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In this issue

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
Deemed to be University U/S 3 of the UGC Act, 1956
SCHOOL OF MANAGEMENT

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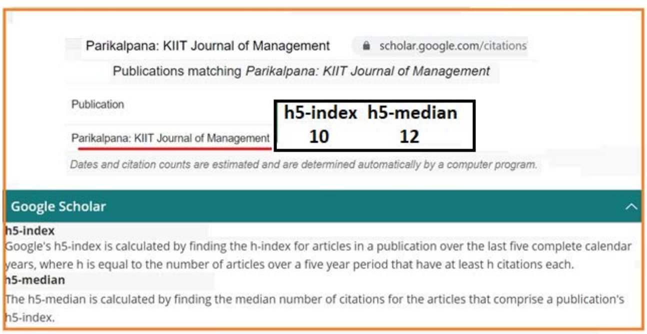

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Does Higher Education Influence on Women Empowerment? A Perceptual Study

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Abstract

In today's world higher education is crucial not only as a source of knowledge but also as a means to increase one's employability. Even though this statement holds good for both men and women, higher education has a more predominant role in the life of woman because higher education not only promotes the financial stability of women but also boost self-confidence and independence in her personality. In order to understand to what extent higher education influences the various aspects of women empowerment namely Social, Psychological, Economic, Political and Educational, a perceptual study of women with higher education has been undertaken in Karnataka. A multiple regression analysis was used to check the influence of higher education on women empowerment and depicted the path analysis using Structured Equation Model. The study revealed that higher education significantly influences the overall empowerment of women and it also exhibited that there is no association between women's perception on overall empowerment among demographic parameter except monthly income.

Keywords: Higher Education, Women Empowerment, Perception

1. Introduction

Mishra & Sam, (2016) has stated that empowerment is a process of change by which individuals or groups with little or no power attain the ability to make choices which affect their life. Women empowerment has gaining significance in discussion with reference to development and economies (Barra & Barra, 2019; Shiraz, 2016).women empowerment is a process by which women redefine what it is that they can be and accomplish in a circumstance that they previously were denied. Higher education is the sum of systematized knowledge and practical skills that will help to solve problems utilizing the modern achievements of science, technology and culture (de Loenzien et al., 2021; Sudha et al., 2011).Higher education results in better utilization of human resources which archives quality of life A quality higher education especially for women can enhance many of the socio-economic indicators namely low birth rate, low infant mortality rate and higher life expectancy. Murtaza, (2012) found that higher education among young women drastically abridged the gender gap in employment and earnings.

2. Objective of the study

To know the impact of Higher education on women empowerment and also to know how Higher education influences the various components of women empowerment.

3. Review of Literature

3.0 Women Empowerment

As India's economy develops, more emphasis is being placed on social and human growth, particularly women's empowerment. Women's empowerment is indeed a key component of ensuring gender equality, in which men and women have equal access to schooling, childcare, economic activity, and self-improvement. Women empowerment can be measured in following aspects,

3.1 Educational empowerment

Education can be a path breaker in women's liberation because it enables them to adapt to demands, confront their conventional roles, and transform their lives. Schooling is the most important method for transforming society's position since it eliminates inequality and serves as a way of strengthening their status with their families (Yadav et al., 2011).When Woman has higher education, she will acquire greater access to employment opportunities and enhance her capabilities to attain her own financial resources (Malik & Courtney, 2011)

3.2 Economic empowerment

Women's status is inferior to that of men. Furthermore, it has been discovered that literacy is the single most significant element in educating women and paving the way for economic equality, which will boost women's status (Junussova et al., 2019).It's observed the fact women are capable to indulge themselves in meaningful activity that will permit them financial freedom to some extent though it is difficult to attain in the initial stage (Lavanya & Ahmed, 2018).

3.3 Political empowerment

West, (2006) came out with the fact that women with education or sufficiently informed about their rights provided by the law and how to exercise them and thus be more active politically and take part equally in social and political decision-making processes. It is also observed that the development of the women witnessed a replication in the constitution of the India were in laws were enacted to exterminate the social evil of inequality, government sponsored programmes like Rural Mahila Mandals and local self-government and the demand for reservation in political institutions (Liu, 2017).

3.4 Psychological empowerment

Wayack Pambè et al., (2014) recognized that detriments of women freedom in India is a better educated woman who has higher barraging power which is measured by physical mobility, a voice in household resource allocation through the cannel of increased information.

3.5 Social empowerment

R. ganeshan & G.Anbalagan, (2018), identified that early marriage declines as girls obtain education and female education results in the decrees of infant and child mortality rates. The local sex ratio works through the spousal age ratio which influences marriage markets and also household bargaining power (Neelakantan & Tertilt, 2008) Women's social inclusion and standing in society would increase if they receive a higher standard of education. Education teaches strong decision-making skills and management tools (Stark et al., 2018)

4. Research Methodology

Present study is descriptive in nature and it examined the impact of higher education on different level of women empowerment. The study conducted by taking higher educated women of Karnataka and in the study area (Karnataka) around 773561 women enrolled for higher education (UGC, 2018-19). Taro Yamune (1967) formula used to determine sample size and finalized with Sample size of 384 with 0.05 error. This study measured different level of measurement Such as Social Empowerment (SE), Economic Empowerment (EC), Political Empowerment (PE), Educational Empowerment (ED) and Psychological Empowerment (PS). Questionnaire developed in two-part, first part asking demographic details and second part asking questions related to empowerment. Each level of empowerment measured separately by asking questions with five-point Likert scale, five being Strongly Agree and 1 being Strongly Disagree. Questionnaire constructed with help of literature, where some of the statements are directly adapted (Yamuna,2013) and some with little modification. After developing questionnaire, data were collected from five highly populated districts, namely Dakshina Kannada, Bangalore, Mysore, Dharwad and Gulbarga as a representative of entire Karnataka population. Questionnaire distributed randomly through google form in email, WhatsApp and personally (with help of friends and colleagues in each districts). Totally 435 responses are collected and after data cleaning process researcher retained only 384 responses to analyze the data. After data cleaning and screening process, the responses are entered in SPSS 20 version. Before conducting descriptive analysis and inference analysis, researcher carried out Cronbach Alpha test to know the reliability of the data. The result of reliability test showed in Table No.1.

Table No.1: Reliability Analysis

Variable	No. of items	Cronbach Alpha Value
Social Empowerment	5	0.761
Economic Empowerment	5	0.805
Political Empowerment	4	0.811
Educational Empowerment	3	0.783
Psychological Empowerment	4	0.843
Overall Empowerment)	21	0.910

The table No.1 revealed that Social Empowerment (I=0.761), Economic Empowerment (I=0.805), Political Empowerment (I=0.811), Educational Empowerment (I=0.783), Psychological Empowerment (I=0.843) and Overall Empowerment (I=0.910), Since Cronbach Alpha value is more than 0.6 therefore, we can conclude that the opinion given by respondents are reliable.

4.0 Data Analysis and Interpretation

4.1 Demographic Profile of the respondents:

The demographic details help the reader to understand the nature of respondents and distribution of respondents based on age, educational qualifications, employment of the respondents, employment status, marital status and monthly income. The researcher collected responses from all groups of respondents and precautions were taken while selecting sample units. The demographic details of the respondents were given in Table No.2.

Table No.2: Demographic details of respondents

Variable	Groups	Frequency	Percentage	Chi-square Value or fisher's exact value	P value
Age	20-29	185	48.18	95.220	.151
	30-39	120	31.25		
	Above 40	79	20.57		
Educational Qualification	UG	203	52.86	148.736	.057
	PG	150	39.06		
	M.Phil. or Ph.D.	20	5.21		
	Other	11	2.86		
Employment Status	Government Employed	21	5.468	190.752	.075
	Private Employed	151	39.32		
	Self Employed	43	11.20		
	Unemployed	139	36.20		
	Other	30	7.81		
Marital Status	Married	182	47.39	101.131	.075
	Single	198	51.56		
	Divorced or Separated	4	1.04		
Monthly Income	No Income	145	37.76	208.589	.000
	Below Rs.10000	92	23.96		
	Rs.10001-25000	82	21.35		
	Rs.25001-Rs.50000	42	10.94		
	Above Rs.50000	23	5.98		

Source: Field Survey, 2021

The Table No.1 exhibits that majority of the respondents (48.18%) are between age group of 20-29, followed by age group of 30-39 (31.25%). Table showed that 52.86% of the respondents completed their graduation and 39.06% of the women competed their post-graduation. Majority of the higher educated women (39.32%) working in private sector organization and only 5.46% of the higher educated women working in the government sector.

The table exhibits that majority of the higher educated women (37.76%) are not earning any income and 23.96% of the respondents are earning less than Rs.10000 per month. The table also examined the association between higher educated women's perception on overall empowerment among demographic parameters. It revealed that there is no significant association between perception on overall empowerment among demographic parameter (P>0.05) except monthly Income. The mean and standard deviation among groups showed that low-income women (Below Rs.10000) are strongly agree that higher education helps to overall empowerment of the women.

4.2 Perception on Social Empowerment

Social empowerment of women means strengthening women's social relationships and her position in the society. The researcher is interested to know the opinion of women about impact of higher education on social empowerment and result depicted in Table No.3.

Table No.3: Descriptive Analysis of Social Empowerment

	N	Mean	Std. Deviation	t	Sig. (2 tailed)
Higher education helps to attain Social Status	384	4.48	.733	39.474	.000
Higher educated women get respect from family	384	3.86	.897	18.767	.000
Higher educated women can influence to eradicate social evils like eve-testing, drug addiction, alcoholism, etc	384	3.74	.932	15.653	.000
Higher educated women question the domestic violence	384	4.16	.798	28.516	.000
High educated women actively involved in Social activities.	384	4.26	.754	32.741	.000
Overall Social Empowerment	384	4.1005	.59114	36.481	.000

Source: Field Survey,2021

Table No.3 revealed that respondents strongly agree that higher education helps them in getting good status in society (4.48±0.733) and they agree that it also help them to get respect from their family members (3.86±0.897). The respondents agreed that higher education to women helps to eliminate social evils (3.74±0.932) and respondents strongly agree that higher education gives courage to question domestic violence (4.16±0.798).The respondents strongly agree that women with higher education involve more in social activities than other literate women (4.26±0.754) and the overall mean and standard deviation are 4.10±0.59 which indicates that the respondents strongly agree that higher education helps them to attain social empowerment. The Table No.3 also exhibits one sample t test to know the mean of opinion given by respondents which significantly differ from population mean (3 for five-point Likert scale), which showed that all statements significantly differ from mean. So we can conclude that the opinion given by respondents are statistically significant ($p<0.01$).

4.3 Perception on Economic Empowerment

Anne Mariegolla (2011) stated that economic empowerment of women means that they realize their rights and achieve broader development goals and financial independence. With this intention researcher is interested to know whether women from Karnataka have the same opinion. Therefore, researcher asked questions related to economic empowerment and they responses are tabulated in Table No.4.

Table No.4: Descriptive Analysis of Economic Empowerment

	N	Mean	Std. Deviation	t	Sig. (2 tailed)
Women who have higher education earn income through business, Job or any other source.	384	4.55	.594	51.027	.000
Higher educated females have financial freedom than other literate women	384	4.06	.835	24.827	.000
Higher educated can understand and perform banking transaction than other women.	384	4.39	.746	36.507	.000
Higher educated women are much aware of various investment avenues	384	4.25	.769	31.919	.000
Higher educated women understand and access easily various loan schemes	384	4.16	.738	30.700	.000
Overall Economic Empowerment	384	4.2807	.55491	45.227	.000

Source: Field Survey, 2021

Table No.4 revealed that respondents are strongly agree that women with higher education earn own income through perusing a job, running a business or any other sources than other women (4.55± 0.594) and they opined that higher educated women are more independent financially than other women (4.06±0.835). The respondents strongly agree that higher educated women perform and understand banking transaction better than other women (4.39±0.746) and they opined that women with higher educated women have more knowledge about savings and investment avenues than other women (4.25±0.769).The respondents also strongly agree that higher educated women understand the procedure of accessing loan and they get loan easily when compared to other women (4.16±0.738) and the overall mean and standard deviation of 4.28±0.55 explains that respondents strongly agree that economic empowerment of women is facilitated through higher education. The one sample t test result showed that all opinions given by respondents significantly differ from mean, therefore we can conclude that respondents' perception about economic empowerment is statistically significant ($p<0.01$).

4.4 Perception on Political Empowerment

Political empowerment of women means the existence of a political system which favors the participation and control by the women in political decision making and also in governance. Women's participation in political events has increased in recent days and women are understand their rights in society. In order to know whether higher education aids them to attain political empowerment, researcher asked respondents about the same and the results have been exhibited in Table No.4.

Table No.4: Descriptive Analysis of Political Empowerment

	N	Mean	Std. Deviation	t	Sig. (2 tailed)
Higher educated register their name for election and lead political parties	384	3.98	.830	23.238	.000
Higher educated women are competent leader and committed in political field	384	4.10	.760	28.414	.000
Higher educated women understand legal laws very easily	384	3.99	.901	21.465	.000
Higher educated women actively involve political campaign for social cause	384	3.73	.905	15.853	.000
Total Political Empowerment	384	3.9512	.67961	27.42	.000

Source: Field Survey, 2021

Table No.4 explains respondents agree that higher educated women register more to compete as candidates in election and can lead political parties (3.98±0.930) and they strongly believe that higher educated women are competent and work committedly in political field (4.10±0.760). The respondents agree that they understand legal proceedures very easily (3.99±0.901) and take active participation in political campaign (3.73±0.905). The overall mean and standard deviation are 3.95±0.67, which indicates that respondents agree that higher education helps them to achieve political empowerment. The result of one sample t test showed that all opinions given to all statements significantly differ from mean. Since p value is less than 0.01. So the opinion of respondents is statistically significant.

4.5 Perception on Educational Empowerment

Educational empowerment means enabling women to attain the knowledge, skills and self-confidence necessary to increase their employability and participate in the development process. To understand the perception of women on educational empowerment and the influence of higher education to attain it, researcher gathered opinions and represented in Table No.5

Table No.5: Descriptive Analysis of Educational Empowerment

	N	Mean	Std. Deviation	t	Sig. (2 tailed)
Providing higher education to women helps in building nation	384	4.13	.834	26.625	.000
Educated women show more self-assurance and social endorsement in the progress of community	384	4.25	.725	33.700	.000
Higher education brings environmental awareness and protection among women	384	4.23	.767	31.339	.000
Overall Educational Empowerment	384	4.2023	.64850	36.329	.000

Source: Field Survey, 2021

Table No.5 showed that respondents strongly agree that providing higher education to women helps in building nation (4.13±0.834) and also in building self-confidence and social endorsement in the progress of community(4.25±0.725). The respondents strongly agree that higher education brings environment awareness among women (4.23±0.767) and the overall mean and standard deviation are 4.20±0.65 which indicates that respondents strongly agree that higher education helps to education empowerment of women and the result of one sample t test proved opinions are statistically significant.

4.6 Perception on Psychological Empowerment

Psychological empowerment means women attaining qualities like self-motivation, self-confidence and drive for achievement which can bring about growth in their personality. In order to know whether higher education strengthen mental ability of women, researcher asked question to respondents and results are depicted in Table No.6.

Table No.6: Descriptive Analysis on Psychological Empowerment

	N	Mean	Std. Deviation	t	Sig. (2 tailed)
Higher education has made women to be more confident to vocalize their problems to the concerned authority	384	4.27	.712	35.036	.000
Obligation and capability are high among the higher educated women	384	4.13	.757	29.256	.000
Higher educated women have significant autonomy in decision making at home and workplace	384	4.08	.811	26.063	.000
Higher education trained women to face crisis management	384	4.07	.792	26.418	.000
Total Psychological Empowerment	384	4.137	.63398	35.155	.000

Source: Field Survey, 2021

Table no.5 exhibits that respondents strongly agree that higher educated women raise voice for their problem and do not hesitate to complain about the same to the concerned department (4.27±0.712) and they have high obligation and capability (4.13±0.757). It showed that higher educated women take decision independently both in home and at workplace (4.08±0.811) and they are mentally trained to face crisis management (4.07±0.792).The overall mean and standard deviation are 4.137±0.633 which explains that respondents strongly agree that higher education facilitate psychological empowerment and the result of one sample t test confirmed statistical significance.

4.8 Structural Equation Model for Impact of Higher Education on Women Empowerment

Structured equation model helps to confirm the theories with empirical data and it evaluates the validity of theories. SEM shows relationship between independent variable and dependents variable by following confirmatory approach. The figure no.1 shows proposed model of relationship between different levels of empowerment and the outcome of women empowerment. Multiple regression analysis conducted to the check impact and tried to fit the model. The figure No.1 shows path analysis and confirmatory factor analysis.

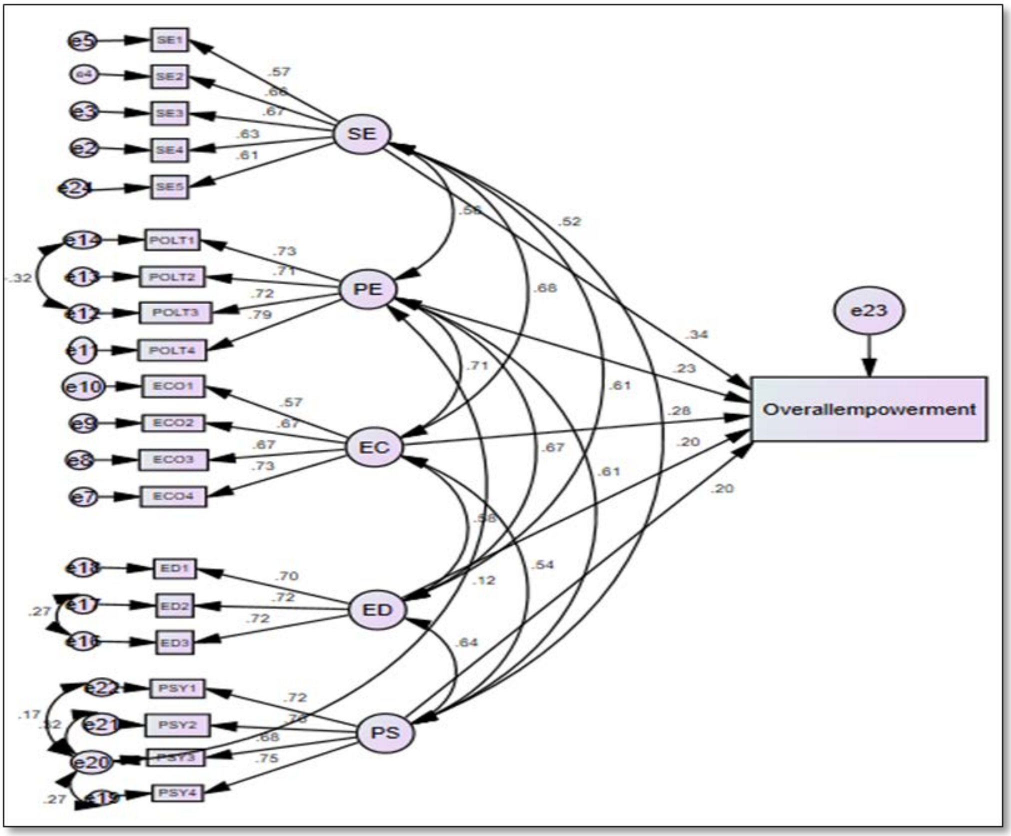

Figure No.1: Model to measure Influence of Higher education on Overall Empowerment

Firstly, confirmatory factor analysis was conducted to know the loading of each statements on respective factors. In that process researcher choose to eliminate statements which load less than 0.5. Therefore researcher eliminated fifth statement in Political empowerment (POLT5) in PE factor. Then run analysis to fit the proposed model and result of model is given in Table No.8.

Table No.8 Standardized Regression Weights: (Group number 1 - Default model)

			Estimate	p
SE4	<---	SE	.627	***
SE3	<---	SE	.666	***
SE2	<---	SE	.659	***
SE1	<---	SE	.568	***
ECO4	<---	EC	.728	***

			Estimate	p
ECO3	<---	EC	.668	***
ECO2	<---	EC	.674	***
ECO1	<---	EC	.569	***
POLT4	<---	PE	.792	***
POLT3	<---	PE	.719	***
POLT2	<---	PE	.712	***
POLT1	<---	PE	.732	***
ED3	<---	ED	.720	***
ED2	<---	ED	.722	***
ED1	<---	ED	.696	***
Overall empow-erment	<---	SE	.344	***
Overall empow-erment	<---	PE	.230	***
Overall empow-erment	<---	EC	.280	***
Overall empow-erment	<---	ED	.196	***
PSY4	<---	PS	.749	***
PSY3	<---	PS	.685	***
PSY2	<---	PS	.700	***
PSY1	<---	PS	.719	***
Overall empow-erment	<---	PS	.197	***
SE5	<---	SE	.607	***

The table No.8 indicates standardized regression weights of each path, which revealed that Social empowerment through higher education significantly influence 34.4% on overall empowerment, Political empowerment through higher education significantly influence 23% on overall empowerment, Economic empowerment significantly empowerment influence 28% on overall empowerment, Educational empowerment through higher education significantly influence 19.6% on overall empowerment and Psychological empowerment through higher education significantly influence 19.7% on overall empowerment. Since all standardized regression value statistically significant, it has been concluded that higher education influence women empowerment. This result also showed in path diagram and its goodness of fit measured with GFI (0.898), AGFI (0.860), CMIN/DF (2.747), CFI (0.945) and RMSEA (0.068). All these fit indices of model showed perfect for good model as stated by Browne and Cudeck (1992).

5. Conclusion

From the study it has been found out that higher education contributes to the various aspects of women empowerment. Therefore, it is suggested to the concerned policy makers to come up with necessary policies, which can ensure quality higher education to each and every woman of the country. A paradigm shift from the male dominated society to a society where there is gender parity can only promote the balanced and overall development of the nation.

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The Mediating Role of Attitude on Country of Origin and Consumer Purchase Intention

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Abstract

Purpose – This study aimed to determine the dimensions of the country of origin (COO) along with its impact on consumers' purchase intention (PI). This study further explored the mediating role of attitude on the relationship between COO and PI.

Design/methodology/approach- To achieve this aim, a quantitative study was undertaken with 825 responses collected through a self-administered questionnaire from Delhi- NCR, and Mumbai in India. The constructs were measured using a five-point Likert scale. SEM and regression were performed to analyze the results.

Findings- Country-specific image (CSI) and product-specific image (PSI) were the two major dimensions of COO. COO played a considerable role in influencing purchase intention (r .426) but in the presence of attitude, the relationship became insignificant (.377(.000)).

Limitations- The present study was limited to the Delhi-NCR and Mumbai in India and had taken only two product categories: - mobile phones and TV. Only one mediating variable (attitude) was included in this study.

Originality/value – This study was the first of its kind to examine how much COO as a single purchase indicator account for PI for Indians and to what extent this relationship was mediated by attitude. This study adds to the current body of knowledge in understanding whether the COO of a product will make it more or less appealing to Indian buyers and provides important implications for marketing managers in designing their promotional campaigns and marketing strategies to carter a wider segment of customers.

Keywords- Country of origin (COO), purchase intention, Attitude

1. Introduction

In the present globalized era, products are generally associated with their source country, that is the country of origin (COO) (Johansson and Thorelli, 1985). Examples include perfumes from France, automobiles from Germany or Japan, Columbian coffee, watches from Switzerland, and electronics from China. The COO was defined by Nagashima (1970) as "the image, reputation, and stereotype that buyers associate with a specific country's products." Variables such as representative products, beliefs, political and economic backdrop, experience, history, culture and customs, help to build this image. Furthermore, Han (1989) stated that a country's image is consumers' general perceptions of the product quality originating from a specific country. Thus, it is an overall perception that a consumer holds for a product originating from a specific nation.

COO has always been a hot topic of discussion like in the 'Made in America' campaign; America's president Trump initiated "Made in America" week at the White House to promote Made in USA products (Long, 2017). Recently the Consumer Protection Act 2019 in India has also mandated e-commerce firms to mention the COO for all their products so that a consumer can make a well-informed decision (Ministry of Law and Justice, 2019). McKinsey's 2019 consumer report states that young Chinese consumers show a greater preference for products made in China (Luan *et al.,* 2019). This clearly indicates how much COO information is necessary for consumers to understand. Earlier people blindly go for global products, but now the tastes and preferences of Indians are making a definite shift, and they are making their decisions very wisely. Currently, Indians are evaluating whether they should go globally or locally. Thus, it is essential to know how much emphasis Indians place on imported products or on the country's image.

If seen internationally, COO is a topic that has been extensively explored, but the findings are often contradictory and non-generalizable, possibly due to different combinations of products, different research locations, or perhaps the multidimensionality of COO. In the past literature, there is a paucity of studies that have taken dimensions of COO along with a mediator to ascertain its impact on purchase intention (PI). Particularly in India, there is a lack of research on the COO construct. Therefore, this study has precisely considered COO as a single cue indicator to determine its impact on purchase intention. This study also investigates how attitudes mediate this relationship. The study will definitely be useful in understanding whether the 'foreignness' of a product will make it more or less appealing to Indian buyers and how marketing managers can utilize this in their promotional campaigns for their indigenous products to reach wider segments of customers.

The present research paper is divided into five parts: the first review of literature and relevant concepts are presented, and on the basis of its hypotheses are developed; the second research methodology is discussed in detail; the third results and analysis are presented; the fourth discussion and conclusion are presented; and the fifth limitations and implications of the research study are given at the end of the paper.

2. Literature review and research hypotheses

2.1 COO

COO is a multi-dimensional construct that evokes two discrete cognitive responses (Darley and Lim, 1997; Jaffe and Nebenzahl, 1996); First, COO helps consumers infer the quality of a product and value for money when other concrete information about the product is not easily accessible (Wyer and Hong, 1989); Second, COO relates to one's own group affiliation, that is, national identity and loyalty (Bruning, 1997). Carli and Maheswaran (2000b) defined COO as the place of manufacture that influences product evaluations. Peterson and Jolibert (1995) said COO is often communicated as a "made in" phrase. Examples include, automobiles made in Germany, L'Ore´al Paris, Singapore Airlines, etc.

COO is more than just another cognitive cue for customers; it also has emotional and symbolic importance for people (Wyer and Hong, 1989, 1990). COO relates a product to authenticity and status; associates a product with ritual, sensory, and affective connotations; and relates products to a sense of pride and national identity, resulting in a strong emotional bond (Steenkamp and Verlegh, 1999). As a result, country image serves as an emotive "expressive" or "image" attribute, particularly in developing nations (Batra *et al.,* 2000).

COO has normative connotations in addition to cognitive and emotive components, such that evaluating items from a particular nation may be interpreted as support for the nation's practices and policies (Leonidou *et al.,* 2007). Similarly, people punish certain countries by boycotting their products (Smith, 1993). The financial, social, and performance components of perceived risk are all affected by COO effects (Ahmed and Eljabri, 2002a). Consumers keenly evaluate the features and performance of products coming from nations with high perceived risk and eventually hold negative attitudes toward them, leading to low purchase intention (Verlegh and Steenkamp, 1999). Country image fluctuates from place to place because of changes in economic, social, and legal-political considerations (Leonidou *et al.,* 2007). Based on a country's level of marketing skills and manufacturing infrastructure, sentiments regarding its products may change over time and across product categories (Chryssochoidis *et al.,* 2007). Finally, COO effects are linked to customer knowledge of the product, familiarity with its attributes, involvement level with the product, and experience with the product itself (Johansson *et al.,* 1994; Schaefer, 1997). In low-involvement scenarios, consumers place greater emphasis on COO than on high-involvement ones (Maheswaran, 1994).

Papadopoulos (1992) argued that globalization has made the COO a very important phenomenon. Heslop *et al.,* (2010) found that COO influence is not just restricted to products, but also covers events and experiences such as the Olympics under its ambit. In the literature, there is insufficient research that can prove that consumers are indifferent to country-of-origin image information and its usage in purchase decisions. As a result, COO research is also a hot topic for marketers and practitioners (Josiassen *et al.,* 2008).

Khachaturian and Morganosky (1990) argued that a country's level of industrialization affects consumers' perceptions of the country; and that "the less-industrialized the country, the fewer chances of good quality." This supports the findings of Wang and Lamb (1983), who discovered that the readiness of the US to buy items was determined by the level of industrialization in each source country.

Hong and Wyer (1989) found that when the COO cue is presented with other cues, such as brand and price, the cognitive effects of the COO are mostly seen in two ways: *Hallo effect* and *Summary effect.* When a consumer is unfamiliar with the products of a specific nation, COO acts as a halo effect that affects consumer attitudes toward the products (positive or negative) and indirectly affects overall product evaluation through these attitudes (Johansson *et al.,* 1985). A mere reference to a country name activates concepts and triggers feelings in a consumer's mind. These latent feelings last long as they are linked to country-specific feelings. On the other hand, if a consumer is familiar with a country's product, then the summary effect operates under which a consumer infers the overall country image via product information, which in turn influences product attitude (Han, 1989). In this case, country image acts indirectly to affect product characteristics and attitudes.

2.2 COO and Product Evaluation

According to *Information processing theory*, a consumer makes decisions about the quality of a product after going through each stage of information processing. A cue is defined as any type of information that is available to a consumer before consuming a product, and can be extrinsic (COO, brand, price, etc.) or intrinsic (taste, features, etc.) (Rao and Monroe, 1989). Internal cues are related to a product's internal attributes: whereas external cues are not (Feng *et al.,* 2020). When intrinsic cues are not readily available, consumers rely mostly on extrinsic cues to infer the quality of a product. The COO (extrinsic cue) is used as a surrogate to predict the attributes of a product coming from a particular nation before consumption (Maheswaran, 1994). *Signalling theory* suggests that consumers rely more on extrinsic cues in making a purchase decision (Xu *et al.,* 2020). A consumer evaluates a product more positively if its nation has a favorable image and vice versa. Country image affects product evaluation in three ways. First, it acts as a quality cue, and based on quality perception, a consumer infers the overall attributes of a product (Wyer and Hong, 1989). Second, it acts as an independent cue that can be used with other cues to help in the valuation of a product (Wyer and Hong, 1989). Third, it acts as a heuristic to ease the evaluation process, even when other cues are more relevant (Li and Wyer, 1994). This situation occurs when either a consumer is unfamiliar with a product or when he is loaded with too much product information.

2.3 COO and Purchase Intention

Purchase intention is defined as "a consumer's willingness to purchase a particular product" (Dodds *et al.,* 1991). Purchase intention is viewed as "an individual's motivation to make an effort to purchase a product." It also indicates that an individual will repurchase a product if he is satisfied that the product is worth purchasing. The COO has a direct and significant impact on purchase intention (Awada and Yiannaka, 2012; Godey *et al.,* 2012; Hsieh, 2004; Laroche *et al.,* 2005). According to Peterson and Jolibert (1995), purchase intention has a stronger link with personal commitment than with perceptual evaluation. Purchase intention is a criterion variable for exploring the influence of a country's image. A favorable COO acts as a quality cue and has a significant impact on consumers' willingness to buy a product.

According to Signalling *theory,* COO image plays an important role in consumers' perceptions of products from a specific country (Diamantopoulos *et al.,* 2020) and purchase intentions (Chen *et al.,* 2020). Researchers have proved that COO influences consumers' purchase intentions and quality beliefs about a product (Arora *et al.,* 2015; Diamantopoulos *et al.,* 2012; Magnusson *et al.,* 2011; Verlegh and Steenkamp, 1999).

H01: There is a significant relationship between COO and purchase intention.

2.4 COO, Attitude and Purchase Intention

COO is one of the most important cues that a consumer refers to when evaluating a product coming from a specific nation (Diamantopoulos *et al.,* 2020; Esmaeilpour and Abdolvand, 2016; Rios *et al.,* 2014).

A favorable association with a COO leads to a favorable attitude toward a product (Ahmed *et al.,* 2002; Gurhan-Canli and Maheswaran, 2000b; Leclerc *et al.*, 1994) and positive purchase intentions (Ahmed *et al.,* 2002; Ahmed and d'Astous, 1995; Tse *et al.,* 1996; Yang and Wang, 2008; Zhang, 1996). If a consumer fails to associate a product with its country of origin, then it will have a limited impact on his attitude and final purchase intentions. COO has a significant influence on consumer attitudes (Cakici and Shukla, 2017). The tag of 'Made In' was found to have a significant impact on attitude formation and product evaluation (Johansson, 1989).

Indeed, COO has a significant influence on purchase intention, especially when consumers do not have much information about a product (Basfirinci and Uk, 2020). Pecher and Tregear (2000) found that the COO influences attitudes of the UK consumers toward German cheese. COO affects the attitudes of consumers (Lee and Ganesh, 1999) and, in turn, leads to consumers' purchase intention. Gary and Roger (2000) found that the COO was a significant antecedent of product attitude. Attitude is important because it directly influences the consequences of an action (Vallerand *et al.,* 1992). Attitude has a significant influence on consumers' purchasing behavior (Samiee, 1994).

H02: Attitude plays a mediating role in the relationship between COO and PI.

3. Research Methodology

3.1 Questionnaire and Measurement

To achieve these objectives, quantitative research was undertaken with a structured questionnaire (research instrument/tool) to collect primary data from respondents (see Table 1). The questionnaire consists of four parts. The first part asked for socio-demographic details such as age, gender, income, education qualification, occupation, and marital status. The second part measured attitude. The third part includes the COO and the fourth part asks for the PI. The questionnaire was initially designed in English and was translated whenever required. The questionnaire used a five-point summated Likert scale, with endpoints strongly disagree (5) to strongly agree (1). The literature for framing questionnaire was extracted using databases such as Emerald, Sage, Science Direct, Wiley Online, Taylor and Francis, and Springer.

Table 1. Questionnaire Statements

Constructs	Statements	Sources
COO	Origin Country indicates economic Development	Terpstra and Han, 1988; Nagashima, 1970; Roth and Romeo, 1992
	Origin Country indicates technological advancement	
	Origin Country indicates industrialization	
	Origin Country indicates the product is reliable	
	Origin Country indicates the product has high quality	
	Origin Country indicates the product is stylish	
	Origin Country indicates the product is innovative in manufacturing	
	Origin Country indicates the product is durable	

Attitude	I would be satisfied by owning the product	Kim and Pysarchik, 2000
	Buying the product is a wise idea	
	I like the product	
	The product is good	
Purchase Intention	I will surely buy this product	MacKenzie *et al.,* 1986
	I will be happy to purchase the product	
	I will definitely take the product to home	
	I will certainly use the product	

3.2 Pilot Study

A pilot study was conducted to determine the content validity and reliability of the questionnaire. For content validity, a jury of academicians/experts was contacted to determine whether the construct statements had full coverage of the content or not. The questionnaire was revised after inculcating valuable suggestions and feedback from the experts. The questionnaire was then administered to 50 respondents, who were requested to fill, review, and critique the questionnaire. Cronbach's alpha(α) was used to test reliability, which was found to be .876 (> .70, (Hair, 2013). Based on the respondents' answers, some statements were reframed and the questionnaire was finalized.

3.3 Sampling and Data Collection

The sampling frame was Indians who were above 18 years of age, had some source of income, and used either TV, mobile phones, or both. The sample respondents were from Gurgaon, Delhi, and Mumbai. These three cities were chosen because they are cosmopolitan cities and people from all over India come here to live, who differ in their behavior owing to their different socio-cultural backgrounds, making the findings of the study more generalizable. Non-probability sampling (convenience sampling) was used to reach respondents. The respondents were contacted by visiting colleges, universities, offices, and marketplaces in each city. Two electronic product categories were chosen, namely TV and mobile phones, to represent the majority of the consumers' electronics sector (IBEF, 2020). Specifically, these two products were chosen because TV is a household appliance and the mobile phone is a personal gazette to which every economic group of society and every age group easily connects. Both are high-technology products, and significant time and money are involved in their purchases. The primary data were collected between 5th August 2022 and 17th October 2022 (including the pilot study), in which 1200 questionnaires were circulated both online (Google form) and offline in the four major cities, of which 825 were successfully completed and returned (68.75% completion rate). It took 7-10 minutes to complete the questionnaire.

4. Results and Analysis

4.1 Descriptive Statistics

Table 2. Descriptive analysis

Descriptive	Frequency (n=825)	Percentage (%)
Gender		
Male	451	54.67
Female	374	45.33
Age		
Below 20	124	15.03
20-30	456	55.27
30-40	145	17.58
40-50	93	11.27
50-60	5	.006
Above 60	2	.002
Income		
Below20k	218	26.42
20k-40k	457	55.39
40k-60k	91	11.03
60k-80k	36	4.36
Above 80k	23	2.79
Education		
Undergraduate	133	16.12
Graduate	567	68.73
Post-graduate	84	10.18
Higher Studies	41	4.97
Occupation		
Student	244	29.58
Working	496	60.12
Non-Working	33	4.00
Self-Employed	47	5.70
Others	5	.006
Marital Status		
Single	494	59.88
Married	331	40.12

4.2 Reliability

Reliability is a measure of the internal consistency of the constructs. A construct is considered reliable if Cronbach's Alpha (α) >.70 (Hair *et al.,* 2013). The reliability results are summarized in Table 3:

Table3. Reliability Statistics

Constructs	No. of items	Cronbach Alpha (α)
AT	4	.801
CS	3	.765
PS	5	.840
PI	4	.843

AT: Attitude; CS: Country Specific Image; PS: Product Specific Image;

PI: Purchase Intention

4.3 Confirmatory Factor Analysis (CFA)

CFA was conducted using AMOS (24) to test the measurement models. This technique has been widely used in past research to test propositions (Byrne, 2010; Hair *et al.,* 2010). All model-fit indices used to measure the overall goodness of fit were within the acceptable range. The results are summarized in Table 4.

Table 4. Model Fit indices

Fit Indices	Recommended Value	Sources	Obtained value
*CMIN/DF**	3-5	Ullman (2001)	3.125
*CFI***	>0.9	Bentler (1990)	.961
*TLI***	>0.9	Bentler (1990)	.952
*IFI***	>0.9	Bentler (1990)	.961
*RFI***	>0.9	Bentler (1990)	.932
*NFI***	>0.9	Bentler (1990)	.944
*MR****	<.08	Hu and Bentler (1998)	.0389
RMSEA***	<.08	Hu and Bentler (1998)	.051
Model Fit; **Goodness of Fit Indicators; * Badness of Fit Indicators*			

Construct reliability was analyzed using Cronbach's alpha and composite reliability (CR). For each construct in the study, Cronbach's Alpha > .70 and CR were also > 0.70 benchmark (Byrne *et al.,* 2013; Hair *et al.,* 2010; Islam *et al.,* 2021d). Hence, construct reliability is found to be significant for each construct. Convergent validity was estimated using CR and Average Variance extracted (AVE) (Iglesias *et al.,* 2019; Pervan *et al.,* 2018). The AVE values were > 0.50 and the CR values were also above 0.7. Thus, convergent validity was established. The results are presented in Table 5.

Table 5. Convergent Validity

Items	Loadings	Composite Reliability (CR)	Average Variance Explained (AVE)
AT1 ← AT	.726		
AT2 ← AT	.794		
AT3 ← AT	.740		
AT4 ← AT	.756	.806	.511
CSI1 ← CS	.691		
CSI2 ← CS	.758		
CSI3 ← CS	.720	.767	.523
PSI1 ← PS	.700		
PSI2 ← PS	.706		
PSI3 ← PS	.743		
PSI4 ← PS	.739		
PSI5 ← PS	.691	.840	.513
PI1 ← PI	.722		
PI2 ← PI	.841		
PI3 ← PI	.837		
PI4 ← PI	.644	.849	.586
AT: Attitude; CS: Country Specific Image; PS: Product Specific Image; PI: Purchase Intention			

Discriminant validity was analyzed using the Fornell and Larcker criterion (Fornell and Larcker, 1981; Quintal *et al.,* 2010). According to this criterion, discriminant validity occurs if the square root of AVE is > its correlation with the other constructs mentioned in the study. The results are provided in Table 6(a).

