, transforming industries including finance, supply chain, and healthcare. While this is going on, quantum computing, a discipline based on the ideas of quantum physics, claims to have unmatched processing capacity and may be able to address issues that traditional computers have been unable to. In order to better understand the confluence of distributed ledger technology with quantum computing, as well as the consequences for accounting in the Technology 4.0 Era, this article sets out on an exploration. In the face of the convergence of these two potent technologies, accounting, as a fundamental pillar of business and finance, stands to undergo significant alteration. This convergence has the power to fundamentally alter how financial data is processed, stored, and safeguarded, ultimately having an impact on the entire accounting ecosystem [1].

An innovative method of storing data is block chain technology (BC). Using computer algorithms and the BC infrastructure, transaction data is transferred and altered in real-time without intervention from outside parties. Big data and the Internet of Things (IoT) have the ability to transform how businesses share data and make transactions when

combined with BC. Additionally, it strengthens the authenticity, reliability, and traceability of the product or service. Numerous economic sectors could profit from this technology, notably those that use decentralized currencies like crypto currencies, smart contracts, and smart land. All areas of the economy are expected to experience the disintermediation caused by BC, with the financial sector being the most impacted. BC might have an impact on company governance, assurance, and financial management. External audit block chain has the potential to increase audit effectiveness while also boosting the quality and dependability of financial statements [2]. Auditors must take into account how BC affects the operational environment when determining how it will affect a company's

financial statements. Instead of emphasizing how auditors might use the technology, BC implementations in auditing concentrate on the technology's technological advantages.

Innovative When the Bitcoin cryptocurrency first appeared in 2008, blockchain technology also gained notoriety as the distributed ledger at the same time. The ledger is the primary record keeper for the list of blocks in blockchain technology. Data or information is stored in each block. Any quality and coordinates are possible for this data and information. Typically, all data is housed on one central device, which has complete control over it. The foundation of blockchain is a distributed, decentralized ledger. In other words, several gadgets are interconnected among themselves. As a result, this system is decentralized, and every device in this system has a copy of the ledger. It is very difficult to alter or corrupt the information since, in this structure, each block's definition of the information depends on the block before it [3]. Building trust is one of the benefits of this technology, and using it in business interactions and exchanges can significantly reduce worries about a lack of trust between the parties because all exchanges are transparent, practically any change in data requires network consensus, and the change records are completely preserved and undeletable.

Due to benefits like increased efficiency and transparency, fraud prevention, user experience development, and direct and unmediated engagement between companies and customers, blockchain helps the growth of digital marketing. Blockchain technology may be an effective instrument on the market for connecting brands and customers directly and forging closer bonds. With the use of this technology, businesses may boost the reach of their marketing initiatives, enhance customer targeting, and improve customer responsiveness. Through its interactive and inclusive capabilities, marketers may efficiently share their promotional content and cut expenses by avoiding middlemen. Additionally, the market adoption of blockchain technology can aid in preventing the dishonest marketing of knockoff

goods that infringe on the copyright and intellectual property rights of the original producer [4]. This is because technology makes it possible for end-product traceability and stringent monitoring regulations. Furthermore, transparency based on Blockchain technology increases consumer confidence because they can more easily see and confirm that brand statements are true. Marketers will be able to highlight their altruistic drive to look out for the interests of consumers by maintaining this high level of transparency and emphasizing the positive aspects of their actions [5].

2. LITERATURE REVIEW:

Economou, D. et al (2019) [6], the study acknowledges the possibility of cryptographic techniques now employed to secure blockchain networks being compromised by quantum computing's enormous computational capability. In order to protect the integrity and security of blockchain data, it is imperative that solutions that are resistant to quantum technology be used. The authors go over a number of issues that come up when building blockchains that can withstand quantum technology. Creating post-quantum cryptography methods, preserving network performance and scalability, and assuring backward compatibility with current blockchain systems are some of these difficulties. The research highlights the significance of quantum-safe cryptography methods that are built to survive attacks from quantum computers. These methods rely on the application of mathematical concepts that are difficult for quantum computers to take advantage of. The long-term security and viability of blockchain systems may be improved by these methods, according to their recommendations.

Giovanetti, L., et al (2020) [7], The article concedes that the encryption algorithms now being employed to safeguard blockchain networks are seriously threatened by quantum computing. These algorithms could be broken by quantum computers, putting the reliability and security of blockchain-based transactions in jeopardy. The authors explore the idea of quantum-safe encryption, which entails creating cryptographic methods resistant to quantum assaults. These encryption techniques are intended to safeguard data on blockchain networks and guarantee that it is secure even in the presence of quantum computers. The difficulties with establishing quantum-safe encryption on blockchain networks are covered in this study. These difficulties include choosing and incorporating post-quantum cryptography methods as well as preserving the efficiency and scalability of blockchain systems. While the paper largely focuses on the theoretical features of quantum-safe blockchain, it makes suggestions about how these solutions might be put into practice. It implies that the development of quantum-resistant encryption will be crucial in boosting the safety and resilience of blockchain networks in the quantum future.

Beck, R., et al (2020) [8], In order to ensure network integrity and functionality, the article emphasizes the significance of defining rules, decision-making procedures, and methods. It addresses the governance difficulties connected with blockchain technologies. To frame their analysis of blockchain governance, the authors use social contract theories from political philosophy, such as those

by Rousseau and Rawls. These ideas examine how people and governing bodies interact, emphasizing the importance of consent and reciprocal agreements. The paper explores how various social contract theories correlate with the various governance models used in blockchain networks, including both on-chain and off-chain governance. It looks at how blockchain communities collaborate to establish and uphold governance standards. Although the paper's primary focus is on blockchain governance, it also makes some general observations about how blockchain governance models can apply to other contexts and industries, such as banking, supply chains, and public institution governance. Additionally, it proposes directions for additional study in this developing area.

Winkler, J. K., et al (2019) [9], the report emphasizes the impending danger that quantum computing poses to the widely used traditional cryptography techniques in blockchain networks. The security of blockchain networks may be under danger if quantum computers are able to solve difficult mathematical problems with efficiency. The authors explore the idea of "quantum-safe cryptography," or creating cryptographic methods that are resistant to attacks from quantum computers. These methods are designed to maintain the security of blockchain data and transactions in the quantum era. The ramifications of quantum computing for blockchain technology are specifically covered in the paper. It emphasizes how crucial it is to use quantum-resistant cryptographic techniques to protect the authenticity and privacy of data and transaction-based blockchains. The authors recognize that incorporating quantum-safe cryptography into current blockchain networks has several difficulties. To properly apply these solutions, they emphasize the necessity of cooperation between researchers, developers, and the blockchain community.

Hassani, H., et al (2021) [10], The notion of Blockchain 3.0 is presented by the authors as an advancement of blockchain technology past its first uses in cryptocurrency (Blockchain 1.0) and smart contracts (Blockchain 2.0). A more adaptable and safe financial environment is

what Blockchain 3.0 intends to achieve by utilizing advanced characteristics like scalability, interoperability, and security. The study highlights how Blockchain 3.0 has the potential to improve the efficiency and security of financial services. It examines how blockchain can be used to speed up procedures like cross-border payments and trade finance, promote safe and open transactions, and lower fraud. The authors acknowledge the significance of scalability and interoperability in maximizing the benefits of Blockchain 3.0 for financial services. The difficulties in implementing these functionalities are discussed,

and the demand for established procedures is emphasized. The authors talk about upcoming innovations that could be made in Blockchain 3.0 applications for safe financial services. They emphasize the impact of cutting-edge innovations on the blockchain landscape, including quantum-resistant cryptography and the Internet of Things (IoT).

3. RESEARCH GAP:

The aforementioned few reviews are among several that have concentrated on the importance of quantum computing and distributed ledger technology in a variety of fields. The enormous body of literature already in existence revealed that there was only lukewarm study conducted in the accounting and banking sectors, where technology is essential for smooth transactions. Few studies have concentrated on the following:

- Beyond Bitcoin, a lot of articles have concentrated on quantum computing and distributed ledger technology. The research also noted that the number of investors in the bitcoin market is rising, which is a result of many different businesses using distributed ledger technology and quantum computing [11].
- The financial market's impact and revolution brought about by distributed ledger technology and quantum computing, as well as the salient aspects of these technologies, were the subject of relatively few articles [12].
- A few studies suggested that it is conceivable to digitize the collaboration between economic institutions within the global financial system and move toward e-government in the information-technology environment of today [13].

According to the evaluations described above, no attempt has been made to conduct research into the effects of distributed ledger technology and quantum computing on the effectiveness of the accounting and financial markets. The study concentrated on how people perceived the application of quantum computing and distributed ledger technology.

4. OBJECTIVES:

- To investigate how investors view the application of quantum computing and distributed ledger technology in the accounting markets.
- To understand how quantum computing and distributed ledger technology affect the effectiveness of financial transactions.

5. HYPOTHESES:

- Hypothesis (H0) : The efficiency of the accounting market process is unaffected by the introduction of distributed ledger technology and quantum computing.
- Hypothesis (H1) : Quantum computing and Distributed Ledger Technology usage have an impact on the effectiveness of the accounting market process.

6. RESEARCH METHODOLOGY:

The effectiveness of the accounting markets' transaction processing has been examined through the use of qualitative research to investigate the role of distributed ledger and quantum computing technology. The analysis took into account a number of articles that looked at the accounting implications of distributed ledger technology and quantum computing.

- **Source of Data :** The original data used in the study was taken into account when looking at the suggested objectives. A questionnaire created by the researcher was used to gather the data.
- **Sampling method :** The convenience sampling approach was used to collect the study's primary data. Convenience sampling refers to a sampling technique where the first primary data source that is accessible is used without the use of any additional research criteria. Or, to put it another way, the participants in this sampling technique are found wherever they can be found, which is typically where it is most convenient. Prior to subject collection, there were no set inclusion criteria for convenience sampling.
- **Sample Units :** The study took into account how the accounting market has invested in technology. The study took into account the fact that investors work in the technology industry and are involved in projects like distributed ledgers and quantum computing. The survey took into account the employees of the IT service providers Infosys and Wipro, who are involved in this technology and are aware of the value of distributed ledger and quantum computing technologies as well as upcoming disruptive technologies.
- **Sample Size :** Since 125 people received questionnaires, the study has taken into account the 125 fully completed questionnaires.
- **Questionnaire :** The questionnaire has been designed with two objectives in mind for the study. Likert scales with 1 to 5 point structures were used to collect the responses.

- **Data Reliability :** For the primary data reliability for the questions, the study used Cronbach's alpha. The estimated value was 0.946, which is higher than the initial value of 0.7. As a result, the primary data can be used in the analysis of the study.

7. DATA ANALYSIS AND RESULTS:

Objective-1 : To investigate how investors view the application of quantum computing and distributed ledger technology in the accounting markets.

The study looked at how investors perceived the use of quantum computing and distributed ledger technology in the accounting financial markets. The discriminant analysis was used in the study to determine the perception level based on the coefficient values. Wilks Lambda test was used in the study to determine the application's fitness for discriminant analysis, and the results show that all parameter values were close to 1, indicating a strong fit of main data for the given questions. The results of the discriminant analysis in Table-1 are as follows.

Table-1 : Investors' Level of Perception of Blockchain Use

Parameters	Coefficients	TDS Weights
The executive team considers the adoption of DLT and QC technology to have a strong business case.	0.299	17.01
preparing to replace the DLT and QC's current record-keeping methods	0.301	13.11
DLT and QC technology is widely scalable and will eventually be embraced by the general public.	0.697	18.61
The development of DLT & QC solutions is being discussed or worked on by vendors, clients, and/or rivals.	0.305	31.72
Our industry will be disrupted by DLT and QC technology.	0.901	18.2
If we don't implement DLT & QC technologies, we'll lose a competitive advantage.	0.702	9.22

Source : Primary Data.

The aforementioned table shows the level of perception among the equity market investing community about the application of quantum computing and distributed ledger technology. The coefficient values show that "Distributed Ledger Technology and Quantum Computing will disrupt our industry" (0.901) and "Distributed Ledger Technology and Quantum Computing is broadly scalable and will ultimately achieve main stream adoption" (0.697) are having the higher perception level among the investors on the Distributed Ledger Technology and Quantum Computing. According to the study, investors have lower perception levels when it comes to issues like "Planning to replace current systems of record in Distributed Ledger Technology and Quantum Computing" (0.301) and "Suppliers, customers, and/or competitors are discussing or working on block chain solutions" (0.305). The study discovered that the coefficient values of all the parameters are seen to vary from one another.

Objective-2 : To understand how quantum computing and distributed ledger technology affect the effectiveness of financial transactions.

Quantum computing and distributed ledger technology have been discussed in the current study. Faster payments, shorter settlement times, smart contracts, digital record keeping, digital currency, and digital assets were all taken into account as independent variables in the analysis. The model's estimated goodness of fitness index and model consistency, which show the model is substantial, are used to support this. A group of statistical models known as structure equation modeling (SEM) aims to explain correlations between numerous variables. It is beneficial to simultaneously investigate the connections between a number of dependent and independent variables. The capacity of SEM to evaluate causal links between components using numerous measuring objects was the first factor in the decision to use SEM for data analysis. Second, it offers reliable statistical approaches that are effective in dealing with complex systems. The results are reported in detail as follows. Finally, the hypothesized model (SEM model) has been framed to test the outcomes of the estimates.

The Goodness of Fit, which includes Fit statistics, Recommended and Obtained values, is shown in the table below, and the outcome is described in Table-2.

Table-2 : For Structural Equation Model Fit Index

Fit statistic	Recommended Value	Obtained Value
Chi square		5.778
Df		6
Chi square significance	p < = 0.05	0.031
Goodness Fit Index	>0.80	.873
Adj. Goodness Fit Index	>0.80	.899
Normed Fit indexes	>0.80	.911
Relative Fit Index	>0.80	.904
Comparative Fit Index	>0.80	.978
Tucker Lewis Index	>0.80	.977
RMSEA	<0.05	.069

The Goodness of Fit Index shows how well a model is suited for the adoption of blockchain technology. The outcome shows that the GFI (Goodness Fit Index) is .873 and the adjusted GFI is .899, both of which are found to be above the suggested level. The relative fit index is .904 and the average fit index appears to be greater than .911. Goodness indices like the Tucker Lewis Index (.977) and Comparative Fit Index (.978) are seen to be over the threshold. Root mean Square is 0.069, indicating that the model is noteworthy. Thus, the model in Figure-1 is satisfactory, according to the goodness of fit index.

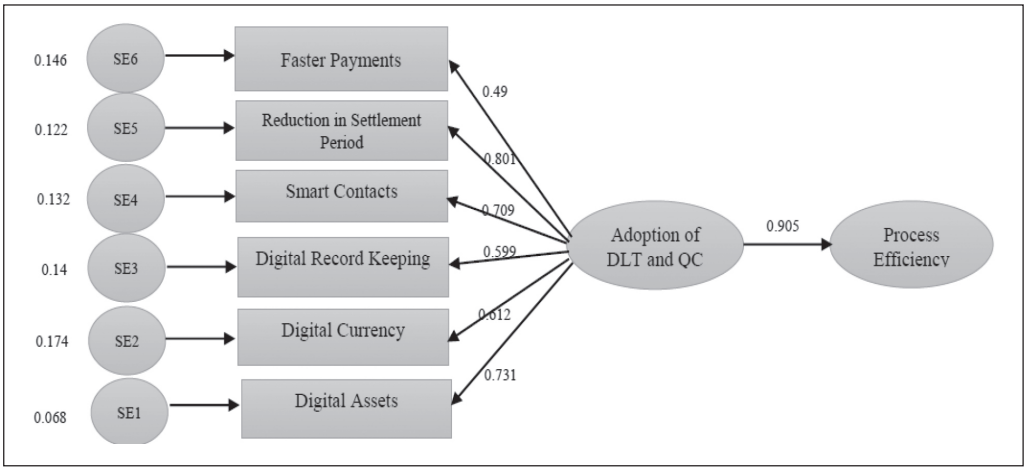

Table-3 shows the impact of blockchain adoption in finance. The following provides a detailed explanation of the regression weights for each factor:

Table-3 : Regression Weights Considering Process Effectiveness

		Estimate	Standard Error (S.E.)	Critical Ratio (C.R.)	P-value
Faster payments	Adoption of DLT & QC	0.49	0.146	4.876788	.000
Reduction in settlement period	Adoption of DLT & QC	0.801	0.122	8.621562	.000
Smart Contracts	Adoption of DLT & QC	0.709	0.132	6.812166	.000
Digital Record keeping	Adoption of DLT & QC	0.599	0.14	5.853524	.000
Digital Currency	Adoption of DLT & QC	0.612	0.174	4.126173	.000
Digital Assets	Adoption of DLT & QC	0.731	0.068	4.834835	.000
Process Efficiency	Adoption of DLT & QC	0.905	0.241	0.4284610	.000

Source: Primary Data

H0 : The efficiency of the accounting market process is unaffected by the introduction of distributed ledger technology and quantum computing.

H1 : Quantum computing and Distributed Ledger Technology usage have an impact on the effectiveness of the accounting market process.

The adoption of distributed ledger technology with quantum computing takes into account six elements, including smart contracts, speedier payments, and shorter settlement times. Digital Assets, Digital Currency, and Digital Record Keeping. The results indicate that Smart Contracts have a lower impact on the

use of Distributed Ledger Technology and Quantum Computing to increase accounting financial efficiency than Reduction on Settlement Period, which was observed to have a higher estimate value impact of 0.801 (indicating that there is a chance that increasing the period of settlement will increase the use of distributed ledger technology and quantum computing). The other components are Digital record keeping (0.599), Digital assets (0.731), and Digital currency (0.612), which means that by imposing

currency digitally, this factor will be helpful for the expansion of the economy and improvement of the financial aspects. Faster payments estimate value, which tends to be 0.49 as the estimate value, is the final component that has been determined to have the most influence on the adoption of the block chain. Less than 0.05 is considered to be a significant p-value. As a result, the Alternative Hypothesis is accepted and the Null Hypothesis is rejected.

8. FINDINGS:

The study used discriminant analysis to evaluate how investors perceived the use of distributed ledger technology and quantum computing, and the outcome indicates that these technologies will disrupt our sector (0.901).

- Therefore, it implies that with the disruptive technology, international transactions will have an impact on the domestic capital market.
- According to the survey, investors have a higher level of perception of block chain technology than the general public (0.697), which is "Block chain technology is broadly scalable and will ultimately achieve mainstream adoption"
- With the help of SEM, the study looked at how block chain technology affected process efficiency. The findings show that "Reduction in settlement period" (0.781) and "Smart Contracts" (0.693) are the factors that are most strongly influencing the adoption of block chain technology.
- According to the coefficient values (0.862), the adoption of block chain technology had a considerable impact on how efficiently the financial markets operated.
- Quantum computing has the ability to defeat the DLTs' underlying encryption techniques.

- Blockchain networks may be at serious danger of security because of this.
- To ensure data security in DLT systems, new cryptographic methods and algorithms (post-quantum cryptography) built to withstand quantum attacks may be required [14].
- Quantum computing has the potential to solve the scalability problems that some DLTs have by processing several transactions at once. Processing transactions could become quicker and more effective as a result [15].
- New consensus methods for DLTs may need to be developed in order to accommodate quantum computing.
- In a post-quantum computing era, it might be necessary to create quantum-resistant DLTs to guarantee data integrity. This entails making sure that old data is safe and unchanged.
- The accounting sector may face new regulatory issues as a result of the confluence of DLT and quantum computing [16].
- Regulators could have to adjust to new cryptographic norms and evaluate the dangers posed by quantum assaults [17].
- DLTs that are quantum-resistant could improve auditability and transparency by offering strong defense against quantum attacks [18].
- In the Technology 4.0 age, accounting software and systems may need to be quantum-safe in order to secure financial data and transactions from potential quantum threats.
- There may be considerable expenses and resource needs associated with integrating quantum computing into DLTs [19].
- Organizations in the Technology 4.0 era will need to develop strong risk management plans that take both quantum computing and DLT risks into consideration [20].

9. CONCLUSION:

A complex and transformational landscape with significant consequences for the accounting profession is revealed when Distributed Ledger Technology (DLT) and Quantum Computing (QC) are examined in relation to accounting in the

Technology 4.0 Era. This junction of cutting-edge technologies is significant because it has the ability to change not only accounting procedures but the entire corporate ecosystem. There are major security challenges brought on by the incorporation of quantum computing into DLT systems. To protect sensitive financial data from quantum assaults on present encryption standards, quantum-resistant cryptographic solutions must be created and implemented in accounting. The capacity of quantum computing to quicken DLT network consensus and verification procedures can boost the effectiveness and scalability of block chain-based accounting systems. The possibility for this is to simplify financial reporting and audits.

DLT's capacity to support automated transactions and smart contracts could transform the accounting industry by obviating the need for middlemen and enhancing the quality and transparency of financial data. The accounting industry needs to be proactive in adjusting to these new technology. The knowledge and abilities needed to comprehend and work with block chain systems, quantum-resistant encryption, and quantum-safe practices must be acquired by accountants and financial experts. Many unknowns still exist as the confluence of DLT and QC is still in its early phases. New uses, difficulties, and opportunities will continue to be uncovered by research and development. In this dynamic climate, staying educated and adaptable is essential.

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Role of NSS Volunteers in Disaster Management : A Case Study of Five Quake-Affected Villages of Marathwada

Prashant Amrutkar

Abstract : *Youth Power is the answer to the world's biggest problems. The NSS programme launched in India to instilling the idea of social welfare in students.*

In Killari, a place in Marathwada region in Maharashtra, where a colossal quake struck in 1993, claiming about 10,000 lives and destroying properties in fifty-two villages around Latur and Osmanabad districts. The NSS volunteers did an exemplary job in these areas. The present research works proposes to evaluate the role and the emergent impact of NSS volunteerism in complementing relief operations during this quake.

The present study seeks to test hypotheses like potential of youth power is very important in disaster management. This research work used primary and secondary data to analyse the role of NSS in disaster management.

Primary data has been obtained using sampling survey technique through structured questionnaire administered to respondents spread across the five most affected villages of two districts.

Keywords : NSS, Disaster Management, Shramadan, Volunteerism.

National Service Scheme (NSS) : A Symbol of Youth Potential and Volunteerism

India has the largest youth population in the worldwhich constitutes a vibrant and dynamic segmentof the country's population and is potentially the most valuable human resource. In view of the large strength and country-wide presence of the youth volunteers of the NSS scheme and to tap the constructive and creative energies of the youth, interaction was initiated with the Ministry of Youth Affairs and Sports, Govt. of India that is pursuing the twin objectives of developing the personality of youth and involving them in various nation building activities.

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National Service Scheme was launched in the Mahatma Gandhi Birth Centenary year in 1969, as student youth service Programme. It aims at arousing social consciousness of the youth with an overall objective of personality development of the students through the instrument of community service. The scheme covers all the states and union territories, 174 universities, 7500 colleges and institutions of higher learning. One NSS unit consists of 100 student volunteers led by a teacher in-charge designated as "NSS Programme Officer".

Importance of sensitization and awareness among the communities to their vulnerabilities and the need to manage them has been felt at the highest levels in Government. With the help of volunteers to sensitize and reach out to communities in rural as well as urban areas, theMinistry aims to make Disaster Management a part of the everyday life of a common man.

Over the years, the NSS Programs have been influencing the young minds to extend a helping hand towards addressing social problems in the country, and have been motivating them to tackle development issues in India. The Ministry of Youth Affairs has been spearheading these movements that have had many successes in various spheres of development including response to natural disasters, especially in the recent major disasters, Killari (Latur) earthquake.

NSS volunteers have traditionally been at the forefront of assisting the civil administration in times of national crisis – be it natural disaster or civil strife. The organization has been active in relief management and distribution. These trained volunteers are also facilitating the process of building disaster-resilient communities by focusing on disaster mitigation preparedness and response related Programs.

In the area of Disaster Management the primary activities of these organizations is to focus upon, in accordance with their presence and strength on facilitating community-based disaster preparedness planning process as part of their community work, generating awareness among the common people about the mitigation and preparedness measures, undertaking college level disaster awareness and safety Programs especially in the case of NSS since they involve young student volunteers and developing the capacity of the youth in their capacity in first aid and search and rescue so as to enable them to assist the civil administration in times of emergencies.

The Programme envisages an important role for the youth volunteers in facilitating community plans to cope with disasters, identifying members of taskforces and training them in different aspects of disaster management. These

youth volunteers are trained in facilitating development of community-based disaster management plans, awareness activities and in implementation of college awareness and safety plans.Amongst the success stories under this programme are several initiatives in the state of Maharashtra. (GOI-UNDP: 2009)

Killari (Latur) Earthquake

A strong earthquake of magnitude 6.4 on the Richter scale struck the Marathwada region of south central Maharashtra on September 30, 1993. (GSI, 1996; Gupta, 1996; Jain, 1994) This natural disaster resulted in extensive damage to life and property leaving 10,000 persons and 15,854 livestock dead, and 16,000 people injured. Fifty-two villages were demolished in the intra-plate earthquake (wikipedia.org), 30,000 houses collapsed, almost two lakh houses in 13 districts suffered damages of varying degree, nearly 127000 families were affected by this colossal quake.(latur.nic.in)

The life in the affected villages was paralysed. Donor agencies and social organisations carried out extensive rescue and relief operations. The Government, social organisations and NGOs contributed their best to bring the life to normal. (Physicians and staff from Railway Hospital, Solapur and V.M. Medical College, Solapur were amongst the first to reach the site and assisted with treatment of the injured over the next several weeks.) The government has formulated detailed rehabilitation policy within six months of the incidence and a huge programme of rehabilitation of damaged villages was taken up with the help of World Bank and other donor agencies. This rescue and rehabilitation work has been completed with the help of social and non- governmental organizations, in which the volunteers of National Service Scheme (NSS) of various colleges have played a pivotal role.This is a unique example of the use of youth potential in disaster management.

Disaster Management

The United Nations defines a disaster as a serious disruption of the functioning of a community or a society. Disasters involve widespread human, material, economic or environmental impacts, which exceed the ability of the affected community or society to cope using its own resources.

While no country is immune from disaster, its vulnerability to disaster varies. There are four main types of disaster i.e. Natural disasters, Environmental emergencies, Complex emergencies and Pandemic emergencies. The earthquake is categorized as a Natural disaster.

Any disaster can interrupt essential services, such as health care, electricity, water, sewage/garbage removal, transportation and communications. The interruption can seriously affect the health, social and economic networks of local communities and countries. Disasters have a major and long-lasting impact on people long after the immediate effect has been mitigated. Poorly planned relief activities can have a significant negative impact not only on the disaster victims but also on donors and relief agencies.

Local, regional, national and international organisations are all involved in mounting a humanitarian response to disasters. Each will have a prepared disaster management plan. These plans cover prevention, preparedness, relief and recovery.

Disaster prevention – These are activities designed to provide permanent protection from disasters. Not all disasters, particularly natural disasters, can be prevented, but the risk of loss of life and injury can be mitigated with good evacuation plans, environmental planning and design standards. In January 2005, 168 Governments adopted a 10-year global plan for natural disaster risk reduction called the Hyogo Framework. It offers guiding principles, priorities for action, and practical means for achieving disaster resilience for vulnerable communities.

Disaster preparedness – These activities are designed to minimise loss of life and damage – for example by removing people and property from a threatened location and by facilitating timely and effective rescue, relief and rehabilitation. Preparedness is the main way of reducing the impact of disasters. Community-based preparedness and management should be a high priority in physical therapy practice management.

The need for the disaster management initiative was recognized in the initial working papers of the World Bank project team (World Bank, 1993) The principal objective here was to engage in disaster management is to reduce vulnerability of the population and the built environment before disasters occur; to minimize life and property loss, enhance populations resilience by providing development opportunities, and to ensure environmental viability for future generations.

Disaster relief – This is a coordinated multi-agency response to reduce the impact of a disaster and its long-term results. Relief activities include rescue, relocation, providing food and water, preventing disease and disability, repairing vital services such as telecommunications and transport, providing temporary shelter and emergency health care.

Disaster recovery – Once emergency needs have been met and the initial crisis is over, the people affected and the communities that support them are still vulnerable. Recovery activities include rebuilding infrastructure, health care and rehabilitation. These should blend with development activities, such as building human resources for health and developing policies and practices to avoid similar situations in future. (www.wcpt.org)

Role of NSS Volunteers in Disaster Management : A Study of Youth Potential in Disaster Management in Killari Earthquake

This paper seeks to study the role of NSS volunteers in post-disaster relief activity after a disastrous earthquake struck the Killari village and its surroundings (Latur district in Maharashtra). The quake occurred in wee hours of 30th September 1993.

Primary data has been collected from the five affected villages, namely Killari, Shirsal, Yalvat, KillariVadi and Talani, which fall under the jurisdiction of Ausa tehsil of Latur district. A total 50 affected respondents from five villages have been interviewed. Each respondent was given twenty structured questions. Data received by way of their responses has been analyzed. Respondents comprised 39 males and 11 females between age group 41 and 86 years.

The residents of this areas lost several family members and friends in this disaster. With their houses flattened, most of them were buried under the rubble. And many of those who survived were badly injured or permanently handicapped. Damage to the properties was huge, but the loss of lives was most excruciating.

A number of organizations came forward to help them, in which Baba Aamte's Anandwan, RSS, Bajarang Dal, students from Uttar Pradesh, SarvanginVikas Sanstha, Latur, and others lent a helping hand to them during the time of this Himalayan crisis. Several companies took initiative for rehabilitation work like Shirke, Keti, Skyline, Tata, Indian Oil, Hindustan Petroleum, Bharat Petroleum, Cole India, World Vision India, Manjara Sugar Factory and so on. NSS volunteers were also involved in rescue operation. They started coming from the very day the tragedy struck. A big number of volunteers were present and although it is hard to point out the exact number, around 100 to 300 volunteers were involved in assisting the survivors of the deadly quake across the affected villages. They stayed up to one month in the village. There were NSS residential camps were organized by the colleges for about two years in the affected villages and under

these volunteers made efforts to rebuild the damaged property and infrastructure in the area.

The volunteers helped in rescue operations, food and water distribution to the affected populace, providing first aid to the injured, assisting in public transportation, making tents and providing temporary residential arrangement to the affected and also assisting farmers in farming work.

In the NSS residential camps volunteers helped in rebuilding roads, revamping sanitation, assisting in building houses, with a focus on hygienic and other developmental measures.

They also tried to educate villagers about the measures to be taken during the post-quake scenarioand these included, among other things, moving out of houses into open spaces or grounds as a first step. The volunteers also advised villagers as to what they should do in case the quake strikes and one cannot go out into open. Thus, the volunteers played an important role in the area as people needed psychological support to cope with post-disaster circumstances. They employed the medium of cultural programs, street plays, one-act plays, camping programs, rallies and so on to get their message across.

NSS volunteers did their job as good as NGO activists. The volunteers conducted door-to-door surveys and prepared a comprehensive list of the affected people, detailing the loss of lives and property. This data was very helpful to the administration. NSS volunteers were howevernot adequately trained for rescue and relief operation, so the relief work has not been up to the mark and there is a need to train these volunteers better. Notwithstanding that, they were fully committed to the cause they undertook to fight for.

Disaster Management Training for NSS Volunteers

The National Service Scheme (NSS) has been setup with an objective of promoting the motive of social service among the citizens of the nation. Since its inception, the NSS, which become a kind of movement in itself, has undergone changes in its form and design in keeping with the changing needs of the nation. The NSS organization has more than 24 lakh volunteers across the country which has been playing a vital role in the disaster response and relief operations for quite a long time.

There is a need to re-orient the roles and responsibilities of NSS volunteers in the light of changes in disaster management approach of the Government of

India. It has been envisaged that this large contingent of volunteers could prove resourceful if they could be trained to assist communities, schools, colleges and other institutions, from where they come or are being posted, disaster preparedness and mitigation. The following roles have been identified as could be played by the NSS volunteers :

- Awareness generation among communities and educational institutions on disaster preparedness and mitigation.
- Help local communities and educational institutions in preparation of disaster management plans.
- Take active role in training the village level disaster management teams in disaster preparedness (for this, skilled volunteers have to be identified).
- Help local administration during disasters in rescue, evacuation, and relief operations.

These volunteer force needs to be trained in various aspects of disaster management to make sure that they perform these new roles in a professional manner.

The following training modules given belowcould prove helpful to the trainers and training institutions of NSS in conducting such a training programme. The aim of this training is to improve the performance of volunteers in disaster risk management that also helps them in improving their performance during disasters.

Knowledge & Skill Areas – Some focal areas are highlighted for skill development of the volunteers such as, Hazards and their impacts, Disaster management : Principles and Practices, Risk and vulnerability assessment, Preparing disaster management plans (community and school), First aid, Rescue operations, DM planning (School and community), Participatory Rural Appraisal (PRA), Developing IEC materials, Reporting skills, Basic survival skills, Strategies for mass awareness generation, Crowd control, Disaster management in India, Counselling, Team-building skills, Relief Distribution, Public Relations, Panic and Rumour Management, Coordination and emergency communication, Personal management, Supervision skills, Disaster management legislation and so on.

There are a total of 24 lakh NSS volunteers in India who need to be trained in various aspects of disaster management.

Implementation Modalities – Looking at the large number of volunteers needs to be trained in various aspects of disaster management, this training design proposes to be implemented in two parts i.e. in Distance Education mode and in Contact Program mode.

a) Distance Education module -

1. The Distance Education module which would be available online provides knowledge on various aspects of disaster management with useful exercises/ assignments for the students. The details of Distance Education module are provided in the Learning Units section.
2. The Distance Education module could be hosted on the NIDM website or NSS website with a two focal points representing NIDM and NSS as course organizers.
3. Regional modules could be designed based on need.
4. To facilitate the distance learning process, the institution level NSS key functionary could act as local level anchor conducting interaction sessions in the school/college as per the online learning schedule every weekend

b) Contact Program -

The Contact Program of the training module would be used to impart disaster management skills where instructors from various specializations would train volunteers on rescue and evacuation, relief distribution, first aid, basic survival skills etc. Refer to the Learning units section for more details

Benefits - Some benefits observed after this training are:

1. Enhanced knowledge and skills in disaster management
2. Increased confidence among volunteers
3. Better communication skills
4. Enhanced social perceptions about NSS
5. Conservation of resources due to better performance (sdmtripura.nic.in)

This type of training is necessary for rural based NSS volunteers for doing their disaster management job with full of skills and perfection.

Conclusion

The role played by the NSS volunteers in disaster management in the above noted villages reflect the channeling of youth power to a social cause. Although these youngsters were not professionally trained in the disaster management, they did an excellent job of helping in relief and rescue operations. Beginning with the activity like 'shramadan', the NSS volunteers made commendable efforts to alleviate the suffering of the distraught villagers. It is important to note that in a deadly quake like one mentioned above, administration alone cannot come up to the colossal task. NSS volunteers complimented the efforts of administration by way of food and water distribution, providing first aid and lending a psychological support to the survivors of the quake. They even assisted the farmers in tilling the land and harvesting the crops.

However, lack of technical know-how in the area of disaster management threw a spanner in the work of these volunteers. They could have done a better job if they had been adequately trained for the purpose.

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An Assessment of the Efficiency of Agricultural Commodity Markets in India : Some Empirical Evidence

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Abstract : *The present study is an attempt to empirically investigate the long-term market efficiency and price discovery in the Indian commodity futures market. The study has been conducted with five highly liquid commodities which include agricultural commodities. Sophisticated statistical methods like cointegration and vector error correction model (VECM) are used to analyze the spot and futures prices time series. The cointegration test shows that futures prices for all the commodities are cointegrated with the spot prices of all the commodities. The presence of short-term biases in the Indian futures market is evidenced in the results of the VECM model which indicates the presence of informational efficiency. The statistically significant value of past prices of spot and futures confirm the short-term inefficiency and biasedness. The significant value of error correction term (ECT) of futures prices suggests that commodity futures are the most important indicator of commodity price movements. The important implication of the results is for market traders. They can use the futures prices to discover the new equilibrium and earn profits by transmitting it to the spot market. A better understanding of the interconnectedness of these markets would be useful for policymakers who try to establish stability in the financial markets.*

Keywords : Agricultural commodities, Market efficiency, Spot, Futures market, Cointegration methods.

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1. Introduction

The success of two economically significant positions is focused on commodity derivatives, price exploration and risk management. Numerous entities such as hedge holders, speculators and arbitrators are present on potential stocks, which implies more price seeking. Speculators usually act as equivalents to hedgers, allowing them to handle risks. In order to reap the benefit of the mispricing, referees help in seeking a better market. The commodity exchanges operate as essential locations for purchasers and sellers to perform trades with or without actual goods within a set of specified rules and regulations. Commodity exchanges are projected to lead to consumer development by reduction of transaction costs, improved price recognition and reduction of risks. Since a centralized location helps minimize expenses related to the identification of commodity content and physical examination of counterparts. Market performance is indicated by the rate and consistency at which information of asset values is conveyed.

With the introduction of futures, the same commodity is eligible for sale in both the spot and future. The dilemma here is whether demands learn information more easily. Both markets respond to information in an ideal situation. This includes the presence in commodity markets of different actors, such as growers, manufacturers, intermediaries, wholesalers, consumers, buyers, and so on. However, one market in an imperfect environment can lead another because of variations in features such as expense, liquidity, leverage and so on. The popular opinion is that futures contribute to market discovery because they take futures as a platform for their views and the related low-price advantages, as speculators and other well-known buyers. One of the key problems in India is that growers or farmers are not educated in the organized trades of commodities. Therefore, the stocks are regulated by speculators and brokers. This results in needless speculation, in turn requiring routine government action to enforce a trade embargo. It will help the potential business performance ineffectively. The research in this sense aims to quantify the performance of the commodity futures price discovery market, Lakshmi (2017).

Successful promotion of agricultural goods is pursued to safeguard the interests of both producers and customers. The forward markets commission (FMC) has needed over a decade to excel in prospective marketing. Farm production to a large degree relies on the atmosphere and the monsoon. Future trade is a methodology used for demand discovery and risk assessment in all economic fields, including producers and customers. Future exchange is a method used

for demand exploration and all segments of the economy, including producers and customers, are subject to risk management.This is seen as a weapon to avoid steep market fluctuations. Abnormal rates have a detrimental effect, with volatility, on both suppliers and customers. Future investing provides a way to measure demand and supplies over time and space, and to protect from market risks. It also provides farmers and consumers with demand cues and guidance in time.

The process of determining the spot price for a potential firm is known as "price discovery". For two reasons, this is vital for producers. First of all, they have a clear sense of potential prevailing projected rates for commodities. Second, to maximise profit and minimise risk, they should efficiently disperse their limited wealth. Consumers frequently like becoming aware of items rates ahead of time.It is vital for a farming economy to have a well-functioning transportation system future demand in order to properly carry out the price discovery phase. The purpose of the price discovery phase is to examine if any new information has surfacedcan be replicated in the future market or in adjustments in spot prices, or if the transitions between the spot and future markets are greatly delayed, Manogna and Mishra (2020).The economic transition of a developing nation such as India is crucial. It depends on the success of its agricultural sector and of its allies. In terms of rural subsistence, employment, and national food security, this sector is critical. It happens to be India's largest source of livelihood. The proportion of the Indian population directly or indirectly relying on agriculture for employment opportunities is greater than that of any other sector in India (Economic Survey 2019-20).