Table 6(a). Discriminant validity

	PS	**PI**	**AT**	**CS**
PS	**.716**			
PI	.418	**.766**		
AT	.464	.685	**.715**	
CS	.479	.362	.490	**.723**

However, discriminant validity using HTMT ratio is also analyzed. All the figures were < .85 (Henseler *et al.,* 2015). Hence, discriminant validity was well established. Table 6(b) summarized the results:

Table 6(b). Discriminant validity

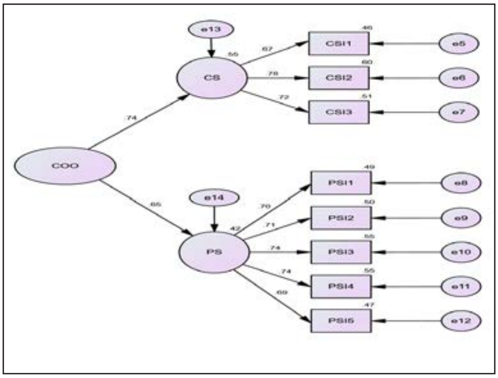
	PS	PI	AT	CS
PS				
PI	.444			
AT	.472	.718		
CS	.479	.387	.498	

4.4 Second-order Construct

This study found that COO has two dimensions: macro and micro. A macro is a country-specific image (CSI) comprising the economic, technological, and political dimensions of a country as a whole, while a micro is a product-specific image (PSI) comprising the design, innovation, workmanship, and prestige dimensions of a product (Pappu *et al.,* 2007). The correlation between CSI and PSI construct was .480, factor loadings > .6, composite reliability (CR >.7), and convergent reliability (AVE >.5) were above the specified limits. Hence, a second-order construct was formed and validated. Similar results were put forward by Diamantopoulos *et al.* (2020), and Zeugner-Roth and Žabkar (2015) who highlighted that CSI and PSI both are the indicators of COO construct Table 7 provides the results:

Table 7. Loadings, CR & AVE

Items	Loadings	(CR)	AVE
CS <--- COO_	.742		
PS <--- COO	.646		
CSI1 <--- CS	.675		
CSI2 <--- CS	.775		
CSI3 <--- CS	.717	.767	.523
PSI1 <--- PS	.699		
PSI2 <--- PS	.710		
PSI3 <--- PS	.742		
PSI4 <--- PS	.739		
PSI5 <--- PS	.688	.811	.519



4.5 Hypotheses Testing

H01: There is a significant relationship between COO and consumers' purchase intention.

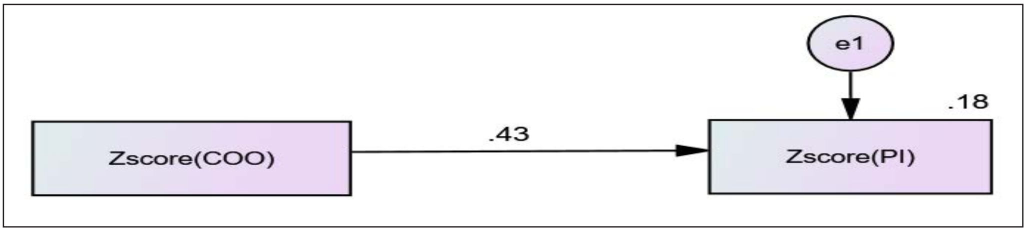


Table 8. Regression Results

Hypothesis	St. Reg. weight (b)	St. Estimates	t-value	p-value	R. sq.	Hypothesis
PI <--- COO	.426	.032	13.508	.000*	.181	Accepted
*p < .05 Significant						

In the first hypothesis, PI is the dependent variable and COO is the independent variable. The hypothesis was supported, as the std b. value was .426(.000), significant enough to indicate that there exists a correlation between COO and purchase intention. The present study is in line with previous works where Godey *et al.* (2012), Hsieh (2004), and Laroche *et al.* (2005) substantiated that the COO plays a significant role in influencing the purchase intention of a product.

H02: Attitude has a mediating effect on the relationship between COO and purchase intention.

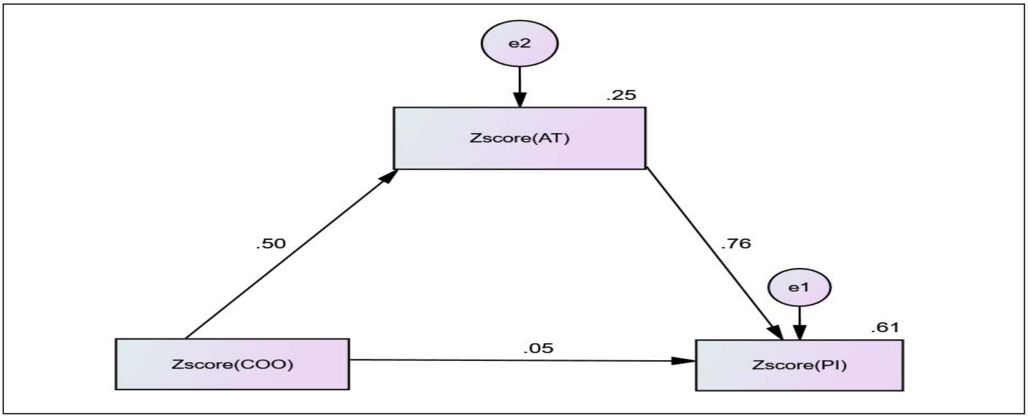


Table 9. Mediation Results

Total effect (COO → PI)			Direct Effect (COO→ PI)				Indirect Effect (COO → PI)		
coefficient	t value	p value	coefficient	t value	p value	coeffi-cient	p value	Percentile bootstrap	
								L	U
.426	13.508	.000*	.049	1.953	.077*	.377	.000*	.319	.435

**p* < .05 Significant [Hypothesis: Supported (Full Mediation)]*

In the second hypothesis, attitude is the mediating variable, COO is the independent variable and PI is the dependent variable. This hypothesis was also supported. The total effect was significant at .426(.000), the direct effect was insignificant at .049(.077), and the indirect effect was significant at .377(.000), proving that attitude has a full mediating effect on COO and purchase intention. The results indicate that in the absence of attitude, COO exerts a significant influence on purchase intention, but with attitude, the direct relation of COO on purchase intention becomes insignificant and there remains only an indirect effect, that is through attitude only. In the literature, similar results were found, where it was seen that the COO first affects consumer attitude toward the product (Lee and Ganesh, 1999) and, in turn, leads to final purchase intention (Ahmed *et al.,* 2002; Yang and Wang, 2008).

5. Discussion and Conclusion

The present study aimed to examine the relationship between COO and PI and access the mediating role of attitude in the relationship between COO and PI.

First, a socio-demographic analysis was conducted (see Table 2), in which the percentage of males (54.7) and females (45.3) were almost comparable, leading to an unbiased distribution. The majority of the population (78%) was relatively young (<40 years), and the majority (55.4%) had an income in the range of 20k-40k. The sample was quite educated, and 83% of the population was either graduates or above. 66% of respondents were working or self-employed and 40% of the sample class was married. Cronbach's alpha (α) (in SPSS) was used to test the reliability of each construct (Hair *et al.,* 2013). The reliability of all the constructs was above 0.7 (see Table 3).

To test the model fit and validity (convergent and discriminant) of all zero-order constructs (details are shown in Table 4, 5 and 6(a) & (b)), CFA was run in AMOS, and all values were found above the benchmark (Byrne, 2010; Hair *et al.,* 2010; Islam and Asad, 2021). Hence, the zero-order construct was validated.

COO image influences purchase behavior in several ways. Consumer purchase behavior has been linked to the characteristics of the country of origin (Han, 1990; Papadopoulos *et al.,* 1990). A consumer's willingness to go for a specific country's product is related to the country's economic development, technological advancement, industrialization, and political environment. Yaprak and Parameswaran (1987) found a general country attribute (GCA) to be one of the faces of an image of an origin country. Purchase behavior is also related to the overall product features and performance of a specific country of origin. Papadopoulos *et al.* (1989) identified that a consumer's perception of the people of any unfamiliar nation is related to their knowledge about their capacity to manufacture high-quality products, and this perception, in turn, affects the evaluation of products coming from that nation. Parameswaran and Yaprak (1987) found a general product attribute (GPA) as the second face of the image of an origin country. Moreover, the present study also highlights a high correlation (.48) between CSI and PSI, so the second-order construct COO was formed (see Table 7). Convergent validity was checked and found to be above the specified limits; hence the second-order construct COO was well validated.

The first hypothesis was supported, as the std b. value was .426(.000), significant enough to indicate that there exists a correlation between COO and purchase intention (refer Table 8). Similar results have been found by Agarwal and Teas (2000), Baker and Ballington (2002), Diamantopoulos *et al.* (2011), and Laroche *et al.* (2005) in which COO has a significant impact on PI. Therefore, the present study's results are in line with the previous literature.

From the findings of the present study, it can be concluded that, as Indians, we give a lot of importance to the fact that where a product is from. A possible explanation for this could be that as India is a developing nation, we always look for a product that comes from a more developed nation, as the development and industrialization of a nation is related to its workmanship, which in turn is reflected in the perceived quality attributes (reliability and durability) of its products (Iyer and Kalita, 1997; Li and Wyer, 1994). For example, German cars are preferred because of their perception of German engineers' workmanship and the fact that Germany is a technologically advanced nation.

The second hypothesis is also supported. The total effect was significant at .426(.000), the direct effect was insignificant at .049(.077), and the indirect effect was significant at .377(.000), proving that attitude has a full mediating effect on COO and purchase intention (details are shown in Table 9). The results indicate that in the absence of attitude, COO exerts a significant influence on purchase intention, but with attitude, the direct relation of COO on purchase intention becomes insignificant and there remains only an indirect effect through attitude. *The theory of information-processing* postulates that a consumer uses product cues to form beliefs about a product, which in turn, influences, his/her purchase decision. *The theory of Reasoned Action (TRA)* put forward that an individual's purchase intention is determined by his attitude toward the product (Carr and Sequeira, 2007). If the attitude is positive, it will lead to purchase intention; otherwise, it will not (Roth and Romeo, 1992).

6. Managerial Implications

As the magnitude of world trade continues to grow, the marketplace (both national and international) is becoming more competitive day by day, so it is essential for marketing managers to understand Indian consumers' attitudes toward the product of their own nation and the product coming from the outside world.

By effectively understanding the strength of the relationship between country of origin and purchase intention for Indian consumers, marketers can frame promotional campaigns for indigenous products. Marketers must highlight the '*Buy Local*' or '*Made in India*' while formulating advertisement campaigns for Indian products. They must perform intelligent brand positioning by performing proper market segmentation after considering the tastes and preferences of Indians.

As India is an emerging market with immense business opportunities, foreign brands are trying to come and continue here, in order to halt their further penetration, Indian manufacturers need to reconsider their own product quality and offer quality products at competitive prices. It has been seen in the literature that the consumer has a favorable attitude toward a product manufactured in a country that has a good image worldwide because the country's image gives an indication of the workmanship, industrialization, and technology of that country. Moreover, the results of the present study also indicate that COO has a positive impact on PI, which is very important for India as a developing nation to work on enhancing its "country-of-origin" image, which would help in improving prestige associations in the minds of Indian consumers and consumers worldwide.

7. Limitations and Future Scope

A few limitations should be considered when generalizing the results of this study. First, TV and mobile phones are the only two product categories used to represent electronics, limiting the generalizations of the findings to the other product categories coming under the ambit of electronics. Second, the study took only one mediating variable (i.e., attitude); in the future, other mediating variables such as familiarity and, purchase involvement, could be taken to strengthen the validity of the results. Third, this study was limited to the geographical territory of India. There is no doubt that India is a culturally rich country, but COO is a concept that differs from culture to culture, place to place so, in future bi-national or multinational studies (specifically nations that differ from India in socio-cultural terms) could be undertaken to validate the results worldwide. Fourth, whether a consumer should go for a foreign product is not only dependent on COO alone; rather, there are other cues, such as brand, price, ethnocentrism, etc., that could be taken in the future as independent variables along with COO to see their combined effect on final purchase behavior. Fifth, the present study is restricted to only one product category, that is, electronics, and in the future, other complex high-tech products could be taken to understand the COO phenomenon in more depth, or even the service sector could be taken to gain more insights into this complex phenomenon.

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Urban Unorganized Sector of North-East India: Dimensions and Growth

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Abstract

The unorganized manufacturing sector has been considered as the main engine of growth for manufacturing in India. Given the paucity of studies concerning the urban unorganized manufacturing sector (UUMS) in the North-East India, this paper aims to examine its growth performance along with an overview of composition of its workforce. The data has been obtained from three rounds of NSSO data viz., 62nd, 67th and 73rd round . The UUMS holds a significant position across the North-East, given the substantial no. of enterprises and workforce engaged in the sector. While the growth of enterprises has been led by OAMEs, the establishments have pushed the employment growth. Although, employment of females has seen a less significant position in UUMS, contractual employment has been largely driven by female part time workers. Given its dynamic nature, the UUMS has a greater scope in making valuable contributions for the development of North-East's economy.

Keywords: Unorganized manufacturing, Urban areas, OAMEs, Establishments, North-East India

I. Introduction

The significance of the unorganized sector in the urban economies of the developing countries has been the centre of discussion in many academic circles. The degree of urban informality and its complexity is much higher in a heavily populated country like India (Kundu, 1999) mostly because it has important implications in our urban economies in myriad ways. It is diverse and predominantly aims to provide employment to the large pool of unemployed workers who are not skilled enough to get involved in the high paying jobs. The process of accelerated urbanisation coupled with a growing rural urban migration has been in a lot of talks and debates over the years, especially because it has important implications in the workforce composition in the urban areas (Panda, 2000). Mohapatra (2012) states that the total employment share of unorganized sector is shown to be around 65-70 percent in the urban areas. The higher share is mainly contributed by the low skilled rural migrants who are unable to get a job in the organized sector and are absorbed in the ever growing unorganized sector.

In the developing economies of the world, 70-80 percent of labour force earn their livelihood from unorganized sector (Agenor, 1996).Particularly, in India, the growth of the unorganised sector is employment oriented (Mitra, 2014). The unorganized sector accounts for 93 percent labour force and 60 percent GDP (Kabra, 2003). In another study by NCEUS (2008), it is reported that the share of labour force and GDP comes to around 90 percent and 50 percent respectively (Kalyani, 2016).

Shrija and Shirke (2014) in their study on the distribution of informal employment both in the organised and unorganised sector in India shows that manufacturing sector is one of the main employment generating sectors and to embark on a journey of economic growth, focus on the manufacturing sector should be given due importance (Goldar et al., 2016). The Economic survey (2018-19), points out that if the labour force participation rate is assumed to be around 60 per cent over the next two decades, then yearly, 55-60 lakh jobs have to be generated. But keeping in mind with India's agriculture growth rate of 6.6 percent, and current demographic dividend, it's not possible to improve the growth trajectory with organized manufacturing alone. Herein, lies the importance of unorganized manufacturing sector (Dandapat et al., 2021). As outlined by Sahu (2010), the share of informal sector in India to the total manufacturing production and exports is around 40 per cent and 35 per cent respectively. It provides a hub for employment as it covers around 90 per cent of the industries in the country.

Considered as a vital stimulus for propounding growth in a country (Saikia, 2015), around two thirds of the manufacturing employment in India is accounted by the unorganized manufacturing sector (NCEUS, 2008). Moreover, 80 percent of employment is generated from the unorganized manufacturing enterprises (Unni and Rani, 2003). In addition to the generation of employment opportunities, the sector's contribution to output, income creation and export earnings is indubitable (Saikia & Gogoi, 2018; Saikia, 2015; Mariappan, 2011). In view of the significance of the Urban Unorganized Manufacturing Sector (UUMS), a detailed understanding of the structure of enterprises, employment and composition of workforce is important and this paper is an attempt to understand it with respect to the North-East part of India, where only few studies have been undertaken till date.

Structure of enterprise, employment and composition of workforce in unorganized manufacturing sector in India

The later reform period, especially after the 1995s, saw a surge in the growth of UMS in both value added and employment. The growth has been mainly attributed to the existing industrial policies and the rising linkages between formal and informal manufacturing sector (Unni & Rani, 2003). Interestingly, the employment growth was more visible in the urban areas (Unni & Rani, 2003), as it is being understood that there was a significant structural shift owing to the growing urban poverty and inability of the organised sector to fulfil the rising demand (Mitra, 1998; Mitra, 1994 ; Mukherjee, 2004).

It appears that one of the distinguishing features of the UMS in India is the heterogeneity aspect of its sub-sectors and enterprises operating under it (Richardson, 1984). Looking into its structure, the sector on one hand, comprises of family operated units without the use of hired labour and who are generally trained among themselves. On the other hand, there are enterprises where skilled or semi-skilled workers are hired from outside (Mitra, 2015). Notably, these enterprises have been a major contributor to employment and output as evident from literature.

Following the analysis of various NSSO reports over time, we can see the significant contribution of UMS in share of enterprises and employment. NSSO (1999-2000) estimated that the UMS constituted around 32 per cent of enterprises and created jobs for around 37 per cent of the workforce. In fact, in a report by World Bank (2010), the organized sector constituted only 1 percent and 26 percent of enterprises and employment respectively, out of the 14.8 million enterprises providing employment for 45.7 million workers. In the subsequent round of NSSO (2005-06), 17 million UMS enterprises were estimated providing employment for 36 million workers. The period of 2006-07 showed that the sector's share to GDP at factor cost was 16 percent (Mariappan, 2011). According to NSSO (2010-11) and ASI (2010-11), the share of enterprises and employment to UMS were 99 percent and 73.3 percent respectively. The latest round of NSSO (2015–2016) reported that the share of manufacturing enterprises came to around 31 percent , out of the 63.4 million unincorporated non-agricultural enterprises excluding construction (Bose, 2022).

While there has been plethora of micro and macro level studies of UMS in India (Banerjee, 1983; Romatet, 1983; Mitra, 1994; Unni & Rani, 2003), studies focusing solely on the dynamics of UUMS in North-East is less. Kumar et. al (2007) in their study about the unorganized manufacturing sector in both the rural and urban economies of North - East India states that the small-scale unorganized industrial sector hasn't provided much sustainable options to the economy because of their uncompetitive nature and low levels of productivity, even though it has provided livelihood opportunities for both the rural and urban areas. There is an advantage of the urban based enterprises over the rural based enterprises in terms of higher productivity levels. It may be noted here that the extensive literature on unorganized manufacturing does not adequately address the North-Eastern states, apart from few studies conducted in Assam. The significance of the UMS to become an important driver of growth in a state like Assam is highlighted by Mazumdar and Borbora (2011) .Saikia & Barman (2018) examines that the UUMS in Assam is very small in size compared to its rural areas. However, its slowly expanding in size as its share doubled from 6.7 percent to 13.1 percent in number of enterprises and from 9 percent to 18.5 percent in number of workers over the period 1994-95 and 2010-11.

Reviewing the existing literature, there are only few available studies on the UMS for the North-Eastern states of India. As against this picture, the paper seeks to examine the status of UUMS for the different states in North- East India by examining: 1) The growth performance of the UUMS in terms of growth in number of enterprises and employment 2) Assessment of the composition of its workforce.

The paper runs through six sections: The first section covers the Introduction. The second section outlines the data sources and methodology. The third section presents an account of the size of the unorganized manufacturing sector for the North-Eastern states in terms of number of enterprises and number of workers. The fourth section briefs about the composition of workers by employment type. Finally, the fifth section concludes the paper.

II. Data Sources and Methodology

Secondary data obtained from the published reports of the latest three rounds of the National Sample Survey Organisation (NSSO) - 62nd round (July 2005- June 2006), 67th round (July 2010- June 2011) and 73rd round (July 2015- June 2016) for Unorganised Manufacturing Sector (UMS) constitutes the main data source for the paper. Thus, the period under study will be from 2005-06 to 2015-16.

One of the main issues faced is the inter-comparability of the data set published in various rounds of NSS, that is, the bifurcation of the categories of UMS into - Own Account Manufacturing Enterprises (OAMEs), Non-Directory Manufacturing Establishments (NDMEs), and Directory Manufacturing Establishments (DMEs). NSSO has categorised the UMS in India into three segments: firstly, OAMEs, which operate on a fairly regular basis without a hired worker; Secondly, NDMEs, which takes up to six workers, with at least one being hired on a fairly regular basis; Lastly, the DMEs, which take up to six or more workers though less than ten workers, with at least one being hired on a fairly regular basis. The 62nd round has separated the UMS into these three categories, but the 67th round and the 73rd round has put together the NDMEs and DMEs into one category-Establishments (employing at least one hired worker on a fairly regular basis). For comparison purposes, we have combined the NDMEs and DMEs into Establishments in the 62nd round.

To compute the growth in the variables, we calculate the Compound Annual Growth Rate (CAGR) by the following formulae:

$$r = \{(Y_t|Y_0)^{(1/t)} -1\}* 100$$

where, r =annual compound growth rate; Y_t=value of the variable at the final period, Y_0= value of the variable at the initial period; t = difference between the time periods.

III. Urban Unorganised Manufacturing in North-East India

In the following section, we look into the share and growth dynamics of UUMS across the eight states. Table 1 presents the number of enterprises and the corresponding percentage shares are displayed in Table 2. For a comprehensive understanding of the growth dynamics, Table 3 (Appendix) displays the CAGR (in %) of UUMS for the two sub periods: 2005-2006/2010-2011 and 2010-2011/2015-2016 and Figure 1 shows the growth in number of enterprises across the states over the period of 2005-06 to 2015-16. We try to explore each of these dimensions in terms of both OAMEs and Establishments.

OAMEs: In Assam, the findings (Table 2) show that majority of the enterprises belong to the OAMEs category except for the period of 2010-2011, where the share of establishments was slightly higher. The share of OAMEs slightly declined from 58.2 percent in 2005-2006 to 56.44 percent in 2015-2016. However, in case of Arunachal Pradesh, the share of OAMEs substantially declined from 70.13 percent in 2005-2006 to 36.73 percent in 2015-2016. There is a steady increase in the share of OAMEs from 41.51 percent in 2005-2006 to 58.10 percent in 2015-2016 in Meghalaya, where the percentage shares of OAMEs was higher during the period of 2010-2011 and 2015-2016. In Mizoram, Manipur and Tripura in all the three time periods, more than half of the enterprises comprised of the OAMEs. In Manipur especially, the importance of OAMEs can be stated from the fact that its share increased from 87.49 percent in 2005-2006 to 91.84 percent in 2015-2016. In Nagaland, there is a mixed picture in the overall structure of the unorganised manufacturing. The share of OAMEs in the total number of enterprises increased from 69.83 percent in 2005-2006 to 81.49 percent in 2010-2011, but declined to 41.77 percent in

2015-2016. In case of Sikkim, although a higher percentage share of enterprises comprised of the OAMEs (74.45 percent) in the period 2015-2016, there was a higher share of establishments in the periods of 2005-2006 and 2010-2011. Moreover, there is an increase in the share of OAMEs from 49.05 percent in 2005-2006 to 74.45 percent in 2015-2016.

Establishments: In case of establishments (Table 2), only three states showed increase in its share of enterprises from the period of 2005-06 to 2015-16: Arunachal Pradesh, Assam and Nagaland. For Arunachal Pradesh, majority of the enterprises belong to the establishments in the period of 2010-2011 and 2015-2016. Its share increased from 29.87 percent in 2005-2006 to 63.27 percent in 2015-2016. However, Assam showed only slight increase in its share from 41.80 percent in 2005-2006 to 43.56 percent in 2015-2016. For the rest of the states, viz., Meghalaya, Mizoram, Manipur, Tripura, Sikkim, the share of establishments declined over the same period. The highest decline was for states Meghalaya and Sikkim, where the former showed a decline in its share from 58.49 percent in 2005-2006 to 41.9 percent in 2015-2016. For the latter, its share declined from 50.95 percent in 2005-2006 to 25.55 percent in 2015-2016.

Growth in number of enterprises: Our findings (Figure 1) reveal that annual growth rate of enterprises during the period of 2005-2006 to 2015-2016 was highest for the states of Sikkim, Tripura and Mizoram at 8.61 percent, 9.11 percent and 9.53 respectively. Interestingly, the higher growths in all the three states have been fuelled by the higher growth of OAMEs as compared to growth of establishments. Going forward, only for the states of Arunachal Pradesh and Nagaland, establishments have shown a higher growth of 14.84 percent and 12.69 percent respectively. If we consider the growth rates of two sub-periods (Table 3: Appendix), except for Arunachal Pradesh and Assam ,all the other states have showed a significant improvement in growth of UUMS from 2005-2006/2010-2011 to 2010-2011/2015-2016.

Employment in Urban Unorganised Manufacturing in North East India

In order to have an in depth understanding on whether there has been a simultaneous generation of employment along with the growth in enterprises, we provide Table 4, which looks into the employment aspect of UUMS along with Table 5 (Appendix) and Figure 2, giving us the growth in number of workers by enterprises.

Number of Workers across Enterprises and Growth

One of the interesting observations brought from the analysis is that in states like Assam, Meghalaya and Tripura, although OAMEs constitute a larger percentage share of enterprises in total, these enterprises have not been able to provide employment to a large labour force as it can be clearly seen that, establishments provides employment to a larger pool of workers (Table 4). This observation is also mirrored in states like Mizoram and Sikkim. In Mizoram, although OAMEs constitute a larger percentage share of enterprises in total in all time periods, it is observed that establishments provide employment to a higher number of workers during the period of 2005-2006 and 2010-2011. Sikkim shows that although OAMEs constitute higher enterprises in 2015-2016, the establishments provide employment to a larger number of workers in all the time periods. However, if we move to states like Nagaland and Arunachal Pradesh, it is observed that for the former, number of workers employed in the establishments is higher in the period of 2015-2016. Thus, establishments have a higher share in both enterprises and workers during the period. For the latter, we observed that establishments have a higher percentage share in enterprises in both the periods of 2010-2011 and 2015-2016. As compared to the OAMEs, these establishments have also provided employment to a larger number of workers during these periods. For a state like Manipur, however, the number of workers employed in the OAMEs is higher in all the periods as clearly observed from the Table 4. These OAMEs constitute a larger percentage share of enterprises in total in all the periods.

Looking into the overall growth rates (Figure 2), Nagaland recorded the highest growth rates of employment at 9.19 percent during the period of 2005-2006 to 2015-2016. Its growth has been largely driven by establishments. States like Tripura and Mizoram also recorded higher growth rates of employment at 8.89 percent and 4.96 percent respectively. Except for Arunachal Pradesh and Nagaland, the growth rate in employment for other states has been driven by OAMEs. If we observe the growth rates by sub-periods (Table 5: Appendix), all states except for Arunachal Pradesh have shown an improvement in growth rate from the period of 2010-2011 to 2015-2016 as compared to the previous period of 2005-2006 to 2010-2011.

Workers by Type of Employment

A common characteristic of labour market in the developed market economies of today is the predominance of 'non standard work arrangements' such as hiring workers on part time or contractual employment (OECD, 2008) .Keeping that in mind, an analysis of the distribution of employment on the basis of part time and full time workers is elucidated in Table 6 and its growth dynamics are shown in Figure 3.

Our observations (Table 6) indicate that in all the time periods and for all the states, the percentage share of full time workers is higher. For Arunachal Pradesh, the percentage share of full time workers increased from 83.95 percent in 2005-2006 to 100 percent in 2010-2011 which however declined to 92.05 percent in 2015-2016. In Manipur, more than 90 percent of workers are engaged in full time work in all the time periods, as shown by the Table 6. Its share marginally increased from 91.65 percent in 2005-2006 to 91.87 percent in 2015-2016.

Turning to the growth rates in the type of worker, Figure 3 highlights that in Assam, the overall growth of both full time and part time workers has been negative during the period of 2005-06 to 2015-16. In Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim over the period of 2005-2006 to 2015-2016, there is a positive growth rate in full time workers, however, there is a negative growth rate for part time workers. In Nagaland, during the period of 2005-2006 to 2015-2016, there is 11.68 percent growth rate in full time workers, which is the highest among all the states. It's important to note here that Manipur is the only state where, both full time and part time workers showed positive growth rates of 1.17 percent and 0.87 percent respectively during the period of 2005-2006 to 2015-2016. Moreover, it was only during the period of 2010-2011/2015-2016 (Table 7: Appendix), where there has been a positive growth of contractual employment for the states of Manipur, Tripura and Sikkim.

IV. Composition of Workers by Gender and Type of Employment

Moving ahead, our analysis on the types of labour employment will be incomplete without the discussion on its composition of workforce by gender. On that line of reasoning, Table 8 shows the gender wise disaggregation of full time and part time workers.

As regards to the composition of workers by gender and employment (Table 8),in Arunachal Pradesh, the full time and part time male workers are higher than the female full time and part time workers in all the time periods. In Assam, Nagaland, Tripura and Sikkim, ,although, there is higher full time and part time male workers in all the time periods, the incidence of female part time workers can be seen in certain periods. In Mizoram, looking into the composition of workers, there is a 52.65 percent share of females in full timework as compared to the 47.35 percent share of males in 2015-2016. For Manipur, the employment of females in both full time and part time workers is higher than that of the male counterpart in all the time periods.

If we look into the growth rates of male workers by type of employment over the period from 2005-06 to 2015-16 (Figure 4), the full time male workers showed a positive growth in all of the states, although there are differences in the percentage of growth rates. On one hand, states like Assam, Meghalaya, Manipur, Mizoram and Sikkim showed lower growth rates at 0.16 percent, 0.42 percent, 1.8 percent, 3.46 percent and 3.82 respectively; on the other hand, Arunachal Pradesh, Tripura and Nagaland showed higher growth rates at 5.18 percent, 9.39 percent and 14.21 percent respectively. If we refer to Table 9 (Appendix), Nagaland witnessed more than 50 percent growth rate in full time male workers over the period of 2010-2011/2015-2016. For the growth rates in male part time workers, except for Tripura which showed 7.4 percent growth rate, all other states recorded a negative growth rate. However, Manipur, Nagaland along with Tripura showed positive growth rates of male part time workers at 25.74, 9.09, and 69.84 respectively over the period of 2010-2011/2015-2016.

Further, examining the growth rates of female workers over the period from 2005-06 to 2015-16 (Figure 5), we see that, barring few states such as Assam, Arunachal Pradesh, Nagaland and Sikkim; the states of Meghalaya, Manipur recorded growth rates of female full time workers at 2.3 percent, 0.86 percent respectively, with the highest growth rates shown at Mizoram (10.08 percent) and Tripura (9.57 percent). There is no discernible growth of part time workers except for the state of Manipur, where 1.72 percent growth in female part time workers was recorded. Interestingly, if we refer to Table 9 (Appendix), over the period of 2010-2011/2015-2016, Meghalaya, Manipur, Tripura and Sikkim witnessed positive growth of female part time workers, the highest being shown at Sikkim (35.1) and Meghalaya (21.27).

V. Conclusions

In the above analysis, we have discussed the dimensions and growth of UUMS, explicitly bringing forward the region wise differences in North-East part of India. Using data of three rounds from NSSO, an analysis on the growth performance, the employment structure, and the distribution of type of worker along with gender wise disaggregation of type of worker was depicted. Some of the major conclusions and remarks from the analysis can be enumerated as follows:

1. The UUMS holds a significant position across the eight states of North-East, as given from the incidence of enterprises and workers. Compared to the other states, the annual growth rate of enterprises for Tripura and Mizoram was highest during the period of 2005-2006 to 2015-2016. The higher growths in all the two states have been fuelled by the higher growth of OAMEs as compared to growth of establishments. However, if we look into the employment aspect, Nagaland recorded the highest growth rates of employment during the period of 2005-2006 to 2015-2016. Interestingly, its growth has been largely driven by establishments. Thus, the findings clearly imply that, although the growth of enterprises has been led by OAMEs, the establishments have pushed the employment growth.

2. All of the states except Arunachal Pradesh have shown a better performance of growth of enterprises and employment during the period of 2010-2011 to 2015-2016 as compared to the previous period of 2005-2006 to 2010-2011. For these states, there may be higher incidences of rural-urban

migration in addition to greater supply of low skilled labour intensive jobs during the period of 2010-2011 to 2015-2016 that might have accelerated the growth.

3. The data analysis on the growth performance of the sector highlights some interesting findings. In states like Assam, Meghalaya, Tripura and Sikkim, it is observed that although most of the OAMEs have a higher share in number of enterprises, the establishments provide employment to a larger share of workers. The important point to note here is that the OAMEs are generally small - scaled household enterprises employing unpaid family labour. They rely on more traditional tools of manufacturing and comprise of the lower rung of the informal sector. The higher share of OAMEs and its low employment generation capacity, as evident from the data, calls for more attention to prioritize on improving its efficiency. Appropriate policies on strengthening their credit support, skill development programs, technological up-gradation etc. should be considered.

4. For a state like Assam, which has shown the highest number of enterprises and workers engaged in its UUMS, there has been a considerably low growth in both enterprises and workers. Given the vast potential of the sector in the state, as evident from the literature, this issue needs to be properly examined.

5. As observed from the findings, the prevalence of contractual employment can be seen for states like Manipur, Tripura and Sikkim, which reported a higher casualization of labour during the period of 2010-2011 to 2015-2016. If we look into the gender dimension, we can also notice that these states also showed a higher percentage share of female part time workers than the male workers during the same period indicating that female employment mostly comprised of part time workers in these states. Nagaland, which showed the highest growth rate in employment also showed the highest growth in male full time workers over the period of 2005/2006 to 2015-2016, implying that employment has been mostly driven by them. The male part time workers are not that pronounced across the states except for Assam and Arunachal Pradesh (2015-2016). The state of Tripura, reported the highest male part time workers over the period from 2005/2006 to 2015-2016.

6. The employment of females has seen a less significant position in the UUMS. However, the feminization of the workforce (2005/2006 to 2015-2016) is observed in part-time work which is mostly based on short–term contracts in states like Meghalaya and Sikkim. Although, the casualization of the female workforce raises questions on their susceptibility to more exploitation at the workplace , we can't sideline the fact that there has been a higher female work participation in full time work (for Mizoram) and both part –time and full time work in the state of Manipur.

All in all, the UUMS has immense potentialities in this region given the substantial no. of enterprises and workforce engaged in the sector. Thus, policies need to be incorporated to strengthen the sector by making them more competitive and sustainable in the long run.

Tables and Figures

Number of Enterprises and Growth

Table 1: Number of Enterprises across States (in '00)

States	Period	OAMEs	Estt.	All
Assam	2005-2006	219.84	157.9	377.74
	2010-2011	142.89	143.51	286.4
	2015-2016	222.1	171.4	393.5
Arunachal Pradesh	2005-2006	2.23	0.95	3.18
	2010-2011	2.18	3.36	5.54
	2015-2016	2.2	3.79	5.99
Meghalaya	2005-2006	10.27	14.47	24.74
	2010-2011	8.32	7.5	15.82
	2015-2016	19.22	13.86	33.08
Mizoram	2005-2006	11.23	6.87	18.1
	2010-2011	9.41	7.36	16.77
	2015-2016	34.56	10.42	44.98
Manipur	2005-2006	146.29	20.92	167.21
	2010-2011	115.84	8.64	124.48
	2015-2016	199.66	17.73	217.39
Nagaland	2005-2006	19.12	8.26	27.38
	2010-2011	11.05	2.51	13.56
	2015-2016	19.57	27.28	46.85
Tripura	2005-2006	38.57	26.13	64.7
	2010-2011	58.75	17.72	76.47
	2015-2016	109.06	45.73	154.79
Sikkim	2005-2006	2.06	2.14	4.2
	2010-2011	2	2.29	4.29
	2015-2016	7.14	2.45	9.59

Source: Computed from NSSO Reports, 62^{nd}, 67^{th} and 73^{rd} Rounds

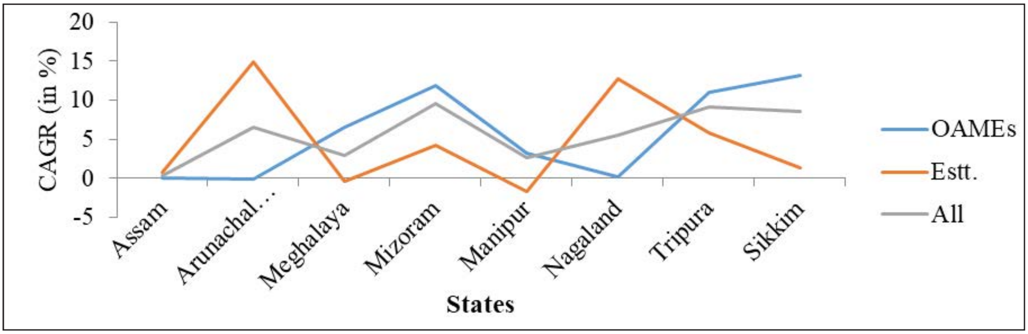
Share in Number of Enterprises across States:

Table 2: Percentage Share in Number of Enterprises

States	Period	OAMEs	Estt.
Assam	2005-2006	58.2	41.8
	2010-2011	49.89	50.11
	2015-2016	56.44	43.56
Arunachal Pradesh	2005-2006	70.13	29.87
	2010-2011	39.35	60.65
	2015-2016	36.73	63.27
Meghalaya	2005-2006	41.51	58.49
	2010-2011	52.59	47.41
	2015-2016	58.1	41.9
Mizoram	2005-2006	62.04	37.96
	2010-2011	56.11	43.89
	2015-2016	76.83	23.17
Manipur	2005-2006	87.49	12.51
	2010-2011	93.06	6.94
	2015-2016	91.84	8.16
Nagaland	2005-2006	69.83	30.17
	2010-2011	81.49	18.51
	2015-2016	41.77	58.23
Tripura	2005-2006	59.61	40.39
	2010-2011	76.83	23.17
	2015-2016	70.46	29.54
Sikkim	2005-2006	49.05	50.95
	2010-2011	46.62	53.38
	2015-2016	74.45	25.55

Source: Same as Table 1

Figure 1: Growth in Number of Enterprises across States (2005-06 to 2015-16)



Source: Computed from NSSO Reports, 62nd, 67th and 73rd Rounds

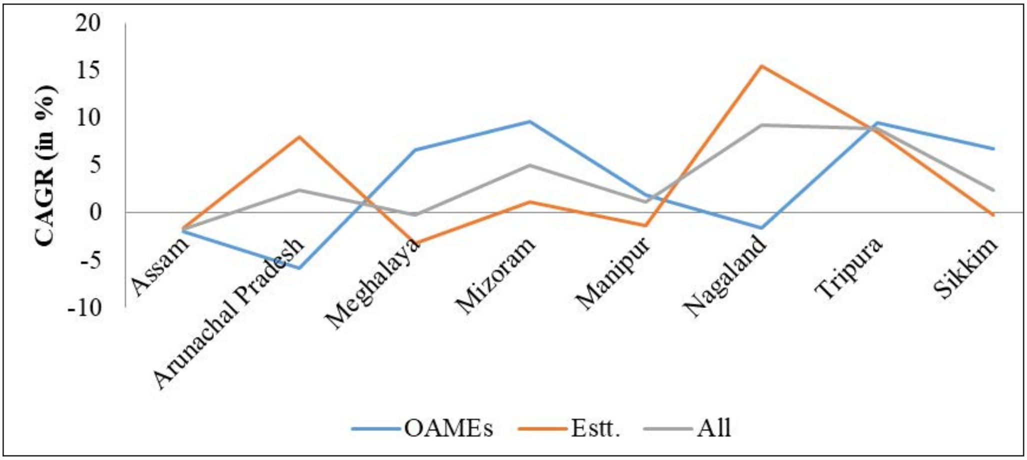
Table 4: Number of Workers in Enterprises across States (in '00)

States	Period	OAMEs	Estt.	All
Assam	2005-2006	331.8	638.76	970.56
	2010-2011	197.7	582.42	780.12
	2015-2016	272.08	544.79	816.88
Arunachal Pradesh	2005-2006	5.56	4.47	10.03
	2010-2011	3.06	12.57	15.63
	2015-2016	3.06	9.65	12.71
Meghalaya	2005-2006	15.38	56.13	71.51
	2010-2011	11	33.95	44.95
	2015-2016	29.26	40.41	69.67
Mizoram	2005-2006	16.38	28.6	44.98
	2010-2011	15.54	23.82	39.36
	2015-2016	41.13	31.86	72.99
Manipur	2005-2006	207.85	75.94	283.79
	2010-2011	148.37	44.07	192.44
	2015-2016	251.57	66.44	318.01
Nagaland	2005-2006	28.7	24.99	53.69
	2010-2011	12.59	12.91	25.5
	2015-2016	24.46	104.91	129.37
Tripura	2005-2006	49.27	82.88	132.15
	2010-2011	82.86	56.93	139.79
	2015-2016	122.7	187.07	309.77

Sikkim	2005-2006	3.79	8.4	12.19
	2010-2011	2.77	7.68	10.45
	2015-2016	7.31	8.18	15.49

Source: Same as Table 1

Figure 2: Growth in Number of Workers by Enterprises (2005-06- 2015-16)



Source: Same as Figure 1

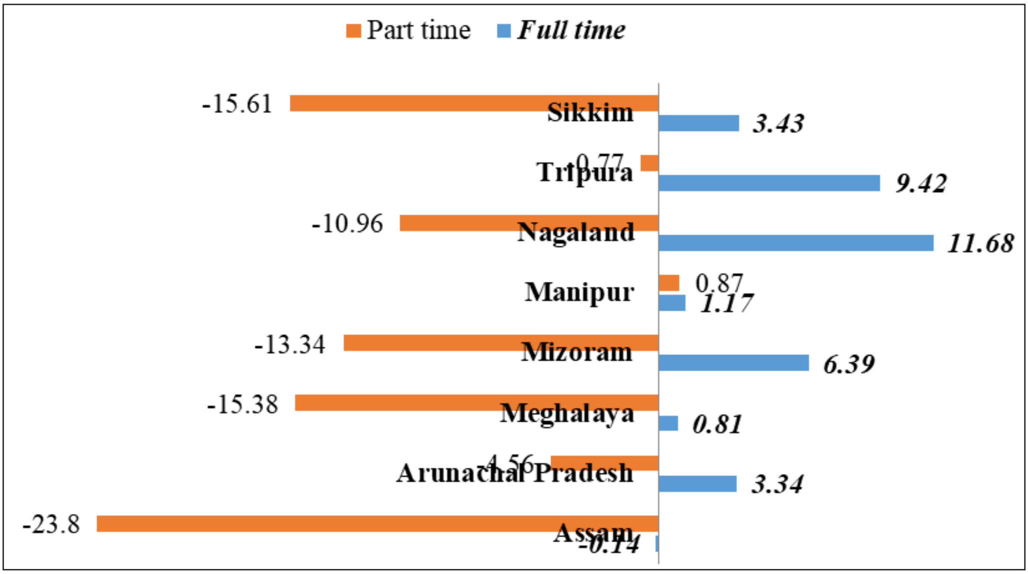
Table 6: Percentage Share of Workers by Employment Type

States	Period	Full time	Part time
Assam	2005-2006	84.32	15.68
	2010-2011	89.18	10.82
	2015-2016	98.77	1.23
Arunachal Pradesh	2005-2006	83.95	16.05
	2010-2011	100	0
	2015-2016	92.05	7.95
Meghalaya	2005-2006	87.75	12.25
	2010-2011	91.01	8.99
	2015-2016	97.63	2.37
Mizoram	2005-2006	85.48	14.52
	2010-2011	86.79	13.21
	2015-2016	97.86	2.14
Manipur	2005-2006	91.65	8.35
	2010-2011	93.09	6.97
	2015-2016	91.87	8.13
Nagaland	2005-2006	77.52	22.48
	2010-2011	83.53	16.47
	2015-2016	97.08	2.92

Tripura	2005-2006	92.56	7.44
	2010-2011	97.66	2.34
	2015-2016	97.06	2.94
Sikkim	2005-2006	89.25	10.75
	2010-2011	98.85	1.15
	2015-2016	98.45	1.55

Source: Same as Table 1

Figure 3: Growth in Type of Workers across States (2005-06 to 2015-16)



Source: Same as Figure 1

Table 8: Composition of Workers by Gender and Employment (in '00)

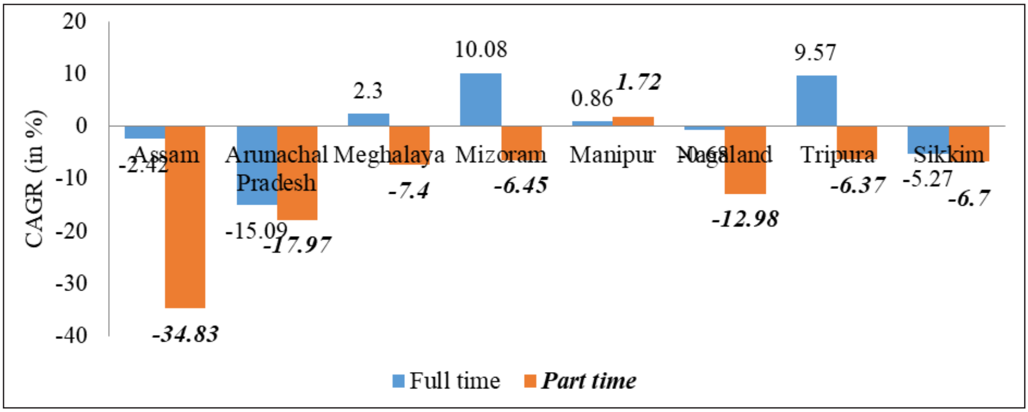
States	Period	Full Time		Total	Part Time		Total
		Male	Female		Male	Female	
Assam	2005-2006	711.09(86.89)	107.29(13.11)	818.38	59.56(39.14)	92.62(60.86)	152.18
	2010-2011	609.7(87.63)	86.04(12.37)	695.74	47.71(56.54)	36.67(43.46)	84.38
	2015-2016	722.87(89.59)	83.96(10.41)	806.83	8.77(87.26)	1.28(12.74)	10.05
Arunachal Pradesh	2005-2006	6.88(81.71)	1.54(18.29)	8.42	1.32(81.99)	0.29(18.01)	1.61
	2010-2011	14.85(95.01)	0.78(4.99)	15.63	0	0	0
	2015-2016	11.4(97.44)	0.3(2.56)	11.7	0.97(96.04)	0.04(3.96)	1.01
Meghalaya	2005-2006	50.59(80.62)	12.16(19.38)	62.75	5.31(60.62)	3.45(39.38)	8.76
	2010-2011	34.18(83.57)	6.72(16.43)	40.9	3.43(84.9)	0.61(15.10)	4.04
	2015-2016	52.75(77.55)	15.27(22.45)	68.02	0.05(3.03)	1.6(96.97)	1.65
Mizoram	2005-2006	24.06(62.57)	14.39(37.43)	38.45	5.42(83)	1.11(17)	6.53
	2010-2011	26.75(78.29)	7.42(21.71)	34.17	3.11(59.81)	2.09(40.19)	5.2
	2015-2016	33.82(47.35)	37.6(52.65)	71.42	0.99(63.46)	0.57(36.54)	1.56

Manipur	2005-2006	83.41(32.07)	176.69(67.93)	260.1	2.45(10.34)	21.24(89.66)	23.69
	2010-2011	56.67(31.66)	122.33(68.34)	179	0.21(1.56)	13.21(98.44)	13.42
	2015-2016	99.66(34.11)	192.52(65.89)	292.18	0.66(2.55)	25.18(97.45)	25.84
Nagaland	2005-2006	30.53(73.35)	11.09(29.65)	41.62	7.25(60.07)	4.82(39.93)	12.07
	2010-2011	14.1(66.20)	7.2(33.8)	21.3	1.67(39.76)	2.53(60.24)	4.2
	2015-2016	115.24(91.75)	10.36(8.25)	125.6	2.58(68.25)	1.2(31.75)	3.78
Tripura	2005-2006	104.39(85.38)	17.87(14.62)	122.26	2.63(26.75)	7.2(73.25)	9.83
	2010-2011	99.81(73.11)	36.71(26.89)	136.52	0.38(11.62)	2.89(88.38)	3.27
	2015-2016	256.07(85.17)	44.59(14.83)	300.66	5.37(59.01)	3.73(40.99)	9.1
Sikkim	2005-2006	10.21(93.84)	0.67(6.16)	10.88	0.95(72.52)	0.36(27.48)	1.31
	2010-2011	9.88(95.74)	0.44(4.26)	10.32	0.08(66.67)	0.04(33.33)	0.12
	2015-2016	14.86(97.44)	0.39(2.56)	15.25	0.06(25)	0.18(75)	0.24

Source: Same as Table 1

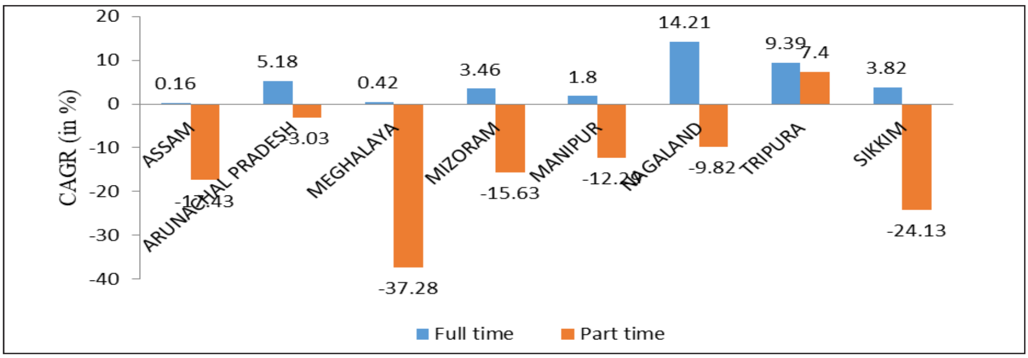
Note: Figures in parenthesis represent percentage shares.

Figure 4: Growth in Male Workers by Type of Employment (2005-06 to 2015-16)



Source: Same as Figure 1

Figure 5: Growth in Female Workers by Type of Employment (2005-06 to 2015-16)



Source: Same as Figure 1

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Appendix:

Table 3: CAGR (%) of no. of enterprises in North-East India

States	Period	No. of Enterprises (in '00)		
		OAMEs	Estt.	All
ASSAM	2005-2006/2010-2011	-8.26	-1.89	-5.39
	2010-2011/2015-2016	9.22	3.62	6.56
ARUNACHAL PRADESH	2005-2006/2010-2011	-0.45	28.74	11.74
	2010-2011/2015-2016	0.18	2.44	1.57
MEGHALAYA	2005-2006/2010-2011	-4.12	-12.32	-8.55
	2010-2011/2015-2016	18.23	13.07	15.9
MIZORAM	2005-2006/2010-2011	-3.47	1.39	-1.51
	2010-2011/2015-2016	29.72	7.2	21.81
MANIPUR	2005-2006/2010-2011	-4.56	-16.21	-5.73
	2010-2011/2015-2016	11.5	15.46	11.8
NAGALAND	2005-2006/2010-2011	-10.39	-21.2	-13.11
	2010-2011/2015-2016	12.11	61.15	28.14
TRIPURA	2005-2006/2010-2011	8.78	-7.47	3.4
	2010-2011/2015-2016	13.17	20.88	15.15
SIKKIM	2005-2006/2010-2011	-0.59	1.36	0.42
	2010-2011/2015-2016	28.98	1.36	17.46

Source: Computed from NSSO Reports, 62nd, 67th and 73rd Rounds

Table 5: CAGR (%) of no. of workers in North-East India

States	Period	No. of workers (in '00)		
		OAMEs	Estt.	All
ASSAM	2005-2006/2010-2011	-9.84	-1.83	-4.27
	2010-2011/2015-2016	6.6	-1.33	0.93
ARUNACHAL PRADESH	2005-2006/2010-2011	-11.26	22.97	9.28
	2010-2011/2015-2016	0	-5.15	-4.05

MEGHALAYA	2005-2006/2010-2011	-6.48	-9.57	-8.87
	2010-2011/2015-2016	21.61	3.55	9.16
MIZORAM	2005-2006/2010-2011	-1.05	-3.59	-2.63
	2010-2011/2015-2016	21.49	5.99	13.14
MANIPUR	2005-2006/2010-2011	-6.52	-10.31	-7.47
	2010-2011/2015-2016	11.14	8.56	10.57
NAGALAND	2005-2006/2010-2011	-15.19	-12.37	-13.84
	2010-2011/2015-2016	14.21	52.05	38.38
TRIPURA	2005-2006/2010-2011	10.96	-7.24	1.13
	2010-2011/2015-2016	8.17	26.86	17.25
SIKKIM	2005-2006/2010-2011	-6.08	-1.78	-3.03
	2010-2011/2015-2016	21.42	1.27	8.19

Source: Same as above

Table 7: CAGR (%) of composition of workers by employment

		Total	
States	**Period**	**Full time**	**Part time**
ASSAM	2005-2006/2010-2011	-3.19	-11.13
	2010-2011/2015-2016	3.01	-34.66
ARUNACHAL PRADESH	2005-2006/2010-2011	13.17	-100
	2010-2011/2015-2016	-5.63	0
MEGHALAYA	2005-2006/2010-2011	-8.2	-14.34
	2010-2011/2015-2016	10.71	-16.4
MIZORAM	2005-2006/2010-2011	-2.33	-4.45
	2010-2011/2015-2016	15.89	-21.4
MANIPUR	2005-2006/2010-2011	-7.2	-10.74
	2010-2011/2015-2016	10.3	14
NAGALAND	2005-2006/2010-2011	-12.54	-19.03
	2010-2011/2015-2016	42.6	-2.09
TRIPURA	2005-2006/2010-2011	2.23	-19.76
	2010-2011/2015-2016	17.11	22.72
SIKKIM	2005-2006/2010-2011	-1.05	-38
	2010-2011/2015-2016	8.12	14.87

Source: Same as above

Table 9: CAGR of composition of workers by sex and employment

		Male		Female	
States	**Period**	**Fulltime**	**Part time**	**Full time**	**Part time**
ASSAM	2005-2006/2010-2011	-3.03	-4.34	-4.32	-16.92
	2010-2011/2015-2016	3.46	-28.73	-0.49	-48.88
ARUNACHAL PRADESH	2005-2006/2010-2011	16.63	-100	-12.72	-100
	2010-2011/2015-2016	-5.15	0	-17.4	0
MEGHALAYA	2005-2006/2010-2011	-7.54	-8.37	-11.18	-29.29
	2010-2011/2015-2016	9.07	-57.07	17.84	21.27
MIZORAM	2005-2006/2010-2011	2.14	-10.51	-12.41	13.49
	2010-2011/2015-2016	4.8	-20.46	38.34	-22.88
MANIPUR	2005-2006/2010-2011	-7.44	-38.82	-7.09	-9.06
	2010-2011/2015-2016	11.95	25.74	9.49	13.77
NAGALAND	2005-2006/2010-2011	-14.32	-25.45	-8.28	-12.09
	2010-2011/2015-2016	52.22	9.09	7.55	-13.86
TRIPURA	2005-2006/2010-2011	-0.89	-32.09	15.49	-16.69
	2010-2011/2015-2016	20.74	69.84	3.97	5.24
SIKKIM	2005-2006/2010-2011	-0.65	-39.04	-8.07	-35.56
	2010-2011/2015-2016	8.51	-5.59	-2.38	35.1

Source: Same as above

Green Hrm-Leveraging Employees' Satisfaction Level in Indian Banking Sector

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Abstract

The purpose of this paper is to study the Green HRM practices practised and its impact on the satisfaction level of employees in private and public sector banks in Kolkata District. To attain the objectives of the research , the research process- Onion of Saunders et al. (2012) is adopted. The Sample Size is 158 (Bank of Baroda= 36, Allahabad Bank= 46, ICICI Bank Ltd= 42 & HDFC Bank= 34.) Reliability Test of the instrument i.e. Cronbach's alpha=0.84. The Sampling Technique is Probability Sampling (Multi-stage Sampling). The Likert - 5 point scale has been used for designing the questionnaire. Exploratory factor analysis has identified six Green HRM Practices i.e. Green Recruitment and Selection Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Rewards and Compensation Management Practices , Green Counselling and Employee Relations Practices and Green Exit Interview Practices which are having a strong influence on Employees' Satisfaction level in Banking Sector in Kolkata District. Regression Analysis reveals that Green Rewards and Compensation Management Practices have a high influence on employees' satisfaction level and Green Recruitment and Selection Practices have least influence on employees' satisfaction level. The Independent Sample T-Test and One-Way Anova reveals that there exists no significant difference of employees' satisfaction level towards Green HRM Practices on the basis of ownership of banks, gender, experience of employees and age of employees.

Keywords: Green HRM, Satisfaction, Recruitment, Orientation, Performance Management, Compensation Management, Gender, Experience.

Introduction

One day in Matsya Puranam, an incident where Goddess Parvati planted a sapling of Ashoka tree and took good care of it. She watered and cared for the plants. Her plants are growing well. Her celestial beings and sages came and spoke to her. "Oh [Goddess] ! Almost everyone wants children. People feel successful when they see their children and grandchildren. What do you accomplish by making a tree like your son and growing up? Parvati replied: One large reservoir is equal to 10 wells. One son is like ten ponds, and one tree is like ten sons (dasa putra samo druma). This is my standard and I will keep it to protect the universe. The words of Ma Parvati is very relevant today, Today our Earth is facing huge sustainability challenges due to pollution. Gases such as hydrofluorocarbons, nitrous oxide, carbon dioxide, carbon monoxide and methane are destroying our forestry, water resources, land and human health. A study by Hayward (2013) found that 67% of 1,000 global CEOs surveyed believe that the global economy is not on the right track to meet the needs of a growing population and address global sustainability challenges. Thus it is not only the concern of the government and the direct polluters but also of other stakeholders like banks to adopt green economy to meet the global sustainability challenges. Most of the banks have adopted "GREEN BANKING" concept in their banking operations. According to Indian Banks Association (IBA, 2014) states that Green Bank is similar to a normal bank considering all the social and environmental / ecological factors with a philosophy to save the environment and conserve natural resources. To broaden the scope of Green Banking, many of the banks have incorporated the philosophy of "GREEN HRM". It is a positive step to handle sustainability challenges in order to conserve energy by handling human resource efficiently. Green HRM involves the use of HRM policies to promote sustainable use of resources in business organizations and to advance the cause of environmental protection more generally (Haridas P. K., 2014). The goal of Green HRM is to be a protector, environmentalist, pollution-free and creator (H.D.N.P. Opata1, A. Anton Arulaza, 2014).

Literature Review

Green HRM has significant contribution in management research area, but lagging behind in Practice, thus creating a gap between practitioner and academic publications (Yusliza M. Yusoff et.al, 2015).According to Jain (2009) ,Green HR consists of two essential elements: environmentally friendly HR practices which involves reducing companies carbon footprint via less printing of paper, video conferencing and interviews, etc. and the preservation of knowledge capital by nurturing intellectual capital when times are tough for companies. Gill Mandip (2012) defined Green Human Resources as a touchpoint/ interface for employees to promote sustainable practices and increase employee awareness and commitments on the issues of sustainability by undertaking HR initiatives which are environment friendly which lead to effective efficiencies, minimise costs and greater employee engagement and retention. Arulrajah, Opatha, Nawaratne (2015) remarked that starting from job design to employee relations, HRM has taken extremely large step in greening organisation and its operations. The foremost task in front of HR professionals is to understand the scope and depth of green HRM in renovating their organisations as green entities. Nagaraj Shenoy et.al (2013) studied that Logica media centre listed 'Green HR' initiatives like electronic filing, car-sharing, job-sharing, teleconferencing and virtual interviews, recycling, telecommuting, online training, and energy-efficient office spaces. Parida Ruchismita et.al (2015) conducted a study on a few IT companies in Pune, Mumbai, Bangalore, Chennai, Kolkata and Delhi. The research showed that businesses are using a variety of strategies to promote sustainable development, such as printing documents on both sides, using less paper, encouraging carpooling, turning off lights and other power-hungry appliances like air conditioners after 6 p.m., using energy-efficient electronics, promoting online job applications, holding video interviews, etc. Ms. Pooja Popli (2014) studied that most of the organizations in Nasik are well acquinted about the green HR concept which help them to keep the environment green but few companies are exceptional , not able to put it in to practices in different functional areas of Human resource Management. The paper highlighted the areas like training and development, performance appraisal system and some routine activities where implementation of Green HRM is lacking. In their study, Yusliza Mohd Yusoff et.al (2015) emphasised that the majority of explorative companies place a very high importance on green human resources management, which takes into account five concepts: corporate social responsibility (CSR), electronic human resources management (E-HRM), work-life balance (WLB), green policies, and extra care programmes. Maryam Khan (2015) in the article "GREEN" Human Resource Management- A Prerequisite for Sustainable Environment", listed steps to "GO GREEN" in Human Resource Management i.e. Conduct an energy audit, Go paperless, Recycle, Reduce business travel, Conduct annual Survey of employee to assess how well the organization is doing with regard to implementing green practices in the organization. Lather Anu Singh ,Goyal Shikha (2015) researched that top management commitment, employee trainings and green programs have a significant positive relationship to perceived environmental performance. But there exist no significant relationship between Environmental communication, Employee involvement & EMS teamwork to environmental performance. The results emphasis that employees in environmentally proactive organizations in India are rarely rewarded for good environmental practices. Prof Shakti Marhatta et.al (2013) stated that green initiatives have created a sense of morale and loyalty among the employees towards their organization, which in turn help in employee recruitment and retention. Kathak Mehta et.al (2015) discussed that 3M's annual Energy Recognition Program established in 2003 promotes employee participation in the company's energy efficiency efforts. The program has facilitated 3M to execute more than 1,900 employee-inspired projects from 2005 to 2009. These projects have realized a 22 per cent enhancement in energy efficiency and yielded $100 million in energy savings over the period. As remarked by SHRM Foundation's Effective Practice Guidelines Series (2012) that in 2010, the U.S. Postal Service gained a $27.1 million cost-saving benefit as a result of work done by green employees," employees involved in the organization's "Lean Green Team" activity. In order to reduce the company's overall carbon footprint, Vancity, Canada's largest credit union, promotes employees through sustainable HRM policies to make responsible choices, using a range of programs and incentives i.e. remote working options and a guaranteed ride home program . M/s. Buck Consultants conducted a survey in U.S. in 2008 which examined the types of "green" initiatives implemented by employers in workforce management and HR practices. A significant finding of "The Greening HR Study" is that 54% of organisations integrated environmental management into their business operations, 74% used the web to cut down on travel, 76% encouraged paper usage reduction, and 60% implemented wellness/fitness programmes for staff. Green Toyota' has taken a public pledge to do business only with those concerns that are certified "Green". The Tata Group has also gone "Green" and deals with those third parties, vendors and suppliers with whom it can do business without releasing toxic emissions that could harm the environment. Ms. Saher Sayed (2015) stated that every day is environment day at TATA Metaliks Limited, one of the top green firms in India .Fuji Xerox runs regular green awareness and education programs such as the 'Go Green Series' in order to provide green teams with knowledge on how to green their office.

Based on the above literature on green HRM, an attempt has been made to study Green HRM practices in public and private sector banks in Kolkata District and its impact on Employees' Satisfaction.

Objectives of the study

- To identify the various Green HRM practices which are being practised in selected Private and Public Sector Banks in Kolkata district.
- To measure employees' satisfaction level in selected private & public sector banks in Kolkata district

with respect to various Green HRM practices.

- To make a comparative study between the private and public sector banks on the basis of the satisfaction level of employees towards Green HRM practices with respect to ownership, gender, age and experience.

Methodology

To attain the objectives of the research , the research process- Onion of Saunders et al. (2012) is adopted. The Sample Size is 158 (Bank of Baroda= 36, Allahabad Bank= 46, ICICI Bank Ltd =42 & HDFC Bank= 34. Reliability Test of the instrument i.e. Cronbach's alpha=0.84 and validity of the questionnaire is tested through content validity. The Sampling Techniques is Probability Sampling (Multi-stage Sampling). The scale used is Likert - 5 point scale .

Hypotheses

Ha1- The level of employee satisfaction with green human resource practises in private and public sector banks in Kolkata District is significantly different.

Ha2- The level of employee satisfaction with green human resource practises on the basis of gender in private and public sector banks in Kolkata District is significantly different.

Ha3- The level of employee satisfaction with green human resource practises on the basis of experience in private and public sector banks in Kolkata District is significantly different.

Ha4- The level of employee satisfaction with green human resource practises on the basis of age in private and public sector banks in Kolkata District is not significantly different.

Analysis of the data

The data is analysed Quantitatively with the help of SPSS 21. The analysis is comprises of Descriptive Analysis consists of Frequency Table , Exploratory Factor Analysis, Multiple Linear Regression Analysis and Hypothesis-Testing through Independent Sample-T test and One-Way ANOVA.

Table 1: Demographic Profile of the Employees across the Four Banks (Bank of Baroda, Allahabad Bank, ICICI Bank & HDFC Bank)

Demo-graphic Variable	Demographic Characteris-tics	Bank of Baroda		Allahabad Bank		ICICI Bank		HDFC Bank	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%
Gender	Male	20	55.6	26	56.5	26	61.9	17	50.0
	Female	16	44.4	20	43.5	16	38.1	17	50.0
Age	≥20 years and < 30 years	6	16.7	22	47.8	24	57.1	18	52.9
	≥ 30 years and < 40 years	14	38.9	17	37.0	14	33.3	5	14.7

	≥40 years and < 50 years	6	16.7	4	8.7	4	9.5	5	14.7
	≥50 years	10	27.8	3	6.5	0	0.0	6	17.6
Experi-ence	< 1 year	5	13.9	9	19.6	5	11.9	8	23.5
	≥ 1 year and < 5 years.	10	27.8	17	37.0	21	50.0	15	44.1
	≥ 5 years and < 10 years.	17	47.2	17	37.0	15	35.7	5	14.7
	≥ 10 years	4	11.1	3	6.5	1	2.4	6	17.6
Qualifica-tions	Graduate	5	13.9	19	41.3	9	21.4	5	14.7
	Post graduate	16	44.4	20	43.5	15	35.7	20	58.8
	Doctorate & (CA, Fellow etc)	15	41.7	7	15.2	18	42.9	9	26.5
Salary	≤ Rs.149999	6	16.7	12	26.1	5	11.9	5	14.7
	Rs.15000-Rs.24999	10	27.8	15	32.6	21	50.0	15	44.1
	Rs.25000-Rs.44999	15	41.7	16	34.8	13	31.0	6	17.6
	≥ Rs.450000	5	13.9	3	6.5	3	7.1	8	23.5

Quantitative Analysis

Normality Test

A normality test has been initiated to determine whether the data has been drawn from a normally distributed population .The researcher has calculated the value of skewness and kurtosis and also used Kolmogorov–Smirnov test (K–S test or KS test) to check the normality of the distribution.

Skewness = 0.189

Kurtosis = 0.197

The value of Skewness and Kurtosis is very much close to 0 so the data of Green HRM practices are normally distributed.

Table 2 : One-Sample Kolmogorov-Smirnov Test (Green HRM Practices)

N		158
Normal Parameters[a,b]	Mean	96.13
	Std. Deviation	7.278
Most Extreme Differences	Absolute	.047
	Positive	.047
	Negative	-.046

Kolmogorov-Smirnov Z	.592
Asymp. Sig. (2-tailed)	.874
a. Test distribution is Normal.	
b. Calculated from data.	

The Test Statistic of the table reflects that the value of Kolmogorov-Smirnov Z is 0.592 as mentioned in Table:2 and the p value is $0.874 > 0.05$ which implies that the data is normally distributed.

Exploratory Factor Analysis

The normality test justified that the data is normally distributed. So, the parametric test are done for further data analysis. As per the primary data collection 158 complete questionnaires has been received which is being loaded to the SPSS Software 21 for the data analysis. To deal with the following objective:

- To identify the various Green HRM practices are being practised in selected Private and Public Sector Banks in Kolkata district.

The Exploratory Factor Analysis has been done. In total, 28 Green HRM practises are chosen which are affecting the level of employee satisfaction in private and public sector banks in Kolkata District. The variables are Online mediums of recruitment and selection, Environmental issues related selection tools, Physical examination, Telephone or video-based interviews, Green-job description, Inviting applicants only for "Green Aware" employees, Health and safety of the workplace, Environmental Management training need analysis, Type of materials used in the job, Soft materials used for training rather than hard copy, Training based on conservation of resources, Training and Development enhances Business value, Opportunities to employees in environmental problem solving, Communicating of Green Schemes, Integrating Performance Management with environmental responsibilities, Green practices with the key performance areas, Penalties for non-compliance, Compensation based on green skills, Special bonus for employees using less carbon foot print, Negative reinforcements in Environmental Management System, Suggestion scheme to reward system, Participation in Green Initiative, Employee Involvement & Participation in green suggestion schemes, Independence in experimenting with green ideas, Green workplace agreements, De-briefing of employees on environmental management, Green issues are the reason for resignation, Inputs taken from the exit employees for the improvement of green HRM practices.

Validity and reliability of the survey are examined. The questionnaire has an overall Cronbach's alpha of 0.78. By content validity, the questionnaire's validity is examined. While reducing data, factor analysis is used to group together a large number of variables into a smaller number of components.

Analysis of Exploratory Factor Analysis

On Exploratory Factor Analysis 28 variables are reduced into 25 variables clubbed into 6 factors i.e. Green Recruitment and Selection Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Rewards and Compensation Management Practices, Green Counselling and Employee Relations Practices and Green Exit Interview Practices.

Exploratory factor analysis

On the basis of an exploratory factor analysis, 28 variables are reduced to 25 variables, which are then pooled into 6 factors: Green Exit Interview Practices, Green Recruitment and Selection Practices, Green Rewards and Compensation Management Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Counselling and Employee Relations Practices.

Table 3 : KMO and Bartlett's Test, Eigen Values, Percentage of Variance & Cumulative Percentage with respect to all banks.

Factors of Green HRM Practices						
	F-1-Green Exit Interview Practices	F-2- Green Recruit-ment and Selection Practices	F-3-Green Rewards and Com-pensation Manage-ment Practices	F-4-Green Orien-tation, Training and De-velopment Practices	Factor -5-Green Perfor-mance Man-agement Practices	Factor-6-Green Counsel-ling and Employee Relations Practices
Cronbach's α	0.946	0.736	0.885	0.767	0.792	0.683
	Df =300; Sig. = 0.000					
Initial Eigen values	4.121	3.251	2.608	2.520	1.797	1.332
% of Variance	12.995	11.573	10.924	10.765	10.288	5.972
Cumulative %	12.995	24.568	35.492	46.256	56.544	62.516

KMO measure for sampling adequacy: 0.710; Bartlett's Test of Sphericity Approx. Chi-Square: 1996.62

This Table 3 demonstrates that the instrument used to measure Green HRM Practices is appropriate as the value of Cronbach's alpha is within the range of 0.7 and 0.9 across all six components of Green HRM Practices of all the banks. With respect to the value of KMO measure for sampling adequacy lies between 0 and 1 i.e. 0 < KMO < 1 and also KMO > 0.5 i.e. the value of KMO = 0.710 indicating that the sample is appropriate for Factor Analysis. On considering a 95% level of Significance, $\alpha = 0.05$. Because the factor analysis has a p-value (Sig.) of .000 < 0.05, it is legitimate. At the 0.05 level of significance, the estimated Chi-square is 1996.619 with 300 degrees of freedom. Based on the Varimax Rotation with Kaiser Normalisation, six factors have been extracted . Each of the factors comprise of variables that are having factor loadings greater than 0.5. Thus 25 variables have been clubbed into 6 factors which are used in the study. These 6 extracted factors explain 62.516 % of the variance of Green HRM practices in banking sector in Kolkata district. After rotation, Factor 1 accounts for 12.995% of the variance, Factor 2 accounts for 11.573%, Factor 3 accounts for 10.924%, Factor 4 accounts for 10.765%, Factor 5 accounts for 10.288%, and Factor 6 accounts for 5.972% of the variance. Hence, all six variables account for 62.516% of the variance in the measurement of green HRM practises in private and public sector banks in the Kolkata district.

Identification of the Core Factors

Table 4: Rotated Component Matrix (a) with respect to all banks.

		1	2	3	4	5	6
Factor-2-Green Recruitment and Selection Practices	Online mediums of recruitment and selection		.489				
	Environmental issues related questionnaire		.588				
	Physical examination		.937				
	Telephone or video-based interviews		.703				
	Green-job description		.626				
	Green Awareness employees		.893				
Factor-4-Green Orientation, Training and Development Practices	Health and safety of the workplace				.957		
	Environmental Management training need analysis.				.776		
	Type of materials used in the job.				.613		
	Soft materials used for training rather than hard copy.				.082		
	Training based on conservation of resources				.824		
	Training and Development enhances Business value.				.825		
	Environmental problem solving				.795		

Factor - 5-Green Performance Management Practices	Communicating of Green Schemes					.496	
	Performance Management with environmental responsibilities					.746	
	Green practices with the key performance areas.					.752	
	Penalties for non-compliance.					.627	
Factor-3-Green Rewards and Compensation Management Practices	Compensation based on green skills			.494			
	Special bonus for employees			.355			
	Negative reinforcements in Environmental Management System			.682			
	Participation in Green Initiative			.872			
Factor-6-Green Counselling and Employee Relations Practices	Employee Involvement & Participation in green suggestion schemes						.669
	Green workplace agreements.						.904
Factor-1-Green Exit Interview Practices	De-briefing of employees on environmental management	.873					
	Inputs taken from the exit employees.	.670					

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Operational Definition of Green HRM Practices.

- **Green Recruitment and Selection Practices-** Green Recruitment is a recruitment process backed by environment sustainability. Bangwal and Tiwari (2015) explained that it is a upcoming process of recruitment where new talents are recruited on the basis of awareness of sustainable process, environmental system and applicants who are aware of the concept of conservation and sustainable environment. The term "green recruitment" is not limited to one definition, but instead emphasises the fact that it refers to recruitment that is handled digitally to have the least amount of environmental impact. To promote paperless hiring, digital methods such as online application forms, telephone interviews, or even internet interviews are used, which reduces the amount of paper wasted and the amount of gasoline used for interview travel. Selecting suitable candidates for the job in consulting with the panel or supervisors who are conducting interviews keeping the concept green in mind. Different selection tools like written tests, background investigations, and physical examination which are used for selecting a suitable candidate comprises of few questions related to environmental issues.

- **Green Orientation, Training and Development Practices-** To promote Green Orientation, Induction programmes are designed to facilitate the new joinees to acquaint with different green practices required for organizational sustainability. Green training and development focuses on educating staff members about various working practises that reduce waste, make effective use of resources, and encourage energy conservation. To promote environmental sustainability, trainer should promote the use of soft materials handout rather than printed materials which will reduce the paper usage.
- **Green Performance Management Practices-** Green Performance Management Techniques: Performance management, according to Bangwal and Tiwari (2015), is an ongoing, year-round process of communication between a supervisor and an employee that aids the company in achieving its strategic goals. The objective of green performance management is to incorporate organisational policies and environmental commitments with employee performance evaluations.
- **Green Rewards and Compensation Management Practices -** Rewards and Compensation forms an important part of Human Resource Practices. In this process employees are rewarded and compensated based on the utilisation of green skills. Special bonus are allotted to employees who are using less carbon foot print. Employees who are actively participating in Green Initiatives and giving suggestion in Green Practices are rewarded and also given promotion and career gains.
- **Green Counselling and Employee Relation Practices -** In this practice employees are involved and encouraged to participate in green suggestion schemes. Employees are given adequate independence in experimenting with green ideas. The organisation is negotiating with Unions for making Green Workplace agreements.
- **Green Exit Interview Practices-** Under this practice , employees who are leaving the organization are encouraged to contribute inputs for the improvement of green practices in the organization. Sometimes, the employers also asked the employees whether Green issues are the reason for their resignation. In certain cases, de-briefing of employees on environmental management is conducted in case of dismissal of employees based on environmental issues.

Multiple Linear Regression Analysis

The evaluation of the dependency of one variable on two or more variables is an important area of data analysis. So, to deal with the following research objective :

- To measure employees' satisfaction level in selected private & public sector banks in Kolkata district with respect to various Green HRM practices.

The impact of each variable of Green HRM Practices on the overall satisfaction of the workforce is measured using a multiple linear regression analysis.

An analysis of all the banks' multiple linear regression data (Bank of Baroda, Allahabad Bank, ICICI Bank and HDFC Bank).

As reflected from the Exploratory Factor Analysis, 25 variables of Green HRM practices have been clubbed into 6 factors which are affecting the Employees' satisfaction level in Banking Sector. The regression model is written as follows

$$Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6$$

Where: Y = Employees' satisfaction
X1 = Green Recruitment and Selection Practices
X2 = Green Orientation, Training and Development Practices.
X3 = Green Performance Management Practices.
X4 = Green Rewards and Compensation Management Practices.
X5 = Green Counselling and Employee Relations Practices.
X6 = Green Exit Interview Practice

Table 5: Regression Analysis of all banks -Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.873a	0.762	0.753	3.4091	1.299

a. Predictors: (Constant)- Green Recruitment and Selection Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Rewards and Compensation Management Practices, Green Counselling and Employee Relations Practices, Green Exit Interview Practices.

b. Dependent Variable: Employees' Satisfaction.

The value of R, R Square and Adjusted R Square and Durbin – Watson results are tabulated in the Table 5: which reflect that value of R Square is 0.762, which indicates that the six independent variables, namely, Green Recruitment and Selection Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Rewards and Compensation Management Practices, Green Counselling and Employee Relations Practices, Green Exit Interview Practices contribute to 76.2 % of the variance in employees' satisfaction (dependent variable) which is considered to be quite significant for the predictability of the model. Also coefficient of Durbin-Watson model is 1.299 < 2, shows no autocorrelation.

Table 6 : Anova of regression model with respect of all banks.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5630.493	6	938.415	80.741	.000[b]
	Residual	1755.007	151	11.623		
	Total	7385.500	157			

a. Dependent Variable: Employees' satisfaction.

b. Predictors: (Constant), Green Recruitment and Selection Practices, Green Orientation, Training and Development Practices, Green Performance Management Practices, Green Rewards and Compensation Management Practices, Green Counselling and Employee Relations Practices, Green Exit Interview Practices.

The Table 6 : reflect that the ANOVA result of the regression model with F =80.741, P < 0.01 emphasize that the multiple regression model is consistent with the overall study and can be used.