Agricultural sector plays a key position in the case of the Indian economy. Farming, actively and indirectly, accounts for nearly two-thirds of the workforce. The central statistics office is projected that almost 16.5 percent of the 2019-20 gross value added at rates are estimated to be in agriculture and their relevant industries (including cultivation, animal husbandry, the forestry industry and fishing). Therefore, the Indian economy is labelled the "monsoon gamble" since the agriculture sector is highly based on monsoon. Against that background, the position of future agricultural goods contracts is much greater in an economy like India. The export of India is a major part of agricultural goods, i.e., tea, tomato, potatoes, spices, jute, cotton, peppers, coffee, sugar cane, wheat and rice. The government intervenes quite strongly in the pricing of agricultural goods since it establishes minimum rates of assistance. The method of agriculture in India has experienced dramatic changes over many decades thanks to the

implementation of green revolution technology and government policy on market subsidies (Chand, 2003). India has thus progressed from a nation with food deficits to a country with a food surplus. The government rules on the production, supply and sale of many agricultural products appear to be affected (Sahadevan, 2002). Indian farmers face every day unpredictable and crucial circumstances in the shape of the output and the price of supply. Farmers are primarily vulnerable to the danger of agricultural output and, secondly, to prices. Therefore, because of varying climatic factors, agriculture development is still full of uncertainty. In the kharif and rabi season, too the prices fluctuate. The uncertainty of markets there by causes instability immediately. In this basis, the instability affects farmers' wages, rendering rural villages poorly safe. Under all these situations, prices will fluctuate if demand decreases similarly. Future markets have two key features, namely, risk control and competition exploration, as is seen in literature (Garbade and Silber 1983).

Farmers and suppliers, though, are rather worried at potential product costs, because their vulnerability must still be mitigated by coverage. Agricultural goods need tremendously to achieve an accessible and liquid futures market in addition to improve and more reliable discovery of values. In literature, the term market discovery has been used in various ways, but the rapid incorporation of fundamental news into market pricing is critical in assessing risk. Hasbrouck (1995) described the price discovery, which is often referred to as the market share of knowledge, as the quantity by which the effective price revolution adjustment may be assigned to such a market.' As the various securities have many trading places, knowing the price discovery mechanism i.e. anything's the influence of every business to the price discovery process is essential for traders and market participants. Any farmer's primary objective is to increase his income and reduce his risk. Peak season is a big problem, with a catastrophic decline in costs. And during its season, this forces a manufacturer to sell at a lower price. When farmers want to store the selling of farm at a reasonable price for the future, they have to contend with the problems of storage depletion. In comparison, India's long intermediate chain markets are extremely fragmented and locational. Regional companies often play a dominant position and foreign players play a spoil role in these spot markets and the national markets. In the post-globalization era regional and global players on locations and domestic markets play a significant role. These market imperfections betray the aspirations of farmers, since they earn little benefit from sales of output that adversely influence their profits.

2. Review of Literature

Ali and Gupta (2011) the findings show that there is a large difference among spot and futures pricing of sugar, cashew, guar seed, pepper, red lentil, maize, chickpea, black lentil, soy bean and except two commodities wheat and rice. The findings of the Granger Causality test indicate that there is a bidirectional connecting among both commodity markets for pepper, black lentil and maize. Finally, this study found that futures market prior information comparatively spot prices. Arfaoui (2018) investigated the relationship among the both market commodities namely heating oil, gasoline propane and crude oil over a period from January 2007 to April 2015. The study employed the ARDL and ECM models to measure the relationship among the commodities. The author discovers that spot and future rates are in equilibrium over the long run. Arora and Kumar (2013) this analysis investigates the discovering costs component of metal commodities namely copper and aluminium over a period from January 2006 to December 2011. Focused on a cointegration technique, the Vector Error Correction Model (VECM) is applied. The authors concluded that order one combines both the spot and future price series and shows a stable long-run balance relationship. Chakraborty and Das (2015) the efficacy of five agricultural and three non-farming organizations, Commodities were checked by measurement of multiscale entropy, taking single and multivariate sequences. In order to calculate the performance of the Indian commodity future markets, the Multivariate Multiscale Entropy (MMSE) approach is used. The agricultural commodities chosen are barley, corn, chickpea, cumin, mustard seed and aluminium, gold, Brent crude oil are the non-agricultural commodities. The duration from 1 January 2004 to 31 December 2012 will be included. The findings show a partial performance of the Indian commodity sector. In the case of agricultural resources, productivity variations are higher.The study therefore concludes that the Indian market for products is partly efficient and that time and time scales differ in quality. Dimpfl et al. (2017)investigated the empirical relationship among the commodities prices of eight separate farm commodities such as wheat, corn, live cattle, lean hogs, feeder, soybeans, soybean meal and soybean oil. They found that both goods were special on the spot market while future markets led to price discovery by less than 10 percent.

Inani (2016) investigated the common factor models price discovery association among commodity indexes for spot markets and futures namely agriculture index, energy index, combined commodity index and metal index, The spanning period from Oct 21, 2005 to May 29, 2015, the sample includes daily closing

prices. Except for the farming index, it is observed because all indices' spot and future prices are co-integrated, they are excluded from the market discovery study. The findings show that for the combined commodity index and metal index, the discovery of prices takes place in the spot market while the discovery of prices for the energy index takes place in the futures market.Inani (2018) has been investigating, by applying Johannsen's cointegration and VECM techniques, the relation between productivity and discovery of prices in Indian agriculture products futures markets, from 1 January 2009 to 20 October 2015. The empirical results demonstrated that there is a long-term connection among spot and future agricultural commodity prices, and the pricing findings revealed that six commodities have a long-term association., including cotton seed oil cake, coriander, sugar, castor seed, turmeric, soy oil have a future demand and lead a spot market.Irafan and Hooda (2017) analyse the long-run equilibrium among the both agricultural commodities of spot and future. This research documented that there is a cointegration relationship among the whole selected farm commodities. While the Granger causality test it has been established that there is still a unidirectional flow among all agricultural commodities. Iyer and Pillai (2010)examined if a dominant position is played by futures markets method for price discovery. Two-regime autoregression threshold for calculation of chana, copper, gold, nickel, rubber and silver commodities. This study finds proof of the phase of the discovery of prices for five out of six commodities in the futures market.Joseph et al. (2014) employed frequency domain analysis, they investigated the causative relationship among the both market prices of Indian commodity markets. Their findings indicate that frequency domain analysis indicates that a clear unidirectional causation exists between both markets' commodities. Joseph et al. (2015)utilizing the wavelet study, examines the Indian futures from 2 January 2006 to 31 December 2014 on eight agricultural commodities such as gold, chana, silver, crude oil, soybean natural gas, aluminium, copper. Their findings revealed the unidirectional causative association of all chosen goods in this analysis from future markets to spot. In addition, its analytical findings indicate a strong price discovery feature on future markets and an effective future demand for Indian commodity products. Joseph et al. (2015) employed the asymmetric causality test to analyses the asymmetric causative association among the spot and future prices of farming commodities in the Indian commodity market. From January 2008 to March 2014, the data was compiled. The regular closing prices of spot and future agricultural commodities were considered to be wheat, jeera, soybean, pepper, castor seed, soy oil, coriander, cotton oilcake, chana, mustard seed and turmeric. Their results

indicate that the price discovery function is the powerful mechanism in agriculture commodity futures prices and implies the effectiveness of the potential prices of agricultural commodities in India.

Lakshmi et al. (2015) the analysis explores the connection among spot returns and contracts for the future of crude oil and gold exchanged in India for during the months of January 2005 and May 2012. The study employed the vector auto-regressive model (VAR), the Granger causality test, variance decomposition and impulse response functions were used. The results have shown that the possible trading volume for both crude oil and goldis defined by its own background. Bidirectional causality takes place from gold spot to gold future selling rate. The results suggest that the rate of trade in gold goods reacts to information more easily and helps predict the return of gold in the Indian commodity markets than the return of crude oil. Lakshmi (2017) examines the long-term causal connection and path among the spot and futures markets. The cointegration test results documented that the futures causing spot in case of barley, cotton seed oilcake, Gur, mustard seed, castor seed and refined soya oil commodities. Granger causality test results documented that the bidirectional relationship in case of coriander, jeera, soya bean, sugar M grade and wheat. The study also found that there is efficiency in futures market in price discovery. Lakshmi and Joshi (2019) the research discusses the shift in the price discovery mechanism among spot and future markets for chosen inventories from the time before the crisis to the post-crisis period between November 9, 2001 and December 31, 2018. The price discovery process was studied by taking spot prices and future prices into consideration. This research uses the Johansen co-integration and the Vector Error Correction Model (VECM) in order to measure the price discovery impact since it adds to the market survey (spot or future) to minimize the possible value of knowledge. The study also extends the approach taken by Hasbrouck to exchanging information to assess the share of the price discoverycontribution of each sector. The findings indicate that in the pre-crisis period there is proof of a leading potential business position. However, during the depression period, the leading role of the future disappeared.Lagesh et al. (2014) examined the potential for the advantages of portfolio diversification using estimated Dynamic Conditional Correlations in the Indian context.Empirical findings indicate that there is a very low DCCamong returns from commodity futures indices and returns from conventional asset indices, which indicates the potential benefits of commodity futures for portfolio diversification.

Malhotra and Kumar (2013) in the present analysis, its efficiency and price discovery are tested using robust models such as Johansen's cointegration, Vector Error Correction process, Impulse Response and Variance Decomposition to analyse the output of the Guar seed futures market. The temporal connection among spot prices and futures prices between 2004 and 2011. Long-run co-movement is observed by spot and futures rates, and futures contracts may also work as a valuable hedging mechanism. In the short term, that the there is a unidirectional flow of data from the future to the spot market i.e., the futures market is leading Guar seed to the spot market. Nair (2019)investigated the recession results in business performance of Indian-traded natural rubber futures contracts. Research reveals that the demand for rubber futures is informatively useful in discovering prices. The cointegration among the spot and future prices of natural rubber. The effect of the recession on the market effectiveness of contracts for rubber futures are evident from the rise in the optimal hedge ratios calculated using the technique of cointegration. Narsimhulu and Satyanarayana, (2016) according to the findings of this research, spot and future commodity prices have a long-term link. The outcomes of the VECM have been documented for a long-term causality ranging from future prices to spot prices. Chilli and turmeric commodity returns have unidirectional causality, whereas chana commodity futures and spot returns have bidirectional causality. Pavabutr and Chaihetphon (2010) the data collection consisting of the regular closing futures price and the exchange size between November 2003 and December 2007 of standard gold futures contracts and mini gold futures contracts is obtained from the MCX. The research used vector error correction models to explain the association among future and spot. The study finds the price of futures corresponds to spot prices, which implies that the discovery of prices takes place in the futures market.

Prasanna (2014) investigate the output of the futures market for Indian agricultural commodities over a period from March 2007 to May 2012. Study employed the Johannsen Cointegration, Granger causality and Vector error correction (VEC) models. Author observational studies have shown that spot and potential values are mixed in the long term, whereas the causality path follows twofold, unidirectional and has no reason for 11 commodities. Raghavendra et al. (2016)investigated the productivity in the commodities markets for the agriculture and future, namely turmeric, channel, soybean, corn and jeera. The study period from January 2010 to March 2015. Authors found that a long-term balance between the five spot and futures items plays a crucial

role both on the spot and potential markets in the price discovery phase. Lastly, the authors indicated that all economies are informationally productive and that markets are immediately collectively accountable. Sehgal et al. (2012) the price discovery in Indian agricultural commodity marketplaces was documented. This study has selected 10 farming products are like castor seeds, barley, soya bean, chana, maize, potato, guar seeds, kapas, pepper, and turmeric. The findings of the Johansen Cointegration Test indicate that nine out of ten commodities have a long-term balance relationship. The Granger causality testthere appears to be a bidirectional relationship, according to the research spot-to-future causality for nine out of ten commodities. Overall results documented that there is no cointegration and causality relationship exited in turmeric. Shakeel and Purankar (2014) the association of prices contained in agricultural commodities would be, soya bean, castor seed and chana. The required regular data on position and commodity prices obtained from NCDEX was collected for the duration from 1 January 2009 to 31 March 2014. The findings of cointegration reveal that castor seed, chana and soya bean spot and future prices have long-term association existed. The model confirmed that the bi directionality of castor seed, chana and soya bean spot and its future sequence has led the way in India through the phase of discovery of prices, indicating the location and the chosen agricultural commodity's future markets play an important role. Sharma and Sharma (2018) the performance of Indian chilli futures markets was examined for between 2006 and 2016. The study established that chilli long-term correlation of the future and spot prices illustrated the two-way trigger of spot-future price. The findings show that both markets and errors are co-integrated. In both sectors, corrections are taking place. The outcome of the Granger causality test also supports this. Wald test results, however, show short-term causality that flows from futures to chilli spot prices. The study observes a long-run distribution among spot and futures prices suggesting that futures contracts will serve as a helpful hedging method.

Soni (2014) analysed market performance of agricultural futures contracts in India. In the time between January 2004 and September 2010. The two frameworks for study were the Johannsen co-integration and the VECM. Authors report that the future of agricultural crops is linked to their spot prices. Surobhi (2017) examined whether developments in the financialisation of agricultural commodities are evident in the Indian futures markets. During the period from July 2011 to September 2014, this study included four crops such as castor seed, guar seed, chana and soybean oil. Markets display considerably high volumes

and exchange prices in the domestic product market. The current study results show that while castor seed and soya oil undergo financialisation, Chana and guar seed tend to lend themselves to old-style speculation.

Vimal Shubhendu (2015) to investigate future-to-spot prices in seven foodstuffs such as wheat, mustard seed, chilly, jeera, pepper, castor seed and soybean. The study employed cointegration model and the "Granger causality" model. The study observational findings show the connection between future and "spot prices" and unidirectional from future market prices to spot prices for wheat, castor seed and jeera whereas the association among future market prices and spot-prices for "chilli, pepper, mustard seed and soya bean" is bidirectional. Goyari and Kumar (2011) investigated the link between the spot and futures commodities of gold, crude oil and guar seed in the context of India the time span of 2005 to 2009 by employing econometric models namely Engle-Granger Cointegration, Johansen Cointegration test, ARIMA, RW, VAR and VEC. This study discovered that the selected commodities' futures and spot markets are both short and long-term effective. Jena and Goyari (2016) this study explored the relationship in India between the price of goods, the yield of bonds and stock prices. For three alternative asset groups from June 10, 2005 to June 30, 2011, this analysis utilises secondary data on daily returns. The analysis shows that commodity and stock prices are positively correlated, while the price of goods and the yield of bonds are negatively correlated. The conditional correlation between product prices and stock prices suggests that there is a negative correlation between both variables. If there is an elevated risk in the stock market, the conditional relationship between commodity prices and stock prices decreases, which is beneficial for investors to allocate assets to the commodity market and vice versa.

2.1. Motivation and Research Gap of the Study

The key explanation for the present objective is that comparatively numerous studies have been carried out on this topic. The present research is however, to analyse the problem and to analyse the market behaviour, in particular barley, wheat, crude palm oil, mentha oil and jeera, for the five food items chosen on the spot and for the future. Emerging markets such as India use more commodities than developing countries. The study data collected from the NCDEX and MCX. NCDEX is the agricultural commodities is one of the leading commodity exchanges of India. Different econometric models were used in the present analysis to approximate bivariate cointegration, multivariate

co-integration, causality checks and processes of error correction, among other things. That is why the analysis initially investigates whether the chosen agricultural commodities are co-integrated between the spot and future markets. The analysis is therefore verified as spot and possible co-integration are validated. We observe the interaction between the spot and future markets, nevertheless the market for few commodities such as jeera, mentha oil, barley, crude palm oil and wheat is very strong. Problems including price detection and the performance of potential product prices for commodity markets with an increased emphasis on the financial markets have been thoroughly studied. Business in emerging markets, however, and in India in particular, is restricted to the agricultural commodity markets. In this sense, this study reviews the efficiency debate on the future and spot markets of Indian agricultural commodities. The above-mentioned problems led the authors to research the efficiency of India's agricultural commodity markets.

3. Source of Data and Empirical Methodology

3.1. Data Source

This study relies on secondary data to evaluate the effectiveness of agricultural commodity futures in India. The data on daily closing prices has been collected from NCDEX and MCX. In this study the prices of five commodities such as "jeera, wheat, barley, mentha oil, and crude palm oil" and the association among spot and future markets are analyzed. The data covering the period from 1 December 2010 to 31 May 2019.

3.2. Empirical Methodology

ADF Unit Root

In order to validate integration and time-series outcomes in order of stationarity, Augmented Dickey-Fuller (ADF), (Dickey and Fuller, 1981) experiments have been used. The intercept and intercept and trend were used for these stationary testing, since the data span a long period of time. The ADF research lags have been calculated and the vital values in the Dickey and Fuller (1981) studies have been taken into account, depending on the Akaike Information Criterion (AIC). In the use of the time series data, first step significantly needs to verify the stationary properties of the data. The study employs the Augmented Dickey Fuller (ADF) test to do this. In the literature, there is a good number studies also used this model for analysis. The empirical equation is as follows

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{i=1}^{p} \varpi_i \Delta y_{t-1} + \varepsilon_t$$

"Where y, β, γ_t, p are dependent variable, intercept in the model, linear trend in the model and integrated order of augmentation. ε is the error term in the model".

Johansen Cointegration Test

To know the cointegration association among the variables, the present study applies Johansen cointegration model. The selected technique also extensively used in the previous empirical literature. This method works under the main assumption of vector autoregressive basis.

$$\Delta Y_t = C + \sum_{i=1}^{k} \Gamma_i \Delta Y_{t-1} + \Pi Y_{t-1} + \eta_t$$

Where Y_t is the variables, C is the constant in the model, k is the lag lengths in the model and Γ is the coefficients of the model. Π denotes coefficient matrix of the model and it has disintegrated as $\Pi = \alpha\beta$ are both the coefficient matrix for adjustment in the model and cointegrating vectors matrix in the model. The present method can significantly determine the number of vectors cointegrating of the model and in any given number of non-stationary data series. This technique also has another advantage is that the model can allow feedback effect among non-stationary data series. The present model is works based on likelihood ration tests that can display the number pf cointegrating vectors in the model. In addition, to determine the relationship Johansen proposed two different statistics namely trade and maximum eigen statistics in the model.

The trade statistics (test) is following as

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \log(1 - \hat{\lambda}_i)$$

Where T stand for number of observations of the model, $\hat{\lambda}$ donates for statistics of eigen values, η is the number of individual series of the model. Therefore,

the null hypothesis is the of long-run equilibrium cointegration vectors is ≤ *r* and where *r = 0, 1 or 2* against the alternative hypothesis of number of long-run equilibrium cointegration of the model with vectors = *r.*

The maximum eigen test statistics is defined as

$$\lambda_{\max} = -T\log(1-\hat{\lambda}_{r+1})$$

Here the null hypothesis is the number of long-run equilibrium cointegrating vectors = *r* and the alternative hypothesis is the number of long-run equilibrium cointegration vectors *r + 1*. *r = 0* is the value that tested against the alternative hypothesis which *r = 1* and *r = 0* is the tested against the alternative hypothesis which *r = 2* $r = 2$. The λ_{MAX} test statistics has the sharper alternative hypothesis.

The Error Correction Method

In order to verify the causality in the long-run, if the both future and spot index level data series are stationary and non-stationary. Therefore, vector error correction technique can be used. To estimate this, the study used ECM model.

$$r_{st} = \alpha_s + \sum_{i=1}^{m}\beta_{si}r_{st-i} + \sum_{j=1}^{m}\gamma_{si}r_{ft-i} + \lambda_s Z_{t-1} + \varepsilon_{st}$$

$$r_{ft} = \alpha_f + \sum_{i=1}^{m}\beta_{fi}r_{st-i} + \sum_{j=1}^{m}\gamma_{fi}r_{ft-i} + \lambda_f Z_{t-1} + \varepsilon_{ft}$$

In the model $Z_{t-1}S_{t-1} - \delta F_{t-1}$ is the error correction in the model with the $1 - \delta$ as long-run cointegration vectors of the model. λ_s and λ_f both are the adjustment parameters of the model.