Table 7 : Multiple Regression Result Coefficients with respect of all banks.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	22.693	3.557		6.380	.000		
	Green Recruitment and Selection Practices.	.279	.195	0.065	1.430	.155	.762	1.312
	Green Orientation, Training and Development Practices.	1.180	.178	0.283	6.639	.000	.868	1.153
	Green Performance Management Practices.	.846	.100	0.353	8.463	.000	.905	1.105

	Green Rewards and Compensation Management Practices.	.829	.078	0.433	10.664	.000	.956	1.046
	Green Counselling and Employee Relations Practices.	1.370	.197	0.299	6.961	.000	.854	1.171
	Green Exit Interview Practices.	.880	.103	0.363	8.549	.000	.871	1.148

a. Dependent Variable: Employees' Satisfaction.

Interpretation – This table 7: indicates that the six variables' collinearity statistics fall within the range of 1 to VIF 10, indicating that a regression analysis can be performed. According to the Multiple Linear Regression Analysis, the variable Green Rewards and Compensation Management Practices. (beta = 0.433) has a higher influence on the level of satisfaction of employees followed by Green Exit Interview Practices (beta =0.363) then by Green Performance Management Practices (beta = 0.353) followed by Green Counselling and Employee Relations Practices. (beta =0.299), then by Green Orientation, Training and Development Practices (beta =0.283) and then by Green Recruitment and Selection Practices (beta = 0.065) in both the public and private sector banks in Kolkata district.

The following regression equation depicts the association between the five independent variables and employees' satisfaction with their jobs.:

$Y = 22.693 + 0.065\ X1 + 0.283\ X2 + 0.353\ X3 + 0.433\ X4 + 0.299\ X5 + 0.363\ X6$

Hypotheses Testing

Hypothesis testing is an important aspect of data analysis. To validate the following **research objective:**

- To research how Green HR practises affect employee satisfaction in the district of Kolkata.

Four hypotheses have been framed ,i.e. on the basis of ownership, gender, experience and age towards employees' satisfaction.

Hypotheses: 1 (Based on Ownership)

H0- The level of employee satisfaction with green human resource practises in private and public sector banks in Kolkata District is not significantly different.

H1a - The level of employee satisfaction with green human resource practises in private and public sector banks in Kolkata District is significantly different.

The independent – samples t-test has been used to compare the means of the two independent groups in order to evaluate whether there exists any statistical evidence that the means of the concerned sample is significantly different.

Independent Samples T Test for testing Hypothesis 1.

Table 8 : Group Statistics : Employees' satisfaction with respect to ownership

Ownership		**N**	**Mean (M)**	**Std. Deviation (SD)**	**Std. Error Mean**
Employees' Satisfaction	Public Sector Banks	82	89.65	7.077	0.782
	Private Sector Banks	76	89.13	5.963	0.684

Table 9: Independent Samples T-Test with respect to ownership.

			Employees' Satisfaction on Green HRM Practices	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		2.660	
	Sig.		.105	
t-test for Equality of Means	T		.492	.496
	Df		156	154.630
	Sig. (2-tailed)		.623	.621
	Difference of Mean		.515	.515
	Difference of Std. Error		1.045	1.039
	95% Confidence Interval of the Difference	Lower	-1.550	-1.537
		Upper	2.580	2.566

Interpretation- In the table : 9 shows that the p-value , (0.105) > 0.05 which signifies that the variances of the populations from which the samples have been drawn are equal. The t-test shows that the mean satisfaction level of public sector bank employees (M=89.65,SD=7.077) is slightly higher from private sector bank employees (M=89.13, SD =5.963) , t (1)= 0.492, and p (0.623) > 0.05. Thus the alternate hypothesis is rejected and the null hypothesis is accepted which concludes that there exists no significant difference of employees' satisfaction with respect to private and public sector bank employees as far as Green HRM Practices are concerned.

Hypothesis- 2

H0- The level of employee satisfaction with green human resource practises on the basis of gender in private and public sector banks in Kolkata District is not significantly different.

H2a - The level of employee satisfaction with green human resource practises on the basis of gender in private and public sector banks in Kolkata District is significantly different.

Table 10: Analysis based on Independent Samples T Test for testing Hypothesis 2.

Group Statistics					
Gender		N	Mean	Std. Deviation	Std. Error Mean
Employee Satisfaction On Green HRM Practices	Male	89	89.42	6.696	.710
	Female	69	89.38	6.403	.771

Table 11 : Independent Samples T- Test with respect to gender.

			Employees' Satisfaction on Green HRM Practices.	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		0.141	
	Sig.		0.708	
t-test for Equality of Means	T		0.037	0.037
	Df		156	149.269
	Sig. (2-tailed)		0.971	0.970
	Mean Difference		0.039	0.039
	Std. Error Difference		1.054	1.048
	95% Confidence Interval of the Difference	Lower	-2.043	-2.032
		Upper	2.121	2.109

Interpretation- The table : 11 exhibit that the p-value of the analysis (0.708) > 0.05 which signifies that the variances of the populations from which the samples have been drawn are equal. The t-test shows that the mean satisfaction level of male bank employees (M= 89.42,SD=6.696) is slightly higher from female bank employees (M=89.38,SD = 6.403), t (1)= 0.037, and p (0.971) > 0.05. Thus the alternate hypothesis is rejected and the null hypothesis is accepted which concludes that there exists no significant difference of employees' satisfaction on the basis of gender with respect to Green HRM practices.

Hypothesis- 3

H0- The level of employee satisfaction with green human resource practises on the basis of experience in private and public sector banks in Kolkata District is not significantly different.

H3a - The level of employee satisfaction with green human resource practises on the basis of experience in private and public sector banks in Kolkata District is significantly different.

Analysis based on One- way Anova for testing Hypothesis 3

Table 12 : Analysis (On the basis of Experience)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
< 1 year	27	90.22	7.239	1.393	87.36	93.09	76	107
≥ 1 year and < 5 years.	63	90.30	6.313	.795	88.71	91.89	75	108
≥ 5 years and < 10 years.	54	87.48	5.862	.798	85.88	89.08	76	101
≥ 10 years	14	91.14	7.685	2.054	86.71	95.58	80	104
Total	158	89.40	6.549	.521	88.37	90.43	75	108

Interpretation – The table : 12 reflects that the mean value of the satisfaction level of employees reveal that employees' satisfaction level towards Green HRM practices slightly differs on the basis of experience i.e. employees whose work experience is equal to or more than 10 years (M=91.14) are slightly highly satisfied followed by employees of experience more than or equal to 1 year and less than 5 years (M=90.30) followed by employees of experience less than 1 year (M=90.22) and followed by employees having experience more than or equal to 5 years and less than 10 years are least satisfied (M=87.48).

Table 13: One -Way ANOVA (Based upon Experience)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	310.747	3	103.582	2.483	.063
Within Groups	6423.132	154	41.709		
Total	6733.880	157			

Interpretation – The ANOVA Table 13 result demonstrates that the value of F= 2.483 and p(0.063) > 0.05. This suggests that the Alternative Hypothesis is rejected and the Null Hypothesis is accepted. As a result, regardless of the employees' experience, the degree of employee satisfaction with Green HRM practises is the same.

Hypothesis- 4

H0- The level of employee satisfaction with green human resource practises on the basis of age in private and public sector banks in Kolkata District is not significantly different.

H3a - The level of employee satisfaction with green human resource practises on the basis of age in private and public sector banks in Kolkata District is significantly different.

Analysis based on One-way Anova for testing Hypothesis 4

Table 14 : Analysis (On the basis of Age)

Employees' Satisfaction								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
≥20 years and < 30 years	70	90.26	6.269	.749	88.76	91.75	75	107
≥ 30 years and < 40 years	50	88.64	6.706	.948	86.73	90.55	76	108
≥40 years and < 50 years	19	89.00	6.716	1.541	85.76	92.24	77	101
≥50 years	19	88.63	7.120	1.633	85.20	92.06	78	104
Total	158	89.40	6.549	.521	88.37	90.43	75	108

Interpretation – The above table 14: shows that the mean value of the satisfaction level of employees reveal that satisfaction level differs on the basis of Age of the employees i.e. employees whose age is more than or equal to 20 years and less than 30 years (M=90.26) are slightly higher than all the three groups of employees and employees under the age group of equal to or more than 50 years (M=88.63) are slightly least satisfied as compared to other groups of employees.

Table 15: One-way ANOVA (Based on Age).

Employees' satisfaction towards Green HRM Practices					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	94.567	3	31.522	0.731	0.535
Within Groups	6639.312	154	43.112		
Total	6733.880	157			

Interpretation - The results of the ANOVA Table 15 show that the Null Hypothesis is accepted and the Alternative Hypothesis is rejected with values of F= 0.731 and p(0.535) > 0.05. As a result, the degree of employee satisfaction with Green HRM practises is unaffected by the employees' ages.

Findings

The research paper highlights the following findings:

- On the basis of an exploratory factor analysis, 28 variables were reduced to 25 variables, which are then pooled into 6 factors: Green Exit Interview

Practices, Green Counselling and Employee Relations Practices, Green Performance Management Practices, Green Orientation, Training, and Development Practices.

- In measuring Green HRM Practices in both private and public sector banks in the Kolkata district, the six components together account for 62.516% of the variance.
- According to the results of the Multiple Linear Regression analysis, employee satisfaction levels in both public and private sector banks in the Kolkata district are most influenced by the variable Green Rewards and Compensation Management Practices, followed by Green Exit Interview Practices, and are least influenced by Green Recruitment and Selection Practices.
- Regarding ownership, gender, experience, and employee age, there is no discernible variation among the private and public sector bank employees with respect to green HRM practises.
- In short, the Indian banking industry is just beginning to implement green HRM practises, which needs further attention and growth to meet the demands of global sustainability.

Conclusions

Green HRM is the standard to assess an organization's sustainability, and banks are no exception. Green HRM not only improves the company's corporate and brand image, but it also raises employee awareness of the need to effectively manage waste management and support the manufacture of environmentally friendly goods. Green HRM is a proactive approach to long-term sustainability that focuses on process innovation at businesses moving in the direction of a greener tomorrow.

Limitations

Though Green HRM has taken birth in 1990s in international context but still conceptualization and operationalisation of various construct in the field of green HRM is a challenging task. More developed, valid and reliable instrument is to be adopted to measure the various construct of Green HRM. The researcher has faced a challenge in gathering data as a number of organisations were not ready to disclose their internal information. It is the statement of some of the officials that Green HRM is a concept; it is not practical in nature.

Recommendations

As per the findings of the above survey, already banking sector has taken initiative to incorporate Green HRM practices in their business strategy. Still the sector should encourage employee involvement and participation in environmental management programmes to improve banking environmental performance with a specific focus on waste management recycling and cost cutting.

Green Rewards and Compensation Management Practices and Green Exit Interview Practices should be properly monitored by both the public and private sector banks because the former practice will enhance the motivation level of employees and the latter one will help the organisation to understand Green HRM Practices with respect to employees' perspective and it will help the organisation to redesign the Green HRM Practices. It is recommended from the above findings that banking sector may incorporate Green HRM practices through three level strategy.

Short term strategy-This strategy basically focus on the current green HRM practices practiced in the organisation focusing on where the organisation stands and what are the initiatives they are forecasting to make the organisation green.

Middle term Strategy-This strategy deals with the evaluation of the effectiveness of Green HRM Practices practiced in the organisation and try to establish a eco-friendly culture in banks.

Long term strategy-Based on the track performance of Green HRM practices, this strategy should integrate Green HRM Practices in Business Strategy.

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Antecedants of Employee Retention Among Startup Organization

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Introduction

Due to the ecosystem and ease of starting business, there has been a strong growth in the startup Organization in India. There are lot of challenges for an entrepreneurial organization when competing with conglomerates. It is significant to maintain their core competencies intact for creating a sustainable business. Human resources has always been a critical competency for startup organizations as it becomes difficult in identifying and deploying the necessary skillset. The inevitability of organizational commitment comes to play here in retaining the competent HR Resources. The study tries to understand the factors that dictate the employee retention in the startup organization

Literature Review

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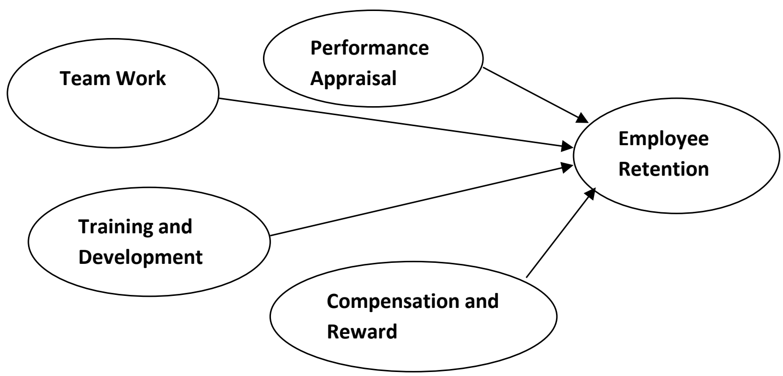
Research Methodology

The Organizational Retention constructs were extracted from the Bader yousif Obideat et.al model and processes using the Statistical Package for Social Sciences and the structural equation modelling parameters are evaluated through the SmartPls3.0 using the partial least squared method. The sample size taken for the study is 493 and sampling method adopted is Purposive sampling. The survey instrument has been provided to experts for the purpose of validity and resolving any errors in the same.

Conceptual Model



Analysis and Interpretation:

Construct Reliability:

Construct	Cronbach's Alpha
PA	0.732
TW	0.882
TD	0.757
CR	0.821

From the above table it is evident that reliability of the constructs is established. The reliability of the constructs measure the stability of the model in repeated testing of the model.

Path Analysis:

Structural Equation Modelling of the model is performed with the help of SmartPls 3.0 and the Path analysis output is given in the following table

	OS	T	P Values
PA -> ER	0.315	2.662	0.03
TW -> ER	0.342	6.344	0.001
TD -> ER	0.221	3.053	0.014
CR -> ER	0.278	2.771	0.028

It is found that the T value of the path is above 2 and the p value are found to be below 0.05 for the all the paths. It is found that the Team work is found to have a significant impact on the Employee retention in Startup Organization.

Model fit

The average communality and average R2 for endogenous variables are the geometric means of the global goodness of fit (GOF). The global goodness of fit for this model is 0.683 and 0.723 is much above the cut-off 0.336.

$$GoF = \sqrt{AVE} \times \sqrt{R^2} = 0.612$$

GoF = .683

Chi Square Test between Age and Training Efficiency

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.341[a]	16	.023
Likelihood Ratio	16.415	16	.004
Linear-by-Linear Association	1.552	1	.001
N of Valid Cases	493		

It is found from the above table there is a significant association between Age and Training Efficiency which is evident from the p value less than 0.05. Therefore the training methods in the startup organization has to be customized on the basis of age.

Analysis of Variance between Gender and Team work

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	77.223	3	20.543	1.401	.012
Within Groups	5372.231	490	14.201		
Total	5372.231	493			

It is found from the above table that Teamwork efficiency varies within gender and the results are validated by the significance value less than 0.05. Therefore in a startup organization it is important to create an organizational culture and Coordination possibilities accordingly.

Conclusion

In a startup organization there is lesser importance towards Compensation and rewards and higher significance is provided towards the teamwork among the employees. The growth of the startup organization depends on the employee retention which depends on the coherence of the team. The training of the employees provide them a sense of skill enhancement which further affects the employee retention in organization.

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A Study on Purchase preference and Repurchase intention towards E-Commerce platform

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Abstract

Purpose- The paper focuses on shift from home-basket to E-basket and customer behaviour related to that, hence the research aims to study the Customer online buying behaviour, the factors affecting Customers' Purchase preference criteria towards E Commerce platform and the reasons that can lead to Customers' Repurchase intention towards E Commerce platform.

Design/methodology/approach- As the study aims to study the significance between independent and dependent variables with respect to purchase preference and Repurchase intention towards E Commerce platform, the researchers have applied Multiple regression model to test the hypothesis using IBM SPSS-22 software. The researchers have also checked the reliability and normality of the data using the mentioned software.

Findings- The study suggests there is significant influence of Coordinated marketing factors, functional benefits, Reference group triangle and trust on Purchase preference towards E Commerce platform and there is significant impact of personal benefits with respect to Repurchase intention with customers having intention to buy related products more compare to same product and higher priced products.

Originality/value- Earlier researches have focused on marketing factors and functional benefits, influencing factor separately, whereas this study has taken the combined and coordinated impact of marketing factors, functional benefits and instead of single influencing factor, the study has taken into consideration the reference group triangle along with trust as an independent variable instead of mediating variable which the other studies have considered earlier.

Further Research- Research give direction that people having repurchase intention would be willing to buy more of related products, then same products and few people are willing to buy higher priced products, which can further be researched as Cross buying habits of customers on E commerce platform.

Keywords- E Commerce, Online buying behaviour, Purchase Preference, Repurchase intention

Introduction

E commerce

Commerce is a trading activity of exchange whereas E commerce is a new commercial exchange theory due to advancement in technology and internet. It is nothing new but a direct trading activity with a change in the focus from home- basket to E-basket that changes the conception of social and behavioural norms and tries to make buying fast, convenient and pleasurable experience. E-commerce is a subset of E business as it deals with trading of activities online whereas E- business deals with overall business taking place on online platform.

Electronic commerce (e-commerce) involves transaction processing which is a style of computing wherein the large volume of transactions is executed on the basis of priority performed by large server computers, such as buying and selling products and services through computer networks like the Internet (Chintagunta, 2012). Which is further divided into nine types: business to-business (B2B), business-to-consumer (B2C), business-to-government (B2G), consumer-to-consumer(C2C), consumer to government (C2G), Consumer to Business (C2B), government to Business (G2B), Government to consume (G2C), Government to government (G2G) and mobile commerce. (Chen et al., 2014). Among these, the transaction objectives of B2C and C2C are more or less similar. Terminal consumers are their transaction objectives. The development of E commerce has given rise to Business domain and along with that the retailers have also got chance to increase the competitive advantage. (Nisara & Prabhakar, 2017) . E commerce has got the potential of growth in omni channel as ther is a rise in internet marketing and digital payments as mentioned in an analytical report by (Khosla & Kumar, 2017) E-commerce has transformed the way business is done in India. As per the (India Brand Equity Foundation, 2020) The Indian E-commerce market is expected to grow to US$ 200 billion by 2026 compare to US$ 38.5 billion as of 2017. And as per the (India Brand Equity Foundation, 2021) The Indian E-commerce market is expected to grow to US$ 111.40 billion by 2025 from US$ 46.2 billion as of 2020, and by 2030, it is expected to reach US$ 350 billion.

Increase in the penetration of internet and smartphone has led the E-Commerce market to grow. As of August 2020, on account of 'Digital India' drive, the number of internet connections in India significantly increased to 760 million, Out of the total internet connections, 61% connections were there in urban areas, and of which 97% connections were wireless.. (India Brand Equity Foundation, 2020). Indian consumers are moving towards adopting 5G smartphones. (India Brand Equity Foundation, 2021) which has intensified the situation.

Theoretical Framework

As competition is now occurring in two worlds, the physical world and the virtual world made of information, e-commerce focusing on convenience, speed, price and personalization. A traditional approach to marketing might take the line of the marketing mix (Kotler, Keller, Koshi, & Jha, 2013) who classically discuss "the 4Ps" (product, place/distribution, pricing, promotion, Lauterborn in the year 1990 gave the new angle to the marketing mix concept which has suggested the following shift: i) price becomes the cost to the customer; ii) product becomes customer valuation of the product; iii) place becomes the convenience for the customer; iv)promotion becomes the communication. (Brayshaw & Gordon, 2006)The use of ecommerce can have a significant on how we can achieve these types of goals and differentiates e-marketing from its conventional approaches. (Smit, 2003) suggested that 4P's is seller's approach whereas 4 C's is that of customer or marketing approach. (Wani, 2013). Many other researchers have adopted many such alternative model for the marketing mix concept, the recent development is the SAVE model which caught the attention when an article titled "Rethinking the 4Ps" was published in the January-February 2013 edition of Harvard Business Review. it seems that this model has all the ingredients to replace 4Ps in every form of marketing. The SAVE model suggests the focus from Products to Solutions, Place to Access, Price to Value, and Promotion to Education, which justifies the acronym- SAVE. (Wani, 2013). E Commerce platform justifies the model by providing solutions for every problem faced by the customer, it genuinely gives value to the customer the kind of offering he is getting. The motive of E Commerce is 24/7*365 which justifies the Availability quotient of the model and it tries to educate customer in terms of using the platform to its fullest capacity. The researchers have applied this to both product and service as researched by (Wirtz & Lovelock, 2016) services include core plus the supplementary services, out of which certain services are of facilitating and the rest are of enhancing services. Some of the supplementary services like, Information, order taking, billing, payment, consultation is information based and do not require physical contact all the time, which has helped E Commerce to perform most of the transactions effectively and efficiently.

Objectives:

1. To study the Customer online buying behaviour
2. To study the factors affecting Customers' Purchase preference criteria towards E Commerce platform.
3. To study the reasons that can lead to Customers' Repurchase intention towards E Commerce platform.

Literature Review

Purchase Preference

Purchase intention in e-commerce is defined as a consumer's inclination to make a purchase

from the online seller). According to the theory of planned behaviour), the most influential predictor of behaviour is behavioural intention . To achieve greater acceptance of e-commerce, it is essential that consumers intend to use e-commerce platforms and obtain the information necessary to perform the transaction when purchasing a product or service. (Lim & Dubinsky, 2004) stated any purchase decision be it offline or online is a complex decision. One Wrong decision can affect customers' post purchase behviour which could result in dissatisfaction or dissonance. Keeping this in perspective, virtual format have the facility to provide detailed product list with option of comparing and suggestions, reviews for easy decision making Virtual retail formats provide multiple options such as reviews, suggestions, comparisons and detailed product information the same concept was highlighted by (Bhatnagar & Ghose, 2004)with time utilization perspective (Szymanski & Hise, 2000) and (Prasad & Aryasri, 2009) focused on category wise search option and comparison easiness as it reduces psychological cost which makes virtual shopping more time and cost efficient. In virtual shopping, convenience is related with time, search access, possession, place and transaction convenience. Virtual shopping cart offers virtual basket to carry which allows users to compare the products with convenience.

Marketing factors:

Marketers always try to influence customers' purchase intention which reflects consumers' intention to make purchases on an e-commerce site. As per (Gefen, 2003) (Van Der Heijden, 2003) (Wells, 2011) (Javornik, 2016) marketing efforts like, products appeal, pricing strategy, delivery system and platform and promotional efforts are more likely to prompt consumers to make purchases online. Thus, researchers like, (Jiang & Benbasat, 2007a) explained that along with attractive projection and presentation of product, positive attitude towards product and website increases and induces purchase intention in E-commerce. (Wells, 2011) also confirmed that E-commerce consumers tend to buy products that they ought to be enticing. Marketing efforts includes the content and its delivery both hence, (Riel, Van, & Jurriëns, 2001) once very appropriately addressed that service content is of no use unless it is delivered properly and accessed by consumers effectively. Which was already suggested by (Grönroos, Heinonen, Isoniemi, & Lindholm, 2000)that consumers are interested in superior service content and its delivery both. Most of the studies talk about each marketing element separately. This study thus focuses on coordinated Marketing efforts,

H1: There is no significance between Coordinated Marketing efforts and Purchase decision.

Functional Benefits:

Web benefits can be the reason for purchase preference as (Freiden, Goldsmith, Takacs, & Hofacker, 1998) mentioned that consumer always seeks accurate information on virtual platform along with accuracy, accessibility of information as discussed by (Daugherty, Ellinger, & Rogers, 1995).What a customer seeks on website is missing of personal touch so many e-commerce platform provide social touch with the help of technology by personalizing communication as mentioned by (Gefen & Straub, 2004) The other benefit that a customer considers is transactional benefit, like self-control, time and cost saving as discussed by (Polatoglu & Ekin, 2001) . the other benefits that a customer seeks are responsiveness and customized products and services as stated by (Klein & Quelch, 1997) and (Greaves, Kipling, & Wilson, 1999) above all the medium itself which is the quality of the website and perception of user towards the same is also which can frame the buying intention This has emerged as an important determinant of consumer intention. (Poddar, Donthu, & Wei, 2009). There are some other benefits that the customer looks for which will be discussed in the paper,

H2: There is no significant difference between Functional benefits and Purchase decision towards E Commerce

Trust:

In E-Commerce, previous studies like, (Aiken & Boush, 2006) (Biswas & Biswas, 2004) (Kim, Xu, & Koh, 2004) have examined that due to asymmetry in information, trust was considered to be the most important factor. At the same time, E-commerce requires integrity and transparency in business, (Reichheld & Schefter, 2000) emphasised on two-way interaction which is not possible in E commerce hence trust building is difficult to establish. To generate trustworthiness, various researchers have focused on different parameters like, (Aiken & Boush, 2006) and (Biswas & Biswas, 2004) addressed advertisement investment for trust building, (Biswas & Biswas, 2004) and (Kim, Xu, & Koh, 2004) focused on reputation system and (Aiken & Boush, 2006) focused on warranties and third part endorsement. Trust has always been taken as mediating or moderating variable; this study would focus on trust as an independent factor. Thus, we hypothesize that:

H3: There is no significant difference between Trust and Purchase decision towards E Commerce

This study focuses on influence triangle Immediate reference group consists of family, friends and colleagues, 2nd corner of the triangle consists of media influence and the third corner consists of own experience and its impact on e-commerce purchase.

H4: There is no significant difference between Reference group triangle and Purchase decision towards E Commerce

Repurchase Intention

Online consumption behaviour has got two facets in E commerce, first is to attract customers to purchase online and then encourage them to repurchase online as explained by (Zhang, 2011). As (Patel, 2014)suggested that the repeat buyers would spend more willingly which contributes to the profitability of the firm. Hence it is less costly monetary as well as non-monetary to sustain and retain the existing customers. This phenomenon has become crucially important than ever before, (Sutto, 2016) mentioned that it has been overlooked and ignored by many online retailers. The adoption of the concept of Repurchase Intention is from various disciplines. Apart from Marketing originally it belongs to the field of social psychology. As (Thibaut, 1959) explained the concept in Social Exchange as relationship maintenance which suggests intention to continue. From the Marketing perspective, as a part of Defensive marketing strategy repurchase intention is a decisive factor in business success. (Cronin & M.K., 2000). As (Fornell C. , 1992) and (Bartlett, 2007) have emphasised that companies are focusing on defensive marketing strategy instead of offensive marketing strategy as it is easy to retain customers rather than acquiring new one. Many researchers have given definitions for Repurchase intention, like (Fornell C. , 1992)termed it as probability to go with the previous provider in future and whereas, (Ranaweera, 2003)claimed it as a tendency to stay or leave the current supplier which is a result of a customer behavioural intention.

Previous studies have examined various factors influencing online consumer repurchase intention on e-commerce websites. (Wu & Cheng, 2014) and (Lee & Nelson, 2011) focused on perceived value whereas, website functionality and quality were addressed by (Sharma, 2015) and (Lee & Nelson, 2011), popularity and reputation by (Hsiao, Lin, Wang, Lu, & Yu, 2010) and innovativeness by (Ghazali, 2018)These factors give an idea about how a customer perceives features of e-commerce websites. Many researchers focused on satisfaction as one of the factor for repurchase intention, Satisfaction is a result of first stage expectation which involves beliefs which is later on followed by initial perception and judgement of the customers. (Kim, Ferrin, & Rao, 2008) . Apart from these a customer looks for personal gain in online purchase, which is addressed here,

H5: There is no significant difference between Personal benefits and repurchase decision towards E Commerce

Research Methodology

The research follows both primary and secondary analysis. A structured questionnaire was floated to the 208 respondents using simple random sampling contacting above 15 years audience as the study is on purchase behaviour. Reviewing the previous research studies and from the data received, it is observed that 97% of respondents have got access to internet, internet has been widely used not only for shopping, but for accessing information, payment of bills, entertainment, education and investment. Customers buy more of grocery items (64%) compared to medicines (62%) cosmetics (60%) Furniture (57%) books (49%), Toys (46%), FMCG (43%), Cloth (41%), gadgets (34%). As far as E-commerce platform preference is concerned, as people prefer grocery items more, the most preferred platform ought to be big basket, then followed by other platform like, Amazon, Flipkart, Jio mart, Snapdeal, Myntra and others.

Reliability of data- Cronbach alpha

Given the aforementioned information, the reliability of all the categories has been tested using the Cronbach alpha reliability test statistics. Table provides reliability test statistics. Cronbach alpha along with the values of standardized alpha. Reliability is defined as "an assessment of the degree of consistency between multiple measurements of a variable"

Variable	Cronbach Alpha
Usage of Internet	0.803
Type of Product purchased	0.886
Preferred E commerce platform	0.787
Coordinated Marketing factors	0.848
Functional benefits	0.903
Reference group triangle	0.820
Advantages	0.846
Disadvantages	0.842
Repurchase intention factors	0.902
Type of product in re-purchase intention	0.771

Hence the reliability of the total data comes out to be as follows,

Cronbach alpha	0.957
No of variables	76

To test the hypothesis, since the data follows normal distribution, and the purpose of the study is to study the impact of independent variable on dependent variable, regression analysis is used to know the significant impact. Regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. In present study, linear regression analysis is used to identify the factors contributing employee satisfaction towards marketing activities in the product launch. Multivariate regression analysis has been used with IBM SPSS-22 software.

Data Analysis & Interpretation

H1: Coordinated Marketing efforts have got significant impact on e-commerce purchase preference. Hence the null hypothesis is rejected as the analysis shows,

R	F value	Significance level
0.299	2.713	0.010

H2: Functional benefits have got significant impact on e-commerce purchase preference, hence the null hypothesis is rejected, as the analysis shows,

R	F value	Significance level
0.281	1.286	0.230

H3: Reference group triangle-family, friends, colleagues grouped as one, media and own experience play significant role in purchase decision on e-commerce

R	F value	Significance level
0.350	2.969	0.002

H4 :Trust as an independent variable has a significant impact on purchase preference on e-commerce platform.

R	F value	Significance level
0.160	1.029	0.402

H5: Personal benefits have got significant impact on repurchase intention on e-commerce platform.

R	F value	Significance level
0.355	3.432	0.001

	Related product			**Same Product**			**Higher Priced Product**		
	Frequency	**Percent**	**Valid Percent**	**Frequency**	**Percent**	**Valid Percent**	**Frequency**	**Percent**	**Valid Percent**
Definitely not buy	1	.5	.5	3	1.4	1.5	9	4.3	4.5
Probably not buy	1	.5	.5	5	2.4	2.5	10	4.8	5.0
Not sure	16	7.7	8.0	22	10.6	11.0	63	30.3	31.5
Probably buy	86	41.3	43.0	93	44.7	46.5	91	43.8	45.5
Definitely buy	96	46.2	48.0	77	37.0	38.5	27	13.0	13.5
Total	200	96.2	100.0	200	96.2	100.0	200	96.2	100.0

Conclusion

As per the study value of R square suggests shows the total variation for the dependent variable that could be explained by the independent variables. A value greater than 0.5 shows that the model is effective enough to determine the relationship. But in case of human behaviour study it can be less than 0.5 as the study would be biased if it is more than 0.5. hence coordinated marketing factors would significantly impact the purchase preference towards E-commerce.

Conclusive Analysis:

Variables	Impact	Hypothesis	R	R square	Adjusted R square	F	Result
Marketing factors	Purchase Preference	H1	0.299	0.089	0.056	2.713	rejected
Functional benefits	Purchase Preference	H2	0.281	0.079	0.018	1.186	rejected
Reference group triangle	Purchase Preference	H3	0.350	0.122	0.081	2.969	rejected
Trust	Purchase Preference	H4	0.160	0.026	0.001	1.029	rejected
Personal benefits	Repurchase Intention	H5	0.389	0.128	0.072	2.280	rejected

At 1% level of significance, the ANOVA table shows the impact of variables among each others wherein the factor value F is within the given range as per the observed and critical data value.

Managerial Implication

A customer takes into consideration marketing factors, functional benefits, trust and reference group triangle to decide whether to purchase using e-commerce platform or not. Hence e-commerce platform should focus on marketing mix elements, showing the functional benefits along with trust and reference group influence. So the marketer needs to win customer trust at the same time should be aware whom to contact so that customer can decide to use e-commerce platform. Every marketer is focusing on repeat purchase hence to induce repeat purchase, marketer needs to identify personal benefits that the customer seeks from the marketer.

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Integrated Personalized Book Recommendation using Social Media Analysis

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Abstract:

Today, most e-commerce sites use product-specific recommendation systems to better user experience. The algorithm used by such sites is - item-to-item collaborative filtering. This matches each user who has purchased and rated items to similar items and then combines those similar items into a recommendation list. The solution proposed in this paper is an integrated book recommendation system that maps the user's highly rated books with books of a similar genre, maps the interactions of said user on social media to assess the kind of books one is interested in, and considers the collaborative filtering or association mapping between the items. In this model, authors used datasets for the same Goodreads book collection, Amazon and Goodreads reviews, transaction histories, and Twitter data. The proposed solution shall use a weighted measure, k-means clustering, and sentiment analysis. The collaborative filtering will be done using the Apriori mechanism to develop an integrated book recommendation list. The result is a list of 10 books that are recommended for a particular user. The proposed model met 80 percent of the user's expected recommendations, whereas the simple collaborative model only met 60 percent of the user's expectations. The collaborative model consisted majority of books by the same author or of a complete contrast genre as the method only considers the choice of other similar users and not similar books. So, the proposed integrated recommendation system is more accurate in its recommendations than a simple collaborative system. This model helps firms recommend the best possible book for book lovers. It also helps book lovers to find the best content as per their interests.

Keywords: Recommendation Systems, Sentiment Analysis, Text Analytics, Data Mining, Data Science, Data Analysis.

1. Introduction

The ideology followed by marketing is that the customer is the king. Furthermore, customers want personalized recommendations when they are purchasing any product. E-commerce sites use item-to-item collaborative filtering in their recommendation engines. This form of filtering maps the items a particular user has bought with similar items bought by other consumers. This is well suited for a domain such as apparel, electronic devices, and other appliances. However, it does not work well with books. When a book is recommended, a significant feature is the book's genre or the book's content. So, to understand the preferences of the consumer, one needs to understand the genre preferred by the user. Currently, item-to-item collaborative filtering will recommend books written by the same author and not the same genre as it does only collaborative filtering and does not touch upon the book's content. The recommendation system is not personalized, i.e., if Person A buys a book, say, 'The Alchemist' and Person B also buys the same book, both their recommendations will be the same because these are not based on the user, somewhat based on what other people buy along with this book. This is not ideal as in today's world, and all consumers love personally picked items. Another aspect that remains unexplored while the recommendations are generated is the user's views about the item on social media. We must accept that fact social media plays an important role in all our lives and is one of the most important sources for gathering user-related data. Especially when it comes to books and movies, we are more inclined to try out books recommended to us by a friend or other connection. Hence, it becomes important to analyze the social media interactions that a particular user has, to enhance the recommendation engine. The integrated recommendation system shall bridge this gap. The system does not consider only transaction history but also the consumer's ratings, reviews, and interactions on social media sites like Twitter and Goodreads. The social media and the user's reviews and ratings help give personalized recommendations suitable only for a single user. Data mining is the best means to integrate and find unique patterns in this wide variety of data. The use of various data mining approaches makes the results more robust and helps derive meaningful interpretations from a variety of data sources. The integrated book recommendation system uses agglomerative clustering to similar group books into clusters based on the genre, publishing year, and author of the books. It uses sentiment analysis on the customer reviews and the tweets by the users to understand how the reader or consumer feels about the book and helps make more personalized recommendations. The recommendation system takes the help of the Apriori algorithm to find patterns in the purchase history using the transactions of several customers and help with collaborative filtering. Finally, the learning from the various channels is integrated. The system produces a list of top 10 recommendations for the user, which cover a variety of authors and genres, providing the users with a broader range and a more appropriate list of recommendations. This system will help online retailers gain loyal customers and decrease their customer churn rate. It will increase their business, and more customers will be attracted by the personalized recommendations. It will also help in showing relatable advertisements in their digital marketing plans. This will ultimately help the consumer as it will save them time and effort in finding the next ideal read.

2. Literature Review

There has been an increase in the need for personalized recommendation systems in the past couple of years. The most common methods of personalized recommendation systems are collaborative filtering, content-based filtering, and a combination of both as hybrid filtering techniques. One of the first systems was proposed in 2000. Mooney et al. (2000) proposed a content-based book recommendation system that uses information extraction and a machine-learning algorithm for text categorization. The first extraction of information is done, and a database is created. Following this, a user profile is created by asking the user to select and rate the books. Finally, the recommendations are generated. Amazon proposed its recommendation system in 2003. Linden et al. (2003) explained the item-to-item collaborative filtering approach and compared it with more traditional processes such as collaborative filtering and clustering methods. The result found was that traditional models cannot handle large datasets unless it reduces dimensionality, leading to data loss. The clustering models could use all the data; however, the results were not accurate enough. They did not match the user to similar customers. Rather, in item-to-item collaborative filtering, the user has purchased and rated items are matched with similar items, forming the final recommendations. Using Data Mining Algorithms was proposed by Chen et al. (2006). They used various Data Mining Algorithms to provide a recommendation system for digital libraries. The proposed system has a two-phase data mining approach that uses association rule mining and clustering methods to generate the recommendations. The process considers the clusters of users and the association among the information accessed by these users. By 2015, Kurmashov et al. (2015) proposed an online book recommendation system that used collaborative filtering and the Pearson correlation coefficient to find the list of recommendations. They developed a system that asks the user to rate some books and thus finds the user's preferences and favorite categories. This data finds the list of books that the user will appreciate. One of the most common methods used especially for collaborative filtering is Frequent Pattern mapping. This was introduced by Zhu et al. (2007) when they proposed a book recommendation system that used an improved association mining technique. They use the Apriori algorithm to generate the association rules from the dataset. The two improvements were that they reduced the scale of the candidate item set, which increases the calculation capacity, and they ignored the useless transaction records. In this way, the efficiency of the Apriori algorithm was improved. A similar model was proposed by Talwar et al. (2015). They came up with a recommendation system that uses the Apriori algorithm to generate the predictions. The Apriori algorithm helps to find patterns in the transactional data and generate useful association rules, which help give useful recommendations. Minimum support and minimum confidence threshold were used to choose the strictest rules. Some researchers tried other methods for finding the frequent patterns and similarities between the users. Devika et al. (2017) proposed a novel method for recommending books that used the Frequent Pattern Intersect (FP Intersect) Algorithm, which has higher productivity than the typically used Apriori algorithm. However, the FP Intersect algorithm needs more space than Apriori and can be considered more expensive. Rana et al. (2019) proposed a book recommendation system that used Collaborative Filtering using Jaccard Similarity. They calculated the Jaccard Similarity for a pair of books. This was calculated as the ratio of the users who have read both books divided by the sum of users who have read any one book out of the two. The books with the greatest Jaccard Similarity will be the best recommendations. This method gave more accuracy than the general collaborative filtering methods. However, this value is dependent on the number of users. The larger the number of common users, the higher the Jaccard Similarity Index. In 2019, frequent pattern mapping methods and other data mining methods were used to produce more efficient and effective results. Obeidat et al. (2019) proposed a collaborative recommendation system to recommend online courses. In this system, the Apriori algorithm has been used to generate the association rules based on the courses chosen by the students. Clustering of the students has been done using k-means clustering to similar group students. Post this, and various online courses have been recommended to each cluster of students. Hikmatyar et al. (2020) proposed a system to recommend books using User-Based Collaborative Filtering. They used the entire Software Development Life Cycle Process to create the model. The similarity measure is Cosine Similarity and K - Nearest Neighbours to find the best recommendations. Opinion or sentiment mining is another beneficial technique to understand how a user feels about a particular product. This data can be used to recommend similar objects to the user. Sohail et al. (2013) gave a system that performed opinion mining on the reviews given by the various users. Post opinion mining, feature extraction is done on each review for the following features - occurrence, helpfulness, material, availability, irrelevancy, price, and others. Each feature is given a weight. This weight is then added to the opinion mining results. Finally, a scoring table is made to display the details of the books based on the scores. Tewari et al. (2017) went a step ahead. They proposed a recommendation system that generates item recommendations to users with the help of dynamic content-based filtering, collaborative filtering, association rules, and opinion mining. The system uses a dynamic profiler to create a profile for every user which analyses the users' shopping patterns and browsing history. With this information it creates a Keyword Vector unique for each user. The similarity of these vectors is calculated and used in a collaborative classifier to produce the necessary recommendations. They have also used weighted opinion mining and association rule mining to reach the final recommendations. Social media is a useful source of information about the users. By 2011, social media made a place for itself and played a major role in recommendation systems. With graph-based networks on the rise, Pera et al. (2011) proposed that collaborative filtering and content-based filtering methods are not personal enough. To overcome this, they developed a recommendation system based on the users' social interactions and then recommends books based on their interests. They considered similarity among the books, their friends' interest, and finally collaborated the results to give the recommendations. Valois et al. (2011) proposed a recommendation system that uses social networks to generate useful recommendations like the previous model. The system's objective is to incorporate the theory of six degrees of separation proposed by Watts in 2003 amongst the users of a social network to enhance the efficiency of an existing recommendation system. In 2019, the impact that the social media apps were having on a consumer's intention of purchasing a product online was explored by Waheed et al. (2019) During the same year, Chandrasekaran et al. (2019) tried to understand the interaction dynamics between several users on a Facebook fan page using a sentiment mining approach. As is the case with most Data Mining algorithms, just one implementation method is not sufficient to provide the desired results. So, hybrid or integrated approaches are used to get the best results from the model. Vaz et al. (2012) proposed a hybrid literary book recommendation system. The system uses two item-based collaborative filtering algorithms to recommend books and authors that the user shall like. The predicted authors are then expanded into a book list. This list is aggregated with the list of recommended books to generate the list of top suggestions of literary books.

Sase et al. (2015) also proposed a hybrid recommender system that uses collaborative filtering and content-based filtering and demographic techniques. For the collaborative filtering, they use the ratings of the products and compare the ratings of similar products purchased together. In content-based filtering, they compare the features of the products with the ratings given. For the demographic techniques, they match the various demographic features of the users to the ratings given by them for the various products. In the same year, Rajpurkar et al. (2015) proposed a system for efficient recommendation of books. A new approach is presented for recommending books to the buyers. The system presents a hybrid model that uses content filtering, collaborative filtering and association rule mining to produce efficient and effective recommendations. The next year, Mathew et al. (2016), Proposed another hybrid book recommendation system that uses both content based and collaborative filtering. Equivalence class Clustering and bottom-up Lattice Traversal algorithm is used to find the frequent itemsets efficiently. This method uses depth-first search to get the relevant recommendations. In 2016, Cho et al. (2016) integrated multiple data mining methods and proposed a content-based book recommendation system. A user profile is created based on the ratings given by the user. It uses Naive Bayes Classifier and Maximum Entropy Classifier under Content-Based Filtering. Collaborative Filtering Approach which involves UV-Decomposition and K-Nearest Neighbours is used to get the list of the recommended books based on the content of the books. And finally, a hybrid method of recommending is used, and all the three methods have been compared. The hybrid approach gave the highest accuracy of 84.99 per cent. Today, deep learning is a highly effective method that allows the machine to understand the patterns between the users and the items in an intrinsic fashion and propose the best results. Wadikar et al. (2020) proposed a book recommendation platform using Deep Learning methodologies. The proposed system uses Convolution Neural Networks to recommend various subject based books. It takes the subject name as an input and generates a list of recommended books based on ratings and number of purchases on that subject.

3. Research Methodology

To identify the gap between the users and the recommendation systems provided by various e-commerce sites, a survey was conducted to analyse to what extent were the users satisfied with the recommendations provided by the e-commerce sites. The survey was also used to analyse whether the consumers would be interested in a personalized book recommendation system. From the survey, more than 56 percent of the users were dissatisfied with the e-commerce recommendations. More than 20 per cent were neither satisfied nor dissatisfied. The observations of the same are given in Figure 1.

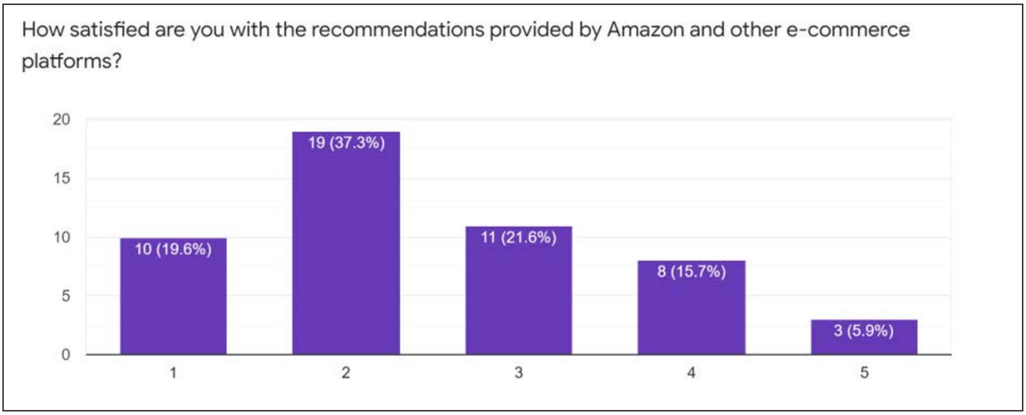


Fig. 1 – Respondents Satisfaction with E-commerce Recommendations ("The Author")

The next observation made from the survey was that 66.7 percent of the respondents wished to explore the personalized recommendation system. Only 9.8 percent of respondents said they did not wish to try the proposed system. From both these observations, there is a definite gap between the recommendations that the e-commerce platforms provide and the users' expectations. Users are eager to try new recommendation systems that provide more personalized recommendations. In order to bridge this gap, an integrated book recommendation system is being proposed.

The first step is to gather the necessary data to build this system. In this model, five data sources: the Goodreads Book Collection, Amazon and Goodreads Reviews, purchase history of the customers, and the social media in this

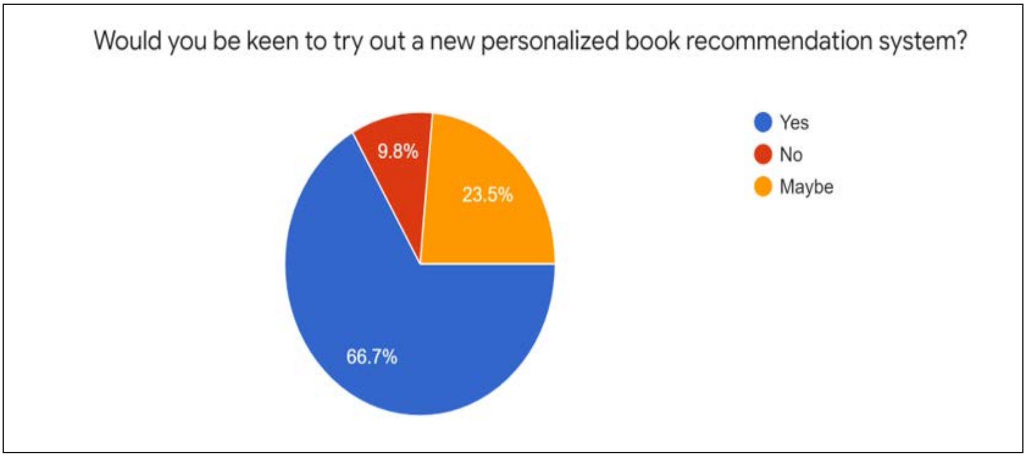


Fig. 2 – Respondents Interest in a personalized recommendation system. ("The Author")

case Twitter data of the consumers is used. Each of these datasets need to be analysed and pre-processed individually. On the book collection dataset, clustering was used; on the reviews, sentiment analysis was implemented; on the purchase history, frequent pattern mapping was done. Finally, text analytics was performed on the tweets. Threshold values were used to understand which data points should be considered for further processing. Only reviews with a sentiment value more than 0.5, frequent patterns with lift more than one, support more than 0.4 and confidence more than 0.5 were considered useful data points. For these data points, the top books read by the user were consolidated. These books were given weights based on the source from which the books were retrieved, several books rated, and these were then integrated with the clusters formed in the Book Collections. Finally, the top 10 books were chosen and displayed to the user as recommendations. The detailed implementation of the model is given in Figure 3.

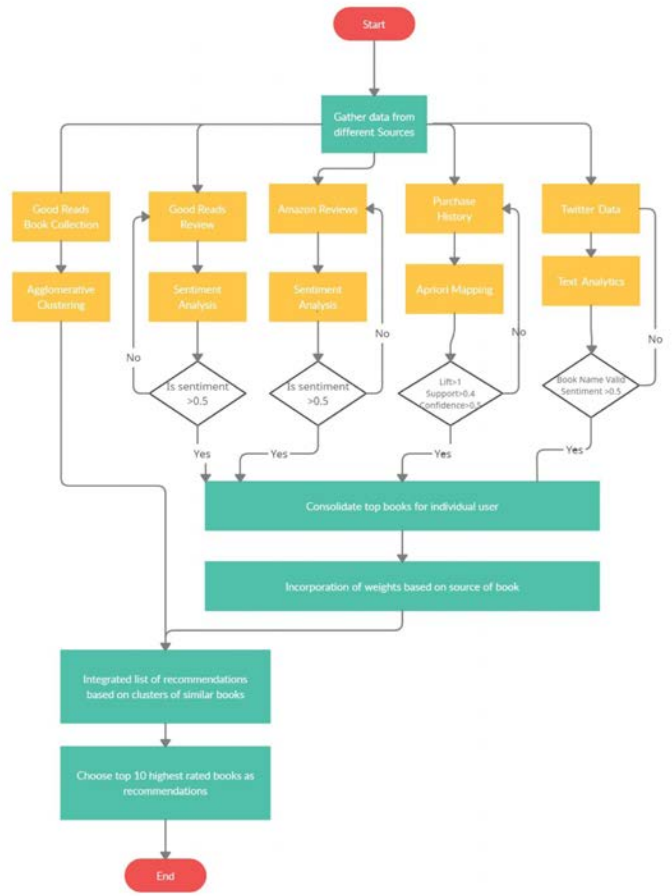
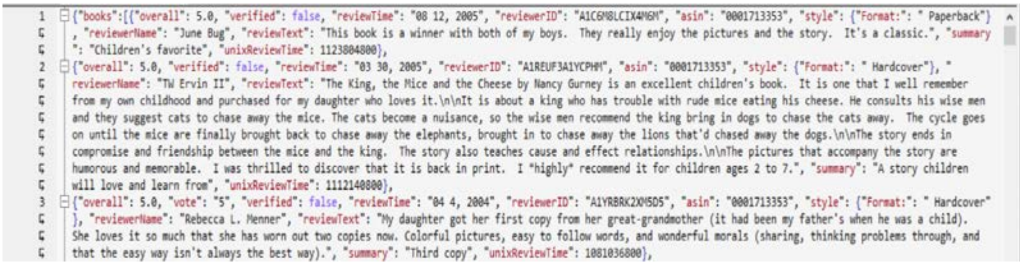


Fig. 3 - Flowchart of model ("The Author")

The data collected was either CSV files for structured data or MongoDB for semi-structured data. The entire implementation of the proposed system was done using Python. Various libraries, such as TextBlob for text analytics and sentiment analysis of tweets and reviews. Sci-kit learns libraries especially sklearn. cluster was used for agglomerative clustering of similar books. Mlxtend.frequent _ patterns library was used to perform pattern analysis and find the frequent patterns in the purchase history data. The entire data mining life cycle was followed to create the integrated recommendation system, which included data collection, data cleaning and pre-processing, data integration, data transformation, modelling, and finally evaluating the models.

In the data-gathering phase, data was collected from various sources. A complete list of books was taken from Goodreads collection of books with other details such as authors, ratings, year of publication, and ISBN. A similar list of book ids and their respective genres was also taken from Goodreads data sources. This contained a list of the books and genres that readers had mapped to each book and the number of users tagging the books to the genre. Reviews from individual users were collected from Amazon and Goodreads as shown in Figure 4. This would help in understanding the sentiment of the user towards the book. Tweets from several users were collected from the Sentiment140 dataset. Purchase or transaction details were collected from the transactions dataset to understand the purchase patterns between the customers. These different data types were used to analyse different parts of the consumer experience. The list of books and genres is useful when we wish to recommend books using a content-based filtering process. The purchase history is useful to understand the collaborative model between the purchase patterns of the various consumers. The reviews help in understanding how a particular customer feels about the book and what are the consumers' sentiments towards it. Finally, the Twitter data helps us understand how consumers feel about the book from social media.



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and they suggest cats to chase away the mice. The cats become a nuisance, so the wise men recommend the king bring in dogs to chase the cats away.  The cycle goes
on until the mice are finally brought back to chase away the elephants, brought in to chase away the lions that'd chased away the dogs.\n\nThe story ends in
compromise and friendship between the mice and the king.  The story also teaches cause and effect relationships.\n\nThe pictures that accompany the story are
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She loves it so much that she has worn out two copies now. Colorful pictures, easy to follow words, and wonderful morals (sharing, thinking problems through, and
that the easy way isn't always the best way).", "summary": "Third copy", "unixReviewTime": 1081036800},
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Fig. 4 - Sample data of Amazon Review("The Author")

Under pre-processing of data, feature extraction was carried out wherein only relevant columns and attributes of each data collection were retained and others were removed. The data was cleaned, especially the Twitter data and the reviews wherein tweets and reviews in languages other than English were removed. All noisy data was also removed. As the datasets were large, the number of rows was capped off at 2000 rows for the research purpose. This helped increase the efficiency of the data mining models used on the data and helped get better outputs from the data as lesser variables would not confuse the algorithm. Post this each data set was individually processed to extract the useful information from them, before integrating all the data into one model. The list of books from Goodreads was joined with the genre of the books using book id as the common column. The genre with the maximum number of tags given by the users were considered while the others were discarded. Agglomerative clustering was carried out on the books to create different clusters of similar books. Four clusters were formed using Agglomerative Clustering (Figure 5). Sentiment Analysis was performed on both the Amazon and the Goodreads reviews. The polarity of the sentiment

```
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```

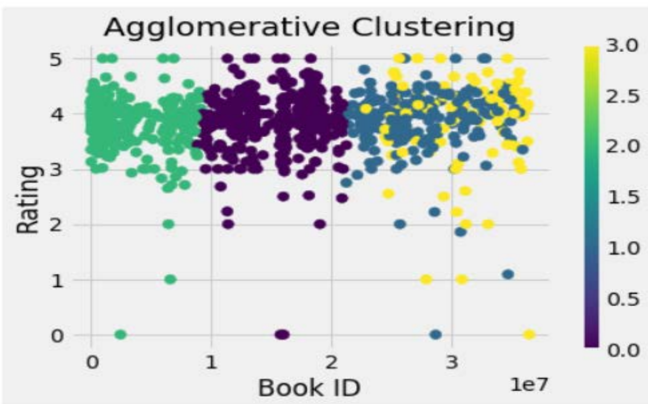


```
In [30]: books.head()
```

Out[30]:

	bookid	author_id__001	average_rating	genre	kmeans	agglomerative
0	5333265	604031	4.00	3	2	1
1	1333909	626222	3.23	2	2	2
2	7327624	10333	4.03	1	2	1
3	6066819	9212	3.49	2	2	1
4	287140	149918	3.40	5	2	2

Fig. 5 - Output of Agglomerative Clustering ("The Author")

was multiplied with the book's rating to remove the subjectivity bias. The books were sorted according to the final rating obtained after the multiplication (Figure 6). The top three books for each user were selected to find similar recommendations. It was also ensured that the final rating is greater than one for the top three books considered. The Apriori algorithm was performed using the purchase or transaction data to find the books that were often purchased together and the customer purchase patterns were extracted. This is the form of collaborative filtering which helps understand user interactions and then map similar users and produce recommendations based on the user profiles and similarities (Figure 7).

Reviewed	BookIds	SentimentValue	Rating
A1C6M8LCIX4M6M	5333265	0.594444444	5
A1REUF3A1YCPHM	1333909	0.722830769	5
A1YRBRK2XM5D5	7327624	0.287857143	5
A1V8ZR5P78P4ZU	6066819	1.283325	5
A2ZB06582NXCIV	287140	1.455208333	5

Table 1- Output after sentiment analysis

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
frozenset ({'5333265'})	frozenset ({'287149'})	0.489	0.521	0.253	0.517382413	0.993056455	-0.001769	0.992504237
frozenset ({'6066814'})	frozenset ({'5333265'})	0.515	0.489	0.258	0.500970874	1.024480314	0.006165	1.023988327
frozenset ({'5333265'})	frozenset ({'6066814'})	0.489	0.515	0.258	0.527607362	1.024480314	0.006165	1.026688312
frozenset ({'28575155'})	frozenset ({'5333265'})	0.496	0.489	0.261	0.526209677	1.07609341	0.018456	1.07853617
frozenset ({'5333265'})	frozenset ({'28575155'})	0.489	0.496	0.261	0.533742331	1.07609341	0.018456	1.080947368

Table 2 - List of Frequent Patterns found from transaction data

Lift	Greater than 1
Minimum Support	0.4
Minimum Confidence	0.5

Table 3- Threshold values for Apriori Algorithm

The threshold values that were considered to get the best patterns are given in Table 1. From all the tweets collected, the ones with key words such as book, novel, reading etc. were considered. Sentiment analysis was carried out on these. Post this, the tweets with a sentiment value greater than 0.5 signifying a positive sentiment were selected. After removing the stop words, the book's name was extracted (Figure 8). This information was passed to the book collection dataset and the similar books were extracted from the clusters. After processing all the individual data from the various sources, integration of the model was necessary. The cluster ids of the top books got from reviews and the Twitter data were compiled along with their average rating and the source from where the top books were selected. A weight is assigned to each source. If the source of the book is reviews, it has the largest weight as this is based on the consumers own preference of books. Also, the reviews are mapped with the ratings, so they give a more verifiable value of the consumer's interest in the book. Next highest weight is given to the books from the transaction history as sometimes purchases are not for the consumer themselves but rather for someone they know. Also, sometimes, a purchase is made however the user is not satisfied with the book. And the lowest weight is given to the books received from twitter as there is no means of verification of the twitter data and the user might be following certain trends, and they may not be the real views of the consumer. The list of weights with respect to source is given in Table 2. Apart from the source from which the recommendation is received, the number of top books from each cluster is also considered in the final ranking. If a user has four books from, say, cluster one and only one book from cluster two, this shows that the user prefers to read books from cluster one rather than two. The number of ratings was also given a weight as with an increase in the number of users rating the book, the value of the rating decreases. However, it is more accurate to recommend a book with a 4.5 out of 5 rating with over 1000 people rating it, rather than a book with a rating of 5 but only three people rating it. Weights had been assigned to the number of ratings as given in Table 3. Therefore, the final rating is a product of the book's average rating, the number of books of the particular cluster that the user likes, the weight of the number of ratings, and the source weight. A sample of the data is given in Figure 9. This final ranking is then used to select the top books for the user for whom the recommendations are being generated (Figure 10).