4. Results and Discussion

Toknow the stationary properties of the data series and in order to achieve the study's goal. First, it is significant to avoid the problem of spurious and invalid result because these are mainly depending on non-stationary data series. To

estimate the unit root results, the study adopts Augmented Dickey Fuller test to know the order of integration. The Augmented Dickey Fuller unit root test required significant lag length, therefore, the study selected based on optimal lags which is determination of the SCI criteria. The results of time series unit root tests are displayed in Table-1. The findings of Augmented Dickey Fuller demonstration that crude palm oil future, crude palm oil spot, mentha oil future, mentha oil spot, wheat future, wheat spot, barley future, barley spot, jeera future and jeera spot variables are non-stationary at level. Therefore, it converted into first order of integration then all of the variables are stationary at their first order of integration. These results show that "crude palm oil future, crude palm oil spot, mentha oil future, mentha oil spot, wheat future, wheat spot, barley future, barley spot, jeera future and jeera spot" variables are integrated order of one, i.e. I(1).

Table 1: Unit root test results

Variables	Levels	First difference
Crude Palm Oil future	0.394 (0.797)	-47.752 (0.000) ***
Crude Palm Oil spot	0.564 (0.838)	-48.145 (0.000) ***
Mentha Oil future	0.0719 (0.705)	-44.422(0.000) ***
Mentha Oil spot	-0.788 (0.374)	-46.412 (0.000) ***
Wheat future	0.599 (0.845)	-51.230 (0.000) ***
Wheat spot	0.432 (0.807)	-14.273 (0.000) ***
Barley future	0.156 (0.731)	-45.669 (0.000) ***
Barley spot	0.254 (0.759)	-10.672 (0.000) ***
Jeera future	-0.136 (0.636)	-19.772 (0.000) ***
Jeera spot	-0.046 (0.667)	-10.934 (0.000) ***

Note: ***, indicates significance at 1% level.

In this section, the study analyses the long-run relationship among the variables. To estimates this, the study uses both bivariate and multivariate cointegration tests. The results of bivariate cointegration tests are reported in Table-2. The findings show that there is a long-run equilibrium association among crude palm oil futures, crude palm oil spots, mentha oil futures, mentha oil spots, wheat futures, wheat spots, barley futures, barley spots, jeera futures, and jeera spots. It means that these variables are cointegrating in the long-run. The results of multivariate cointegration tests are show in Table-3. The investigation also

confirmed that there is a long-term link among the variables. All the variables are moving towards the equilibrium position and it will reach same level in the long-run. Finally, the research shows that the crude palm oil future, crude palm oil spot, mentha oil future, mentha oil spot, wheat future, wheat spot, barley future, barley spot, jeera future, and jeera spot have a long-run equilibrium relationship.

Table 2: Bivariate Cointegration Results

Hypothesized: No. of CE(s)	trace test	critical values	λ-max test	critical values
Crude Palm Oil				
None	138.378	15.494***	138.375	14.264***
At most 1	0.002	3.841	0.002	3.841
Mentha Oil				
None	36.292	15.494***	31.461	14.264***
At most 1	4.8306	3.841**	4.830	3.841**
JEERA				
None	137.085	15.494***	132.750	14.264***
At most 1	4.335	3.841**	4.335	3.841**
BARLEY				
None	65.769	15.494***	62.369	14.264***
At most 1	3.400	3.841*	3.400	3.841*
WHEAT				
None	70.596	15.494***	68.635	14.264***
At most 1	1.961	3.841	1.961	3.841

"**Note:*****, **, * indicates significance at 1% 5% and 10% level".

Table 3: Multivariate Cointegration Results

Hypothesized: No. of CE(s)	trace test	critical values	Prob.	λ-max test	critical values	Prob.
None	899.862	239.235	0.000***	441.375	64.504	0.000***
At most 1	458.486	197.370	0.000***	164.655	58.433	0.000***
At most 2	293.831	159.529	0.000***	85.740	52.362	0.000***
At most 3	208.091	125.615	0.000***	83.418	46.231	0.000***
At most 4	124.672	95.753	0.000***	62.643	40.077	0.000***
At most 5	62.028	69.818	0.178	26.441	33.876	0.294
At most 6	35.587	47.856	0.417	19.474	27.584	0.378
At most 7	16.112	29.797	0.704	9.780	21.131	0.764
At most 8	6.331	15.494	0.656	4.157	14.264	0.842
At most 9	2.174	3.841	0.140	2.174	3.841	0.140

Note: ***,indicates significance at 1% level.

In this section, the explore the direction of causality between crude palm oil future, crude palm oil spot, mentha oil future, mentha oil spot, wheat future, wheat spot, barley future, barley spot, jeera future and jeera spot. The result of

both causality and ECM tests are reported in Table 4. In short-run, the study finds unidirectional causality from mentha oil spot to mentha oil future. The results confirmed that jeera spot Granger causes jeera future and there is a unidirectional causality from barley spot to barley future. In the long-run, there is a bidirectional relationship between crude palm oil spot and crude palm oil future, mentha oil spot and mentha oil future, jeera spot and jeera future, wheat spot and wheat future.

Table 4: Causality and ECM Results

Hypothesis	F-statistic	Prob.	Direction
CPOS →CPOF	0.056	0.944	No Causality
CPOF →CPOS	0.247	0.780	
MOS →MOF	14.366	6.000	Unidirectional causality
MOF →MOS	3.571	0.028**	
JEERA-S →JEERA-F	4.591	0.010***	Unidirectional causality
JEERA-F →JEERA-S	198.086	4.008	
BARLEY-S →BARLEY-F	5.752	0.003***	Unidirectional causality
BARLEY-F →BARLEY-S	57.199	6.E-2	
WHEAT-S →WHEAT-F	14.746	4.000	No Causality
WHEAT-F →WHEAT-S	47.854	4.002	
Hypothesis	**t-statistic**	**Prob.**	**Direction**
CPOS →CPOF	-3.344	0.000***	Bidirectional causality
CPOF →CPOS	-6.023	0.000***	
MOS →MOF	-2.938	0.003***	Bidirectional causality
MOF →MOS	-9.171	0.000***	
JEERA-S →JEERA-F	-5.576	0.000***	Bidirectional causality
JEERA-F →JEERA-S	-1.701	0.088*	
BARLEY-S →BARLEY-F	-0.235	0.814	No Causality Relation
BARLEY-F →BARLEY-S	-0.712	0.475	
WHEAT-S →WHEAT-F	-2.672	0.007***	Bidirectional causality
WHEAT-F →WHEAT-S	-8.326	0.000***	

"**Note:** ***, **, * indicates significance at 1% 5% and 10% level".

5. Conclusion of the Study

Furthermore, Indian agriculture responded to all the advantages in an age of globalization and liberalization. The FMC (Forward market Commission), After a lengthy embargo and rigorous laws, the Ministry of Consumer Affairs, Food,

and Public Distribution has been closely supervising the government in compliance with the Future Contracts Act 1952.Offset trading in agricultural products has been an effective forum for a variety of commodity market players in a relatively a seven-year period of time. Government played a major role in stabilizing both farmers and customers with respect to trade in agricultural goods in order to sustain the economy by minimum subsidy rates, national insurance and public distribution programmes. However, with government actions lowering demand for agricultural commodities, the futures market's role in "price discovery and price management" has become increasingly important. The feasibility of potential markets for farm crops depends on price exploration honesty and performance, agile communication demands, unjust speculation, price risk control, supply and delivery of products, infrastructure assistance etc. This study examines empirically, using the Johannsen cointegration technique, the efficiency of five key agricultural commodities that are regularly traded on NCDEX and MCX exchanges' futures markets. As evidence of empirical proof, all 5 agricultural commodities chosen "barley, jeera, crude palm oil, mentha oil, and wheat, have a long-term balance between future and spot prices".

Across the globe, day by day increasing the importance of commodity future market. It is significant for trade transactions in particularly both future and spot market. There is more problem in uncertainty to certainty. Given this background, the study considered major trading commodities for analysis. The present study examines the relationship between crude palm oil future, crude palm oil spot, mentha oil future, mentha oil spot, wheat future, wheat spot, barley future, barley spot, jeera future and jeera spot variables covering day data period from 1-12-2010 to 31-05-2019. The study applies several time series econometric methods such as unit root tests, bivariate and multivariate cointegration tests, causality and error-correction model (ECM) test. The investigation demonstrates that the variables have a long-run connection existed. The results confirmed that jeera spot granger causes jeera future and there is a unidirectional causality from barley spot to barley future. In the long-run, there is a bidirectional connection among crude palm oil spot and crude palm oil future, mentha oil spot and mentha oil future, jeera spot and jeera future, wheat spot and wheat future.

The purpose of this research is to see how efficient these agricultural commodity futures markets in India are. A well-functioning commodities futures market can provide useful signals for spot market prices while also removing the prospect of profit as part of the trading process. The equilibrium value for market

suppliers and purchasers is reflected in this futures price. The government, as well as producers and purchasers in India, are interested in studying efficiency in agricultural commodity futures markets. An effective market is a better option for the government than intervening in the market through policies. It gives processors and marketers with a solid projection of future spot pricing, allowing them to successfully manage market risks. This research can help them to get a better idea of what's going on current state of the Indian agricultural commodity futures and cash markets (H. Holly Wang and Bingfan Ke). In India, a variety of agricultural commodities are traded on many national and regional commodity exchanges, but NCDEX is the major agricultural commodity exchange. For better and more effective price discovery, an agricultural economy needs a well-functioning and for agricultural commodities, there is a liquid futures market. Despite the futures market's major role in price discovery, it can be concluded based on these findings.Furthermore, the data illustrate the amount to which "spot and futures markets contribute to price discovery" for all of the commodities studied.

For all of the commodities analyzed, the results of the stationarity and cointegration tests reveal that spot and futures prices are integrated and cointegrated at a 5% level of significance. It signifies that in its current state, the Indian commodities market is efficient, and that spot and futures prices have a long-term association.These findings also provide new insights into "price discovery" or the lead-lag association among spot and futures prices, based on relatively recent data.The findings of this study reveal that for the vast majority of commodities analysed, the futures market had a greater influence on price discovery.The current study's findings show that the futures market is more influential in the price discovery process.As a result, governments should stimulate the creation of futures markets for more agricultural commodities by enacting rules and regulations that favour the growth of futures markets (Sarveshwar Kumar Inani, 2017).India's agriculture is adapting to the era of globalization and liberalizations in order to reap the benefits. In a relatively short period of time, probably a couple of years, future trading in agricultural commodities has become an essential platform for several stakeholders in the commodity markets. The government has played a crucial role in market stabilisation in agricultural commodity markets, safeguarding both farmers and consumers through minimum support prices, market guarantee schemes, and public distribution systems. The importance of the futures market in price discovery and price management has become increasingly important as government engagement in the agricultural commodities market declines.The

viability of agricultural commodity futures markets is dependent on their transparency and efficiency of operation for price discovery, price risk management, flexible contact specification, controlling unfair speculation, commodity delivery system and coverage, infrastructural support, and other aspects.

6. Policy Implications

1. SEBI, commodities exchanges, farmers, producers, makers, brokers, and other middlemen are all interested in investigating the effectiveness of commodity futures. Based on actual evidence, SEBI and exchanges can implement improved regulatory systems and take other steps to guarantee that farmers and other beneficiaries participate actively. Setting up sophisticated infrastructure, such as good storage or warehousing facilities, standardization of norms, and so on, may entice a large number of companies to participate. (Lakshmi VDMV, 2017).

2. The price discovery association has an impact on market efficiency, policy formulation, risk management and trading tactics. The agricultural commodity futures contracts have made a substantial contribution to market information efficiency. As a result, policymakers and regulators should focus on measures that make the futures market more liquid and efficient while minimizing the impact of speculative trading.

3. Overall, the findings can assist market participants, manufacturers, dealers, wholesalers, lawmakers, regulators, and researchers in determining the efficiency of agricultural commodity futures contracts. The findings would help market participants by allowing them to develop effective trading methods that would eventually lead to arbitrage and hedging are two methods for reducing financial risk.

7. Limitations of the study

1. The study's first limitation is the small sample size of only five commodities. It's because we've just looked at the top five most liquid commodities. Because of data limitations, only the Indian agricultural commodity market was considered.

2. Daily closing prices, both spot and futures, were used in the study, however intra-day data might be used to obtain more precise results. The study focused on only five agricultural commodities, while NCDEX trades a wide range of agricultural goods.

8. Scope for Further Research

1. Analyzing the factors that influence agricultural commodity price discovery in various nations could be a valuable study topic in the near future.

2. Rainfall, seasons, and government assistance in the form of subsidies and support prices are all important factors in agricultural commodities.

3. It's also possible to do similar study and evaluate the results on other national commodities markets including the MCX, NMCE, ICEX, and UCEA variety of natural elements, such as harvest-dependent seasonal cycles, monsoons, depressions, and weather-related events, which is another area that requires further investigation.

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How does Investment in Green Stocks Compare with Traditional Stocks on Indian Equity Market : An Empirical Investigation

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Abstract : *The present study makes an attempt to examine the performance of green stocks represented by ESG index against traditional stocks in Indian Stock Market for the period April 1, 2017-March 31, 2023. Whereas ESG Nifty 100 Index is a proxy for green stocks, for traditional investing we consider broader index, NSE Nifty 500. The paper initially analysed the risk-return profile of the two indices followed by co-integration analysis to understand the association between the two. The result of the study fail to detect any long run co-movement amongst the two indices with results being consistent for three different co-integration techniques. Bi-directional causality was however visible. The risk-return assessment revealed that the conventional index ; NSE 500 index was giving similar return as that of ESG 100 index but with lower risk thereby showing that ESG index has not delivered as expected inspite of index including Companies scoring high on ESG parameters.*

Keywords : ESG Nifty, Nifty 500, Co-integration, Causality, Risk-Return Profile.

1. Introduction

The choice of selection of a stock of a Company is a function of a number of factors and one such factor which has gained importance amongst the investing community during recent past is the company's adherence to principles of environment, society and governance orsimply, the ESG principles. Again, ESG which has a synonym as 'sustainability' is very closely related to some other terms often used in research studies like responsible investing, green investing, thematic investing, socially responsible investing and so on. However, the million

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dollar question which arises in an investor's mind is; If a Company focuses on ESG principles and also makes substantive investment thereof, then will such an investment pay off as compared to traditional investing or in in simple words; Does it really pay to be sustainable?

Investors today often talk of 'ESG alpha' an alpha built up after considering ESG Principles as against standard 'alpha' which is independent of such 'restrictions'. When we speak of 'restrictions' under ESG, these are usually defined in exclusions model of ESG and aims at restricting investments in companies involved in arms, tobacco, human rights, climate change violations, gambling, adult content and private prisons. On the other hand, instead of restricting investments, investing in firms which provide solutions to environmental problems is another ESG model called 'Impact Investment Model'. The model became popular after the release of Sustainability Accounting Standards in 2018 and many indices in US and other parts of the worldnow have started following the 'Impact Investment Model' (Ouchen, 2022).

On of the popular research dimensions with respect to ESG investing has been to undertake a comparative assessment ofESG performancewith conventional stocks or indices and here the broad conclusion is that ESG is not a miracle tablet which can be swallowed to achieve both targeted return and risk. Thus as the research has proved, even the best of the ESG scores, do not translate to best of the returns (Kanamura, 2022 ; Broadstock et al., 2020; Brunet, 2019; Giese and Lee, 2019).A study by Cornell, (2021) found that investments in ESG assets may be somewhat beneficial for corporates as they are able to raise capital at lower costs associated with green technologies, however for an investor this benefit to the Company actually gets translatedto lower expected returns therefore adversely impacting the risk-adjusted performance. Similarly, a study carried out byAtz, et al., (2023) analysed 1100 research papers on ESG investing published between 2015-2020 and their findings revealed that ESG investing was not giving a 'return' which was superior to traditional stock investing. Their own viewpoint after analysing these research studieswas that not only classification of ESG investing was still ambiguous, but both investors and researchers need to explore beyond the financial angle of ESG with respect to how sustainable strategies could be meaningful differentiators.

Going ahead, empirical research on ESG has actually gained momentum during the last few yearsand researchers are trying to understand the drivers of ESG and how the same can be integrated and adopted in business so that benefit of the same is accrued to all the stake holders viz, Company, Public, Society,

Government and Investors. Amongst the dimensions explored , the most popular area is making a comparative analysis with existing conventional indices with respect to 'return' and 'volatility of returns'. We now discuss some of the existing research studies on ESG investing along with their empirical findings.

Moosawi and Segerhammar, (2022) applied two models; AR(1)-GARCH(p,q) model and a Diebold-Yilmaz spillover approaches to understand the return and volatility spillover between ESG Indices and traditional benchmark indices including most financial assets. The results revealed that a country's ESG specific index was more integrated with another country's ESG index rather than other financial assets. However they also noticed that there was an evidence of both 'return' and 'volatility' transmission from country specific index to all other financial assets. On the other hand, an attempt was made by Cornell (2021) in his study to understand the theoretical basis for investing in ESG both by corporates and investors. He concluded that investors going with a sole purpose of 'returns' are likely to be dissatisfied with ESG investments, however if return per se was not a big issue but their preference for ESG was in providing benefit to society, company and environment, then the investoraccording to their analysis appeared to be satisfied. He further argued that even if one assumes that a 'risk premium' is attached to an ESG stock, then Companies with high ESG ratings are usually assumed as ones which are exposed to lower risk which simply means that such companies actually provide lower and not higher expected 'returns' to investors. In yet another study,Auer and Schuhmacher (2016) tried to compare ESG investments made in US, Asia-Pacific region and Europe and found that ESG selected stocks did not fair better than any kind of passive investing in stocks. In Europe, the study also found that investors did tend to pay a price for their socially responsible investments while in Asia Pacific or US markets, ESG investment did provide 'returns' compatible with broader markets.

On the other hand, there hashowever been different viewpoint regarding 'volatility of returns' pertaining to ESG investing. A study by Ashwin Kumar et al., (2016) applying traditional ratio analysis tools; Sharpe and Treynor on 157 firms listed on Dow Jones Sustainability index found that ESG brings in lower 'volatility' which immediately gets translated to higher risk adjusted returns. Another group of researchers could find reduction in 'return volatility' but only for a particular sustainability index and not for other sustainability indices e.g. a study carried out by Hoang, et al., (2021) on 344 listed firms on Eurostoxx index during 2019-20 where they divided the firms on the basis of high and low ESC Performance with rating being provided by two sources: MSCI ESG rating

and Sustainalytics ESG Risk Rating. The results showed that firms which received high ESG rating from MSCI had a lower 'volatility' performance spread, but the same was not the case with Sustainalytics ESG Risk Rating where there was no difference in volatility spread for the two type of firms. Furthermore, MSCI ESG rating clearly showed that firms with high ESG performance were able to resist better to all types of shocks viz. market capitalization shocks, news impact, stock beta shocks and so on.

Further, considering that the available dataon ESG has its limitation of being recent origin, new models are being experimented and applied on this evolving research area thereby offeringtremendous research potential. Furthermore, investment figures have clearly revealed that inspite of not having any special advantage in financial terms, investor's interest in this promising area has not come down but on the contrary has grown exponentially over the last few years e.g. US Markets showeda rise in investment flows into ESG funds from 5 billion US $ in 2018 to more than 50 billion US $ in 2020, a rise of ten times in two year time period (Morningstar, 2021).

Also, being a research interest of recent origin, a lot of the studies on ESG investing have also focused on ESG performance during the crisis periods especially covering extensively the two major crisis; Global Financial Crisis of 2008 and Covid Pandemic of 2019. The results obtained fromthese studies have been somewhat mixed ; whereas researchers like Das et al. (2018) could see resilience in ESG investing during 2008 Global Financial Crisis, others like Folger-Laronde, et al., (2022) found the opposite or almost negligible resilience during the Covid 19 period. Most studies have actually found that ESG investing provides no extra gain to investors in terms of 'financial return' nor does this type of investment works as a 'hedge' or a 'safe haven' like gold during crisis periods and hence have requested State to provide some incentive for this all important theme to flourish. Thus in the absence of any suitable incentive, investors have now started viewing investing in ESG stocks as a disincentive to sustainability (Folger-Laronde, et al., 2022).

On the other hand, if we keep aside the 'return' aspect, then some researchers have found that during the crisis periods, ESG funds do provide relief in terms of slightly lower 'volatility' than the conventional indices. A study by Mousa, et al., (2021) assessed pre and post Covid 19 volatility scenario on two stock indices; Arab's S&P Composite index and S&P ESG Arab Index by applying GARCH and NARDL approaches. The findings revealed that during pre-Covid period, volatilities of both the indices were equally affected however post-COVID

period saw substantial lower magnitude of volatility in the ESG index as compared to conventional index with shocks in ESG index dying out quickly as compared to conventional index. On the other hand, all the researchers do not agree that the ESG indices are more resilient during crisis and this was seen in a study by Ouchen (2022) where the researcher considered a special ESG index "MSCI USA ESG Select", an index of companies with high ESG scores across sectors and conventional index "S&P 500.", the objective being to compare the turbulence of both indices for which they applied "GARCH and EGARCH" models and their single regime switch modifications viz. Markov-switching "GARCH and EGARCH". The results showed that ESG index was non-linear however the index showed signs of lower 'volatility'only after a rise and not after a fall in 'returns'. Furthermore, ESG index was lessresilient to crisis situations than conventional portfolio. Then almost similar results were obtained by Folger-Laronde et al., (2022) where they tried to explain in terms of 'financial returns', the sustainability performance of ETFs during the Covid 19 pandemic and found that it was no way less resilient to market downturn during the crisis period. Their study thus identified two challenges with respect to measurement of sustainability performance and these include, first identifying the right indicators for responsiveness during a crisis, and second, the transparency in ESG rating methodology. Yet another study focusing on Covid-19 pandemic was carried out by Demers et al., (2021) where they showed that ESG did not provide any resilience during COVID-19 pandemic, and therefore questioned the generalizability of CSR being resilient during Global Financial Crisis be extended to ESG in times of Covid-19 as done by some researchers. Further, their research clearly showed that investors who invested on the basis of higher ESG scores during the Covid-19 did not get superior returns.

Questions have also been raised by various stakeholders regarding methodology adopted by ESG indices and also transparency of their operations (Chatterji, et al. 2009). Kanamura (2022) in his study showed that environmental values were not adequately demonstrated by ESG indexes, while social and governance valueswere reflected to some extent. They also found that over a period of time the performance of ESG indices tends to converge to conventional indices. Similarly, La Torre et al., (2020) revealed that ESC Index's contribution in explaining stock return was very limited with resultsof individual companies varying considerably, the possible reasons according to them could be other factors influencing the stocks 'return' or that the relation between could be nonlinear. However after pooling, the researchers could find "ESG index" was impacting 'stock returns' in a somewhat positive manner. Then Ashwin Kumar

et al., (2016) found that different sector industries reacted differently to ESG and therefore clubbing together of all industries into single unit by ESG funds must be avoided.

Some researchers and investors however do believe that companies incorporating sustainability in their operations shall surely give superior performance in 'returns' in the long run even if the same may not be visible as of today. A few researchers have also tried to link other financial variables to ESG and one such study was carried out by Gökmenoðlu and Menteþ (2023) where they tried to establish a relation between crude, natural gas, and gold with two stock indices; one being conventional popular index; Dow Jones Industrial Average and second the sustainability index; Dow Jones Sustainability World Index. The cointegration results from the two indices differed considerably with respect to speed of adjustment towards equilibrium which was faster @8.4% for DJIA while it was 3.3% for sustainability index. Further the long run impact of crude on both indices was negative while for gold this was positive. On the other hand, natural gas impact was seen only on one index i.e. sustainability index. Causality was seen moving from crude to conventional DJIA index unidirectionally while this was bidirectional with respect to sustainability index.

Sustainability Index was also considered using GARCH approach in a study by Sariannidis et al., (2010) where they found not much difference between a broader index and sustainability index in terms of crude's impact on these two market indices . A study by Nakajimaet al., (2021) showed evidence of return spillover from crude to US and European Market ESG indices. Again, Maraqa and Bein, (2020) investigated linkages between traditional stock indices of crude importing and crude exporting countries, two sustainability stock indices (Dow Jones sustainability World Index and Dow Jones Sustainability Europe index) and crude oil. The results showed that sustainability indices had higher interaction with crude importing countries, while crude exporting ones had higher correlation with simple crude return which became even more stronger after global financial crisis. Significant 'volatility' transmission was also seen amongst all the three variables.

Moving further, the focus of the present study is on ESG Nifty Index of Indiawhich has been developed on lines of other existing sustainability indices across the world. The ESG Nifty Index excludes companies involved in the business of alcohol, tobacco, controversial weapons and gambling. It also excludes companies which had any ESG controversy in the past and weight of each Company in the index, is based upon its market cap and ESG Scores.

Furthermore, compared to some of the advanced economies where ESG concept has been for a while, ESG concept in relatively new in India with the country's first ESG Index being launched in April, 2011 while its counterpart, Dow Jones Sustainability World Index was launched on 8th Sept. 1999, 12 years before it was launched in India Thus, for India the concept being only ten years old, needs an extra boost which can come mainly from institutional investorsand stock market watchdog, SEBI.

Thus, inspite of being a recent origin, the studyhas tried to buildby including two stock indices viz. ESG Nifty Index of India and S&P Nifty 500 for their co-integrated movement in the long run. The data for the present study collected is daily closing prices of two stock indices; ESG Nifty Index of India and S&P Nifty 500 for the six period April 1, 2017-March 31, 2023.

The rest of the paper is structured as follows: Section 2 explains the methodology employed, Section 3 provides empirical results and discussion on these results, Section 4 provides conclusion and study implications, followed by two more sections, Section 5 for references followed by Section 6, Appendices.

2. Methodology

The methodology employed under the present study includes developing two models; a co-integration and a causality model. For testing long run co-integration between S&P Nifty 500 and ESG Nifty Index of India we have applied three co-integration techniques; Phillips-Ouliaris (1990), Engle Granger (1987) and Johansen (1998) models; whereas the first two models Phillips-Ouliaris (1990) and Engle Granger (1987) are commonly employed for two variable co-integration, the third model Johansen (1998) technique gives results of co-integration which are considered highly reliable under most situations. For testing causality we have applied traditional VAR based Granger Causality (1969) Procedure. All the models developed have been pretested by applying Model Diagnostics of Serial Correlation, Heteroscedasticity and Stationarity of Variables.

2.1. Developing a Co-integration Model

One of the main objectives of our study is to determine whether, the two indices viz. NSE Nifty 500 or the conventional index and ESG Nifty Index exhibit a long run stable co-movement. Many financial variables which show inconsistent behaviour in the short run, do end up with a stable and more predictable co-movement in the long run and whether the same is also true for our variables has been tested in our study by applying three different co-integration

techniques. All the three techniques employed for co-integration analysis have some distinct characteristics and hence the conclusions drawn after analysing these techniques would help us in arriving a correct assessment of the co-movement of the variables. Whereas Johansen Model (1998) is a popular technique which employs an MLE Procedure for parameter estimation, Engle Granger (1987) and Phillips-Ouliaris (1990) are two step OLS procedures and carry out the co-integration test through residuals.

2.1.1. Engle Granger Co-integration Method (1987)

Engle Granger is a two-step co-integration test procedure is also popularly called the test of residuals. The test carries out co-integration assessmentby first generating residuals from eq. (i) and then applying unit root ADF test onthese residuals as given under eq. (ii). Null Hypothesis (Ho): No Co-integration or Non Stationarity of Residuals.

$$y_t = \beta_1 + \beta_2 x_t + u_t \quad \text{.....(i)}$$

$$\Delta u_t = \gamma_2 u_{t-1} + \sum_{i=1}^{m} y_{3,i} \Delta u_{t-1} + e_t \quad \text{.....(ii)}$$

2.1.2. Phillips-Ouliaris Co-integration Model (1990)

Phillips-Ouliaris is also a two-step test procedure, and generates residuals in a similar manner as Engle Granger Method, however the generated residuals follow unaugmented Dickey Fuller regression as shown under eq. (iii). Null Hypothesis under Phillips-Ouliaris shall again be Non-Stationarity of Residuals.

$$\Delta Y_{it} = \mu + Y_{i(t-k)} \quad \text{.....(iii)}$$

From eq. (iii), long run one sided residual variance is computed by applying the

$$\text{formula} = \frac{\text{Residual Variance}}{(1 - \text{sum of lagged diff residual coefficents})^2}$$

Both residual variance and long run one sided residual variance as computed above, are used to obtain 'z' statisticsresults to test for co-integration.

2.1.3. Johansen Co-integration Model (1998)

The third co-integration model applied in our study is Johansen (1998), a VAR based Co-integration test which may be stated as $\Delta Y_{i,t} = \mu + \delta Y_{i,(t-k)} + \sum_{L=1}^{k-1} \pi_{i,L} \Delta Y_{t-L}$,

where 'i' is the i^{th} variable, 'k' is the max no. of lags following lag SC structure which for long run relation remains same for all the independent variables. On the other hand, for short run relation, for each independent variable these can range from 1 to k-1, all being included in the model. The model develops 'δ' where 'δ' represents a matrix of coefficients signifying long term relation amongst the variables and is the fundamental matrix of the co-integration.

$$\text{i.e., } '\delta' = \begin{pmatrix} T_{11i} & T_{12i} & T_{1ni} \\ T_{11i} & \dots & \vdots \\ T_{m1i} & \dots & T_{n,mi} \end{pmatrix}$$

If matrix does not have full rank then the matrix can be factorized as $-\delta = \alpha\beta'$, where 'β' contains the cointegrating vectors and 'α' signifies the adjustment parameters. For co-integration we focus on the rank of the matrix 'δ' as all the vectors need not be co-integrated. If there is no co-integration, Matrix has a rank '0', if only one cointegration exists then rank is '1' and so on. Further, if co-integration is detected we proceed towards computation of characteristic roots and eigen values. The different variants we consider in our study include Model I : No Deterministic trend but with intercept, Model II : Linear Deterministic trend but no intercept and Model III : Linear Deterministic trend but with intercept.

2.2. Developing a Causality Model

We develop a Causality (Granger 1969) Model (eq.iv and v), where model shown as eq. (iv) is restricted while the same given as eq.(v) is unrestricted . Wecompute residual sum of the squares of two models and check for causality using the following 'F' formula

$$ESG_t = \theta_1 + \sum_{i=1}^{n} \pi_{i,L}\beta_i ESG_{t-1} + u_{1t} \quad \text{.....(iv)}$$

$$ESG_t = \rho_1 + \sum_{j=1}^{n} \lambda_j ESG_{t-1} + \sum_{i=1}^{n} \pi_j NSE500_{t-1} + u_{2t} \quad \text{.....(v)}$$

$$F_{'Wald'} = \frac{(RSS_{res} - RSS_{unres})/m}{RSS_{unres}/n-m}, \text{ If } F_{Wald} > F_{5\%\,table} \text{ we reject the Null Hypothesis}$$

(Where RSS: Residual Sum of the Squares, 'm' is the number of parameters to be estimated, 'n' being no. of observations, no. of lags are decided by SC criteria)

The hypothesis under causality is developed as under **:**

H_{01} : (i=1,2,3…..n) Causality is not flowing from to ESG.

H_{A1} : (i=1,2,3…..n) Causality is flowing from to ESG

3. Results of the Study

Under this section we discuss the study results, the tabular format of the same is given in Appendices. Appendix I shows the statistical data description of two Indices namely, NSE Nifty 500 Index and Nifty ESG 100 Index over a period of six-years starting from April 1, 2017, to March 31, 2023. The data based on daily closing prices of these two variables have been collected from the www.nseindia.com and these have been transformed to daily spot returns by applying the formula : $\ln\left(\frac{P_t}{P_{t-1}}\right)$ where P_t is the closing price of the index at day 't' and P_{t-1} is the closing price of the same index at day 't-1'. The computation of returns from closing prices facilitates the comparison of the two indices across different parameters as shown in the Table 1. This table provides information about the four moments over the study period on yearly and aggregate basis, i.e., Mean, Standard Deviation, Skewness and Kurtosis. It also provides additional information on Coefficient of Variation (C.V) and Normality test for the two variables.

The analysis reveals that the mean return for the combined study period is almost same for both the indices i.e., 0.0004, however the flagship broader index; Nifty 500 gives higher return for two years 2017-18 and 2018-19 as compared to its counterpart; Nifty ESG 100 index. It is interesting to note that 2017-18 was year of negative returns in stock market and the likely reason being the impact of currency demonetisation which was declared by the Indian government on Nov. 8, 2016. Again, the stock returns were negative and were in line with most global stock indices during 2020-21 due to the impact of Covid-19 pandemic on markets.

ESG Index for India has performed better in terms of average return than Nifty 500 index for four of the six years for which the study was carried out viz. 2019-20, 2020-21, 2021-22 and 2022-23. Further, even though ESG includes companies which have thrust on environment, social or corporate governance issues, the same is not reflected in terms of risk as the Standard Deviation for daily returns for the entire study period is again slightly higher than Nifty 500 Index. This reveals that investors in ESG Index have to contend with a risk element which

is no different from Nifty 500 stock index while on the contrary NSE 500 index is slightly lower in terms of risk than ESG 100 index for the six year period of study. The picture is almost the same if we consider this on yearly basis and NSE 500 index has lower standard deviation as compared to ESG indexfor four of the six years included in the study.

If we adjust return for risk, we obtain a level picture i.e. out of six years, three years have CV of NSE 500 as lower while for rest, it is ESG Index with lower CV. CV for the aggregate period 2017-23 is lower for ESG 100, however the difference is not substantial.Thus,the broad conclusion drawn is that the ESG investing has failed to create much enthusiasm amongst Indian investors as compared to some of the other advanced countries where investors are willing to even sacrifice some of the returns for ESG investing whichusually gets reflected in terms of reduction in risk in these indices.

The study also carried out distribution characteristics for the two indices and it was seen that both the distributions were negatively skewed for all the years except for the year 2019-20. Also both distributions were not normally distributed which was confirmed by JB Normality test : JB = $\frac{n}{6}\left\{S^2 + \frac{1}{4}(K-3)^2\right\}$; 'n' being the number of observations, 'S' is the Skewness and 'K' Kurtosis of the distribution.

The next set of results pertain to long run co-integration between NSE 500 and ESG 100 indices for which we had applied three different models viz. Johansen Co-integration Model (1998), Phillips-Ouliaris (1990) and Engle Granger (1987). For Johansen Co-integration Model (1998), the study has used three variants and the results of all the three variants is given in Appendix II. All the three variants viz.Model I : No deterministic trend but with intercept, Model II : Linear deterministic trend but no intercept and Model III : Linear deterministic trend with intercept accept the Null of No Cointegration as the 'p' values of both trace and eigen value test statistics exceeds 0.05 in all the three cases. Similar results of No Cointegration is also observed from other two co-integration tests; Phillips-Ouliaris (1990) and Engle Granger (1987); the results of the same are shown in Appendix III. Appendix III gives information on two different statistics; 'tau' statistics and 'Z' Statistics and their corresponding probabilities. The results however reveal no co-integration between Nifty 500 and Nifty ESG indices .

After having seen that no long run co-movement exists amongst these two indices, we decided to check for short run results for which we carried out

Granger Causality (1969) tests , the results of the same are given as Appendix IV. The results reveal that the causality is bi-directional and both NSE 500 and ESG Index are impacting each other in the short run.

In our final results section, we present the result of our Model Diagnostics (Appendix V) where we have carried out three type of tests; stationarity, serial correlation and heteroscedasticity. For stationarity we have applied unit root ADF while for Serial Correlation and heteroscedasticity, the tests employed are 'Q' Statistics and BPG Heteroscedasticity test. The results of Diagnostics are given in Appendix V and these results reveal that all model diagnostics are fully satisfied.

4. Conclusion and Implications

To conclude, the present study made an attempt to examine the performance of investment in green stocks as compared to the traditional stocks in the Indian financial markets. To achieve this objective, a statistical analysis of the Nifty ESG 100 index and S & P Nifty 500 index was carried out, the purpose being to identify the interlinkages and causality between the two indices.

The study first examined the risk-return profile of the two indices, and later developed three co-integration models; Phillips-Ouliaris (1990), Engle Granger (1987) and Johansen (1998) to understand their characteristics and dynamic movements of their interlinkages. It was seen that both NSE 500 and ESG indices were giving similar return, however NSE 500was doing so with lower risk thereby showing that ESG index has failed to deliver inspite of index including Companies which scored high on ESG grounds.

With respect to long run co-integration, the study however failed to identify the same between the two indices. On the other hand, short run bi-directional causality was seen whereby the two indices were seen impacting each other. No long run relation amongst the indices gives a clear signal that investors can keep both the assets in their portfolio if their time horizon is long run, however investors should also not expect miracles with this portfolio as risk profile of both assets is quite similar. On the other hand, the results of short run causality is bidirectional which implies that one variable could be used to obtain information on another. Thus all the results combined together simply reveal that market is India is still not mature enough to consider ESG as a separate category and hence requires the necessary boost which has to come mainly from policy makers duly supported by institutional investors and retail to some extend.