```
['Heidi']
118    316994
Name: BookId, dtype: int64
```

Fig 6- Extracting names of books from tweets("The Author")

bookid	average_ rating	ratings_ count	agglom- erative	Source	Number of Books	Source_ weight	Rating_ weight	Final_ Ranking
11371089	5	20	0	Review	1	3	1	15
13598466	4.23	310	0	Review	1	3	1	12.69
15524469	5	148	0	Review	1	3	1	15
18283092	4.2	1537	0	Review	1	3	2	25.2
6016342	5	112	0	Review	1	3	1	15

Table 4- Assigning weights to the top books from the various sources.

	bookid	title
0	32822271	Black Anthology: Adult Adoptees Claim Their Space
1	25918513	Digital Fortress
2	34627196	Ludwig's Fugue: A White Feather Mystery
3	30330416	A Girl Named Mary
4	32615018	Peril at EndHouse
5	32615012	The Scarlet Letter
6	27189830	Grey
7	25636252	Stone Writer Ascending
8	27139767	Kate's House
9	29065952	Louder Than Everything You Love

Table 5- Final list of recommendations

Source	Weight
Amazon Reviews	3
Good Reads Interaction	3
Purchase History	2
Twitter Data	1

Table 6 - Weights assigned to sources

Number of Ratings	Weight
0 to 500	1
500 to 2000	2
2000-5000	3
5000 -10000	4
10000 +	5

Table 7- Weight assigned to number of ratings

3.1 Analysis and Results

From the final recommendations obtained, it is observed that one of the most-read genres by the user is that of thriller or mystery. The recommendation model has provided many books like Digital Fortress, Peril at End House, The Scarlet Letter by separate authors such as Dan Brown, Agatha Christie and Arthur Conan Doyle. They are the most famous mystery and thriller novelists. The recommendation engine has also suggested some romance such as Grey and Kate's House again by separate authors. These recommendations are personalized and unique for every user. They are obtained by processing different forms of data and arriving at an integrated recommendation system that can process and find intelligent patterns in the data and come to knowledgeable recommendations. To test if this is the case with all the users, the users who had opted to try the personalized book recommendation system in the original survey were sent a list of 10 recommendations generated by the system, based on the information obtained from their Goodreads and Twitter accounts. Along with the list, a feedback form was sent to get each user's views on how satisfied were they with the recommendations generated and how different were the recommendations from the ones given by e-commerce sites. 78.3 per cent of the users were either satisfied or very satisfied with the recommendations provided. 71.7 percent of the users felt that the recommendations provided by the proposed system were better than those provided by e-commerce sites. Over 70 percent of the users felt that the recommendations provided by the system were very different from those provided by any e-commerce site. Figures 11,12 and 13 show the graphical representation of the data.

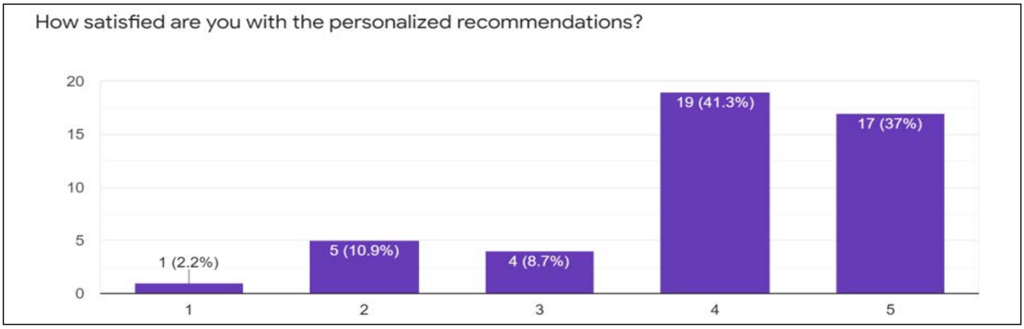

Fig 7- User's satisfaction with recommendations

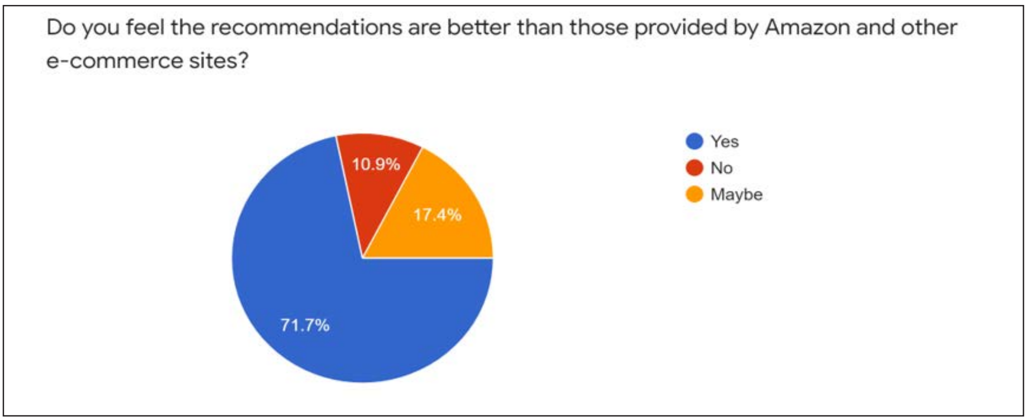

Fig 8- Comparison between personalized recommendations and e-commerce sites

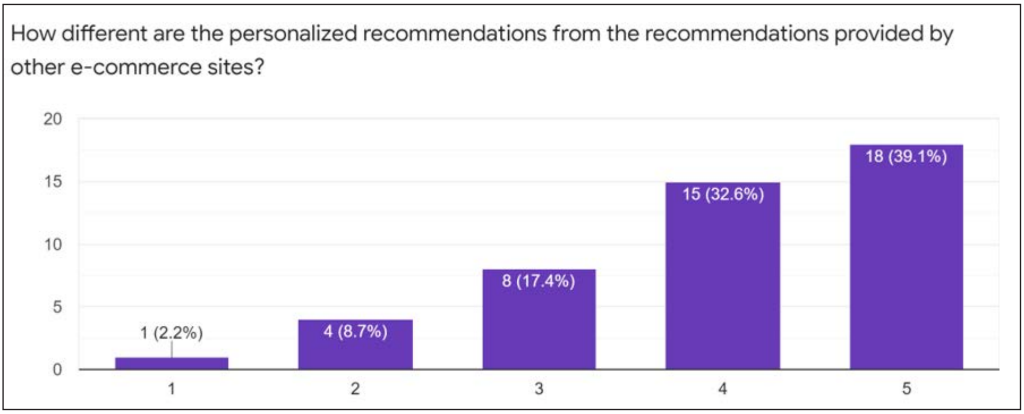

Fig 9- Percentage of users who felt the personalized recommendations were different

4. Conclusion

The book recommendation system proposed in this paper uses data from various sources such as a collection of Goodreads books, Amazon and Goodreads reviews, purchase history of consumers and Twitter data of consumers. The paper aimed to see if having a variety of data sources and integrating multiple data mining processes to extract knowledge would lead to better or higher quality recommendations. To achieve this goal, data mining processes such as text analytics and sentiment analysis were implemented on the users' reviews and tweets. Apriori algorithm was used to find frequent patterns used on the purchase date. Clustering algorithms were used to group similar books to produce meaningful and personalized recommendations. Such recommendations will help the e-commerce business acquire and retain their customers and help the consumers find their next book to read effortlessly. The proposed model can generate a list of top 10 personalized recommendations unique to each user and contains a good mix of different genres and different authors in each genre, giving the reader a wide variety of options. To test the accuracy of the proposed recommendation system, the recommendations provided by the model were compared with a simple collaborative filtering model that uses Apriori algorithm. Both the lists of recommendations generated were compared with a manual list generated by the user. The proposed model met 80 per cent of the user's expected recommendations, whereas the simple collaborative model only met 60 per cent of the user's expectations. The collaborative model consisted majority of books by the same author or of a completely contrast genre as the method only considers the choice of other similar users and not similar books. So, the proposed integrated recommendation system is more accurate in its recommendations than a simple collaborative system. This was also thoroughly tested using survey forms and more than 70 per cent of the users were satisfied with the recommendations, felt that the recommendations were better than the ones given by any e-commerce site and were also different and unique. However, some limitations to the proposed system are discussed in the next section.

4.1 Future Enhancements

In the given paper, the only social media data that is used is that of Twitter, however, data from other social media platforms, which are more commonly used, such as Instagram and Facebook could also be considered. In the paper, only reviews written in English are considered. This can be expanded to include other languages, such as Russian, French, Hindi and more. This will help the e-commerce sites provide recommendations to people whose first language is not English or would prefer reading books in a foreign language. Lastly, while analysing the Twitter data, the concept of n-grams can be incorporated to extract phrases instead of single tokens. Also, Twitter data can be used to extract the consumer's sentiment towards a particular genre rather than a particular book.

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Identification of Business Ethics Variables in Healthcare Functioning
An Empirical Analysis of Responses of Healthcare Professionals in Rajasthan

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Abstract

The healthcare industry has evolved to a great extent. Facilitating healthcare services and carrying out operational obligations need conscientious and ethical management. The practice of medicine is a shared knowledge that has been gained, perceived, practiced, learned, and comprehended after years of assiduous and diligently seeking of knowledge along with the evolutionary process and hence cannot be assumed or entitled by one or group of individuals. Healthcare services belong to everyone and hence stewardship of resources for patient care and community health is of paramount significance. This paper attempts to give a decisive answer to pivotal and indispensable healthcare issues which sometimes permeate as a result of sheer negligence and dereliction of duties. The issues so highlighted have been considered pertinent for the study after a thorough and rigorous literature review.

Keywords: Business ethics in healthcare, ethical decision-making, Patient care, stewardship of healthcare resources, Patient-physician relationship.

Introduction

Ethics is an inextricable aspect of all walks of life of human beings, particularly in the healthcare sector. The concept and existence of business ethics pave a strong foundation for the concept of justice in the organization. In this era of cutthroat competition where everyone wants to secure their market share and want to increase the profit ratio, it's essentially significant that vigilant business ethics practices should be adopted. Ethics in the workplace not only ensures legal compliance and other social obligations but also condemns deceiving and delusive trade practices to earn large revenue. At times people are found involved in unethical conduct due to intimidation from top management in the form of losing their job. Hence an ethics committee and ethical norms are imperative to deal with iniquitous practices in the workplace. Ethics helps to achieve informed decision-making and setting up a qualitative approach in all facets of the organization, which encourages more contribution rather than just executing what is ordained and fair enough to justify the remuneration.

Fair practices and ethical norms have become indispensable requisite for investors across the globe. Business ethics preserves accountability to work, the privacy of information and data, curbs false fabrication of facts and figures and maintains human dignity in the workplace. Explicit ethical norms facilitate an effortless training workshop for executives which enhances decision-making at the workplace. When set standards are cleared and everyone is aware of the efficacy of the results expected, things go easy and effortlessly. Ethics leads a company towards the precipice of turning every cornerstone towards success including dealing with ethical dilemmas that business leaders face very often. In a situation when progressing with certain alternative strategies, choosing the most appropriate one becomes a severe pain for businesses and that is where ethics come to the rescue. It evaluates every possible option in close proximity to organizational goals and suggests the best way of dealing or acting in a particular situation and avoiding future contingencies. Giving due attention to ethics assures abiding by legal compliances which keeps fines and penalties away and also increases the share price of the company. Business ethics proselytize an altruistic approach amongst employees and strive to obviate corporate myopia. Altruism fosters willingness in individuals to do good and act ethically for the wellbeing and benefits of others.

Review of Literature

A professional having decisional capacity in an advisory committee should proselytize the general interest of the target population and should abstain from any commercial, financial or professional interest **(Sox, 2017)**. Pecuniary motives have always acted as stimulus and induced healthcare professionals to make influenced choices and biased decision-making. Physicians often prescribe irrelevant tests and expensive diagnostics to satiate their avaricious motives and cupidity **(Nie et al., 2018)**. Physicians associated with both govt. healthcare facilities and private hospitals/clinical establishments can be often observed inducing and persuading patients for private consultation in their personal clinic or compelled to pay further for availing services in a govt. funded care hospital **(Basu et al., 2012)**.

Physicians should foster patient participation by paying attention to various beliefs, preferences, values, and expectations any patient might have regarding the benefit and outcome from respective or selected treatment or other medical options if any available, and making an informed choice thereafter all the relevant information being elucidated **(Guadagnoli & Ward, 1998)**. Constructive efforts of regulatory and governing bodies and authorities need fact-based information-sourcing out of proven methodologies for developing and fostering capacity enhancement of healthcare/clinical establishment altogether **(Ceferino et al., 2020)**. Occurrence of any natural calamity, disaster including the outbreak of any disease, and incidental yet unfortunate terrorist attacks across the globe bespeak the need for improved and efficient emergency resource plans and mechanisms to cope with and effectively manage dire healthcare needs **(Geddo et al., 2006)**. Cherry-picking of patients that can be cured and not suffering from any terminal illness or fatal diseases that may result in death or those in need of expensive surgeries/treatment options is unethical and inadmissible **(Morrell et al., 2019)**. The occurrence of prevalent workplace harassment issues including conflict of interest, sexual abuse, employee safety, etc., are impinging on healthcare settings grievously **(Ells & MacDonald, 2002)**. Perceived apprehension of retaliation by management to employees concerning reporting unethical conduct in the organization mold their proclivity and inclination to remain silent **(Mayer et al., 2013)**.

Understaffing of healthcare personnel is a serious issue and may not always be owing to a lack of competent professionals and paramedics, often cost-cutting measures play a crucial role **(Winter et al., 2020)**. Occurrences of medical error committed by either physicians or paramedics often went unreported due to negatively related to work surroundings which include over swamped with work responsibilities, under-staffing, incongruous relations with colleagues, uncooperative culture, complex reporting mechanisms along with fear of retaliation, career growth perspective, to be perceived as incompetent, legal and judiciary actions **(Ali et al., 2021)**. Fair and adequate allocation of resources toward patient care comes within the purview of the principle of justice **(Mallia, 2020)**. The imprudent and incautious approach regarding handling and disposition of medical waste may expose healthcare professionals to severe risk of infection and injury resulting in hazardous health issues and complications **(Mohee, 2005)**.

Frequent interaction and visits of medical representatives regarding prevalent and commercially saleable drugs at times influence physicians' preferred choice of prescribing medicines in some way or other **(Zipkin & Steinman, 2005)**. Furthermore, the benefits, risk, effectiveness, efficacy, burden, and responsiveness of any new medical intervention should be justified and validated against the existing or best-proven and available medical interventions **(Tugwell & Tovey, 2021)**.

Substandard care and insignificant transfer of patients contribute to unethical and dishonest practices **(Morrell et al., 2019)**. Healthcare/clinical establishments are home to various contagious and infectious diseases due to being centre for various severe and critical treatment options. Patients in any care facility or hospital/clinical establishment may get exposed to Iatrogenic disease or illness caused by medical examination or treatment **(Gomes & Milhomens Filho, 2021)**. Conscientious efforts of fumigation, disinfection, and decontamination of patient wards, operation theatre, and rest of the premises are cardinal to curb the increased risk of iatrogenic disease and other hospital-acquired infections and always have been an integral part of infection control policy formulation **(Walker, 2019)**.

Successful organ transplantation has been a bliss for many by enhancing their life quality and well-being, however malpractices and wrongdoing e.g., human organ trafficking and transplant tourism for commercial gain have sadly been its stimulating force **(Danovitch, 2014)**. Studies have revealed grievous concern about increased unnecessary medical interventions and the difference in such practices between govt. and private care facilities merely inspired by pecuniary motives and avaricious means **(Mayra et al., 2022)**. The existence of controversial decisions in patient care like end-of-life decisions regarding the limited use of life support are often observed in modern practices of healthcare, however, a clear consensus has been achieved to not inessentially prolong a patient's life who's suffering from a terminal illness **(Blazquez et al., 2019)**. Patient and their next of kin have often revealed the demand for money by paramedics or physicians in govt. hospitals. Poor infrastructure including the absence of required facilities, working of staff during nights, delayed ambulance service, and frequent transfer to private hospitals for caesarian section, etc., has grievously aggravated the situation **(Vellakkal et al., 2017)**.

The influx of patients causes a rise in the number of patients in the waiting area which over-swamps paramedics and physicians as they have to consult more patients often in a short duration of time and with finite resources **(Beczek & Vámosi, 2022)**.

Confidentiality of information is often compromised due to sharing demands by insurance companies, legal authorities, and other concerned companies **(Serour, 2006)**. In case patient-physician consultation is being carried out in seclusion, some form of caution should be exercised or paramedics and other healthcare members/professionals should be apprised that peeking from behind the curtain or eavesdropping is absolutely not acceptable **(Woogara, 2005)**.

Objectives of the study:

The study encompasses the following objectives fostering critical analysis of variables so identified:

- To understand, analyse, and assess the implications and effectiveness of business ethics in the healthcare sector in India.
- To analogize the structurization, objectives, modus operandi, and working behavior between Public and Private hospitals.
- To deduce and identify the paramountcy of various ethical dimensions in the functioning and operations of Public and Private hospitals.
- To collate the observation, implementation, and application of business ethics in Public and Private hospitals.

Research Methodology

The nature and objectives of the study aim at engendering original analysis with substantial evidence for plausible arguments so proffered and proselytized. Hence, the primary source of data collection was adopted and formulated to maintain and uphold the originality and credibility of the research. A comprehensive and profoundly studied questionnaire was designed and formulated for the purpose of evaluating and analyzing elemental and cardinal aspects of business ethics in the practices and work behaviour of public and private healthcare/clinical establishments. The study was conducted in one govt. (Sawai Man Singh hospital) and one private (Santokba Durlabhji Memorial Hospital) with a view to understanding the extent of inclusion of ethical values and variance in principle approach and practices being followed in govt. and private hospital in Rajasthan.

Initially, 33 questions were formulated, which were deduced to 24 in the final construct of the questionnaire. Physicians and senior healthcare professionals were approached from nearly all possible departments and a total of 389 responses were obtained (194 from govt. hospital & 195 from the private hospital). Respondents were asked to give their unbiased opinion on a five-point Likert scale as below:

- 5 – Strongly Agree.
- 4 – Agree.
- 3 – Rarely.
- 2 – Disagree.
- 1 – Strongly Disagree.

Analysis of Data

To study and establish the inclination of respondents' opinions either towards strongly agree or strongly disagree, Weighted Average Score (WAS) is calculated considering the score of 5-1 assigned to Strongly agree – Strongly disagree as weights of the responses and result thereof are interpreted as below:

Table 1: Ranking and Weighted Average Scores of Respondent's Feedback

		Frequency								
Sr. No.	**Particulars**	**SD (1)***	**D (2)***	**R (3)***	**A (4)***	**SA (5)***	**Total**	**Wt. Sum @**	**WAS $**	**Ranking**
A.	Prescription of irrelevant tests or other unethical conduct.	6	7	20	252	104	389	1608	4.13	**3**[#]
B.	Emergency resource plans to handle the influx of patients.	29	48	117	118	77	389	1333	3.43	8
C.	Management stand against workplace harassment and peer pressure.	12	40	97	192	47	389	1386	3.56	7
D.	Less reporting of unethical behaviour.	63	159	77	75	15	389	987	2.54	15
E.	Enforcement of penalties for unethical behaviour.	44	47	103	124	71	389	1298	3.34	11
F.	Stewardship of resources towards patient care and healthcare facilities.	3	12	21	255	98	389	1600	4.11	**4**[#]
G.	Monitoring methods of disposing medical waste.	3	10	18	243	115	389	1624	4.17	**2**[#]
H.	Patient's ability to choose between available alternative treatment options.	0	6	45	249	89	389	1588	4.08	**5**[#]
I.	Obtaining informed consent.	0	4	16	232	137	389	1669	4.29	**1**[#]
J.	Persuading patient for private consultation instead of OPD.	76	199	66	46	2	389	866	2.23	19
K.	Influence of medical representative visits on physician's preferred prescription.	35	104	161	83	6	389	1088	2.80	12
L.	Use of placebo.	90	105	96	93	5	389	985	2.53	16
M.	Referring patients to other facilities for commercial gain.	105	245	29	7	3	389	725	1.86	24[%]
N.	Prescription of medicines by brand names instead of Generic names.	74	204	77	33	1	389	850	2.18	20[%]
O.	Ethics resources in the organization are competent.	33	46	115	119	76	389	1326	3.41	9

P.	Fair treatment for all	75	136	97	67	14	389	976	2.51	17
Q.	Inadequate patient care and over-swamped work schedules due to understaffing.	0	95	120	96	78	389	1324	3.40	10
R.	Certain treatments like C-sections are often advocated and upheld.	80	213	69	24	3	389	824	2.12	22%
S.	Medical profit motives act against physician's own moral obligations.	44	189	91	48	17	389	972	2.50	18
T.	Treatment of patients is prolonged for economic interest of the organization.	104	201	64	19	1	389	779	2.00	23%
U.	Negligence towards the shortage of required medical equipment.	82	113	82	83	29	389	1031	2.65	13
V.	Necessary caution regarding hygiene in the hospital.	1	17	60	219	92	389	1551	3.99	6
W.	The demand for money from patients and caretakers by paramedics.	90	185	77	36	1	389	840	2.16	21%
X.	Patient-physician consultation in front of a person other than paramedics.	73	123	77	108	8	389	1022	2.63	14

* Weight for each response @ Weighted [Wt.] Sum = Σ(Weights x Frequency) $ Weighted Average Score [WAS] = Weighted sum/ 389	# Top strongly agree contributing aspects % Top strongly disagree contributing aspects

From all variables taken under consideration and that remained the part of the study, variables with similar characteristics were required to be grouped together to draw meaningful and comprehensive interpretations. For that reason, Factor analysis was found appropriate and pertinent to extract meaningful inferences (based on results from KMO and Bartlett's Test). SPSS version 23 was used in this regard to assess the appropriateness and fitness of the factor model by testing the below formulated null hypothesis:

$H_0$1: The variables do not show correlation within the population or the correlation matrix occurs as an identity matrix

H_A1: The variables are significantly highly correlated within the population or the correlation matrix does not result in an identity matrix.

To test the stipulated hypothesis the correlation matrix was analysed through the below-mentioned tests:

1. Kaiser-Meyer-Olkin [KMO] Statistics. (Measures sampling adequacy. Should be > 0.5).
2. Bartlett's Test of Sphericity. (Analyses the null hypothesis and if a correlation matrix occurs an identity matrix).

The results so populated were quite significant as evident in the table below:

Table 2: KMO and Bartlett's Test*

Sr. No.	Test Statistics		Result	Interpretation
1.	Kaiser-Meyer-Olkin (Sampling adequacy measurement).		.903	Significant
2.	Bartlett's Test of Sphericity	Approximate value of Chi. Square [X^2]	3373.327	Significant
		df	276	
		Sig.	.000	

***SPSS output**

The results from KMO and Bartlett's test clearly established the fact that the correlation matrix does not occur as an identity matrix and the factor analysis approach is suitable to proceed further with the data analysis for drawing inferences.

The 24 variables under study were studied and analysed using Principle Component Analysis [PCA] characterized as a technique of dimension reduction. It forms a linear combination of observed variables according to the most significant amount of variance in the sample. So, the principle components are formed in a manner that the first component represents the combination of variables with the maximum number of variances in the sample, second component has less variance than the first, and so on. Afterward, communalities were calculated, and factors were identified and justified using the Eigen Value method, Scree Plot, and Percentage of Variance method.

A total of 6 factors were identified based on their eigenvalues. Factors with eigenvalues less than one are not considered due to not having enough explained variance to represent as a factor. The scree plot thus created explains the total variance associated with each factor as depicted in Fig. 1 below:

The calculation of the cumulative percentage of variance extracted by the factor identifies 6 factors with a satisfactory level of 57.326% as explained in Table A in the Appendix. In order to explain the variable's factor loading on extracted factors, the component (factor) matrix was formulated as shown in Table B in the Appendix. Also, to minimize

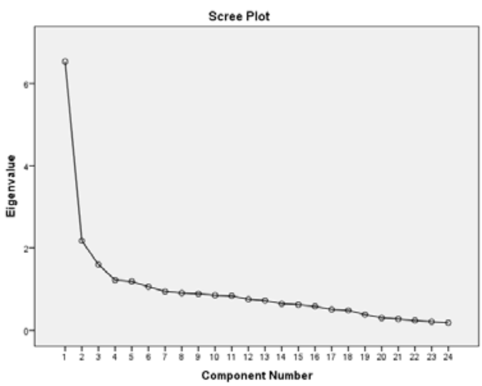

Fig. 1: Scree Plot

the number of variables having high loadings on any factor component rotation matrix is formulated using the Varimax (Orthogonal method) method of factor loading.

Ascertainment of factors affecting business ethics functioning in the selected healthcare establishments:

As previously discussed, Principle Component Analysis [PCA] of Factor Analysis is used and hence 24 variables that were initially formulated and constructed were further reduced to 6 factor that affects ethical functioning in a healthcare setting. These reduced factors explain areas of opportunities where ethical functioning in a healthcare establishment is often compromised or adjusted for the desired outcome.

Table 3: Factor affecting business ethics functioning in the selected healthcare establishments

Factors	**Factor Interpretation (% of variance explained)**	**Factor loading**	**Variables constituting factors (Ranking as per WAS of respondents)**
F1	Managerial functionality (25.568%)	0.893	Use of placebo. – L (16)
		0.869	Patient-physician consultation in front of a person other than paramedics. X (14)
		0.868	Negligence towards the shortage of required medical equipment. – U (13)
		-0.850	Emergency resource plans to handle the influx of patients. – B (8)
		-0.845	Ethics resources in the organization are competent. – O (9)
		-0.834	Enforcement of penalties for unethical behaviour. – E (11)
		0.784	Inadequate patient care and over-swamped work schedules due to understaffing. – Q (10)
		0.572	Persuading patient for private consultation instead of OPD. – J (19)
		0.553	Less reporting of unethical behaviour. – D (15)
F2	Purposive execution (7.619 %)	0.743	Certain treatments like C-sections are often advocated and upheld. – R (22)
		0.577	Prescription of medicines by brand names instead of Generic names. – N (20)
		0.568	Referring patients to other facilities for commercial gain. – M (24)
		0.506	Treatment of patients is prolonged for economic interest of the organization. – T (23)
F3	Mercenariness (6.766 %)	0.750	The demand for money from patients and caretakers by paramedics. – W (21)
		0.703	Medical profit motives act against physician's own moral obligations. – S (18)

F4	Circumspection (6.146 %)	0.723 0.642 0.558 0.421	Stewardship of resources towards patient care and healthcare facilities. – F (4) Monitoring methods of disposing medical waste. – G (2) Prescription of irrelevant tests or other unethical conduct. – A (3) Management stand against workplace harassment and peer pressure. – C (7)
F5	Patient-centric (6.134 %)	0.772 0.668 0.429	Patient's ability to choose between available alternative treatment options. – H (5) Obtaining informed consent. – I (1) Influence of medical representative visits on physician's preferred prescription choices. – K (12)
F6	Hygienic (5.092 %)	0.666	Necessary caution regarding hygiene in the hospital. – V (6)

- The first factor (F1) named **Managerial functionality** includes variables that are paramount and directly correlated to effective management in the organization.

  [Variance- 6.136; Composition to total variance- 25.568%]

- Factor two (F2) categorized as **Purposive execution** elucidate and highlight variables that reflect biased healthcare practices- advocacy of certain treatment options like C-section, referral of patients to other facilities for avaricious means, prescription of medicines by brand names instead of Generic names, etc.

  [Variance- 1.829; Composition to total variance- 7.619%]

- The third factor (F3) categorized as **Mercenariness** speaks about ethical dilemmas that arise out of acquisitive and mercenary motives- The demand for money from patients and caretakers by paramedics and medical profit motives act against physician's own moral obligations.

- [Variance- 1.624; Composition to total variance- 6.766%]

- The fourth factor (F4) comprises the vigilance and monitoring capacity of healthcare establishments and is thus named **Circumspection.**

  [Variance- 1.475; Composition to total variance- 6.146%]

- **Patient-centric** is the fifth factor (F5) and explains significant patient-centric variables viz. obtaining informed consent, patient's decisional capacity to choose between alternative treatment options and influence of MR visits on prescribed medicines to patients by physicians.

  [Variance- 1.472; Composition to total variance- 6.134%]

- Necessary caution regarding decontamination, fumigation, and disinfection is covered under the sixth factor (F6) and thus named **Hygienic.**

[Variance- 1.222; Composition to total variance- 5.092%]

Findings of the study:

The weighted average score so populated elucidate the top 5 strongly agree components and 5 strongly disagree components as below:

Top 5 Strongly Agree components	5 Strongly disagree components
Obtaining informed consent (1). Monitoring methods of disposing medical waste (2). Vigilant towards prescription of irrelevant tests or other unethical conduct (3). Stewardship of resources towards patient care and healthcare facilities (4). Patient's ability to choose between available alternative treatment options. (5).	Prescription of medicines by brand names instead of Generic names (20). The demand for money from patients and caretakers by paramedics (21). Certain treatments like C-sections are often advocated and upheld (22). Treatment of patients is prolonged for economic interest of the organization (23). Referring patients to other facilities for commercial gain (24).

Table 3 elucidate the categorical factorization of variables that affects or in some way sway the ethical (business) functioning in healthcare establishments. Out of all the variables covered by the first factor (F1) only variables- “Emergency resource plan to handle the influx of patient” and “Ethics resources in the organization are competent” have been able to achieve the maximum consensus among concerned respondents (healthcare professionals). Rest all variables have scored in the medium-range which raises concern about the management and operational efficiency in our healthcare institutions.

Factor two (F2) and factor three (F3) on the contrary include variables that have been marked as dissatisfied/ strongly dissatisfied by the majority of respondents. However, respondents have shown moderate yet decent concern regarding these variables by marking their occurrence as “Rarely” as well. Given the scenario and options of anonymously selecting dissatisfied and strongly dissatisfied, few have opted rarely as their answers which indicates a situation of sitting on the fence which in simple words can be interpreted as that these issues might not happen most of the time, but they do happen close to an average level of occurrence if seen along with responses those have been marked as agree and strongly agree for the same variables.

Circumspective has been named factor four (F4) and includes variables that have been marked as agree/strongly agree by the majority of respondents. However, the variable “Management stand against workplace harassment and peer pressure” has half-heartedly been marked as “Rarely” by nearly 1/4th of respondents which begets due attention and disciplinary approach in the required context.

Factor five (F5) named patient-centric fairly scores on both variables apart from "Influence of medical representative visits on physician's preferred prescription choices". Nearly half of respondents have chosen "Rarely" and do not disagree/strongly disagree with the point that visits by pharmaceutical agents do influence physicians' choice of preferred medication which is a serious issue and authorities and regulatory bodies need to give their due attention regarding increased marketing interference in patient care.

Factor six (F6) named Cleanliness has fairly scored on necessary caution being observed regarding decontamination, fumigation, and disinfection in the healthcare premises and may be considered satisfactory.

Conclusion:

The study meticulously highlights key areas of improvement in the healthcare industry. The variables- use of placebo, patient-physician consultation in front of a person other than paramedics causing intrusion to patient confidentiality and dignity, negligence towards the shortage of required medical equipment, inadequate patient care and over-swamped work schedules due to understaffing, enforcement of penalties for unethical behaviour and less reporting of unethical behaviour has raised serious concern about operational functioning of healthcare institutions/establishments. Patient care is the essence of healthcare and should be upheld as the same. In the contemporary era of fast-paced development and quick solutions, the health of people is something that still needs a human touch and conscience approach. Healthcare establishments should continuously surveil the extent of work culture actually followed and upheld by the healthcare professionals from time to time. Ethical committees should be considered as an intrinsic part of management and be provided with the required leeway to function independently and make unbiased recommendations and decisions whenever and wherever needed. Management should thrive on fostering an altruistic approach in healthcare workers to proselytize and actuate quality healthcare services.

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Appendix on SPSS output can be obtained from author

How the Situational Factors Impact the Consumers to Buy Food and Grocery Products Impulsively: A Study Conducted in the Organized Retail Formats of Kolkata

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Abstract

Impulsive purchasing is quickly becoming one of the highly observable behaviour for an increasing number of Indian consumers. Situational factors as experienced by the consumers inside an organized retail format affect the consumers to purchase different food and grocery products impulsively. These situational factors are impacted by a number of socio-economic and technological issues such as increase in online transaction facilities, unavailability of time to shop leisurely, increase in disposable income, financial independence of young shoppers, peer pressure, nuclear family structure etc. Food and grocery retailers might capitalize this change of buying pattern among tech-savvy and time pressed urban consumers by offering a range of technological facilities along with a decent service quality. This research studies the impact of the various situational factors eliciting impulsive buying behaviour among the consumers in the organized retail food and grocery outlets in Kolkata, through consumer survey by a standardized questionnaire.

Keywords: impulse buying, consumer behaviour, situational factors, organized retail food and grocery outlets, survey

1. Introduction

Impulse buying behaviour is an unplanned buying act which can take place in certain circumstances. Usually before purchasing any product the consumers follow some rational steps which are disrupted by the Impulse purchasing behaviour. The situation related factors such as presence of peers, friends and family members while purchasing, availability of free time to explore the retail stores, availability of disposable income and availability of credit facilities, complements this behaviour.

Past studies have showed that buying behaviour among the Indian consumers has been changed dramatically and an increasing number of the Indian consumers are cosseting in the impulsive buying activity. Construction of newer and technologically superior shopping malls, supermarkets and hypermarkets, availability of disposable earnings among the Indian working class consumers, increasing financial independence and freedom among the Indian youth, a rising number of nuclear families in India, availability of an increasing number of Automated Teller Machines installed by different banks and other financial organizations, ease of using debit and credit cards in Point of Sales terminals, are some of the reasons enticing Indian consumers to indulge into impulsive buying behaviour.

A number of previous studies that were undertaken in different parts of the world indicated that consumers generally exhibits situational impulsive purchasing behaviour while shopping in different organized retail formats. But, as far as the Indian retail scenario is concerned, very few studies have been conducted on the Indian consumers to predict about those situational factors which might stimulate such activities.

Thus, in this study the researcher intends to find out the important situation related facets that arouse the consumers to exhibit the impulsive buying activities and to test the strength of association between those inducing factors and the impulsive purchasing behaviour in case of Indian retail formats.

2. Objective of the Study

In this study the two main objectives are

i) To understand the impact of shopping companions on consumers' impulsive buying behaviour in the organized retail format for food and grocery products.

ii) To examine the effect of availability of leisure time on the impulsive buying behaviour of the consumers in organized retail formats of Kolkata while buying food and grocery products.

iii) To understand the impact of financial capacity of the consumers on the impulsive buying behaviour in organized retail formats of Kolkata while buying food and grocery products.

3. Literature Review

Different researchers have defined impulsive purchasing behaviour in different way such as:

1) Impulse buying is a rapid and instant purchase with no pre shopping intentions either to buy the specific product category or to fulfill a specific buying task (Beatty & Ferrell, 1998);

2) Impulse buying is characterized by high emotional activation, low cognitive control and largely reactive behaviour (Weinberg et al. 1982);

3) An unplanned and sudden buying act, in response to subjective or external stimuli, accompanied by a powerful and persistent urge after the purchase followed by customers emotional, cognitive and behavioural reactions (Xiao & Nicholson, 2012).

4. Situational Factors and Impulsive Buying

Situational factors denote both the environmental factors and the personal factors which are present at the time when the consumer is purchasing impulsively (Dholakia, 2000). These factors include the time available, money available, and impact of peers.

4.1 Impact of peers:

A shopping companion acts like as a spur in the impulse purchase process creating a pleasant environment for the consumers to purchase a product that was not premeditated earlier. Thus the shopping mates perform a role to encourage the impulsive buying behaviour. Research indicated that consumers attempt to follow the group norms and make an effort to satisfy the aspirations of the other members of the group by behaving in a cohesive manner as other fellows of the group. The presence of a shopping partner in a retail environment has mixed effects on impulse buying behaviours because interaction with others has an informational component and it impacts the cognitive aspect of impulse buying (Silvera et al, 2008) which could occasionally decrease the probability of purchasing on impulse. Xueming Luo (2005) indicated the presence of peers augmented the desire to purchase whereas it is reduced in the presence of family members.

4.2 Availability of Time:

When a consumer has a lot of leisure time the probability that the individual will behave impulsively will be greater and the consumer devotes extra time to explore the store (Beatty and Ferrell, 1998). Probability of buying impulsively will increase when the buyer devotes more time as the shopper will find and view the impulse generating products inside the store (Jeffrey & Hodge, 2007). Thus the availability of time has positive consequence on impulse purchase, whereas time pressure has a negative influence on unplanned buying behaviour (Beatty & Smith, 1987). Beatty and Ferrell (1998) found that there is significant influence of available time on impulse buying. Time is an important factor in retail setting because there is a simple correlation between the lengths of time the buyer spends at the store and the amount spent on purchasing (Yalch and Spangenberg, 2000).

4.3 Availability of Money:

Since the money plays the role of a catalyst to purchase the desired products, the researchers have identified the association between the availability of money with the impulse purchasing behaviour. Consumers like to avoid purchasing the products and also the shopping environment in case they feel the shortage of the required money. When the consumers feel that they have enough money it generates a better shopping mood and this increases the tendencies of impulsive purchasing behaviour (McGoldrick, 2002).

4.4 Availability of Credit Card:

In today's retail scenario, for most of the purchase done in the organized retail formats such as in the shopping malls, the payment is usually made with a credit or debit card or money transfer. The availability of credit cards has been regarded as having a positive influence on impulsive purchase behaviour as indicated by a number of researchers. Having a credit card stimulate consumers to exhibit impulse purchase behaviour (Maha Jamal, Samreen Lodhi, 2015). Consumers do not indeed feel like spending money when the payments are made using credit cards (Dittmar & Drury, 2000).

4. Research Methodology

In this research the positivist philosophical approach was followed. The gathered data was also influenced by its external environments and also with the individual bias of the respondents.

4.1 Hypothesis Formulation

"A hypothesis can be defined as a tentative explanation of the research problem, a possible outcome of the research, or an educated guess about the research outcome" (Sarantakos, 1991). Based on the review of literature and conceptual framework stated before the hypotheses are formulated as follows:

4.2 Research Hypotheses

H_{01}: The impulse buying behaviour of consumers is not affected when the consumer is shopping food and grocery products with shopping companions in organized retail formats of Kolkata city.

H_{a1}: The impulse buying behaviour of consumers is affected when the consumer is shopping food and grocery products with shopping companions in organized retail formats of Kolkata city.

H_{02}: The impulse buying behaviour of consumers is not affected when the consumer has availability of leisure time while shopping food and grocery products in organized retail formats of Kolkata city.

H_{a2}: The impulse buying behaviour of consumers is affected when the consumer has availability of leisure time while shopping food and grocery products in organized retail formats of Kolkata city.

H_{03}: The impulse buying behaviour of consumers is not affected when the consumer has enough financial capacity while shopping food and grocery products in organized retail formats of Kolkata city.

H_{03}: The impulse buying behaviour of consumers is affected when the consumer has enough financial capacity while shopping food and grocery products in organized retail formats of Kolkata city.

4.3 Research Technique Used for this Research

In this study Survey is used as a research technique. The information gathered from the secondary sources / literature review has facilitated to form the questionnaire. The survey questionnaire consists of two sections. The first part was designed primarily to collect the demographic information of the consumers. The second part of the questionnaire comprises a number of statements which aims to identify the situation related issues inducing the impulsive buying behaviour of the respondents. To collect the responses of the respondents a five point Likert Scale is used. One hundred and twenty five consumers were participated correctly and returned the completely filled up questionnaire. Both male and female respondents were surveyed across different age groups, who buy food and grocery products from different organized retail formats in Kolkata city.

4.4 Sampling Technique

Stratified random sampling method is followed in this study. Shoppers visiting the organized retail formats of Kolkata comprise the populations of this study. The entire population of consumers is divided into different strata depending on the geographical location of the organized retail formats in the city of Kolkata. The consumers were also sampled according to shopping time of the consumers. That is in a particular geographic area consumers are surveyed in morning, afternoon and evening hours of weekdays and weekends.

5. Data Analysis and Findings

Collecting substantial data from the consumers, the data was coded and edited to facilitate the analysis of the collected data. The coded data was analysed through different statistical techniques in order test the hypotheses formed. Analysis was conducted with the help of SPSS software. First Pearson chi square test, likelihood ratio and linear by linear association tests were used to analyze collected the data. Then exploratory factor analysis was done for the reduction of the variables.

5.1 Measurement of Reliability of the Questionnaire

Cronbach's alpha is a measure of internal consistency, i.e., how closely related a set of items are as a group. In most social science research, the acceptable value of the Cronbach's alpha is 0.6 or more.

Table -1 - Cronbach's Alpha

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.697	.692	7

The alpha coefficient for the seven items is 0.697, indicating that the items have acceptable level of internal consistency.

5.2 Assumptions for Pearson Chi-Square test

In this study the Pearson Chi-Square test was conducted using SPSS software based on the collected data. The situational variables are analyzed by the Pearson chi-square test for independence of attributes to test the hypothesis of no association of columns and rows in tabular data. The level of significance was kept at five per cent. If the p-value for any situation related attribute against the purchase behaviour is lower than that (five per cent), the null hypothesis of no association between the corresponding attribute and impulse purchase behaviour is rejected. Therefore, it can be concluded that the corresponding attribute significantly affect purchase behaviour. Otherwise the null hypothesis can't be rejected based on the available data and the study concludes that the corresponding attribute does not significantly affect purchase behaviour.

Table -2 P value of the Situational variables for Food and Grocery Product

Statement No	Factors influencing Buying	Pearson Chi-Square	Likeli-hood Ratio	Linear -by-Linear Association	P value	Significance
i	Usually I purchase a product suddenly when I am shopping alone.	49.797	49.734	44.753	0.000	Significant
ii	Usually I purchase a product suddenly when I am shopping with my friends/ peers.	24.846	24.039	21.057	0.000	Significant
iii	Usually I purchase a product suddenly when I am shop-ping with my family members.	13.207	15.967	10.789	0.01	Significant
iv	I used to purchase in holidays because I can spend a lot of time to explore the stores.	19.603	17.817	10.832	0.001	Significant
v	I often purchase un-intentionally when I spent more time inside the store.	42.498	38.533	36.533	0.000	Significant

vi	I purchase a lot of unintended products when I have enough cash in my wallet.	15.282	13.924	12.057	0.004	Significant
vii	I generally use Credit Card to buy Products.	36.375	36.422	28.696	0.000	Significant

Situational Factors crosstab:

From statement - i), ii) and iii) we reject the Null Hypothesis $\mathbf{H}_{01,}$ and conclude that the impulse purchasing behaviour of shoppers regarding the food and grocery items in organized retail formats of Kolkata city is affected by shopping companions.

From statement - iv) and v) we reject the Null Hypothesis $\mathbf{H}_{02,}$ and conclude that the impulse purchasing behaviour of shoppers is affected by the availability of leisure time of consumers while shopping food and grocery products in organized retail formats of Kolkata city.

From statement - vi) and vii) we reject the Null Hypothesis $\mathbf{H}_{03,}$ and conclude that the impulse purchasing behaviour of shoppers is affected by the financial capacity of the consumers while purchasing food and grocery product in organized retail formats of Kolkata city.