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6. Appendices

Appendix I : Statistical Description of Variables: NSE Nifty 500 Index and Nifty ESG 100 Index

	NIFTY 500 INDEX CLOSE PRICE							Nifty ESG 100 INDEX CLOSE PRICE						
	2017-18	*2018-19*	*2019-20*	*2020-21*	*2021-22*	*2022-23*	*Combined 2017-23*	*2017-18*	*2018-19*	*2019-20*	*2020-21*	*2021-22*	*2022-23*	*Combined 2017-23*
Mean	-0.0001	0.0008	0.0022	-0.0013	0.0003	0.0004	0.0004	-0.0003	0.0007	0.0023	-0.0011	0.0006	0.0005	0.0004
Std. Dev.	0.0093	0.01010	0.0130	0.0169	0.0081	0.0067	0.0112	0.0095	0.0098	0.0134	0.0170	0.0081	0.0064	0.0113
(C.V.) = σ /μ	-92.6	12.625	5.909	-12.9166	24.782	15.238	27.873	-28.757	13.568	5.9362	-15.0860	13.4105	13.4841	25.9563
Skewness	-0.1881	-1.2299	-0.0086	-2.6953	-0.1794	-0.6155	-1.7747	-0.1416	-1.1132	0.3858	-2.4099	-0.2895	-0.4612	-1.4706
Kurtosis	3.5948	7.2439	7.8954	23.8141	3.4832	4.0245	24.7138	3.3885	6.9948	10.1149	22.4320	3.4443	3.5867	24.4213
Jarque-Bera	5.1392	248.6355	248.6411	4757.693	3.7430	26.29123	29993.16	2.3978	216.1288	531.3847	4125.239	5.5029	12.2478	28966.80
JB(Prob)	0.0766	0.0000	0.0000	0.0000	0.1539	0.000002	0.000000	0.3015	0.0000	0.0000	0.0000	0.0638	0.0022	0.0000
Obser.	249	248	249	247	248	246	1487	249	248	249	247	248	246	1487

Appendix II: Co-integration results using Johansen Methodology

Null Hypothesis	Model I : *No Deterministic trend but with intercept*		Model II *: Linear Deterministic trend but no intercept*		Model III : *Linear Deterministic trend with intercept*	
	Prob(Trace)	**Prob (Max Eigen)**	**Prob(Trace)**	**Prob (Max Eigen)**	**Prob(Trace)**	**Prob (Max Eigen)**
No Cointegration exists	0.2521	0.3144	0.1332	0.2922	0.7413	0.6877
One cointegration	0.3630	0.3630	0.0577	0.0577	0.7979	0.7979

Appendix III : Co-integration results using Phillips-Ouliaris and Engle Granger Methods

	Engle-Granger Cointegration Test				**Phillips Ouliaris Cointegration Test**			
Dependent	tau-Statistics	Prob.	Z-Statistics	Prob.	tau-Statistics	Prob.	Z-Statistics	Prob.
ESG Index	0.216195	0.9994	0.651209	0.9995	0.256452	0.9995	0.762666	0.9996
Nifty 500	0.354714	0.9997	0.957265	0.9997	0.277833	0.9997	0.768717	0.9996

Appendix IV : Causality Results

Null Hypothesis	**Observations**	**'F'(Computed)**	**Probability**	**Result**
ESG Index does not cause Nifty 500	1547	3.84888	0.0215	Null Rejected; ESG Index→ Nifty 500
Nifty 500 does not cause ESG Index	1547	3.62037	0.0270	Null Rejected; Nifty 500 →ESG Index

Note : SC Criteria used for lag determination , No. of lags=2

Appendix V: Model Diagnostics

# **Stationarity test :** ADF Unit root test		**ESG Nifty Index**		**NSE Nifty 500 Index**	
Null : Non Stationary/Presence of Unit root		***Level***	***I^st Diff***	***Level***	***I^st Diff***
1. Coefficient 'p' values	1	0.2966	<0.01	0.2078	<0.01
2. Table result Null (Accepted/Rejected)	2	-4.1328 (Accepted)	-39.3744 (Rejected)	-4.2996 (Accepted)	-38.3753 (Rejected)
	Critical Value at 5% *for* ADF Unit Root *-4.8598*				
***BPG Heteroscedasticity test**					
1. Observed R^2	1	0.551132			
2. Probability χ^2	2	0.4579			
**** Serial Correlation: 'Q' Statistics**					
Lag 1		'Q' Statistics 1.3625 'p' value 0.243			
Lag 5		'Q' Statistics 3.1979 'p' value 0.525			

Note 1.$^{\#}\Delta Y_{V,t} = \beta_{1,v} + (\beta_{2,v} - 1) Y_{v,\,t-1} + \sum_{i=1}^{m} \beta_{3i,v} \Delta Y_{v,t-i} + u_{v,t}$; *(v=1,2) 'v' denote variable; NSE 500 or ESG 100,* $Y_{v,\,t-1}$ *reveals the stationarity of variable 'v' and has* $(\beta_{2,v} - 1)$*as its coefficient,* $u_{v,t}$ *is the random error term . Null: Non Stationary time series.*

2 * BPG Heteroscedasticity test: We run the regression, obtain the residuals and then develop an auxiliary equation. $u_t^2 = \partial_1 + \partial_2 X_{2t} + \partial_3 X_{3t} + \ldots + \partial_k X_{kt}, \ldots$; Null being Homoscedasticity and B.P.G test follows Chi Square Distribution i.e. $n.R^2_{aux} \sim \chi^2_{m-1}$

3. ** Serial correlation , second diagnostic and has been tested by using 'Q' Statistics where we define; $Q_m = n.\sum_{i=1}^{m} \rho_{u_{i,t}}^2$; '$Q_m$' ~$\chi^2$distribution with 'm' d_f (no. of lags). Null(H_0) for the same being $\rho_{u_{1t}} = \rho_{u_{2t}} = \ldots \rho_{u_{mt}} = 0$ and alternative hypothesis being some of the $\rho_{u_{it}}$ are not equal to 0. We further define $\rho_{u_{1t}} = \frac{cov\,(u_t, u_{t-1})}{\sqrt{var_{(u_t-1)}\, var_{(u_t)}}}$, and the study provides information about serial correlation at lag 1 and lag 5

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Triggers and Barriers of Rural Women Entrepreneurs : An Empirical Study

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Abstract : *Rural women entrepreneurship has been rising rapidly. More prominent businesses can be seen. Women entrepreneurs in rural area have taken up business activities on the basis of many driving forces. As Indian women in no way inferior to men in all walk of life and they are as good as men in entrepreneurial skills, it is imperative to exploit the potential of Indian women. Women's participation in trade, industry and commerce requires entrepreneurship. Studies have been done to understand the women entrepreneurs in general. Rural entrepreneurship is relatively under researched. The present study is an attempt to understand the triggers and barriers to women entrepreneurs in rural areas in particular. A sample of 280 respondents-in 10 villages of Hassan and Mysore District was collected through interview schedule. Factor analysis and ANOVA was applied to test the hypothesis. The results show that there is no difference in the opinion of respondents about triggers where as there is no common opinion, i.e. no common problems to all the types of businesses. Every type of enterprise has its own problems. We suggest for government financial assistance to rural women and educational support. We also recommend enhancing the women outlook by improving a positive attitude.*

Keywords : Women Entrepreneurs, Rural, Triggers, Barriers, Attitude.

INTRODUCTION

About 50 percent of total population constitutes women, but women workers constitute only 16 percent, 80 percent remain engaged in unorganized sectors. The entrepreneurial world is still a male dominated one. According to the United Nations Human Development Report (2002) in India women work 457 minutes per day and men 391. The type of activities men and women do explains why women work more time than men but their estimated income is lower. Women

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spend 65% of their time in non-market activities, and men spend 92% of their time in market activities. However, the number of women entrepreneurs is rising rapidly and many are creating Substantial businesses Women in advanced nations are recognized and are more prominent in the business field. But the Indian women entrepreneurs are facing some major constraints. Women are expected to perform the domestic and reproductive tasks like cooking, cleaning, collection of fuel wood and water, care for the animals, child bearing and rearing. This type of mentality imposes restrictions on their mobility and on their contacts with the outside world, restrains their access to jobs and their social and political participation in the society. They are dependent on men, economically, socially and politically, and have limited direct independent access to resources.

'Women Entrepreneur' is a person who accepts challenging role to meet her personal needs and become economically self-sufficient. Entrepreneurship among rural women is a recent phenomenon.

Rural Women entrepreneurs may be defined as a woman or group of women, who initiate, organize and run a business enterprise in villages or sub-urban areas. According to Schumpeter women who innovate, imitate or adopt a business activity are called "women entrepreneurs".

Need and Importance of the Study

Pandit Jawaharlal Nehru, realizing the pathetic situation of women, stated, ¯in order to awaken people, it is the woman who has to be awakened. Once she is on the move, the household moves, the village moves, the country moves, and thus, we build the India of tomorrow. As Indian women in no way inferior to men in all walk of life and they are as good as men in entrepreneurial skills, it is imperative to exploit the potential of Indian women. Women's participation in trade, industry and commerce requires entrepreneurship. It is observed that entrepreneurial traits are still poor mainly because of the problems associated with their traditional role in the family. In rural areas, women are helping men in agriculture and agri-business industries. With little training and support they can prove better results in the business activities. Setting up of small business units generates income to the family and it contributes to the national economy through commercial activities and employment generation. Women in rural area engaged in businesses like bakery, dairy, poultry, milk-parlor, beauty parlor, general stores and small spare parts, flower vending etc. Many of the traditional occupations open to women are mainly based on caste, creed and the nature of self-employment is based on the standard of living. At present, women are

generating employment for themselves in unorganized sectors and other category of women provides employment for others.

Contribution of the Study

Like any other investigations that lead to policy initiatives, the present study explores the major motivating factors and barriers to rural women to become an entrepreneur in Indian context. Understanding the typical problems of the rural women folk as an entrepreneur paves the way for nurturing the occupation through needful support and required policy from the government. Removing the barriers to the success of rural women entrepreneurs contribute to a greater extent to align themselves in the right direction. Moreover, rural entrepreneurship is relatively less researched. This study contributes to the literature on this area in the Indian context.

Statement of the Problem

Many research studies prove that women empowerment and financial self sufficiency is achieved through entrepreneurial activities. Many NGOs have been training women in this direction. Plenty of women have successful in the field of business and achieved fame globally. Generally, women in the urban areas have been engaging in trade and business activities, at least, in small scale. As the concept of urbanization of rural is the order of the day, government focusing on development infrastructure at the gross route level, and also, encouraging rural women to set up business or self-employment activities. Women in the rural areas are gradually coming forward to start up enterprises through which enhancing their level of socio-economic status. Because of its success in many cases, rural entrepreneurship has been gaining popularity. Although women entrepreneurs are being inspired by the success stories, there are instances of obstacles to it. Hence, studying the triggers and barriers to rural women entrepreneurship is a concern.

Review of Literature

There are few studies investigated the major issues of women entrepreneurs in rural areas. They stressed that the socio-economic problems of the rural women entrepreneurs to be addressed soon.

Cole (1959), in their study on rural women entrepreneurs, observed that another important business motivation for women is the need to provide security to the family.

A study done by **Azad (1982),** reveals that the main motivating factors for women entrepreneurs are economic compulsion, the presence of knowledge and skills, need for achievement, inspiration gathered from the success of others and frustration in the present occupation.

The research by **Asghari (1983),** concludes that women take up entrepreneurship to fulfill economic needs like power and achievement and to gain a novel experience.

Azad (1982), opined that the main motivating factors for women entrepreneurs are economic Compulsion, the presence of knowledge and skills, need for achievement, inspiration gathered from the success of others and frustration in the present occupation

Nelson (1991), in his study, Small Business Opportunities for Women in Jamaica, revealed that women were concentrated in businesses which required the least capital outlay or an extension of household activities. The study also revealed that women entrepreneurs were dependent on their business to maintain their homes and support their families

O D Heggade (1998) has discussed the development of rural women entrepreneurship, trends, and patterns of growth by various types of economic activities and the problems faced by them. The government schemes such as DWCRA/TRYSEM and other income generating activities in the group and by individual entrepreneurs have enlightened the process involved in the promotion of self- help groups, networking of the bankers/NGOs/village panchayats/departments/societies in organizing and promoting self-employment ventures by these women. The study has revealed that the marginalized groups like SC/STs, religious minorities like Muslims/Christians are very negligible whereas the rural women belonging to Hindu forward groups are substantial. Activities selected by these women were purely village based, lacked tapping the avenues of wider markets due to gender bias of the promoters, their restrictions in mobility, constraints of market expansion ideas by taking additional working capital. The author has failed to comment on the personality growth of these women, and mode of inculcating risk taking, decision making, and capacity building aspects.

Punitha et al. (1999), examined the problems and constraints faced by self-employed women in the Pondicherry region. A sample of 120 women was personally interviewed during the period from June to July 1999 of which 42 belonged to rural and 78 to urban areas. The major problems faced by the rural

self-employed women were competition from better quality products, and marketing problems. The problems for the urban entrepreneurs were, apart from the competition from better quality products, the difficulty in getting loans. The least problems faced by both rural and urban self-employed women were ignorance about schemes, distance from markets, and ignorance about agencies and institutions

Lall & Sahai, (2008), conduct a comparative assessment of multi-dimensional issues & challenges of women entrepreneurship, & family business. The study identified Psychographic variables like, degree of commitment, entrepreneurial challenges & future plan for expansion, based on demographic variables. Through stratified random sampling & convenience sampling the data have been collected from women entrepreneurs working in urban area of Lucknow. The study identified business owner's characteristics as self-perception, self-esteem, Entrepreneurial intensity & operational problem for future plans for growth & expansion. The study suggested that though, there has been considerable growth in number of women opting to work in family owned.

Sathiabama. K (2010), in her article titled 'Rural Women Empowerment and Entrepreneurship Development' emphasized empowerment of rural women through entrepreneurship and the advantages entrepreneurship among the rural women, in some countries, women may experience obstacles with respect to holding property and entering contracts. They suggest that increased participation of women in the labour force is a prerequisite for improving the position of women in society and self-employed women. They also advise that the need is knowledge regarding accessibility to loans, various funding agencies procedure regarding certification, awareness on government welfare programmes, motivation, technical skill and support from family, government and other organization. More over Formation and strengthening of rural women Entrepreneurs' network must be encouraged.

Kishor N. Choudhary & Dr. Arvind P.Rayalwar (2011) studied Opportunities and Challenges for Rural women Entrepreneurship in India and highlight some issues with reference to the strategic challenges and opportunities from a gender focus to analyze the prospects of rural small and medium entrepreneurship for women.

S. Vargheese Antony Jesurajan and S. Varghees Prabhu (2012) conduct an empirical investigation entitled on the Expectation of women entrepreneurs in Tirunelveli district of Tamilnadu. This study aims to study the expectations of

women entrepreneurs in Tirunelveli district. The number of samples collected for this study is 300 women entrepreneurs and the type of sampling used is proportionate stratified random sampling. Factors analysis has been employed for the purpose of analyzing the data. The finding depicts many factors like finance, training, support and schemes are the major expectations among the women entrepreneurs in Tirunelveli district. This study will be relevant and significant to the present Indian scenario.

Sreenivasa Rao Behara & K Niranjan (2012), in their study of rural women entrepreneurship in India, intends to find out various problems, motivating and de-motivating factors of women entrepreneurship. This study is based on secondary data only. They found that Desire to be independent; achievement orientation, etc. are some of the common motivating factors of women entrepreneurs across geographical boundaries. Women entrepreneurs in India have to face many problems at start up as well as operating stage. The main reason of non-availability of finance to women is their inability to provide collaterals as they do not have any property on their name. Women have got restricted mobility, and freedom, and have to perform dual roles at family and at business as well, which hinders the entrepreneurial growth. Similarly some gender related stereotypes also create obstacles for women entrepreneurs. They trace that the social systems and attitudes the root cause of these problems.

Anitha D.Pharm, & Dr. R. Sritharan (2013), in their study, entitled 'Problmems being faced by women entrepreneurs in rural areas', focused on the women entrepreneurs in selected districts in ERODE district, Tamilnadu. They tried highlighting their motivational forces and relationship between socio-economic background of women entrepreneurs, motivational factors and their existing entrepreneurial traits. In their study, through various tools, suggest that marketing product is the main problem for women entrepreneurs. They also found that improper location and inadequate infrastructure facilities are the hurdles in the way of development of women entrepreneurship

Research Gap

Literature study reveals many issues of rural women entrepreneurs. No research work has focused on the multi-dimensional issues of the research topic. Problems of rural women entrepreneurship are multi-faceted. Triggers and barriers of rural entrepreneurship of different types of businesses on socio-economic angle is the research gap that we found out. Hence, we proceed to understand the triggers and barriers of rural women entrepreneurs.

RESEARCH METHODOLOGY

OBJECTIVES

The purpose of the paper is to Study of triggers and barriers of rural women entrepreneurs. Therefore, we set the following objectives for the study

- To understand the socio-economic status of respondents in the study area
- To study the triggers for rural entrepreneurship among the respondents
- To understand the problems of rural women entrepreneurs
- To suggest measures to overcome barriers and motivate rural women entrepreneurs

HYPOTHESES

For the study we set the following hypothesis :

- **H_{01}** : there is no significant difference in the mean perception of respondents as regard triggers
- **H_{11}** : there is significant difference in the mean perception of respondents as regards triggers
- **H_{02}** : there is no significant difference in the mean perception of respondents as regards barriers
- **H_{12}** : there is a significant difference in the mean perception of respondents as regards barriers

DATA COLLECTION

The present study is empirical and descriptive in nature based on both primary and secondary data. Secondary data has been collected from journals, working papers, newspapers, thesis, books, and reports published on the relevant topic. Simple random sampling and systematic sampling method was followed for this study.

Primary data consists of responses collected from women entrepreneurs in rural areas, running different types of businesses. In a structured interview, the schedule was prepared, and the same questions were posed to all the respondents in the same order. Each question was asked in the same way in each interview,

for the purpose of measurement of reliability. In the present study, Likert's summated scale was used at five points.

Data Validation

Data was validated by applying Cronbach's alpha method.

SAMPLING :

The Sampling frame is the women entrepreneurs in rural areas. 10 villages and sub-urban towns, of population not more than 10000, were considered for data collection. In each area women entrepreneurs were met. Respondents not participated were ignored from the list. Total sample of 280 respondents were finally considered for analysis.

Locale of the Study :

Villages selected from Hassan and Mysore District where we found many women business enterprises of different types.

Period of the Study

The study has been undertaken from October 2022 to July 2023.

Scope of the Study :

The study includes women entrepreneurs who are engaged in small businesses of different types in rural areas. The study explores the triggers and barriers of rural women entrepreneurs in general. Includes those run their businesses in rural areas itself and those who move to urban areas regularly for business. Triggers we mean the driving force behind choosing entrepreneurship and barriers address the typical problems of women entrepreneurs in general and rural women in particular.

TOOLS FOR ANALYSIS

Data so obtained was analyzed by using SPSS version 16.0. Percentage, mean, , Factor analysis and ANOVA were applied for data analysis, after testing the reliability of the data.

RESULTS AND ANALYSIS

The study of socio-economic background of respondents was relevant before we go for various testing. Respondents were classified on the basis of age,

education, family background, and annual income. Cross tabulation of nature of business and 10 villages shows the various types of business in each village. Of the total respondents, 32 members family background is farm labour, a major chunk of 132 members from agriculture background, 79 members have business background basically from chettiars, Muslims, Marwaris community, a small percent are of other community members, whereas 37 members running their business on the basis of traditional caste based occupation, particularly broomstick vendors, flower vendors and beauty-parlors

TABLE-1 : SOCIO-ECONOMIC PROFILE OF THE RESPONDENTS

		Family background									
		Farm labours		**Agriculture**		**Trade/Business**		**Caste- occupation**		**Sub Total**	
		N	%	N	%	N	%	N	%	N	%
AGE	20-35	11	34.4	44	33.3	24	30.4	10	27.0	89	31.8
	35-50	17	53.1	67	50.8	46	58.2	23	62.2	153	54.6
	>50	4	12.5	21	15.9	9	11.4	4	10.8	38	13.6
	Subtotal	32	100.0	132	100.0	79	100.0	37	100.0	280	100.0
Education	UP TO 7th	9	28.1	18	13.6	6	7.6	9	24.3	42	15.0
	8th - 10th	15	46.9	54	40.9	40	50.6	18	48.6	127	45.4
	10th & above	8	25.0	60	45.5	33	41.8	10	27.0	111	39.6
	Subtotal	32	100.0	132	100.	79	100.0	37	100.0	280	100.0
MARITAL STATUS	Married	**19**	**59.4**	**103**	**78.0**	**74**	**93.7**	**27**	**73.0**	223	79.6
	single	9	28.1	26	19.7	5	6.3	10	27.0	50	17.9
	Widow	4	12.5	3	2.3	0	.0	0	.0	7	2.5
	Subtotal	32	100.0	132	100.0	79	100.0	37	100.0	280	100.0
Annual Income	Below 20000	7	21.9	40	30.3	18	22.8	13	35.1	78	27.9
	20000-40000	10	31.2	58	43.9	44	55.7	21	56.8	133	47.5
	Above 40000	15	46.9	34	25.8	17	21.5	3	8.1	69	24.6
	Subtotal	32	100.0	132	100.0	79	100.0	37	100.0	280	100.0

Source: field study

15 percent of respondents are educated below 7th standard, 45.4 percent are up to 10th standard, and 39 percent are above 10th standard. 79 percent of women

are married, 17.9 percent are unmarried and 2.5 percent are widows. In the income category, 47.5 percent members are earning income up to Rs.40000 And 27 percent of the respondents are earning income only up to 20000 annually, where as 24.6 percent of the respondents earn over Rs.40000 annually. It is interesting to note, that 103 respondents who are married and running a business are from agriculture background and 19 members' parents are farm labours. 74 entrepreneurs have business background.

Table-2 below indicates the number of respondents classified according to the nature of business in their respective villages. It is evident from the analysis that more than 30 women (10 percent) are engaged in selling flower, bangles, vegetable and a major chunk of the respondents are running general store or provision store consisting of provisions and goods for daily needs of the people in the locality. 20-30 members are milk sellers, fruit sellers, tailoring service, and running small canteen or bakery. 10- 20 members are engaged in spare parts trading, beauty-parlor and selling ropes and broomsticks produced by them and only 9 members are running small beuty-parlours.

Table-2 : The Number of Respondents Classified According to the Nature

Nature of business	v1	v2	v3	v4	v5	v6	v7	v8	v9	v10	**Total**
1. General store	4	3	4	4	5	3	3	4	3	3	**36**
2. Vegetable seller	1	5	3	4	2	6	2	4	4	1	**32**
3. Fruit seller	1	2	2	4	2	0	3	3	0	3	**20**
4. Bangle seller	4	2	3	1	3	3	3	6	4	3	**32**
5. Tailoring	3	4	2	1	2	2	2	0	4	4	**24**
6. Rope and broomstick vendor	5	0	1	2	0	1	3	1	1	3	**17**
7. Milk seller	3	6	2	2	2	3	3	2	3	1	**27**
8. Flower vendor	3	2	4	3	2	3	3	2	4	5	**31**
9. Small canteen/bakery/fruit juice centre	2	1	3	5	4	2	1	3	3	3	**27**
10. Coconut vendor	1	1	0	1	1	2	3	0	0	0	**9**
11. Beauty parlor	0	1	3	0	4	3	0	2	1	1	**15**
12. Spare parts store	1	1	1	1	1	0	2	1	1	1	**10**
Total	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**280**

SOURCE: FIELD WORK

FACTOR ANALYSIS :

To understand the driving force behind the rural women entrepreneurs, 16 statements were asked and recorded as per their priority. Factor analysis was applied to reduce the statements into factors. Initially, KMO and Bartlett's Test of Sampling adequacy (Table-3) was tested.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.656**
Bartlett's Test of Sphericity	Approx. Chi-Square	1736.065
	df	120
	Sig.	**.000**

Bartlett's test of sphericity was significant, supporting the factorability of the correlation matrix and the associated significance level was extremely small (**0.000**). A high value which is above 0.5 to 1.0 generally indicates that a factor analysis may be useful with the data. As here KMO value is 0.656 on triggers perceived is more than 0.50, we found that the results of factor analysis are useful with the present data.

For factor extraction, principal component method was used, under the restriction that the Eigen value of each generated factor was more than one. A factor analysis was conducted to develop constructs that will help to evaluate factors that are identified as motivational force. Five factors were generated, which explained 62.15 percent of the variance with the loss of only 37.85 percent of information. The extracted factors were then rotated using variance maximizing method (Varimax). These rotated factors with their variable constituents and factor loadings are given in **Table** 4. Of the Five factors identified Opportunities is the first factor emerged as an important component with the highest factor scoring and the total variance of 26.092 percent, the second factor is Entrepreneurial Attitude with the total variance of 12.918 percent, then follow Career objective, Empowerment goal and Individual Talent. It is evident from the analysis, that rural women, if an opportunity available, can start and run businesses competitively and achieve her socio-economic self-sufficiency.

TABLE 4: FACTOR ANALYSIS

	Component						
	1	2	3	4	5	Eigen values	Cronbach's Alpha
Triggers from opportunities							
13. Existing local resources for running a business	**.903**						0.627
8. To utilize my skill and knowledge	**.857**					**4.175**	0.639
6. Unsuitable working opportunity	**.852**					(26.092)	0.635
16. Caste based occupation	**.809**						0.632
7. Previous Job dissatisfaction	**.766**						0.655
Entrepreneurial attitude							
15. Family business background		**.794**					0.679
4. Earning money for livelihood		**.677**				**2.067**	0.659
5. An Attractive sources of Income		**.585**				(12.918)	0.645
2. To prove my potential		**.550**					0.671
Career objective						**1.381**	
9. Education background			**.887**				0.700
3. To achieve socio-economic Status			**.710**			(8.632)	0.666
Empowerment goal						**1.239**	
14. Opportunity to run a new venture in the village				**.866**			0.672
1. I Desire to be Independent				**.583**		(7.741)	0.659
Individual talent						**1.083**	
12. Competencies and experience					**.790**		0.711
10. Family Support					**.782**	(6.768)	0.709

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations. b. Figures in the parenthesis are total variance

TESTING OF HYPOTHESIS 1

Our null hypothesis ($\mathbf{H_{01}}$) is that there is no significant difference among the respondents as regards the motivational factors. We applied ONE-WAY ANOVA for the test.

TABLE 5: ANOVA

PERCEPTION		Sum of Squares	df	Mean Square	F	Sig
Between People		361.050	279	1.294		
Within People	Between Items	12.296	15	.820	1.991	.013
	Residual	1723.079	4185	.412		
	Total	1735.375	4200	.413		
Total		2096.425	4479	.468		

Grand Mean = 1.17

The table (5) shows that F statistics equals 1.991 with a corresponding P-value 0.013. Since P-value is greater than 0.05 there is no enough evidence to reject the null hypothesis and infer that there is no significant differences in the mean perception of respondents. F statistics is less than the table value at 10 percent level of significance.

The third objective of the study is to understand the barriers or problems being faced by rural women entrepreneurs. For this purpose, again we applied Factor analysis. Reliability test was conducted for all 17 factors. The overall value of Cronbach's Alpha is 0.833 as shown below. The value more than 0.60 which is considered to be reliable and it shows the homogeneity of items.

Reliability Statistics

Cronbach's Alpha	N of Items
.833	17

Bartlett's test of sphericity was significant, supporting the factorability of the correlation matrix and the associated significance level was extremely small (**0.000**). As here KMO value is 0.0.852 on triggers perceived is more than 0.50, we found that the results of factor analysis are useful with the present data.

TABLE 6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.852
Bartlett's Test of Sphericity	Approx. Chi-Square	4744.037
	df	136
	Sig.	.000

TABLE 7: Total Variance Explained

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	5.954	35.024	35.024
2	4.585	26.970	61.994
3	2.093	12.312	74.306
4	.977	5.749	80.055

Extraction Method: Principal Component Analysis.

Three factors were generated, which explained 80.05 percent of the variance with the loss of only 19.05 percent of information. The extracted factors were then rotated using variance maximizing method (Varimax). These rotated factors with their variable constituents and factor loadings are given in **Table** 8. Of the Three factors identified Economic Barriers is the first factor emerged as an important component with the highest factor scoring and the total variance of 35.024 percent, the second factor is psychological Barriers with the total variance of 26.970 percent, the third factor is social problems with total variance of 12.312 percent. It is evident from the analysis, that rural women, if an opportunity available, can start and run businesses competitively and achieve her socio-economic self-sufficiency. It is evident from the table that of the responses expressed, lack of family support is the main Sociological barrier. Difficulty in Relationship with suppliers, customers and others is the major psychological barrier. It is very pertinent from the analysis that most of the rural women are facing Economic problems and lack of technical and managerial skill and knowledge.

TESTING OF HYPOTHESIS 2

Our second null hypothesis ($\mathbf{H_{02}}$) states that there is no significant difference in the mean perception of respondents as far as barriers are concerned. ONE-WAY ANOVA (Table 9) was calculated for this test. F statistics shown in the table equals 4.973 with a corresponding P-value 0.00 which is less than 0.05. Hence, we reject the null hypothesis and can be inferred that there is a significant difference between the mean perceptions of respondents as far as problems are concerned.

TABLE 8: FACTOR ANALYSIS

BARRIERS	Component		
	1	2	3
Economic Barriers			
2. Lack of Technical/management knowledge	.972		
8. Lack of proper training on innovative business practices	.963		
3. Financial problem	.930		
7. Problem of availability of raw materials	.923		
6. Problem of marketing my product/service	.885		
11. Exploitation by middle men	.869		
12. High competition from competitor and male counterparts	.824		
Psychological Barriers			
16. Difficulties in Relationship with suppliers, customers and others		.902	
13 Lack of self confidence		.892	
14. Lack of entrepreneurial aptitude		.884	
20. Unable to deal with legal formalities		.830	
15. Low risk-bearing capacity		.815	
21. Dual responsibility of family and business		.683	
19. Old and traditional outlook of society towards women as an entrepreneur		.562	
Social Barriers			
22. Lack of support from family members			.880
23. Negative attitude of male counterparts and public towards women entrepreneurs			.732
24. Lack of Public acceptance			.633

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

TABLE 9: ANOVA

PERCEPTION		Sum of Squares	df	Mean Square	F	Sig
Between People		1434.689	279	5.142		
Within People	Between Items	68.406	16	4.275	4.973	.000
	Residual	3837.829	4464	.860		
	Total	3906.235	4480	.872		
Total		5340.924	4759	1.122		

Grand Mean = 1.53

Women in rural area in particular are hardworking people. They are bold and prefer to be self-reliant. Most of them are frustrated with the daily wages that is insufficient to lead life and get their children educated, have comfortable house, and to have handsome income. Some of them are running business as a continuation to their parents or as a supportive entrepreneur. Rural women try to find new avenue in which they can continue their occupation perpetually. From the analysis it is found that women are diverging from agricultural activities and find new opportunities to earn income. They take up challenging venture too. Factor analysis revealed that most of them have intention to utilize their talent and educational background, perhaps they have Business education or some of them are engineering graduates traditionally struck in the villages on account of the typical social constraints where in the family members do not allow them to work outside as per their qualification. In this background rural entrepreneurship could be an alternative forum to exhibit and encash their skills. And also increasing needs of rural population and varied goods and services they desire to buy and consume in villages not less than urban population. Bakery, canteen, small hotels, beauty parlors, flower decoration for different occasions, milk, butter, ghee, cheese, tender coconut, fancy stores are found generally in rural areas now-a-days.

Rural entrepreneurship leads to increased business activities and income, and economic empowerment of women. Despite the opportunity, the driving spirit, self-motivation rural women entrepreneurs lack family support. This can be attributed to nuclear family trend and migration of educated youth towards cities. It is also found that the dual role of women is another important problem since she has to manage traditional functions of family and business. Of the problems they have been facing, economic problems such as low managerial talent, lack of finance, lack of supply of goods or material at reasonable price, lack of training and severe competition from their male counterpart.

SUGGESTIONS

To be successful, women entrepreneurs should have self-confidence, managerial skills, and technical and legal guidance, economic support in time. Therefore, in addition to the existing schemes of the government, NGOs and government together design a plan of action to make rural women more active, more positive in their attitude, instill confidence through financial and legal support. MAHILA BANK, MAHILA MARKET, Preference to buy products of women home industry, reservation to women in SEZ and Industrial sites, loans at cheaper rate of interest etc could stabilize the inspiration of rural women entrepreneurs.

To overcome sociological barriers, government has to educate through bulletins, news and advertisements to persuade them to not to bother about silly outlook of society. The attitude of male and the society towards women has been gradually becoming healthy. Rural women shall develop positive attitude and take out their inferiority from their mind.

LIMITATIONS AND SCOPE FOR FURTHER RESEARCH

The present study has a limited scope of only few villages of two districts and the sample size may not replicate and results may not be generalized. As the problems differ from business to business and locality and personal traits, the perception expressed are not applicable to different business and different people. The major occupation in rural area is agriculture. Naturally we cannot expect the qualities of typical business person. As the size of business is generally small, small is beautiful only when it is managed by trained entrepreneur. Therefore, the study did not focus the problems on the basis of nature of business. This is due to time and resource constraint. Thus, further study can be extended to examination of motivations and barriers with respect to a specific type of business either as a case study or in general.

CONCLUSION

After review of available literature, we undertook a study of trigger and problems of rural women entrepreneurs by collecting responses through interview schedule. Both motivational factors and problems of rural women entrepreneurship were analyzed through factor analysis and data was reduced to construct important factor. The hypothesis test proves that there is no difference in the perception about triggers. However, hypothesis test proved that there is no common opinion about the problems. Therefore, it is understood that problems of one entrepreneur may not be the same for other. It depends on the nature of business and other variables. However, it is suggested that the government financial and educational support is necessary and advised to mould and develop an entrepreneurial attitude positively.

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Consumer Perceptions of Digital Marketing Strategies in the Health Insurance Sector

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Abstract : *Healthcare is not government responsibility across the world. In developing countries, like India, government healthcare schemes will not cover everyone, and people depend on private health insurance. This results in vast competition in the health insurance sector to grab a chunk of market share. Being effective in other sectors, increased number of health insurers are adopting digital marketing strategies along with traditional marketing tools. This study aims at finding the attitude of customers towards such digital marketing strategies adopted by health insurers. The sample data analysis has suggested which demographic variables should have higher order of importance while building marketing plans and strategies. Further, based on the analysis of responses, the study suggested the most effective strategic approach to approaching consumers. The authors suggested various innovative digital marketing strategies based on the analysis in line with the practice specifically for health insurance companies.*

Keywords : Attitude, Innovative Digital Marketing Strategies, Healthcare Insurance.

Introduction

Healthcare is not a state responsibility across the world. In some parts of the world, the population is fortunate because the healthcare system is developed to support the citizens in case of need. Universal Healthcare is provided in some parts of the world, for example, in Canada and the residents will not spend out-of-pocket in case of any medical emergency. Even in developing countries like India, the government claims to provide universal health care and is propagated as the world's largest health program. But economists criticized the Indian prime minister's healthcare policy '*Ayushman Bharat*' also known as *Pradhan Mantri Jan Arogya Yojana (PMJAY)* for its low budgetary allocation. According to

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economist Jean, it is an illusion or deception to poor Indian people as it provides only Rs 200 towards insurance per year (Drèze, 2018).

As per Organisation for Economic Co-operation and Development (OECD) data, India has the lowest spending on healthcare ($186.2) as against $10,948 per capita in the US (Data, 2021). According to Statista 2022 ("Number of lives covered under health insurance in India FY 2016- 2021," 2022) during the fiscal year 2016, 64 percent of the Indian population's healthcare expenditure was out-of-pocket (OOP) (Keelery, 2022). In India, where there is a lack of appropriate government support for healthcare people need to rely on private health insurance, but people are not interested in buying health insurance both because there is a lack of awareness and due to financial constraints. This gives room for innovative marketing strategies to be adopted by health insurance companies both in the private and public sector. In India, there are four public and twenty private health insurance companies along with additional seven stand-alone health insurers competing for the market share, and even then, the penetration of health insurance is too low.

According to the Insurance Regulatory and Development Authority (IRDA), the Indian health insurance market is anticipated to show a compound annual growth rate of 29 percent during 2021-2025 owing to the expanding middle-class income population, and growing awareness about the benefits of health insurance plans (ReportLinker, 2020). Consumer behaviour is such that they are aware but not motivated to spend money on health insurance because they have a lack of trust in the health insurance companies to cover the hospitalization cost (Insurance, 2022). Thus, insurance companies doing business in India have great competition over the market share targeting the middle to the high-class income group of people. The middle class needs motivation and awareness to buy the insurance while the high class is looking for a seamless experience enjoying insurance. In 2019, private insurance providers accounted for the largest share of the Indian health insurance market resulting in competition. Better service offerings and brand positions would help insurance companies to grab their pie in the competitive market share. Insurance advertisements are now not only launched on traditional advertising media like newspapers and television but the insurance sector is spending more and more on digital platforms. People are more searching for insurance on Google especially due to COVID-19, insights from Google analytics show an 89-percent growth in searches related to insurance and related products (Mishra, 2020). In addition to digital platforms, as per data, there is 80 percent of the traffic on its app platforms for

insurance. Insurance companies have not migrated advertising and marketing budgets from traditional to digital, they claim to have consistent expenditure with TV advertising, especially on news channels (Mishra, 2020).

Insurance providers are facing challenges to tackle with advertising (ad) on multiple platforms to ensure the reach and frequency of messages. This is giving birth to a new problem of dealing with ad clutter. The advertising avoidance rate is increasing amongst consumers. As per research, the ad recall rate is reducing because of audiences becoming prone to avoiding the ads due to excessive clutter across different platforms, including digital (Early, 1990). Thus, there is a need for marketers to be innovative in finding better ways to break the clutter with creative and innovative strategies. Consistently writing blogs or posting on Instagram or Facebook might not be of significant help to any brand, in general, to grab the attention of the visitors and leave an ever-lasting impact. There are different new ways that research and data reflect might help the business, including the insurance sector to achieve the goal of effective and impactful advertising.

Demographic factors, income, and education, play a significant role in determining attitude of consumer and thus effectiveness of online services (Keaveney & Parthasarathy, 2001). As per research, demographic variables like age, gender, level of education, marital status, employment status, income level and area of residence influence the consumer behaviour towards online digital platforms for shopping and banking (Onyia & Tagg, 2011). In another study, demographic factors play an important role in consumer perception of value towards brand communications using social media (Klepek, 2020). Based on the research, the objective was developed to study the impact of in the demographic variables (gender, age, income, education level) on the attitude of consumers towards digital marketing adopted by health insurance companies. Further to provide better value to the insurance companies the analysis was aimed to rank which variable out of these would be the most important for marketers to consider while framing various strategies for effective marketing of health insurance products.

The study would be an addition to the existing research by ranking the demographic variables based on their impact in determining the effectiveness of consumer attitude towards digitalization of marketing content in health insurance sector.

Objectives of the Study

This paper is focused on understanding the ad clutter and how it is challenging the medical insurance brands to engage with target audiences. Further, the paper aims to suggest an innovative and creative blend of strategies to enhance consumer engagement with brands by breaking the ad clutter in the modern digital world. The paper aims to –

- To find the impact of the demographic profile of the health insurance customers on the overall attitude towards online digital marketing strategies adopted by insurance companies.
- To determine the most important and least important demographic variable for strategic usage of marketers to create an impact on consumer attitude by strategically using digitalization of insurance products.
- To measure consumer attitudes towards the various kinds of strategies adopted by health insurance companies concerning digital marketing.

Methodology

The study is based on the data collected from existing and potential consumers of health insurance. A questionnaire has been designed to collect the data from respondents. For this study, data was collected from respondents from Punjab. Data has been collected both online as well as in person from Jalandhar. With over 800 super-speciality hospitals, Jalandhar is the Asia's biggest medicare hub and that was the main reason to choose this city (Singh, 2019). For this study, the questionnaire was administered to 240 respondents and 217 questionnaires were found complete for analysis. The sample size was calculated based on the structure of the population assisted by a logical-mathematical equation. The nominal and ordinal data have been used in the questionnaire. A five-point Likert scale has been used to measure the attitude of the respondents towards digital marketing and strategies adopted by the health insurance sector. The scoring scale of the Likert scale questions was 1=Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree. For analysis of this study and to provide better recommendations to marketers for making strategies, in addition to Likert scale statements the questionnaire included demographic variables to explore gender and other categorical variables like Age, Qualifications, Occupation and Monthly Income.

Based on the literature and digital marketing practice, the popular digital marketing strategies used by companies were analysed to frame the statements

and study the impact. These statements were related to general attitude towards digital marketing, email marketing strategies, social media marketing strategies, customer service and word-of-mouth strategies used by various health insurance providers. These were worded around the following:

1. Preference regarding the installation of the app on the user's device
2. Value in visiting the website of health insurance providers to seek information.
3. Convenience to purchase health insurance virtually.
4. The overall attitude towards dealing with health insurance providers online.
5. Attitude towards receiving promotional emails from medical insurance providers.
6. Value in receiving emails from health insurance providers.
7. Attitude towards promotional offers through emails in choosing insurance products.
8. Value in receiving authentic information from online sources in decision making.
9. Attitude towards engagement with social media content of health insurance providers.
10. Social media content is a valuable source of information for buying health insurance.
11. Role of customer service of health insurance providers in buying such products.
12. Preferences toward text or messenger-based customer service provided by health insurance providers.
13. Text-based customer service saves time.
14. Role of reviews posted by other customers in purchasing health insurance products..
15. Role of third-party websites endorsing health insurance (e.g., blogs or professional insurance hubs like policybazzar.com selling online comparison-based products)

Reliability and Validity of Collected Data

Reliability is the measure of the internal consistency of constructs in the study. A construct is reliable if the Alpha (á) value is greater than 0.70 (Nunnally, 1978). Construct reliability was assessed using Cronbach's Alpha with SPSS. The results revealed that the Likert scale statements data with a five-point scale to measure the attitude toward digital marketing in health insurance with fifteen items was reliable (á = 0.949).