5.3 Exploratory Factor Analysis

In this study **Exploratory Factor Analysis** was conducted with the help of this one hundred and twenty five respondent data. The numbers of variables are reduced to simplify the analysis, thereby interpreting the results easily. All the items contained in the second part of the questionnaire were all exposed to the Exploratory Factor Analysis (EFA) to group the statements under different heads. Principal component analysis was used with rotation Varimax to generate the factors.

Table 3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**0.678**
Bartlett's Test of Sphericity	Approx. Chi-Square	184.018
	df	21
	Sig.	0.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: The value of the KMO statistic is 0.678, which is well above the minimum criterion of 0.5 and can thus be concluded that the sample size is adequate for factor analysis.

Bartlett's Test of Sphericity: The significance of Bartlett's Test of Sphericity is 0.000 which is less than 0.05. Therefore, the null hypothesis that the correlation matrix is an identity matrix can be rejected This indicates that correlation matrix is significantly different from an identity matrix and the correlations between variables are (overall) significantly different from zero and therefore factor analysis can be applicable.

Table – 4 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.554	36.491	36.491	2.554	36.491	36.491	1.973	28.191	28.191
2	1.346	19.228	55.719	1.346	19.228	55.719	1.621	23.159	51.350
3	1.064	15.199	70.918	1.064	15.199	70.918	1.370	19.567	70.918
4	.670	9.566	80.484						
5	.584	8.341	88.824						
6	.414	5.907	94.732						
7	.369	5.268	100.000						

The total variances explained are presented in Table 4 and the Scree plot is in Figure 1. Seven factors explain the total variance of the model. But, the scree-plot shows that only three factors having eigenvalues greater than one need to be retained, explaining 70.92% of the variance. Results from EFA are shown in Table 5.

The scree plot is shown above. It plots the eigenvalue against the component number. From the third component on, it can be seen that the line is almost flat, meaning the each successive component is accounting for smaller and smaller amounts of the total variance. Here only those principal components whose eigenvalues are greater than 1 are considered only.

Rotated Component Matrix

The Varimax rotation method is used to get a rotated component matrix which clubs all the seven items into three components. All the items with a factor score of more than 0.5 which is the accepted criterion for analysis (Hair et al., 2006), were taken into considered for the analysis.

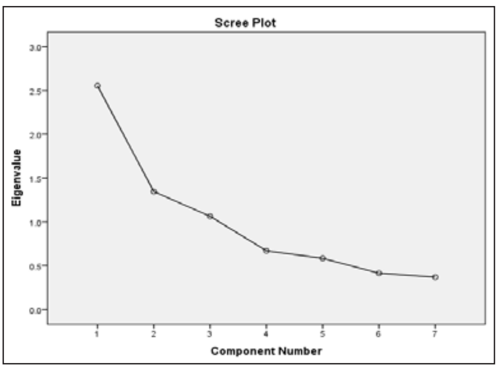

Figure -1 Scree Plot

Table – 5 Rotated Component Matrix

	Component		
	1	2	3
Usually I purchase a product suddenly when I am shopping alone.	.781		
Usually I purchase a product suddenly when I am shopping with my friends/peers.			
Usually I purchase a product suddenly when I am shopping with my family members	.857		
I used to purchase in holidays because I can spend a lot of time to explore the stores			.879
I often purchase unintentionally when I spent more time inside the store.		.835	
I purchase a lot of unintended products when I have enough cash in my wallet		.901	
I generally use Credit Card to buy Products.			.586

Component – The columns under this heading are the principal components that have been extracted. As we can see, three components were extracted (the three components that had an eigenvalue greater than 1). Here, the component scores are used for data reduction. In case same item appears for any two components or if the same item appears for the each of the three components, we will associate the item to that component where the component score is greater.

Here we associate 1st and 3rd item (marked yellow) to component 1 as their values are the greatest for the component1 with respect to component2 and component3. Similarly we associate 5th and 6th item (marked green) to component 2 and 4th and 7th item to component 3 (marked pink).

Hence from total 3 items (marked yellow) we construct the comonent1 and from total 2 items (marked green) we construct component 2 and from total 1 item (marked pink) we construct component3.

The situational factors related statements are grouped in the following factors:

- Factor 1: i) Purchasing when shopping alone, ii) Purchasing when shopping with family members.
- Factor 1 ------ Shopping partners
- Factor 2: i) Unintentional purchasing when spending more time inside the store, ii) Having enough cash
- Factor 2: ------ Shopping time and money
- Factor 3: i) Purchase on holidays, ii) Using Credit Card
- Factor 3: ------ Shopping convenience

6. Conclusion

The consumers in general follow some rational steps of decision making before purchasing any product. But the Impulse buying behaviour disrupts this rational decision making process. It is rapid and instantaneous in nature.

In this study the researcher's objective is to identify the situation related issues that causes the consumers to impulsively purchase food and grocery products in the organized retail formats in Kolkata city. Survey is the research technique that is employed in this study. To collect the data from the shoppers a five point Likert Scale was designed in this study. A total of one hundred and twenty five shoppers filled up the questionnaire correctly which serves as the sample size for the purpose of this research. Stratified random sampling method was used while conducting the survey among the consumers.

In this study the value of Cronbach's alpha is also found to be 0.697 which indicates that the multiple-question Likert Scale surveys are reliable.

To test to hypotheses of this study the Pearson Chi-Square test for independence of attributes was performed using SPSS software.

To reduce the number of variable in the questionnaire the Exploratory Factor Analysis of all the items in the questionnaire was performed in this study to find out the latent variables. With this analysis, three latent variables (Shopping partners, Shopping time and money and Shopping convenience) are identified in the Situation related statements as responded by the buyers, triggering the consumers to buy food and grocery products impulsively.

7. Managerial Implications

Based on the various analysis of this study a few business implications can be suggested. These are:

i) Shopping partners influence the consumers to purchase impulsively. Depending on the type of shopping partners (friend/peers and family members) the individual preference of the shoppers are modified. Therefore, manufacturers need to design the products depending on the functionality and usefulness of the products. In presence of the friends/peers, shoppers might be tempted buy food and grocery products which are ready to eat and technologically modern and suits the busy life-style of the young urban consumers. Similarly, in presence of the family members consumers usually look for the usefulness and efficacy of the food products. Keeping this in view the product managers need to design the product innovatively and should give proper attention while designing the layout of the package. To draw the attention of the time pressed consumers and to stand out of the product clutter, the aesthetics and colour schemes of the packages need to be designed creatively. To assure the conscious urban consumers about the quality of the product, product ingredient related information should be displayed on the packages clearly so that consumers can easily read those at a glimpse. Package should be designed keeping a view to the ease of usage of the products.

ii) Shopping convenience also influence the impulsive buying tendency of the consumers. Availability of online transaction facilities especially ease of using debit and credit cards in Point of Sales terminals plays a crucial role for the busy tech-savvy urban shoppers. Young urban consumers usually prefer to use credit card while purchasing a product because of many reward facilities. When consumers use credit cards they don't get anxious while purchasing because it gives them a feeling them they are not spending money. Also, the urban office goers prefer to shop on holidays as they get the adequate time. Therefore, the working hours need to be extended on holidays and full strength of sales staff must be present on holidays to assist the shoppers. Additionally, the different service utilities like escalators, parking facilities, clean drinking water and clean washroom facilities should be available on all holidays.

8. Limitations of This Study

1. In this research a survey of one hundred and twenty five buyers was conducted because in the post Covid situation many of the consumers are buying food and grocery products online rather than visiting brick and mortar stores. This has created a problem as far as the data collection for the organized retail formats is concerned.. However, a better result could have been achieved if the number of respondents were more than the currently surveyed number.

2. Only the consumers who visit the organized retail formats in Kolkata city were surveyed in this study. The survey could have been done in many other cities of West Bengal and India to get a more comprehensive interpretation about the impulsive buying behaviour of the consumers.

3. In this study, the researcher has conducted Pearson Chi square analysis and Exploratory Factor analysis using SPSS software. However, a binary logistic regression analysis could have been conducted to predict whether a particular consumer will buy food and grocery products impulsively or not based on factor scores. Some additional statistical tests such as analysis of variance, cluster analysis, confirmatory factor analysis etc. might have also been performed.

4. In this study, the collected data was analysed with the help of the SPSS software. Some other statistical software such as the Stata or AMOS could have been used to infer the result more clearly.

9. Scope for Future Research

By reviewing the past literature the study hypothesized that the impulsive buying behaviour of the consumer depends only on a few situational variables. .Accordingly the survey questionnaire was designed to measure the different facets of these situational variables only. However, impulse buying behaviour can also depend on some other situational variables that the current study might have been omitted. These factors need to be included in the future research.

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Examining Social Media Usage, Brand Image and E-WOM (Quantity, Quality and Credibility) as Determinants of Purchase Intention

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Abstract

Social media took over the world in no time and proved to be a game changer for better connectivity, shared information, global integration and consumption. On one hand consumers became more enthusiastic about their social media image, products or services they consumer and perception of influencers towards brand, on another brand managers became more proactive about what their consumers are putting and seeking out in this dynamic world of choices. The traditional factors influencing purchase intention become less relevant and the modern factors like social media, E-wom, global trends become more important to analyse. This study aims at identifying social media usage, brand image and E-WOM (quality, quantity and credibility) as the determinants of purchase intention. The research is causal and descriptive in nature. For data collection, self-administered questionnaire was developed and data collection was via convenient sampling method. To check the reliability and data validity, exploratory factor analysis and confirmatory factor analysis was run using SPSS and AMOS.

Keywords: Social media usage, E-WOM, E-WOM quantity, E-WOM Quality, E-WOM credibility, Brand Image, purchase intention

1. Introduction

Purchase intent is an important factor in developing marketing activities for any brand manager. Purchasing intention is a consumer behaviour that drives a purchasing decision (Yohana et al., 2020). Purchase intention is a person's attitude toward a product that they intend to acquire in the future (Papadopoulou et al. 2012). Cultural, demographical, social, personal, and psychological aspects are all relevant elements that impact consumer purchasing intentions (Mehyar et al., 2020).

P. Yu. Michelle (2018) conducted their research on different contexts like consumer reviews, reviewer personality, characteristics of the website that provides reviews, product review characteristics, factors influencing present in environment to identify the elements that influence consumer purchase intentions. The Internet facilitates direct connection of give and take between customers and advertisers. Customers may acquire a desire for consuming or buying a product/service, while marketers may obtain ideas, thoughts, and feedback from consumers (Avery et al., 1999).

With the rise in increased access to internet, social media consumption material has become an integral part of everyone's everyday life. Therefore, even for a small purchase, people search the brand on the internet for information and reviews (Jin & Phua, 2014). Marketers are both excited and frightened by the rise of social media. More and more of businesses are marketing their products and services via social media and customer service or to keep an eye on their customers, one may say. Firms watch and analyse these websites to evaluate consumer impressions, identifying the huge range of information material and the openness of social media platforms (Ma et al., 2015). Given how much generation Y is influenced by the social media, brands that develop relations, encourages the brand-consumer interaction and can co-create the value for the benefit of this particular generation (Peres et al., 2006).

Although the study of E-WOM has only been around for around 15 years, it has drawn academicians and brand managers towards it from several domains such as marketing, sociology, communications, and psychology. Most of the current research has been conducted in a Western cultural context. This presents with an opportunity to explain E-WOM communications and impacts of social media usage in Asian regions (Cheng & Zhou, 2010). The evolution of web 2.0 technology has resulted in several shifts from traditional commerce to digital commerce. The impact of web 2.0 technologies has created a large social traditional website from word-of-mouth to electronic spoken communication which is more widely spread now (E-WOM) (Sulthana & Vasantha, 2019). As a casual communication medium, electronic word of mouth (E-WOM) has proved useful in influencing customer decision-making and re-purchasing decisions (Joshi & Singh, 2017).

The effect of E-WOM on customer views of adopting products/services has been intensively researched in recent years. However, the spectrum of published studies in this field is fragmented, making systematic judgments on the usefulness of E-WOM a little problematic (Cheung & Thadani, 2012). The increasing popularity of electronic or digital communication, particularly E-WOM, is altering how consumers seek information, assess options, and make decisions. With the significant rise of E-WOM in the Indian setting, academics and marketers must develop a better understanding on how E-WOM influences customer purchase intention (Kala & Chaubey, 2018).

Despite several research studies on consumer goods branding and an expanding literature on product brands, very limited knowledge is developed about social media usage and E-WOM in the context of mobiles and laptops. As a result, this study report will give useful insight into E-WOM, image of brand, social media usage, & purchase intention in India's electronics (mobile and laptop) market. The contribution will mostly benefit academia and electronics brands, as stated further below. The study will significantly contribute to academia in having more research in the field of electronic word of mouth & social media marketing, as it will provide a profound insight on the impact of E-WOM, brand image, & usage of social media on purchase intention in the Indian electronics industry, which can be useful not only to India but also to other countries as it can be used as a foundation for any other studies to replicate. research to be conducted.

The influence of E-WOM and social media usage is highly significant for laptop and mobile firms, particularly their marketing managers, to understand consumer behaviour relating to how customers view their goods, which is generally recognisable by its brand, from critical or positive feedbacks. As a result, the outcomes of this research can be findings of this study will be extremely useful to marketers in developing effective promotional techniques and social media strategies, to influence customer purchase decisions in this burgeoning market.

1. Literature Review

1.1 An overview

This part will include a critical evaluation of the literatures relevant to this inquiry. The chapter will then be followed by a finding's summary, which will be followed by the conceptual framework of this study. A chapter summary will be included at some point.

2.2 Purchase Intention

Purchase intent is a type of consumer behaviour that occurs in reaction to things that signal the customer's inclination to make a purchase (Kotler

& Keller, 2009). It can be defined as the perceived possibility that users would engage in particular behaviours. People who are concerned about acquiring a particular good or service usually have a buy intention, which is a desire to do so in the long- or short-term. According to Wells et al. (2011), purchase intention is a mental state in which a buyer has established a desire to buy a specific product or brand. Customers who are interested in a product will almost certainly seek the advice of their friends, family, or relatives before making a purchase.

Customers are more likely to make purchases when they have a positive opinion of a brand's goods or services because their attitude toward the product influences them (Ajzen & Fishbein, 1972).

2.3 Electronic Word-of-Mouth

Thurau & Walsh (2003) defined word of mouth as "any informal messages aimed towards other customers about the ownership, use, or features of certain items and services or their suppliers". It is only successful within narrow social interaction limits, and its influence wanes swiftly across time and space (Bhatnagar & Ghose, 2004). The emergence and growth of the internet has inherently transformed the way word of mouth is conveyed and its conventional constraints. Earlier transient word of mouth directed at a few known has now been changed into a long-lasting communications accessible to the entire world. Therefore, electronic Word-Of-Mouth is becoming of paramount importance in customer purchasing decisions. The impact of E-WOM on consumers' lifestyles has created newer opportunities and complications for corporate marketing activities. Therefore, both researchers and practitioners have paid focussed attention to E-WOM method of communication for decades (Bruyn & Lilien, 2008).

E-WOM communication refers to any favourable or unfavourable comments on the internet, about a product or firm by future, existing, or previous consumers that are made available to a larger population of individuals and institutions. They may be sent by e-mail, chat rooms, instant messaging, forums, homepages, blogs, online communities, newsgroups, hate sites, social networking sites and review sites (Thurau et al., 2004). E-WOM is critical for generating customer purchasing interest, developing brand equity for brands and enterprises, and lowering promotional costs (Jalivand & Samiei, 2012).

Word of mouth has gained popularity among consumers due to several factors like utmost satisfaction and dissatisfaction (Maxhem & Netemeyer, 2002), devotion towards the organisation (Dick and Basu, 1994), duration of the connection with the company/brand (Wangenheim & Bayon, 2004) originality of the product or service (Bone, 1995) and motivation to share their happiness, pleasure and disappointment regarding a product or service among other people (Neelameghan & Jain, 1999). Customers may see E-WOM as more trustworthy, understandable, and useful than commercial sources of knowledge on the internet provided by marketers. Social media's function of providing information and recommendations plays a key role in E-WOM because it has independent sender and consumer-centric channels, which are deemed more trustworthy (Brown et al., 2007), higher efficacy than traditional marketing activities (Trusov et al., 2009) and reduced customer risk (Hennig-Thurau & Walsh, 2004).

The aspects that distinguish WOM from E-WOM include spoken words versus written words, direct interaction versus indirect engagement, identity versus invisibility, and tight reach versus extensive reach (Bickart & Schindler, 2001).

Chevalier & Mayzlin (2006) in their study studied the impact of consumer reviews on the relative sales of books at the online book stores - Amazon.com and BarnesandNoble.com, and found that an enhancement in a book's reviews leads to increased sales at that website. Also, negative reviews (1-star) has greater impact than positive reviews (5-star).

When making purchase selections, an increasing number of consumers depend on network connectivity to look for detailed information. E-WOM is a significant information source for customers making purchase decisions (Kozinets, 1999). When E-WOM for a product is favourable, people are more inclined to consider purchasing it, and vice versa (Park & Lee, 2008). Jalilvand and Samiei (2012) in their study concluded that the effect of positive E-WOM is very high on purchase intention. With the introduction of Internet deployed technologies, customers are progressively shifting toward computer devices led communication to receive the knowledge they require towards making purchase decisions. It has been found that good E-WOM contributes significantly for enhancing clients' purchase intentions (Kala & Chaubey, 2015).

2.3.1 E-WOM Quantity

There is a substantial association between the number of online reviews/positive product feedback for a given brand and a customers' positive buying intention toward it (Berger, Sorensen and Rasmussen, 2010). The vast amount of information available online gives a confidence boost to shoppers as the number of online reviews and comments may be an indication of the popularity and worthiness of the product and thereby influencing customers' intentions (Lee et al., 2008).

People these days live online and they tend to share every information on web, especially social media. Most shoppers require a supporting reference from existing users to make buying decisions.

It gives them confidence in making correct decisions as the quantity of online reviews/comments is directly proportional to how popular and worthy the product is. Greater the number of reviews or comments through electronic word of mouth will increase the purchase intention of the prospective customers (Mehyar et al., 2020). The customer's intention to purchase items and services is not only influenced by the quantity of information gathered but also by the review sites (Lee et al., 2008).

1.1.2 E-WOM Quality

The strength of the material included in an informational communication is known as information quality (Yeap et al., 2014) which plays a vital part in the appraisal of products and services by the customer (Filieri & McLeay, 2014). The persuasive power of reviews/comments included in the form of an informative message may be termed as E-WOM quality (Bhattacherjee, 2006). The quality of E-WOM may be defined as the persuasive power of reviews based on an informative message. The adoption of an E-WOM communication channels may depend on the quality of information displayed on it (Bhattacharjee, 2006). While looking for information, the quality of that information may have an impact on customers' acceptance of it, especially when in case of E-WOM communication channels (Cheung, Lee & Thadani, 2009). Mehyar et al., (2020) in their study established a positive correlation between the quality of E-WOM and the purchase intention.

1.1.3 E-WOM Credibility

Credibility is the extent to which one observes the suggestion to be realistic, accurate or realistic (Tseng & Fogg, 1999). Fogg et.al., 2002, defines e-WOM credibility as a range to which one distinguishes the reference of a certain source which may help in making a purchase decision. It explains the extent to which a customer separates the information which is crucial in making a purchase or not. In this study, E-WOM credibility refers to the extent of reliance of persons on the known list, such as cherish friends or companions and so forth (Bataineh, 2015). The credibility of E-WOM relates to how much an individual believes an advice from a certain source person or organization is trustworthy (Fogg et al., 2002).

Studies suggest that collecting C2C (customer to consumer) information electronically is considered not only dependable but also credible (Jonas, 2010). If the information obtained from E-WOM is credible and can be trusted, it may lead to better purchase intention of the customer (Eun-JuSeo & Jin-Woo Park, 2018). The credibility of E-WOM evaluations impacts the likelihood of acquiring new customers (Goyal & Sharma, 2020). As a result, it is claimed that online intervention tactics influence customer purchase intentions due to credibility at the source, message, and medium level (Lo & Yao, 2019). A crucial initial step in the information persuasion process is the receiver's evaluation of the information's reliability (Hilligoss & Rieh, 2007).

2.4 Social Media Usage

As the internet usage has surged in recent years, the globe is becoming more technologically globalised (Amen et al., 2017). Social networking use has increased as a result of this evolution. (Erkan and Evan, 2016). Customers in India utilise social media to stay up to date on product or service information. They also use social media to browse commercials, make evaluations, and read reviews. In the twenty-first century, social networking sites are a popular and reputable platform on which marketers may rely. As a result, conceptual comprehension of the social media is a critical area of study for marketers (PWC, 2018). Social media is becoming widely used as the preferred form of media, and it is changing how people shop. It allows users to compare and engage with data from around the world at any time and gives reliable information (effective two ways communication) (Bernhardt et al., 2012).

Social media is often referred to as an internet service that empowers and helps users to not only make but also share different kinds of content. It encompasses social networking sites, user-generated content platforms (like blogs), video sharing websites, online communities, online review and rating portals, and online virtual worlds where users may create, modify, and publish material (Krishnamurthy and Dou, 2008). Consumer behaviour on social media may be roughly divided into two categories: consumption (lurking or watching) and contribution (posting) (Schlosser, 2005; Shao, 2009). The majority of people use social media to consume content rather than to contribute (Jones et al., 2004). Also, approximately 53% of social media users that are engaged do not actively promote a brand but rather follow it. (Nielsen, 2009). Marketers may use social networking sites to engage and connect with buyers for marketing goals. This engagement helps in the development of extended connections with the clients (Chikandiwa et al., 2013). Prasad et al., (2017) established the positive relationship between social media usage and purchase intention of consumers.

2.5 Brand Image

When someone thinks about a specific brand, they form an active association in their memory. This association is known as brand image (Shimp, 2010). The method by which a person chooses, arranges, and evaluates the information provided to create a valuable image is called brand image (Kotler & Keller, 2009). Brand image was described by Setiadi (2003) as a person's method of comprehending views of a brand that are produced as a result of knowledge and customer experience with a brand. A graphic representation of consumers' perceptions of brands based on experience and brand knowledge is another way to define brand image. Customers are more likely to make purchases when they have a favourable perception of a brand in their minds.

Brand differentiation, purchasing rationale development, sensation and feeling construction, and significant value to businesses all contribute to brand image as a crucial competitive advantage (Aaker,1996; Keller, 2009). In order to make a brand more distinctive and set it apart from the competition, brand image analyses the features and advantages connected with a brand (Webster and Keller, 2004).

A product with the correct brand image is an important technique to capture a customer since people will unknowingly pick a product with a favourable image (Maulana, 2018). Brand image influences customer purchasing decisions by developing purchase intention (Aslam et al., 2019).

Brand image is an important phenomenon since by delivering what customers need and want, the firm is proclaimed to have met the brand's promise to its buyers, which may have a substantial positive influence on consumer buying intentions (Sahin et al., 2012). One of the key elements of consumer cognitive behaviour is purchase intention, which expresses the consumer's conscious desire to try to purchase a product (Spears and Singh, 2004). These findings support the study's finding that adoption of internet opinions can determine the impact of brand image on purchase intention (Charo et al., 2015).

3. Research Methodology

The study is intended to investigate the effects of e-WOM factors, social media usage and brand image on purchase intention. To attain the study goal, the research design adopted is descriptive and causal in nature. The study is focused on the electronic products particularly mobile devices and laptops. The sample size is to be five times of the number of items in the questionnaire based on (Malhotra, 2010). The data has been collected using a questionnaire having established scales as shown in table 1. The data has been gathered over the course of three weeks from 165 Delhi-NCR residents using who were social media users and recent buyers of mobile or laptops.

Among the several quantitative data collection methods employed, a self-administered questionnaire with two sections was constructed using Google forms. The questionnaire comprised of two parts: the first part recorded the respondents' thoughts on the 46 items linked to the research constructs, and the second half included questions on the respondent's demographic facts, such as age, education, monthly pay, and job industry.

The face validity of the questions was examined to ensure that they were intelligible, straightforward, and logical by the respondents. Before data collection, a pilot study was conducted to ensure validity. The survey instrument was sent via several digital media channels such as WhatsApp, email, and Facebook.

The questionnaire was circulated among 230 people approximately out of which 165 were collected for this study. The setting of google forms made it mandatory for the respondents to respond to each statement with the 'required' feature, therefore there were no missing responses. As a result, every response was deemed sufficient for the data analysis.

The collected responses were graded on a five-point Likert scale varying from 1 (Strongly Disagree) to 5 (Strongly Agree). The first half of the questionnaire assessed purchase intention and its determinants, while the second section assessed demographic parameters such as age, family, income, and education level. Brand image, E-WOM, E-WOM quality, E-WOM quantity, E-WOM credibility, social media usage and purchase intention are the seven constructs examined in this study.

S.No.	Constructs used	Adapted from
1	E-WOM	Electronic word of mouth (Bambauer-Sachse and Mangold, 2011)
2	Social Media Usage	Chu and Choi (2011); Mahapatra and Mishra, 2017; Hsu and Tran (2013)
3	Purchase Intention	The Impact Of Perceived e-WOM on Purchase Intention: The Mediating Role of Corporate Image by Abdallah Q. Bataineh (2015)
4	Brand Image	Role of electronic word of mouth on Purchase Intention by Wajeeha Aslam, Kahif Farhat and Imtiaz Arif (2019)
5	Credibility	The Impact Of Perceived e-WOM on Purchase Intention: The Mediating Role of Corporate Image by Abdallah Q. Bataineh – International Journal Of Marketing Studies (2015)
6	Quality	The Impact Of Perceived e-WOM on Purchase Intention: The Mediating Role of Corporate Image by Abdallah Q. Bataineh – International Journal Of Marketing Studies 2015)
7	Quantity	*The Impact Of Perceived e-WOM on Purchase Intention: The Mediating Role of Corporate Image by Abdallah Q. Bataineh – International Journal Of Marketing Studies* (2015)

Table 1: List of constructs

Cronbach alpha (reliability) and factor analysis (EFA) via SPSS & AMOS were used to calculate the variance explained by the given data on the recorded responses. In terms of research design, this study utilised the Principal Component Analysis (PCA) method for EFA (Exploratory factor analysis), which is especially useful for fundamental factor-analytic procedures (Gorsuch, 1988; Fabrigar and Wegener, 2011). As un-rotated solutions are generally difficult to decipher, the axes are rotated, making them orthogonal (Gable and Wolf, 2012). If the factors are uncorrelated, the orthogonal rotation methods or Varimax method is used. In this case, Varimax came in handy for rotating the variables and getting adequate extraction.

4. Results and Discussion

Group (n=120)	Variable	Percentage
Gender	Male	49.1 %
	Female	50.9 %
Age	Below 30	87 %
	31-45	9.6 %
	45 and above	3.5%
Income	Less than 30000	38.3%
	30000 – 60000	28.3%
	60001-90000	10.9%
	90001 and above	22.6%

Table 2: Demographic results of the respondents

Table 2 depicts the analysis of demographic data of respondents using SPSS. The analysis shows that the respondents comprise of 55.8% of females against 44.2 % of male members. Majority of the respondents are between the age group 20 to 25 years that constitute 93 % of collected data, 4.2% of respondents are below 20 years of age and 2.5 % respondents' range between 25 to 30 years of age. Majority of the respondents are people who earn less than Rs 30,000 per month that is 38.3% whereas 28.3% of the respondents belong to the category of people who earn between Rs 30,000 to Rs 60,000.

Reliability

Cronbach Alpha has been used to evaluate the construct's and the whole scale's reliability. According to Table 3, the average Cronbach's alpha for all the constructs is.909. Burgess & Steenkamp (2006) state that a reliable collection of measurements for the underlying construct is one with a Cronbach Alpha of more than 0.6.

Factor	Score
Brand Image	.896
Credibility	.907
e-Word of Mouth	.857
Social Media Usage	.877
Quality of Information	.918
Quantity	.905
Purchase Intention	.888

Table 3: Reliability analysis

KMO and Bartlett's tests are used to determine sampling adequacy and sphericity. The Kaiser-Meyer-Olkin sampling adequacy measure and Bartlett's sphericity test were used to determine that the data sets were appropriate for factor analysis based on the eigen value greater than one rule to identify the scale structure. The KMO was up to .925, and the sphericity test by Bartlett was significant (0.000).

Factors	Factor Loadings-β	Mean	Stand Deviation	% Of variance explained
Factor 1: Social Media Usage				
SMU3	.807	2.34	1.164	12.985%
SMU4	.793	2.44	1.129	
SMU5	.780	2.53	1.121	
SMU6	.733	2.87	1.021	
SMU2	.729	2.73	1.156	
SMU7	.708	2.66	1.147	
Factor 2: E-WOM Credibility				
CR4	.847	2.91	1.172	24.595%
CR5	.768	2.81	1.053	
CR2	.755	2.52	1.173	
CR1	.743	2.35	1.014	
CR3	.677	2.61	1.021	
Factor 3: Purchase Intention				
PI4	.806	2.83	1.032	36.202%
PI5	.795	2.88	1.046	
PI1	.760	2.54	1.035	
PI3	.750	2.55	1.153	
PI6	.705	2.34	1.166	
PI2	.591	2.42	1.176	
Factor 4: E-WOM Quality				
QL2	.764	2.96	1.162	46.931%
QL3	.761	2.32	1.035	
QL1	.751	2.54	1.174	
QL5	.721	2.66	1.021	
QL4	.719	2.61	1.164	
Factor 5: E-WOM				
E-WOM3	.819	2.46	1.162	56.925%
E-WOM4	.810	2.57	1.135	
E-WOM2	.743	2.68	1.015	
E-WOM6	.726	2.34	1.153	
E-WOM5	.657	2.22	1.146	
Factor 6 – Brand Image				
BI3	.805	2.51	1.175	66.820%
BI1	.779	2.57	1.121	
BI2	.724	2.53	1.022	
BI5	.694	2.75	1.017	
BI4	.681	2.42	1.141	
Factor 7 – E-WOM Quantity				
QT1	.803	2.43	1.119	75.132%
QT2	.725	2.86	1.011	
QT3	.712	2.75	1.072	
QT4	.696	2.64	1.411	

Table 4: Total Variance

On study variables, factor analysis with principal component analysis (PCA) and Varimax rotation produced entirely uncorrelated factors with Eigenvalues and factor loading greater than 1 and 0.50 respectively (Hair et al., 2010). When all seven principal components are considered together, the total variance is 75.13%. As shown in table 5, social media usage turned out to be the most important determinant of purchase intention (12.98%), followed by E-WOM credibility (11.61%). The third relevant factor is purchase intention (11.60%), fourth is E-WOM quality (10.73%), fifth is E-WOM (9.99%), followed by brand image (9.89%) and last is E-WOM quantity (8.31%).

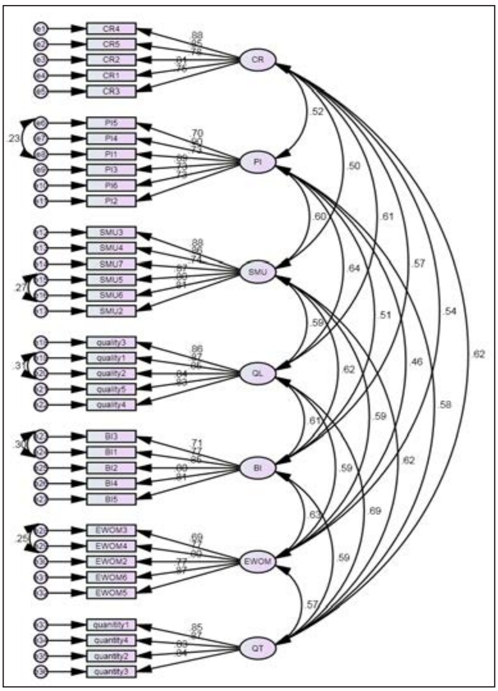

Figure 1: CFA – Determinants of purchase intention

Confirmatory factor analysis (CFA) is strongly recommended following exploratory factor analysis (EFA) to evaluate and corroborate EFA results (Hair et al., 2010). As a result, CFA was performed using the AMOS 20 edition to determine the relationship between the research items kept in the final EFA. The construct validity of the scales shown in figure 3 was determined using confirmatory factor analysis.

Convergent and Discriminant Validity

CFA is an essential analytical technique for construct validation. CFA results can provide sufficient evidence of discovered constructs' convergent and discriminant validity (Hoyle, 2000).

The extracted average variance (AVE) is used to determine convergent validity. It is calculated by averaging the squared loadings of all items associated with the construct. Each concept should explain at least half of the variation in the assigned items. The dependability of a construct is determined using composite reliability (CR) in addition to Cronbach's alpha. The CR approach to total reliability is more retrospective, assessing the construct's consistency as well as its stability (Hair et al., 2010). Convergent validity measurements were effective for all constructs with AVE values greater than 0.5 and CR values between 0.7 and 0.9. (Hair et al., 2010). The aforementioned results are depicted in Table 6.

	CR	AVE	MSV	MaxR(H)
E-WOM	0.888	0.615	0.402	0.899
E-WOM Credibility	0.909	0.666	0.387	0.916
Purchase Intention	0.904	0.615	0.404	0.925
Social Media Usage	0.929	0.687	0.391	0.935
E-WOM Quality	0.928	0.721	0.475	0.929
Brand Image	0.891	0.622	0.402	0.897
E-WOM Quantity	0.911	0.719	0.475	0.912

Table 6: Convergent and discriminant validity

Indicators	Results	Standard Value
CFI	0.926	>0.90
IFI	0.938	>0.90
TLI	0.915	>0.90
RMR	.049	<0.10

Table 7: Result of goodness of fit

The fit of the model is assessed using the fit index of the surveyed data. Three fitness indicators are typically checked to support the model (Gupta & Kaushik, 2018). The study uses the Comparative Fit Index (CFI), the Incremental Fit Index (IFI) and the Tucker-Lewis Index (TLI). The corresponding tolerances for CFI, IFI, and TLI should be greater than 0.90. (Smith and McMillan, 2001). Goodness-of-fit test results correspond to the standard values shown in Table 7. Thus, we were able to establish the relationships between the selected constructs.

brand history. E-WOM credibility, purchase intention, social media usage, E-WOM, brand image, E-WOM quality and E-WOM quantity. Therefore, the results of the study met the requirements of internal consistency, convergent validity and discriminant validity.

5. Conclusion, Limitations & Direction for future research

Consumers always go for products that are not only well branded but also have a exceptional brand image in the market. The intention of a consumer to buy the product largely depends upon how favourable brand image that product carries in the minds of consumers and how well that product satisfies their requirement and needs (Yohana, 2020).

If a product has a favourable brand image as perceived by the customer and is able to match the customers' requirements and desires, the consumer will more likely have an intention to purchase the product (Yohana, 2020). According to earlier research by Arifin and Fachrodji (2015), brand image significantly and favourably influenced consumers' interest in making purchases. The results of this study are consistent with the findings of Ruhamak and Rahayu (2016) study, which found that brand image had a beneficial effect on customers' purchase intentions. The findings of this study are supported by those of Tseng et al. (2012), Maulana (2018), Prawira and Yasa (2014), and Putra and Giantari (2014). Brand image and purchase intent have a significant correlation, according to researchers (Shukla, 2010; Wu et al., 2011; Lien et al., 2015). The results confirmed the theoretical framework and demonstrated the positive impacts of social media use and EWOM on involvement in buying decisions.

The study has identified social media usage as a determinant to purchase intention of the consumers which is quite relevant considering its growing popularity but rather it is a less explored area. To gain a better understanding, a qualitative research technique could be used to obtain efficient results. Finally, future research should look into the role of gender moderation or any other possible moderators in information adoption, purchase intention, and information forwarding on mobile social networks.

6. Managerial Implications

This study provides various understandings for firm's marketing strategy to exploit the digitization of WOM in obtaining fresh customers, holding on to existing ones, and building a positive brand image. It is said that if E-WOM is correctly managed, it has the ability to transform marketing operations and results for the firm. In the Indian market, where the number of internet users and online buyers are constantly increasing, marketers should consider E-WOM as an important marketing instrument which effects competitiveness, and long-term success. The implications of this study's findings are important for marketing managers and policymakers. This model demonstrates that the electronic communication technique will be effective in the long run if people develop trust in this context. As a result, rather than focusing solely on the propagation of information or simple communication, such a strategy should prioritise the development of trust through various means. People can participate in making decisions (or purchasing decisions) more effectively this way.

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A Bibliometric Review on Use of Google Trends in Stock Market Research

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Abstract

As an investor sentiment measurement tool, there is growing adoption of internet technology in financial market. On a large scale, the public mood represented on the internet reflects the entire society. The internet's pervasiveness in people's lives has sparked a surge of interest among scholars in the field. The study of financial theories has been changed by the subject of market efficiency as a result of increasing anomalies. As a guide for future research, the purpose of this study is to conduct a bibliometric analysis focusing on tracing of investor sentiments through their web search-based queries measured by Google Trends. The analysis through VOS viewer covers 272 papers refined from SCOPUS database of 1330 articles. With the help of Citation and Co-citation analysis results identify foundation articles, turning point articles and article clusters. The study closes with recommendations for future research as well as theoretical implications.

Keywords: Bibliometric Study, Google Trends, Search Engine Data, Stock Markets Returns, VOS Viewer

INTRODUCTION & LITERATURE REVIEW

The influence of the behavior of an investor in his financial decision-making cannot be ignored and must be given due importance. The question on efficiency of markets due to increasing anomalies has revolutionized the study of financial theories. Economists have identified that the extreme fluctuations in the market cannot be explained only by the underlying fundamentals of the financial markets. There are various psychological concepts and numerous theories which are applicable in the field of behavioral finance. Investor sentiment can be considered as a relevant factor to explain the investors' behavior in financial markets. Since no universal standard measure is there to determine investor sentiments, so various methods like surveys, indexes based on macro-economic variables have been utilized in past years. In recent years, new ways of measuring public mood and sentiment have emerged in the form of social media posts, blogs, news headlines or web search-based data.

The rapid evolution of digital landscape has made people to spend considerably more time on the internet using connected technology. A report by Digital Market Outlook on Statista.com (2020) states that in 2020, the number of internet users in India has increased to 696.77 million from 302.36 million in 2015 and it is expected to grow to a whopping number of 974.86 million by 2025. This continuous increase in internet users posits the need to examine the information accumulated through internet sources.

In the context of financial markets, a prominent impact on stock markets on the basis of large volume and rapidly disseminated data is quite evident. The connection between the market movements and web search-based data cannot be ignored and this is becoming a significant field of study and research as well. Study of Tantaopas, Padungsaksawasdi & Treepongkaruna (2016), stated that internet search intensity has been emerging as a better direct proxy for investors' attention in comparison to earlier indirect proxies used. There are different platforms available which can be utilized to gather the online data for the purpose of predictions. Out of those platforms, Google Search Volume Index is the most utilized one (Agarwal, Kumar & Goel, 2019). Based on the queries posted on Google across various regions and languages for any search term keyword, a platform is provided by Google known as 'Google Trends' (Google Search Volume Index), introduced in 2012. Earlier since 2008, Google provided with Google Insights for Search (GIS), a service to display data on search trends which later emerged as Google Trends in 2012. The present ongoing trend portrays the extensive usage of internet and social media platforms to represent the opinion and sentiments about each and every event. This area has emerged as a fascinating field of research as a huge amount of data is available, and a lot of exploitation and extraction is possible to generate eloquent results and new knowledge.

Prior to this review, there had been a limited number of literature review publications related to distinct themes of behavioral finance. In recent years, there has been an increased use of bibliometric analysis to overview varied research areas. Various researchers have also explored domains and branches of behavioral finance bibliometrically. Work done by Hirsch (2005) states that the bibliometric analysis highlights the research trends and provides analytical overview of knowledge map in context of published scientific articles. Table 1 represents the list of these reviews along with the major findings of the study. Most of the reviews pertains to different themes. There is no work which directly and specifically traces the field of Google trends research with stock markets. Such gaps provide roadmap of this research.

Table 1: Bibliometric Studies in the Literature

Author	**Title of Study**	**Key Findings**
López-Cabarcos et al. (2019)	"*Investor sentiment in the theoretical field of behavioral finance*"	Relates behavioral finance to traditional finance.
(Paule-Vianez et al., 2020)	"*A bibliometric analysis of behavioural finance with mapping analysis tools*"	Different themes of behavioral finance and behavioral economics are identified
Fariska et al. (2020)	"*Defining and Measuring Microblogging Sentiment Investors on Stock Market: A Literature Review*"	Explored the emergence of online platforms as an important place for exchange of stock market information among investors. With advent of technology, new ways of capturing investor sentiment through social media platforms like Twitter, etc were revealed