Demographic Profile of the Respondents

In this study, data were collected from male and female respondents. The sample consisted of 61.29 percent male and 38.71 percent female respondents.

As per the details in the table 1, as far as the age of the respondents in sample data, 18.43 percent of the respondents were below 25 years of age, 20.28% of the respondents are in the age category 26-40 years, and 29.03 percent of respondents belong to the 41–60 years age group, and 32.26 percent respondents were above 60 years.

Table-1 : Baseline Demographics of Sample Respondents (n=217)

Gender	Age	Education	Occupation	Monthly_Income	Number of Records
Female	Below 25	Diploma or degree	others	20-40K	12
		Post Graduation or higher	Service/Job	20-40K	8
	Above 60	Diploma or degree	others	20-40K	4
		Others	others	Below 20K	12
		Sr Sec High School	others	Below 20K	4
	41-60	Diploma or degree	Business	Above 60K	4
		Others	others	Above 60K	4
		Post Graduation or higher	Service/Job	Above 60K	12
	26-40	Diploma or degree	others	20-40K	4
			Business	40-60K	4
		Others	Service/Job	Above 60K	4
			others	20-40K	4
		Post Graduation or higher	Service/Job	20-40K	4
				40-60K	4
Male	Below 25	Diploma or degree	Student	Below 20K	10
		Post Graduation or higher	others	20-40K	10
	Above 60	Diploma or degree	others	20-40K	22
			Business	40-60K	11
		Others	others	Below 20K	6
		Post Graduation or higher	others	Below 20K	11
	41-60	Post Graduation or higher	Service/Job	Above 60K	27
			Business	Above 60K	16
	26-40	Diploma or degree	Service/Job	40-60K	10
		Post Graduation or higher	Business	20-40K	5
				Above 60K	5

The education profile of the sample consisted of 47 percent of respondents with a post- graduation degree or higher, while 37.33 percent claimed to have some diploma or degree, 1.84 percent had completed high school, and the rest of 13.82 percent belong to other categories.

Further based on the occupation, the sample consisted of 4.61 percent students, 31.80 percent in service/jobs, 20.74 percent were from doing business and the rest of 42.86 percent in other categories.

The respondents categorized based on income consisted of 19.82 percent below the monthly income of rupees twenty thousand, 33.64 percent of the respondents had a monthly income of 20-40 thousand rupees, 13.36 percent of respondents had monthly income between 40-60 thousand rupees and rest of the 33.18 percent respondents had income more than rupees sixty thousand.

Data Analysis and Interpretation

To identify if there exists a difference in attitude towards digital strategies of health insurance based on the gender of the respondents, H0 was tested that there is no significant difference in attitude towards digital marketing strategies of health insurance companies based on the gender of the customers. To evaluate the difference between gender and attitudes, Mann- Whitney U Test was used. The test revealed that insignificant differences in attitude towards digital marketing strategies of health insurance providers of male *(Median=4, n=133)* and female *(*Median*=4, n=84), U = 930, z = -1.291, p = .197*. Hence, the null hypothesis failed to reject. There is no statistically significant difference between gender type and attitude towards digital marketing strategies of insurance companies.

The age of consumers plays a key role in determining the media consumption choice. The sample study shows that younger respondents below 25 years of age had the highest mean rank of 152.95, followed by a mean rank of 114.86 for the respondents in the age bracket of 26-40 years of age. In contrast to this, sample data suggested a higher mean rank of 158.67 in the age group 41-60 years age group. The respondents above 60 years of age had a mean rank of 35.50. To identify if there exists any significant difference in attitude towards digital strategies of marketers and age, H0 was set that there is no significant difference in attitude towards digital marketing strategies of health insurance companies based on the age of the respondents. A Kruskal-Wallis was used for this purpose. As summarized in table 2, the Kruskal-Wallis test results showed that the age of the respondents has a significant impact on the attitudes toward

digital strategies for marketing health insurance products. The test results are, $H(3) = 171.688$, $p < .001$. Hence, this rejects the null hypothesis and there is a statistically significant difference between age and attitude towards digital marketing strategies of insurance companies.

Table-2 : Importance of Demographic Characteristics and Attitude towards Digital Marketing Strategies.

Characteristics	H_0	*N*	*H Statistics*	*df*	*P value*
Age	Age has no impact on attitude	*217*	*171.688*	*3*	*P<.001*
Education	Level of Education has no impact on Attitude	*217*	*80.427*	*3*	*P<.001*
Occupation	Type of Occupation has no impact on Attitude	*217*	*94.512*	*3*	*P<.001*
Monthly Income	Monthly Income has no impact on Attitude	*217*	*62.179*	*3*	*P<.001*

The level of education also plays a vital role in the media consumption choices of the respondents. The sample statistics show that respondents with post-graduation or higher-level education had a mean rank of 145.25, followed by 87.41 for diploma and degree level, 24.50 by respondents at the high school completion level of education, and 55.30 as the mean rank for those in other categories. To identify if there exists any significant difference in attitude towards digital strategies of marketers and level of education; H0 stated that there is no significant difference in attitude towards digital marketing strategies of health insurance companies based on the level of education of the respondents. A Kruskal-Wallis was used for this purpose. The Kruskal-Wallis test results showed that the level of education of the respondents has a significant impact on the attitudes toward digital strategies for marketing health insurance products. The test results are, $H(3) = 80.427$, $p < .001$. Hence, this rejects the null hypothesis and there is a statistically significant difference between the level of education and attitude towards digital marketing strategies of insurance companies.

The type of occupation was also tested to find any differences in attitude towards digital marketing strategies in the health insurance sector. Sample statistics reveal the mean rank of students (175.00), service/job (145.17), business (130.43) and for others category mean rank was (64.69). To identify if there exists any significant difference in attitude towards digital strategies of marketers and type of occupation; H0 set was that there is no significant difference in attitude towards digital marketing strategies of health insurance companies based on the type of

occupation of the respondents. A Kruskal-Wallis was used for this purpose. The Kruskal-Wallis test results showed that the type of occupation of the respondents has a significant impact on the attitudes toward digital strategies for marketing health insurance products. The test results are, $H(3) = 94.512$, $p < .001$. Hence, this rejects the null hypothesis and there is a statistically significant difference between the level of education and attitude towards digital marketing strategies of insurance companies.

To find out if the monthly income of respondents would make any difference in how they perceive the value of digital marketing strategies of the health insurance marketers the sample data were analyzed. It was found that respondents making above sixty thousand rupees per month had the highest mean rank of 151.52 compared to respondents in the monthly income category of rupees 40-60 thousand per month (105.84), 20-40 thousand (92.20) and respondents making below rupees 20,000 per month had a mean rank of 68.45. To identify if there exists any significant difference in attitude towards digital strategies of marketers and monthly income of respondents; H0 was that there is no significant difference in attitude towards digital marketing strategies of health insurance companies based on the monthly income of the respondents. A Kruskal-Wallis was used for this purpose. The Kruskal-Wallis test results showed that the monthly income level of the respondents has a significant impact on the attitudes toward digital strategies for marketing health insurance products. The test results are, $H(3) = 62.179$, $p < .001$. Hence, this rejects the null hypothesis and there is a statistically significant difference between the monthly income and the attitude towards digital marketing strategies of insurance companies. Health insurance marketers should make strategies to target the customers accordingly.

As suggested by the above analysis of sample statistics, Age, Occupational, Monthly income, and Education level plays a significant role in determining the attitude of the respondents towards digital marketing strategies adopted by health insurance marketers. To further analyze which demographics might play a key role Linear Modeling technique was used.

As shown in the table 3, the Age of the respondents has the highest predictor importance of 0.865 and is statistically significant as $F(3) = 166.280$, $P<.001$. Compared to this, the level of income holds 0.096 as predictor importance and is statistically significant at $F(3) = 35.748$, $P<.001$, and in the last ranking based on the predictor importance is the type of occupation with 0.026 as predictor importance and is statistically significant at $F(3) = 9.592$, $P<.001$.

Figure-1 : Demographic Variables and Consumer Attitude

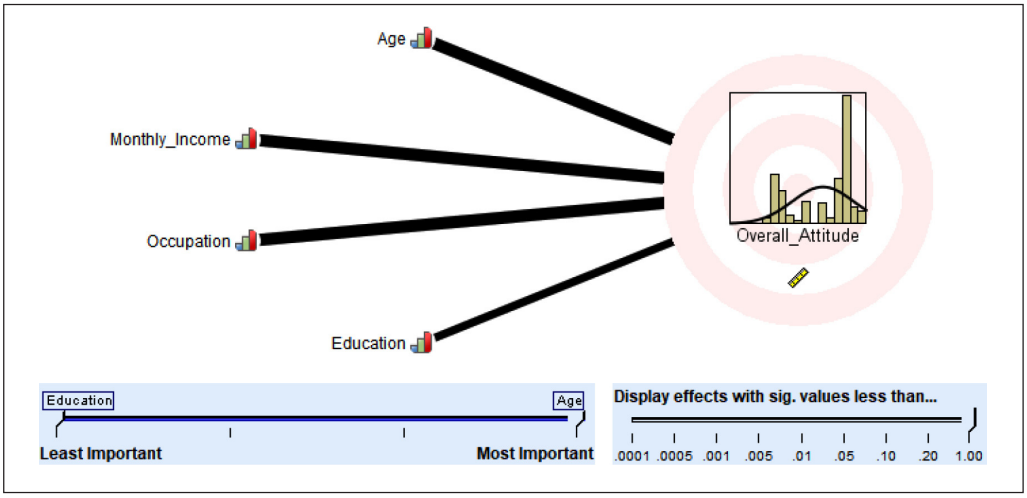

Table-3 : Importance of Demographic Variables

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Importance
Corrected Model	*166.280*	*12*	*13.857*	*283.522*	*P<.001*	
Age	*47.245*	*3*	*15.748*	*322.227*	*P<.001*	*0.865*
Monthly Income	*5.241*	*3*	*1.747*	*35.748*	*P<.001*	*0.096*
Occupation	*1.406*	*3*	*0.469*	*9.592*	*P<.001*	*0.026*
Education	*0.733*	*3*	*0.0244*	*4.997*	*.002*	*0.013*
Residual	*9.997*	*204*	*0.049*			
Corrected Total	*176.251*	*216*				

Figure-1 shows the effect of demographic variable and consumer's attitude towards health insurance purchase. Even though Education was analysed as statistically significant but as per regression model age, income and occupation to be considered as important for determining any role in the attitude of the respondents towards digital marketing strategies of the health insurers.

Further to build marketing strategies marketers need to know which kind of content and marketing efforts would yield better value. Based on literature and

practice, three kinds of Likert statements were asked, and these were statements around email marketing, customer relationship marketing and word-of-mouth strategies adopted by marketers. Spearman's rank-order correlations were run to examine the relationships between the overall attitude of the customer towards digital marketing strategies and email marketing strategies, customer relationship marketing strategies and word-of-mind strategies. There were positive and significant correlations between overall attitude and email marketing strategies, $rs = .653$, $n = 217$, $p < .001$, overall attitude and customer relationship marketing strategies, $rs = .829$, $n = 217$, $p < .001$, and overall attitude and word-of-mouth strategies $rs = .732$, $n = 217$, $p < .001$. Thus, marketers should give more importance to personalized online customer service, word-of-mouth strategies over email marketing.

Discussion

The results of the sample analysis clearly show that marketers need not to worry about gender of respondents while designing the ad content for health insurance. Further age of respondents would play the most significant role in differentiating the digital marketing strategies. Thus, marketers need to be sensitive for age as it would help them to effectively utilize each dollar spent on digital advertising or other digital marketing strategies. Social media platforms like Facebook, Instagram have their native audiences and that should be kept in mind while engaging with audience. These strategies are discussed in detail in the recommendations section of the paper. Other two variables, income and education are significantly important but not that much important as the age of the respondents or prospective consumer.

Further, the type of the content that should be prioritize would include personalised customer service experience using online tools and strategically engaging with consumer to enhance their experience and thus resulting in conversion. Further, word-of-mouth plays a key role and digital marketing strategies around this have also been suggested in recommendations section. Email marketing is significant but does not as much as the customer experience and word-of- mouth would work for marketers.

Strategies Recommendations

Digital marketing can be strategically used to engage with the target audience and bring the expected results. Based on the findings of the study, age, income and occupation are most important factor playing role in consumer response towards digital marketing strategies of a business.

Word-of-Mouth Marketing Strategies

Word-of-mouth (WOM) works better than advertisements because there is more trust in the fellow consumer's post than from a company that is just because everyone knows it is not sponsored but rather a genuine posting about the experience using the product (Keller & Fay, 2012). It works just like reviews on the internet. But it is a double-edged sword, on the one hand, positive WOM will be great, but in the case of an unhappy consumer posting his experiences on social media might be damaging for the brand. The negative WOM works even faster than positive WOM and it would need the marketing intelligence of the marketing team to nip it in the bud before it spread like wildfire (Smith & Vogt, 1995). Thus, insurance companies can create an effective digital marketing strategy with a mix of various digital platforms to nail effective marketing communication. To spread positive brand vibes businesses should post helpful content about how to keep good health, workout tips, and diet tips. Further, there could be some infographics posts from these blog pieces to be shared on social media owned by the company to bring traffic to these blogs and generate a higher search engine rating for the brand name. The pages need to be optimized for the appropriate search terms used by consumers.

Social Media Marketing Strategies

Social media is a critical tool to raise awareness about what's new, evolving, and annual health concerns and the benefits of purchasing health insurance to cover the risk of any out-of- pocket expenses. There are several ways to use social media in healthcare, including promoting awareness and sharing accurate health messaging (Newberry, 2021b). Healthcare organizations have a responsibility to be part of the general health discussions on social media by engaging and providing credible information (Yoder, 2022). Winning the trust of the insured by raising awareness is important and it can be achieved by engaging with followers on social media with reminders about common health practices, as done in this example via Tweet from health Canada and PHAC (GovCanHealth, 2021). Another benefit of using social media in the health sector is to combat misinformation. Everyone knows the power of social media to quickly spread information to a diverse group of people. Sometimes information comes in the form of untrue statements. Thus, simply citing published credible health sources like WHO could help to stop the spread of misinformation and bring awareness to the public. The reference given here is an example showing such an effort to combat misinformation using the power of Twitter (PeterHotez, 2021). So, insurance companies can post credible information and help to stop the spread

of misinformation that might be a risk to the health of the insured and the public. Similarly, during a crisis like we had during COVID-19 social media platforms can be of immense help to facilitate crisis communication. For example, the government of British Columbia hosted press conferences during the pandemic and these press conferences were streamed on Facebook Live videos along with other news channels (BC Provincial Government, 2021).

Instagram Marketing Strategies

Social Media platforms can be used to implement other wonderful strategies like facilitating Instagram contests to engage the audience. The insights data show that engagement increases manifold with contests letting people a chance to win something thus enhancing the interactions and engagements with the content and helping to break the clutter. Here is an example of letting visitors win a $250 gas card from Armour Insurance when gas prices are rocketing high due to inflation (Insurance, 2021). Currently, the average of 70 percent of users on Instagram is in their thirties, while on Facebook this age is sixty-five. But with time as the population grows old, the lines between Snapchat, TikTok and Instagram will continue to blur. Even though there are a lot of active target audiences on social media, keeping them engaged with the brand would be a challenge and that will need some creative strategies to achieve marketing communication goals.

Influencers Marketing Strategies

Further, the power of influencers on social media is always an effective strategy. Insurance companies can strategically choose the right set of influencers who can engage and encourage their followers to buy medical insurance from that brand. Influencer marketing is a terrific way for insurance providers to increase their exposure and boost engagement and follow-ups for conversion. Even though it sounds weird to see medical insurance products being promoted using Instagram influencers, it certainly is working. A Canadian company, Sonnet Insurance – focused on home and auto insurance, uses Social Media channels. Sonnet relates to its target audience on Instagram by sharing experiences in partnership with the Toronto Blue Jays and the World Cup of Hockey. Sonnet actively collaborated with local Instagram influencers as well (Fiorella, 2018). The company also had direct driving lessons on YouTube to engage with target consumers. Similarly, in the field of medical insurance businesses can implement such strategies as it will enhance the engagement with the final consumer. For example, Oscar insurance uses niche micro-influencers that appeal to digitally

savvy Millennials (Fiorella, 2018). In addition to this, Oscar insurance would use various digital strategies like maintaining a blog to provide tips to the visitors on improving their health (Blog, 2022).

Strategies for Video Content

Medical insurance companies can help the public by posting content that motivates and guides them to lead healthy lives. This can further be linked to the insurance company consistently posting on its blog to engage with the target consumer or creating video content. Video content is considered more engaging than text, so insurance companies could create short Instagram or Facebook story videos or Instagram reels and even long videos. Eighty-one percent of marketers advocate the use of video content as it has a direct and positive impact on sales, 94 percent agree that video helps to increase product awareness and understanding, and a majority of 62 percent of marketers consider video content as having top engagement metrics (Hayes, 2022). Instagram TV (IGTV) is new, but it is gaining traction among brands, so medical insurance companies can certainly make longer videos engaging consumers to spread awareness as to why they should buy the insurance. This is important, especially when the penetration of medical insurance is low as it is seen as an expenditure rather than a risk aversion strategy. Such videos can help consumers to understand the benefits of buying insurance and motivate them to do so. Digital marketing strategies suggested here are practised on various clients, including but not limited to the service sector, businesses, and the insurance sector. As per data, it is suggested that businesses must use the video for Facebook News Feed to attain higher engagement rates. Videos result in up to 25 percent more views compared to still News Feed, and it is impactful and memorable compared to still image posts. As per research viewers retain 95 percent of a message when they view it in a video compared to merely ten percent when they read it in the text (insivia, 2017). Another motivator to go for using video content by marketers is that people do not have time to read, 50 percent of executives would rather watch a video than read the text. According to Forrester Research's Dr. James McQuivey, one minute of video content equates to 1.8 million words (Arruda, 2016). Thus, it is helpful to break the ad clutter to some extent.

Conclusion

In a world flooded with overwhelming healthcare insurance ads to give everyone a headache, every marketer wants to surpass this marketing noise to get and keep the attention of consumers. There is no magic formula but a simple strategy

that seems to be powerful enough to crack this clutter and surpass the advertising noise; and that is, Healthcare insurance brands can use data and technology in their favour to predict the needs and desires of prospective customers and give them the best experience possible by delivering the next-gen engagement. This refers to the use of predictive analytics and machine learning to recommend, in real-time, actions that are likely to better engage consumers based on their profile and previous actions and needs.

The Healthcare and insurance industry can offer better customer service by using personalized marketing. Personalized marketing simply put is understanding the customer needs and providing the services that are custom designed based on the needs of the consumer. According to a Salesforce survey, 66 percent of people now expect brands to understand their needs and serve accordingly (Neuner, 2021). To better understand the consumer needs, insurance companies need to invest in customer database management tools, and marketing insights to better predict the consumer needs and provide them with real-time solutions accordingly. This will ensure that insurance providers like other brands will not waste the precious advertising dollars by overwhelming the customers with advertising or marketing, but, rather, serve them with the messages that are likely to satisfy their information needs or desires and better engage with them.

Thus, to provide the right and valued information at the right time, the insurance providers need to invest in building sound data foundations by creating a customer-data platform to provide a 360-degree customer view, deploy advanced analytics and machine learning to create customer cues and real-time triggers (Neuner, 2021). Sound data-driven marketing is the future of effectively targeting consumers and it will benefit insurance brands to eliminate wastage of time and marketing budget thus even reducing the cost of such healthcare and insurance to the consumer.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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