Abdulrasool et al. (2020)	"*A review and bibliometric analysis of global research trends on the behavioural finance using scopus databases*"	The study discovers US and China as countries with more publications and good international collaborations. Currently explored areas include price anomalies and noise traders. The study also identifies potential areas for future studies could be sentiment analysis and perceived value.
Valcanover et al. (2020)	"*Behavioral Finance Experiments: A Recent Systematic Literature Review*"	Conducting a comprehensive literature review for the Journal of Behavioral Finance's behavioral finance research, highlighting notable authors, nations, and articles in the area.
Zhang et al. (2021)	"Big data analytics and machine learning: A retrospective overview and bibliometric analysis"	Deep learning and visual analytics were identified as subjects with a large future research potential. Their cluster-level understanding gives saturated areas such as firm performance and dynamic capacities, which necessitates reviving study using an interdisciplinary method.

Komalasaria et al. (2021)	"Herding behaviour in the capital market: What do we know and what is next?"	Uncertainty of information in capital markets has been identified as a cause of herding behavior in the literature. In addition, as a future study topic, the researchers might investigate and evaluate market circumstances that encourage herding behavior.
Choijil et al. (2022)	"Thirty years of herd behavior in financial markets: A bibliometric analysis"	After the subprime crisis, there has been an increase in study on herding behavior.
Avilés-Ochoa et al. (2021)	"*A bibliometric overview of volatility*"	Estimation, forecasting, and modelling are identified as major concerns linked with financial market volatility.
Su et al. (2021)	"*Online public opinion and asset prices: a literature review*"	Review of the literature on the influence of online public opinion on asset values via news and social media.

Purpose of the Study

With the view of the previously mentioned discussion, to identify the current dynamics in investor sentiment-stock market nexus, to provide the overview of ongoing research and to suggest the further directions for research, the present study researches investor sentiment through google trends to study its impact in stock markets through bibliometric analysis.

The current study recognizes the most prolific authors, the most cited and co-cited publications, highly publishing journals and countries, their relevance and significance in the current scientific literature. To identify the areas of existing literature requiring further research, it focuses on the dynamics and main research areas of this domain and suggest research gaps for future research projects. To identify the intellectual structure of current literature, the present study deliberates on the publication trends in the most influential journals, influential authors who have contributed in recent years and identifies the state of research collaboration in current literature.

RESEARCH METHODOLOGY

Data & Method

First of all, a reputed comprehensive bibliometric database is selected and Scopus is the widest journal accessing database on its record. Scopus is selected as the database for retrieval of articles and in October 2021 the database is searched for relevant key terms with Boolean Operators ("OR" & "AND") as depicted in Figure 1. Th initial search yielded 1332 articles, which were further screened on the basis of English language preference, removal of duplicates, relevant subject areas and relevancy of the paper to the key research area on the basis of reading of abstracts. Finally, for the purpose of citation and co-citation analysis, 272 research articles are bibliometrically studied with the help of Vos Viewer software.

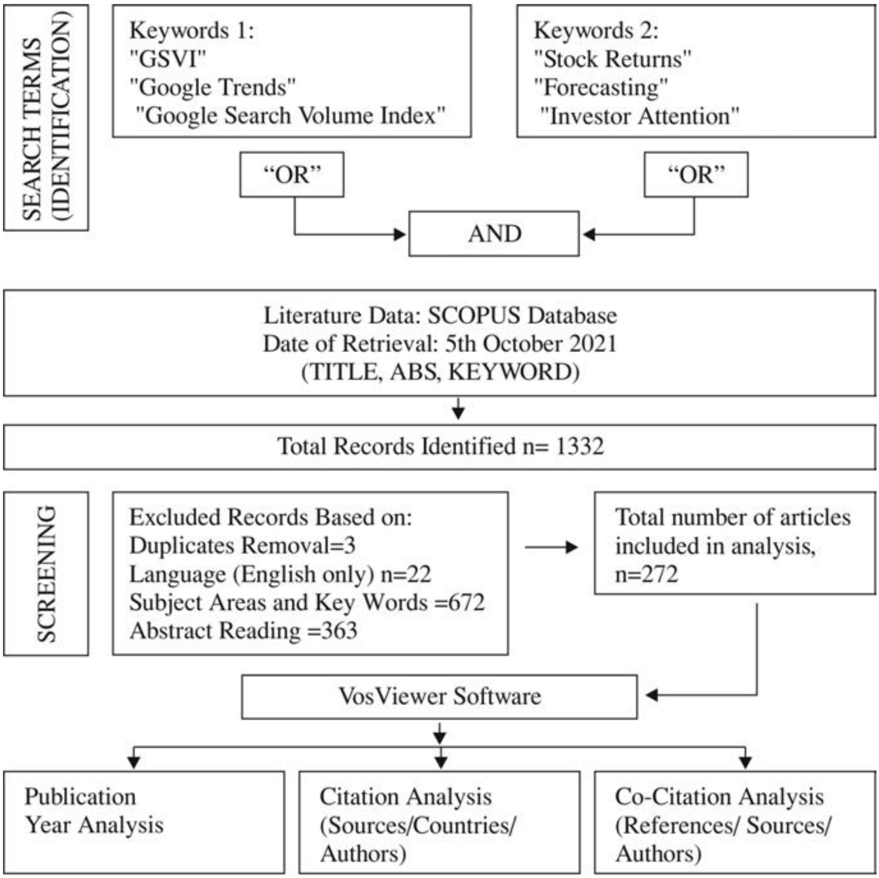

Figure 1: Data Retrieval & Framework (Author's Own)

Figure 2 highlights the steady growth in literature and its citation impact. A clear upward trend can be witnessed after 2016 suggesting increased interest of researchers in application of google trends to assess investor sentiments while taking investment decisions in stock market.

The study evaluates the different disciplines using google trends for forecasting and reveals all disciplines can be broadly classified as 2 groups. The economic and financial application of google trends in stock markets such as business, management and accounting, Economics, Econometrics and Finance. And the underlying technology in assessing this such as computer science, and decision sciences. Among all categories, literature in Business, Management and Accounting, Computer Science and Economics, Econometrics and Finance categories is maximum with more than 180 publications. Research on investor sentiments assessed through google trends presents the characteristics of diversified disciplines.

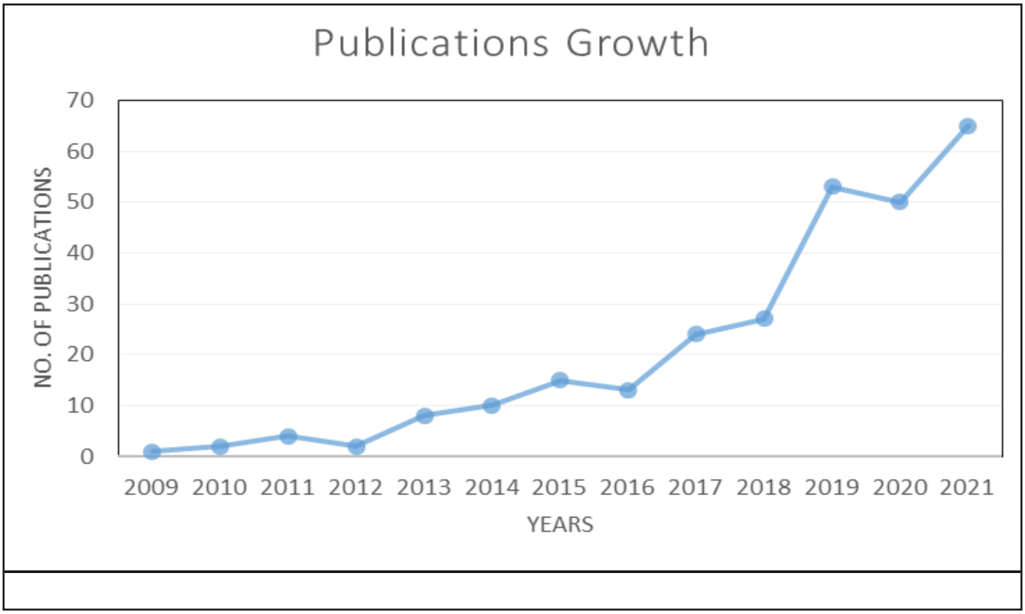

Figure2 : Number of Documents Published Year on Year

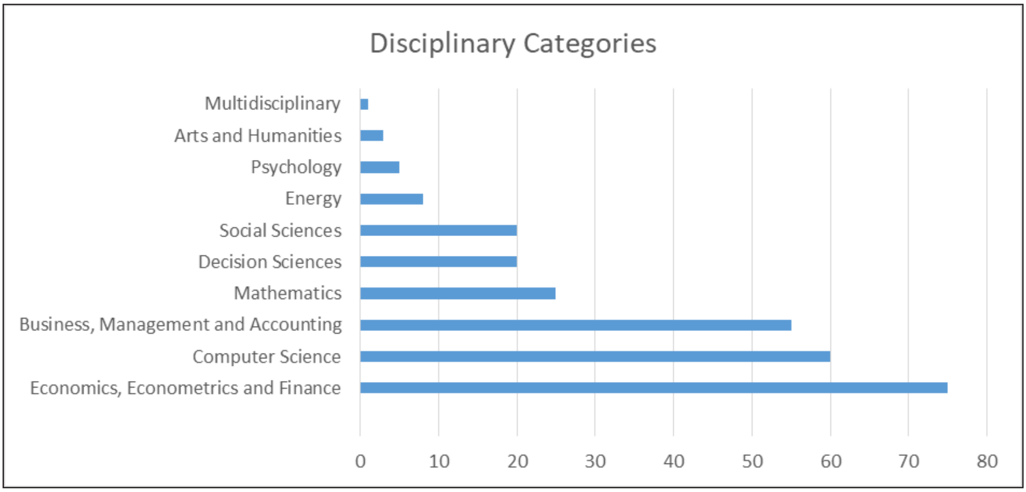

Figure 3: Disciplinary Categories

Citation Analysis

Citation by Sources

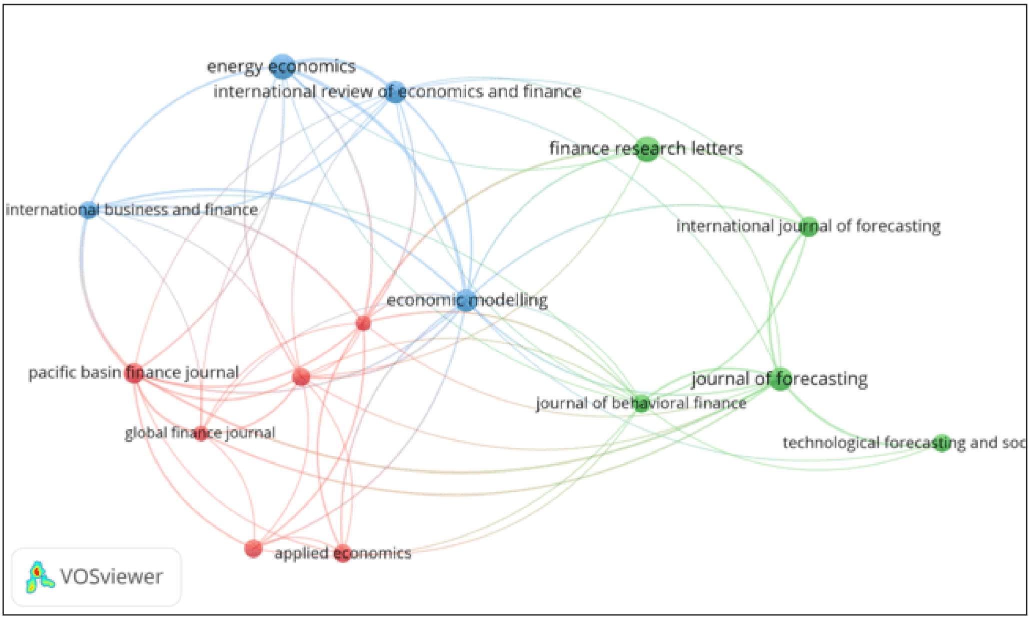

Figure 4: Network visualization map of the citation by sources

Notes: Minimum number of documents of a source = 3

Minimum number of citations of a source = 10 (132 sources, 18 meet d threshold, 15 linked)

Table 2: Citation by sources (Top 15)

Name of Journal	Cluster	TLS	TP	TC	Avg. Pub. Year	Avg. Citations
Journal Of Forecasting	2	22	7	304	2017.6	43.43
Economic Modelling	3	33	6	233	2016.3	38.83
Energy Economics	3	25	8	181	2018.9	22.63
Journal Of Banking and Finance	1	24	3	172	2016.7	57.33
Technological Forecasting and Social Change	2	6	4	167	2017.5	41.75
Finance Research Letters	2	11	8	140	2019.4	17.5
Pacific Basin Finance Journal	1	25	5	133	2017.0	26.6
International Journal of Forecasting	2	11	5	119	2019.8	23.8
International Review of Financial Analysis	1	17	4	106	2018.0	26.5

Journal of Behavioral Finance	2	15	4	35	2018.5	8.75
Applied Economics	1	8	4	30	2017.3	7.5
Research In International Business and Finance	3	21	4	26	2019.3	6.5
International Review of Economics and Finance	3	20	6	25	2020.2	4.17
Review of Behavioral Finance	1	10	4	23	2020.0	5.75
Global Finance Journal	1	12	3	14	2019.7	4.67

(TLS: Total Link Strength, TP: Total Publications, TC: Total Citations)

When analyzing cited journals in the area of google trends and investor attention, the total citations is used as the main indicator to identify the most influential journals. Table 2 displays the Top 15 highest cited journals. The Journal of Forecasting has the maximum number of citations with the citation frequency of 304 followed by Economic Modelling (233) and Energy Economics (181). The Energy Economics journal has the second most maximum link strength of 25 after 33 of Economic Modelling indicating the influence and relevance of studies of oil price and stock market nexus in this domain. The maximum number of publications (8) are in Energy Economics and Finance Research Letters but average citation of studies of Finance Research Letters is really less indicating non relatedness of the work. The work published in Journal of Banking and Finance has maximum average citation and good link strength revealing relatedness of studies. International Review of Economics and Finance and Review of Behavioral Finance can be identified as the emerging journals as average publication year is 2020. Most of the journals are from the field of economics or finance.

Citation by Countries

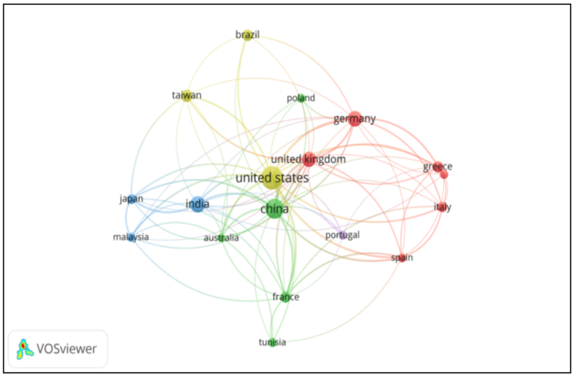

Figure 5: Network visualization map of the citation by countries (18 countries)
Notes: Minimum number of documents of a country = 5
Minimum number of citations of a country = 10 (57, 18 meet threshold)

With minimum number of documents as 5 from a country and minimum citations as 10, out of 57 countries only 18 meets the threshold as shown in network visualization map of countries in figure 5. United States has the highest contribution in terms of the maximum number of articles published (40) with highest total citations (563) and maximum link strength of 97. Germany and United Kingdom has fewer total publications than China and India but their total citations place them in top 3 countries which reveals the more relevance of the studies conducted in these countries. Malaysia and Poland can be considered as new emerging opportunity where average publication year is 2020 (as shown in Table 3) but citations are good in comparison to number of publications.

Table 3: Citation by Countries

Label (Countries)	**Cluster**	**TLS**	**TP**	**TC**	**Avg. Pub. Year**	**Avg. Citations**
United States	4	97	40	563	2017.4	14.07
Germany	1	42	18	439	2018.16	24.38
United Kingdom	1	55	17	373	2018.35	21.94
China	2	76	29	244	2019.17	8.41
France	2	39	9	164	2018.22	18.22
Greece	1	22	10	145	2018.4	14.5
Italy	1	20	8	131	2017.25	16.37
India	3	34	20	125	2019.05	6.25
Japan	3	30	7	119	2018	17
South Korea	1	9	6	114	2019.66	19
Spain	1	31	6	54	2019.33	9
Australia	2	32	5	51	2019.2	10.2
Poland	2	7	6	43	2019.83	7.16
Malaysia	3	21	6	24	2020	4
Taiwan	4	19	11	23	2018.81	2.09
Brazil	4	9	10	20	2019	2
Tunisia	2	9	6	17	2019.66	2.83
Portugal	5	12	6	11	2018.66	1.83

(TLS: Total Link Strength, TP: Total Publications, TC: Total Citations)

Citation by Authors

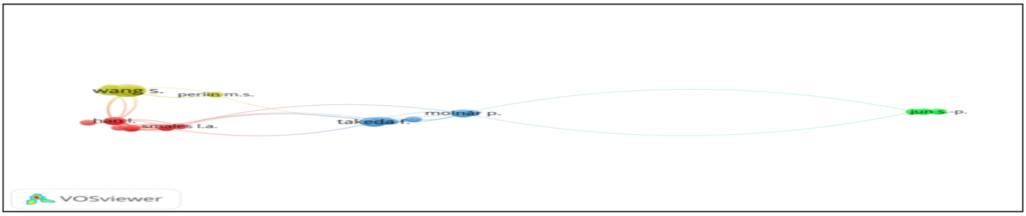

Figure 6: Network visualization map of the citation by authors
Notes: Minimum number of documents by an author = 2
Minimum number of citations of an author = 10 (556 authors, 38 meet d threshold, 28 linked)

Wang S. has the maximum number of publications 6 in number as shown in Table 4 but the work of Molnar P. has maximum citations of 133 with only 3 articles. The top three authors with maximum average citations are Jun S.P.(50), Yoo H.S. (50), and Molnar P. (44). Their number of publications are limited but the work is more cited which reflects the relevance of their studies for other researchers. As shown in figure 6, Molnar P. is central in the map which reflects relatedness of the studies. Also, for majority top authors the average publication year is around 2017-2018 which reflects recent growth in this research domain.

Table 4: Citation by Authors (Top 15)

Label	**Cluster**	**TLS**	**TP**	**TC**	**Avg. Pub. Year**	**Avg. Citation**
Wang S.	4	16	6	106	2017.83	17.66
Takeda F.	3	15	4	103	2017.75	25.75
Li X.	4	13	4	95	2017.25	23.75
Zhang X.	4	13	4	68	2018	17
Molnár P.	3	13	3	133	2018.66	44.33
Ma J.	4	13	3	94	2016.33	31.33
Han L.	1	19	3	74	2017.66	24.66
Yin L.	1	19	3	74	2017.66	24.66
Dharani M.	3	12	3	14	2020	4.66
Jun S.-P.	2	4	2	100	2019.5	50
Yoo H.S.	2	4	2	100	2019.5	50
Kita A.	1	11	2	56	2014.5	28
Wang Q.	1	11	2	56	2014.5	28
Lyócsa Š.	3	2	2	39	2020	19.5

Padungsaksawasdi C.	1	16	2	36	2018.5	18
Treepongkaruna S.	1	16	2	36	2018.5	18

(TLS: Total Link Strength, TP: Total Publications, TC: Total Citations)

Co-Citation Analysis

Co-Citation by Cited References

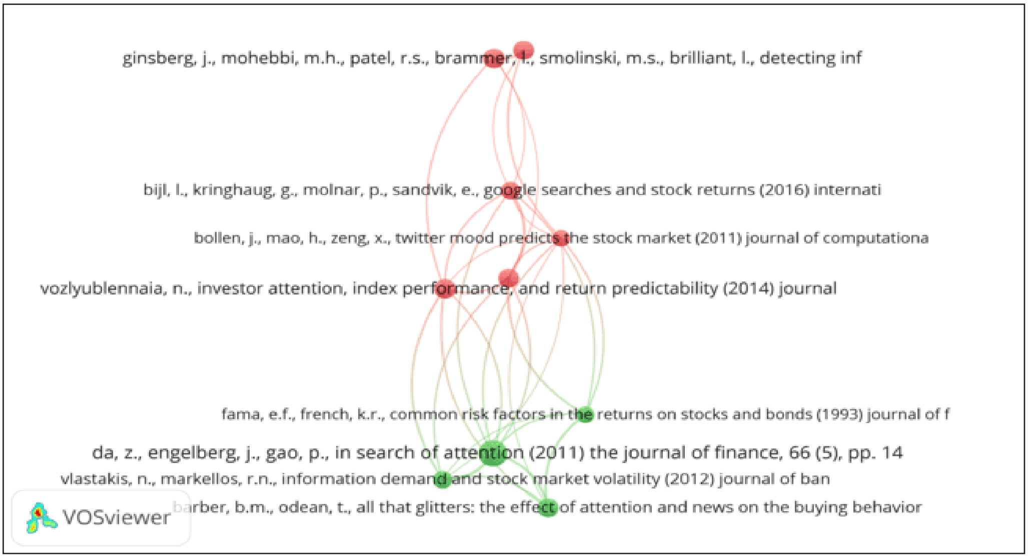

Figure 7: Network visualization map of Co-Citation
Unit of analysis =Cited References
Counting method: Full counting
Minimum number of citations of a cited reference= 8 (8467 references, 12 meet the threshold)

Table 5: Co-Citation by Cited References

Author	**Article**	**TLS**	**TC**
Da, Z., Engelberg, J., Gao, P., (2011)	*"In Search of Attention"*	22	19
Ginsberg, J., Mohebbi, M.H., Patel, R.S., Brammer, L., Smolinski, M.S., Brilliant, L., (2009),	*"Detecting Influenza Epidemics Using Search Engine Query Data"*	8	11
Vozlyublennaia, N., (2014)	*"Investor Attention, Index Performance, And Return Predictability"*	16	11
Barber, B.M., Odean, T., (2008)	*"All That Glitters: The Effect of Attention and News on The Buying Behavior of Individual and Institutional Investors"*	15	10

Choi, H., Varian, H., (2012)	*"Predicting The Present with Google Trends"*	8	10
Kim, N., Lucivjanska, K., Molnar, P., Villa, R., (2019)	*"Google Searches And Stock Market Activity: Evidence From Norway"*	20	10
Bijl, L., Kringhaug, G., Molnar, P., Sandvik, E (2016)	*"Google Searches and Stock Returns"*	15	9
Da, Z., Engelberg, J., Gao, P., (2015)	*"The Sum of All Fears Investor Sentiment And Asset Prices"*	12	9
Vlastakis, N., Markellos, R.N., (2012)	*"Information Demand and Stock Market Volatility"*	17	9
Bollen, J., Mao, H., Zeng, X., (2011),	*"Twitter Mood Predicts The Stock Market"*	13	8
Fama, E.F., French, K.R., (1993)	*"Common Risk Factors In The Returns On Stocks And Bonds"*	17	8

(TLS: Total Link Strength, TC: Total Citations)

The frequency with which one paper cites two other papers is known as co-citation (Small, 1973). This method is commonly used in bibliometric analysis to investigate the intellectual structure of the most prominent documents in a topic. In terms of the general research area, the more frequently two articles are co-cited, the more similar they are (Culnan, 1987). Publications that are too old and contain few citations, or documents that are too new, do not have a legitimate impact on the research domain (Pilkington & Fitzgerald, 2006). As a result, the study used a co-citation criterion of 8 papers for research in order to focus on the most influential publications in the field. Out of 8467 references, 12 meets the threshold. Figure 7 & Table 5 represents the network visualization and citations and link strength of the articles. The articles in a cluster have a common theme and are distinct from those in other clusters. The most cited reference with highest link strength is *"In Search of Attention"* by Da et al. (2011) with 22 link strength and 19 citations. The study represents that SVI is linked with but distinct from known investor attention proxies. It is more likely to assess the attention of retail investors since it catches investor attention in a timelier manner. An increase in SVI indicates that stock prices will rise in the following two weeks, with a price reversal occurring later in the year. It also adds to IPO stocks' high first-day returns and long-term underperformance.

The article "*Detecting Influenza Epidemics Using Search Engine Query Data*" by Ginsberg et al. (2009) is the second most cited article as it was the first study which utilized google trends data for the purpose of research and as it is related to diagnosis of a disease so it has less link strength. The next article in the list is article of Vozlyublennia N. (2014) "*Investor Attention, Index Performance,* *and Return Predictability*" establishes the significant relationship and states that following the increase in attention, there is a large short-term change in index returns. A shock to returns on the other hand causes a long-term shift in attention. "*Google Searches and Stock Market Activity: Evidence from Norway*" by Kim et al. (2019) is a recent article published in 2019 but has second most link strength and good citations as well. The results of the study provide contradictory results and suggests that GSVI (Google Search Volume Index) provides no robust trading signal information and it cannot be used to predict or correlate future abnormal returns. The study of Barber and Odean (2008) titled "*All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors*" identified that individual investors were discovered to have attention driven buying behavior. On high volume days, they are net purchasers after both extraordinarily negative and extremely positive events.

Co-Citation by Cites Sources

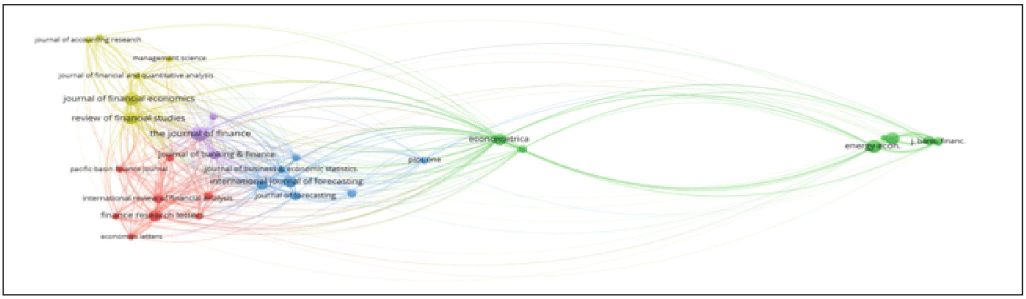

Figure 8: Network visualization map of Co-Citation
Unit of analysis =Cited Sources
Counting method: Full counting
Minimum number of citations of a cited source= 30 (3017 Sources, 31 meet the threshold)

Table 6 : Co Citation of Cited Sources (Top 15)

Journal	Cluster	TLS	TC
The Journal of Finance	5	3296	192
Journal Of Financial Economics	4	2810	160
Energy Economics	2	749	143
Review of Financial Studies	4	2450	136
J. Finance	2	764	131
Finance Research Letters	1	2061	122
Econometrica	2	1637	122

International Journal of Forecasting	3	1774	117
Journal Of Econometrics	3	1428	82
Journal Of Banking & Finance	5	1805	79
J. Financ. Econ.	2	909	78
International Review of Financial Analysis	1	1347	68
J. Bank. Finance	2	839	67
Journal Of Forecasting	3	858	60
Tourism Management	3	347	60

(TLS: Total Link Strength, TC: Total Citations)

The top most co cited source is the Journal of Finance with maximum link strength of 3296 with 192 citations. After this, the Journal of Financial Economics is the second top most the list with 2810 link strength and 160 citations. The third top most co-cited journal is Energy Economics with 143 citations but the link strength is low for the same (764). This reflects studies related to oil prices are similar in nature and relevant for the further work by the researchers.

Co-Citation by Cited Authors

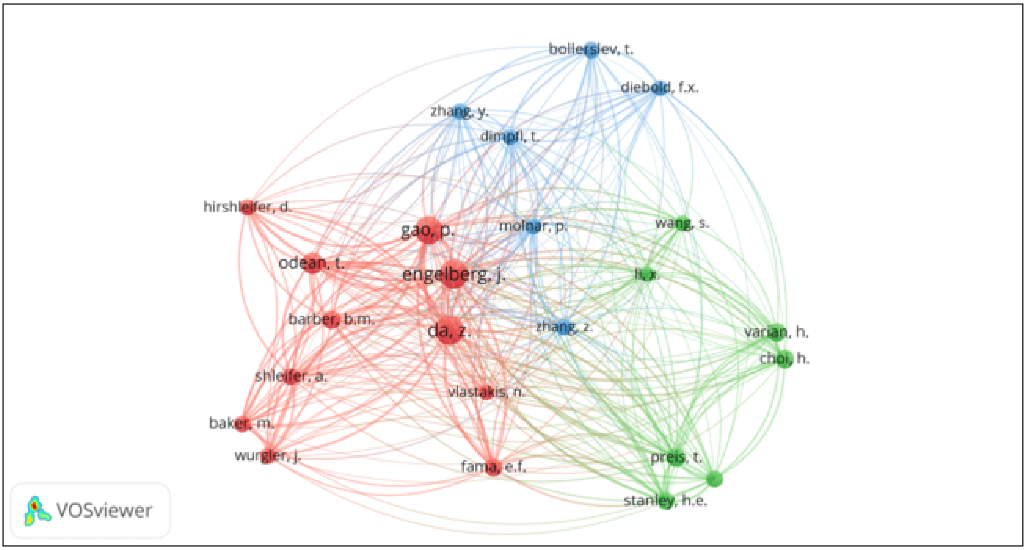

Figure 9: Network visualization map of Co-Citation
Unit of analysis =Cited Authors
Counting method: Full counting
Minimum number of citations of an author= 50 (9647 authors, 24 meet the threshold)

Table 7: Co- Citation of Cited Authors (Top 15)

Label (Authors)	Cluster	TLS	TC
Da, Z.	1	2198	176
Engelberg, J.	1	2173	172
Gao, P.	1	2059	160
Odean, T.	1	1348	99
Preis, T.	2	894	76
Choi, H.	2	557	75
Varian, H.	2	559	74
Barber, B.M.	1	1004	72
Fama, E.F.	1	869	70
Shleifer, A.	1	876	64
Stanley, H.E.	2	739	63
Bollerslev, T.	3	656	61
Moat, H.S.	2	720	61
Baker, M.	1	797	60
Molnar, P.	3	766	57

(TLS: Total Link Strength, TC: Total Citations)

Regarding the co-cited authors, out of 9647 co-cited authors, 24 meet the threshold of minimum 50 citations and are represented in Figure 9 and Table 7. The top three authors are Da, Z., Engelberg, J. and Gao, P. with maximum link strength and total citations of more than 150 each. All of them belongs to cluster 1 (red cluster). This shows first cluster included the most influential authors. This group of authors focused on establishing the utility of google trends as a measurement tool for investors attention. Most of the top 15 authors belongs to this cluster only. From cluster 3 (blue cluster) only two authors in top 15 are there: Bollerslev, T. and Molnar, P.

CONCLUSION

Google Trends has the advantage of gathering vast volumes of data, processing it to make analysis easier, and even making it freely available. As a consequence, Google Trends is a great tool for highlighting the advantages and disadvantages of big data. Furthermore, Google patterns research trends give valuable insights into how big data applications and usages are evolving. The study differs from standard literature reviews in that it aids new researchers in comprehending the scope of the issue under investigation, its evolution, and emerging and stagnant trends.

The noticeable academic attention which the concept of google trends and stock market returns received in past decade, makes this research stream as an interesting field of research. The work done in this study intends to fill the void of literature which is yet not fully explored. By combining and utilizing distinct bibliometric methods of citation and co-citation analysis, the study tries to explore how literature is capturing the constantly changing online behavior of investors and its relation with stock market returns. The findings of the study provide comprehensive structure of google trends and stock markets literature to get acknowledgement of academia about the current contribution, potential research resources and scope of future research in the said field.

The studies based on bibliometric assessment subjects to their own limitations as results are highly dependent on choice of database, the keywords used in search criteria and methods used in analysis. Still the study manages to positively contribute in literature. The research contributes by providing useful information to researchers working in the field. To understand the intellectual structure of the existing literature co-citation and content analysis is done. The results identify most prominent journals publishing in this field along with most prolific authors. Increase in publications in last few years categorizes the field as fashionable research area. Co-citation analysis helps in identifying the most cited work or the seminal papers of the research field which can provide base for the future new research. The study domain swings between two disciplines: Finance & IT. The disciplinary categories publishing in this domain provides new lines of research in context of application of computer science approaches to define improved insights in the field of study. The measurement of investor sentiments with technological advancements provides new research scopes and guides the way for application of interdisciplinary approaches and new ways of considering investor sentiments to improvise their contribution in modeling stock market returns. Over the course of time research has evolved but witnesses lack of academic collaborations, cross industry studies, and theoretical development impede the current literature. There is need of further research to overcome limitation of existing theoretical and empirical framework. The current bibliometric analytical review the current literature. It establishes the lack of robust theoretical framework. The difference in macroeconomic conditions across industries can also guide the way for cross-industry studies.

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Impact of Digital Marketing on Customer Perception During Covid -19 (Omicron) Relating to Ease of Banking Transactions

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Abstract

This research paper introspects to understand the impact of digital marketing on the banking sector based on customer perspectives of demographic factors about gender, age, and occupation. Due to the 3rd phase of Covid 19 (Omicron), the banking sector intensified and adopted digitalization for consumers in times of new normal. It adopted new developments to enhance the ease of accessibility, and to make it consumer-friendly. Because of the fear of the pandemic and its tragic consequences, it enabled in affecting the consumer's perspective.

The paper is an exploratory study conducted to know the impact of demographic factors on banking transactions based on the database collected from 100 consumers online; through a questionnaire; besides a few selected interviews. It adopted a mixed method to reach the conclusion by holding ANOVA tests. It identified that there is a significant difference between gender and mode of banking and there is a significant difference between age and post services facilities provided by the banks. The research was conducted in a limited period and conclusively resolved with the empirical findings.

Keywords: Consumer Perception, Demography, Covid-19, Digital Marketing, Banking.

Introduction

Today all organizations/institutions are striving to reach their customers in the most effective possible way. It necessitates the improvement of customer satisfaction, values, and loyalty. Contextually the banking sector in India has undergone a significant change in recent years. It has brought significant changes through the adaptation of information technology in its business day-to-day operation. This forced the customers to minimize their physical visits to the bank branches. The process is complicated with multiple touch points. Due to the unlimited information available on the internet, customers conduct considerable online banking services. Because of the ease of involvement, most customers prefer to conduct online transactions. It further indicates that banks should have a strong online presence. Customer service employees should be available online to provide after-sales services and the sales staff should use the digital channel for cross-selling and up-selling.

Digital Marketing is a sort of marketing that is frequently used to advertise products or services and reach customers through the digital platform. Digital marketing goes beyond online marketing to include outlets that hardly rely on the use of the internet. It includes mobile phones (both SMS & MMS), social media marketing, display advertising, search engine marketing, and many other kinds of digital marketing are also included. Desai (2009) concluded that digital marketing has a promising future for sustainable long-term method products or services in today's technology-driven market with all its advantages and disadvantages. Bala and Verma (2018) reported that digital marketing allows customers to reach a broader audience than conventional means. They further added that digital marketing is typically less expensive than traditional marketing and allows customers to monitor their progress daily. In the context of digital marketing, Customer Relationship Management (CRM) is the backbone of a successful digital campaign. Customer Relationship Management is the main pillar that provides a solid foundation for advertising and the sale of any product or concept. CRM refers to the collection of programs that will enable us to handle things like a customer database, customer interaction, and everything else related to customer needs and satisfaction. In the analysis between CRM and Digital marketing, Tandon et.al (2020) found a significant and positive relationship between customer engagement and customer satisfaction. Hasanat et.al (2019) reported that a customer engagement strategy through obtaining feedback and reviews helps in providing satisfaction to the customer and also helps in maintaining customer loyalty. Out of various delivery channels, digital banking is taking a boom and has become the most popular and convenient mode of banking among customers. This paper mainly studies the impact of demographic factors (age, gender & occupation) on the uses of digital marketing in the banking sector.

Review of Literature

The word "digital marketing" refers to the integrated marketing services often used to attract, connect, and deliver clients digitally. Digital marketing covers a range of platforms, including content marketing (the marketing process which includes the making of videos or blogs, or digital posters for sharing), search engine optimization (a collection of techniques aimed at the visibility of keywords from the web pages), influencer marketing (the niche market, the person who can influence the buying decisions of the consumers because of the person's position and information), social media (the type of marketing which includes the social media platform to grab the consumers), and online advertising (the form of marketing which mainly uses the internet for promotion of their products and services), to assist firms in connecting with customers and determining the efficacy of marketing initiatives in all-time basis (Lee,2001). Digital marketing is generally the use of technology to reach the demand and needs of the consumers' marketing activities as per their knowledge (Iacono et al.,2009). The usage of word-of-mouth (WOM) on social media and for popularising websites is crucial for digital marketing success. Furthermore, WOM is associated with attracting new users and growing website traffic, both of which improve marketing visibility. Technology is crucial in enhancing the standard of service offered by business units (Khan et al.,2009). Encouraging consumer interactions on the company's official website or via its online networking" is what social media marketing entails (Chaffey,2011). Customer information satisfaction (CIS) for digital marketing can be thought of as a collection of feelings of different intensities that occur after utilization and are triggered by sales activities, information systems (websites), online products/services, customer support, after-sales service, and workplace culture (Giese et al., 2013). The business strengthens its real interaction with digital users and develops a smooth network of consumers, suppliers, and partners to achieve success (Alshaketheep et al., 2020). As a result of technological advancements, traditional marketing has given way to digital marketing (Bhattacharya and Bolton,2009). Traditional marketing functions are boosted by stretching digital technologies over the internet (Urban, 2004). Online banking usage is influenced by factors such as education, gender, and income. Trust, gender, culture, religion, security, and pricing are obstacles that have little impact on user attitudes regarding mobile banking (Palani and Yashodha, 2012). Customer engagement is critical for businesses in a variety of situations which includes new business start-ups, expansion into new geography, customer market segments, the launch of a new product, the development of new applications for an existing product or service, the marketing of low-involvement products and services, infrequent repeat purchases, and low switching costs (Israel and Hay, 2006). The customer's perception towards the use of digital technologies which are provided by both private and public banks (Jain A S, 2012).

Digital banking is mainly used to reduce the cost of the financial gateway and is a powerful marketing model (Shaikh and Karjaluoto, 2016). We can't deny the reality that this banking sector is always developing for connecting people digitally. In this context, the current research aims to assess bank executives' opinions on the efficacy of in-branch efforts by banks to encourage clients to embrace and use digital banking channels. Consumers' perception and precondition variables are the main matter for customers; while using the digital mode of banking, as well as factors that are affecting the customers' perception to utilize contemporary banking modes. These have been the focus of research in the domain of digital banking (Alalwan et al., 2017; He et al., 2019). Client satisfaction and engagement are achieved in the field service by swiftly resolving customer concerns. Within the service organization, people and material management are seamlessly interwoven. Allocating, scheduling, and deploying the appropriate personnel, with the correct components, at the right time ensure customer satisfaction (Xu et al., 2002). Through the integration of CRM with ERP (enterprise resource planning) or SCM (Supply Chain Management), the information recorded and maintained inside CRM solutions may play a critical role in organizing, providing a key to increased customer service. In today's system/driven operation, many conventional tasks are completed through the use of the internet. Banking, reservations, and other services are mostly handled by the use of the internet. As a result of this customers hardly visit any retail outlets. Yet they cannot complete all banking operations when traveling or when they are busy. This is the biggest drawback in a predefined circumstance. To address this issue, banks have developed a unique form of smartphone application known as Mobile Banking. Customers have begun to see bank services via mobile as more appealing than any other feature of the bank. Customers have begun to evaluate banks based on the convenience and convenience they offer. Using mobile applications, bankers have helped to establish numerous financial services.

Research Problem

The surge of the 3rd wave of Covid-19 (Omicron) jeopardized smooth financial transactions, due to consumer perceptions regarding its virulence and unexpected complexities. It impacted digital marketing consumer perceptions in the domain of demographic factors.

Research Gap

This specific introspection pertained to the period of the 3rd wave of Covid-19 omicron, which had customer apprehensions and peculiar perceptions probing into the demographic only.

Research Objective

1. To understand the impact of digital marketing on the mode of Banking based on consumer perception.

2. To evaluate the impact of digital marketing on preferred banking operations.

3. To explore the impact of the post-service facilities on consumer perception.

4. To introspect the impact of digital marketing on age, gender & occupation in the demographics.

Methodology

To know the impact of digital marketing on the banking sector based on the basis of consumer perspective an online survey was carried out. Due to the emergence of the 3rd wave of COVID-19 spread of the Omicron variant and consequently lockdowns, the majority of the responses were received via online medium. Non-probability sampling approach was adopted for data collection. The participation was made completely voluntary with anonymity and confidentiality assurance. A total of 122 respondents were collected. The final analysis of data was performed on 100 responses. The data were subjected to SPSS 26 for statistical analysis. The research introspection was carried out on the demographic factors like age, gender, and occupation on the use of the digital medium. The exploratory research was conducted between the period from the end of August to October.

Demographic Discussion and Analysis

Table: 1:- Online survey of respondents

Variables	**No. of Respondents**	**Percentages**
Gender		
Male	62	62%
Female	38	38%
Age		
< 22years	15	15%
23 yrs. – 35yrs.	42	42%
36 yrs. – 50yrs.	31	31%
More than 50 yrs.	12	12%
Profession		
Student	18	18%
Govt. Employed	27	27%
Pvt. Employed	45	45%
Others	10	10%

Source: own analysis, 2022

The study was collected on 100 respondents, of the 112 responses received online by serving the questionnaire. Out of the 100, 62 respondents are male and 38 are female respondents. The classified four age groups have been studied in relation to classified four categories of the profession. Then ANOVA Test was conducted on the database generated from the demographic study.

Interpretation

The demographic analysis shows that 62% of the respondents are male and 38% are female. Male respondents are higher than female ones. A maximum of the respondents were lying in the age group of 23yrs-35yrs i.e., 42(42%). In terms of Profession, a maximum of the respondents was privately employed i.e., 45(45%), followed by Govt. employed and students.

Consequently, descriptive statistics and an ANOVA test was conducted based on the database.

Table-2:- Impact of mode of banking (Descriptive)

	Type	Number	Mean	SD	SE
Gender	Male	62	1.29	0.458	0.058
	Female	38	1.26	0.446	0.072
Age Group	Below 22 yrs	15	1.33	0.488	0.126
	22-35	42	1.24	0.431	0.067
	36-50	31	1,23	0.425	0.076
	Above 50 yrs	12	1.50	0.522	0.151
Occupations	Student	18	1.39	0.502	0.118
	Govt. Employee	27	1.30	0.465	0.090
	Pvt. Employee	45	1.20	0.405	0.060
	Others	10	1.40	0.516	0.163

Source: Own Analysis, 2022

ANOVA

Table: 3:- Use of mode of banking

		Sum of Squares	Df	Mean Square	f	Sig.
Gender	Between groups	0.17	1	0.17	3.821	0.046
	Within Groups	20.143	98	0.206		
	Total	20.160	99			
Age	Between groups	0.788	3	2.263	2.578	0.039
	Within Groups	19.372	96	0.202		
	Total	20.160	99			
Occupation	Between groups	0.653	3	0.218	1.071	0.365
	Within Groups	19.507	96	0.203		
	Total	20.160	99			

Source- Own analysis, 2022

Interpretation

From above table 2 and table 3, there was a significant difference between gender and mode of banking operations. The value of the mean shows that the male respondents were very much more friendly with the online mode of banking rather than the traditional one. There was also a significant difference between the age groups with the mode of banking. We also found that the age group of 22yrs-35yrs was much attracted towards the mode of banking. Further, there was no significant difference in the attraction towards the mode of banking with the occupations of the consumers.

Moreover, the descriptive and ANOVA Results for the impact of digital marketing on preferred banking operations according to consumer perception are mentioned below:

Table: 4: Impact on Preferred Business Operations (Descriptive)

	Type	Number	Mean	SD	SE
Gender	Male	62	1.71	0.663	0.084
	Female	38	1.82	0.766	0.124
Age Group	Below 22 yrs	15	1.73	0.458	0.118
	22-35	42	1.86	0.783	0.121
	36-50	31	1.71	0.739	0.133
	Above 50 yrs	12	1.50	0.522	0.151
Occupations	Student	18	1.39	0.778	0.183
	Govt. Employee	27	1.59	0.572	0.110
	Pvt. Employee	45	1.98	0.723	0.108
	Others	10	1.80	0.422	0.133

Source: Own Analysis, 2022

ANOVA

Table: 5:- Preferred Banking Operation

		Sum of Squares	Df	Mean Square	f	Sig.
Gender	Between groups	0.265	1	0.265	0.536	0.466
	Within Groups	48.485	98	0.495		
	Total	48.750	99			
Age	Between groups	1.287	3	0.429	0.868	0.461
	Within Groups	47.463	96	0.494		
	Total	48.750	99			

Occupation	Between groups	5.376	3	1.792	3.966	0.010
	Within Groups	43.374	96	0.452		
	Total	48.750	99			

Source: Own Analysis, 2022

Interpretation

In these pandemic times, most consumers are tied and adopting the digital mode of operation in the banking sector. The banking sectors are developing more and more technologies, which will help consumers for easy access to banking operations. There is no significant difference between gender and the preferred mode of operations of banking. In the context of Age, there is no significant difference between the age groups and the preferred mode of banking operation. But the mean shows that the range of 22yrs – 35yrs old is more friendly towards the preferred mode of banking. Occupation has a significant difference between the preferred mode of banking operations and the occupations of the consumer. Mainly the private employees are more familiar with the preferred banking operations.

The descriptive and ANOVA results on the impact of the post-service facilities on consumer perceptions are given below:

Table: 6:- Impact of the post-service facilities (Descriptive)

	Type	Number	Mean	SD	SE
Gender	Male	62	2.37	0.730	0.093
	Female	38	2.58	0.642	0.104
Age Group	Below 22 yrs	15	2.67	0.617	0.159
	22-35	42	2.48	0.634	0.098
	36-50	31	2.42	0.720	0.129
	Above 50 yrs	12	2.17	0.937	0.271
Occupations	Student	18	2.44	0.784	0.185
	Govt. Employee	27	2.56	0.506	0.097
	Pvt. Employee	45	2.44	0.725	0.108
	Others	101	2.20	0.919	0.291

Source – Own analysis, 2022

ANOVA

Table: 7:- Post Service Facilities

		Sum of Squares	Df	Mean Square	f	Sig.
Gender	Between groups	1.019	1	1.019	2.092	0.151
	Within Groups	47.731	98	0.487		
	Total	48.750	99			
Age	Between groups	1.725	3	0.575	3.174	0.032
	Within Groups	47.025	96	0.490		
	Total	48.750	99			
Occupation	Between groups	0.928	3	0.309	0.621	0.603
	Within Groups	47.822	96	0.498		
	Total	48.750	99			

Source- Own analysis, 2022

Interpretation

From this table, the result showed that gender had no impact on the post-service facilities of the digital marketing of the banking sector. There is a significant relationship between the age group and the post-service facilities of the banks which help them with digital marketing. There is no significant difference between the occupations and the post-service facilities of the banking sector. And mainly the private employees were more attracted to the post-service facilities of the banking sector.

Findings

From the above interpretations, the study showed that gender and age had a significant difference concerning the mode of banking. When it came to preferred banking operations, the occupation had only a significant difference in that. Age and gender had no significant difference in preferred banking operations. Post-service facilities are the most important factor in affecting the consumer's perception. Gender and occupations had no significant difference in the post-service facilities whereas age had a very significant effect on the post-service facilities.

Conclusion

The merits of using digital media are totally dependent on how customers perceive the usage of information technology. The use of information technology in the purchase of banking services will lead to a bright future for India in terms of business in the coming years. Indian Government must raise the speed of technology adoption in order to support the growth of the business. The sustainable approach of digital marketing should be presented to ensure the future of Indian banking in rural areas. This study can be further expanded to investigate the characteristics of digital marketing that limit rural customers from adopting technology.

Limitations of the study

The purpose of the study was to know the demographic factors like gender, age, and occupations impact the digital way of banking due to covid. We took only three demographic factors which are relevant to our main study. There might be other related factors that are there to be discovered. The data collection was conducted at a time when COVID-19 cases were on a rise due to the Omicron variant in India. The scope of the study was limited to one city of Odisha, further, exploration can be persuaded across different states over the country.

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Life Insurance of Live-in-Partners: Time to address the Elephant in the Room

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Abstract

"If a Child, a spouse, a life partner, or a parent depends on you and your income you need life insurance"

The famous quote by Susan Lynn Orman, American Financial advisor & Author very well explains the importance of Life Insurance. If you have financial dependency from your child, spouse, a life partner or a parent then you need to have a Life Insurance considering the uncertainties associated with one's life. On one hand while the quote is stressing on the importance of insurance on one's life, on the other it raises so many debatable questions because of the use of the word Spouse as well as Life Partner. The question of Life Insurance becomes more important in light of the changing dynamics of the institution of marriage and present generation's shift towards Live-in-Relationship. The Paper aims to analyze the insurable interest concept vis-à-vis contemporary issue of allowing partners to insure each other's life in case of a Live-in-Relationship. The paper also focuses on the current situation of insurance sector for couples in Live-in-relationship along with suggestions and solutions for the same.

Keywords Marriage, Spouse, Partners and Insurable Interest

Introduction

The basis of humanly existence is dependency on each other which could be in terms of monetary, emotional, physical and psychological dependency. On one hand, dependency nurtures the civilization on the other hand, when the person on whom people are dependent either dies or is rendered incapable to take care of dependants, it creates a situation of crisis. The crisis, though inevitable by nature can be mitigated by using the mechanism of Insurance which works as a means of Social Security[1] and mechanism for mitigation of loss.

The *prima facie* understanding of Insurance gives a hint towards Wagering agreement wherein one party either wins or loses. A contract of insurance is different from a wagering agreement in that the latter provides for the protection of the insured's interests in the event that the insured loses. Relationships between an insured and the insurance's subject are referred to as Insurable Interests. There are various parameters which determine the existence of insurable interest

1. Dependency or/and
2. Love and Affection
3. Or both

For example, for the purpose of Life Insurance in India, the presumption is that out of Dependency and Love & Affection, Spouses on each other's life, Parents on Children and vice versa etc are some of the relationships which enjoy the sanctity of Insurable Interest and are allowed to insure each other's life. However, it's not the same in all the cases of dependability or Love & Affection e.g. in Indian Jurisdiction, Live-in-relationship is one such example where partners despite living on similar patterns of a Husband and Wife sharing the household and satisfying the requirement of dependability & Love and Affection, are currently not allowed to insure each other's life thereby raising several issues with respect to the future and social security of those partners.

While when it comes to married couples, it's presumed that insurable interest exists and they are ipso facto allowed to insure each other's life and secure the future, on the other hand in Live-in-Relationships in India, despite being into a relationship of love & affection and/or having dependency on each other, the general rule bars such partners from taking Life insurance on each other's life. The Hon'ble Apex court while taking into consideration the changing societal matrix, has granted legal validity of the Live-in-Relationships in India in certain specific matter like Domestic Violence Act, Succession etc, however, the matter hasn't been discussed pertaining to the insurability of Partners on each other's life.

The Paper aims to identify the current legal positions with respect to the *sine qua non* of Insurance i.e. Insurable Interest vis-à-vis the changing matrix of Society in form of Live-in- relationship. The Paper also focuses on Legal & Social challenges and impediments in India with respect to the allowing of Partners in a Live-in-relationship to avail Life Insurance on each other's life. Lastly, the paper discusses the importance of insurance in such cases, measures to be taken to mitigate the challenges and the recommendations thereto.

1 KRZYSZTOF, OSTASZEWSKI. "THE SOCIAL PURPOSE OF INSURANCE AND WHY IT MATTERS." Accessed October 30, 2022. https://huichawaii.org/wp-content/uploads/2018/01/Ostaszewski-Krzysztof-2018-AHSE-HUIC.pdf.

Research methodology

The Paper is based on Doctrinal Research wherein various books, judgments, regulations, insurance policy documents and articles have been analyzed. The primary focus of the paper is to analyze and comprehend the laws, cases, policies and news pertaining to a live-in relationship in India and understanding the dynamics of this new social order vis-à-vis Life Insurance sector, specifically the concept of Insurable Interest in India.

Lastly, with respect to the problems being faced by those who voluntarily embrace this emerging trend of cohabitation i.e. Live-in-Relationship, the paper discusses the possible solutions for making the Life Insurance available to such couples in light of the current legal system, especially the precedents set by Hon'ble Apex Court in India.

Scope and Limitation of Research

The issue of insurable interest with respect to the Partners in a Live-in-Relationship is a challenge that India is facing currently due to increase in the number of people opting for informal set up of Live-in-relationship as compared to formal and legal institution of Marriage. While some of the issues pertaining to Live-in-relationship have been resolved by the courts in India and certain specific rights are conferred on such partners, however Life insurance of such partners is one area that still remains to be addressed.

Considering the various limitations of research like resources and word limit constraints the jurisdiction of the research is limited to India only. Secondly, though the Partners in a live-in-relationship could belong to the same sex also, but the research is limited only to partners belonging to opposite sex. Lastly, even Live-in-Relationship could be of various natures, the paper is limited to studying the relationship wherein the partners are not married but cohabitation is in nature of domestic household contrary to temporal relationships only for specific purpose/s.

Life Insurance in India- General Introduction

Life Insurance is the Contract of Insurance that one takes either on one's own life or on someone else's life in whose life the person has insurable interest. The Life under the Life Insurance could be of Human as well as non-human like pets and Cattles. While there are certain relationships that are considered as having insurable interest in each other's life and are allowed to take Life insurance on each other's life, there are some other relationships which do not have such rights.

In general, the following couples share an unwavering interest in one another's life:-

1. Husband and Wife on each other's life
2. Parents' perspectives on the lives of their offspring, including

legally adopted children, and vice versa .
3. Creditor solely to the debt's maximum amount over the debtor's lifetime.

Some of the relationships which generally don't have insurable interest in each other's life but in case of any financial dependency they are allowed on a case to case basis:-

1. Grand Parents on life of Grand Children and Vice Versa
2. Uncle/Aunt on life of Niece/ Nephew and Vice Versa

Following are some of the relationships which irrespective of the dependency don't qualify for the insurable interest requirement:-

1. Friends on each other's life
2. Cousins on each other's life

The legal threshold of allowing certain relationship and disallowing others lies in the basic concept of Insurable Interest, the absence of which in any Contract of Insurance renders the same wager, hence void.[2]

INSURABLE INTEREST

The first and most important requirement in the validity of an insurance contract is insurable interest. This is defined by E. W. Patterson, a prominent jurist.

"The term "insurable interest" refers to a connection between the insured and the event being insured against, where the insured would suffer significant loss or injury of some kind in the case of the occurrence of the event." [3]

The landmark decision Castellain v. Preston established the rule that "an insured's insurable interest is the aim of the insurance and that only those who have an insurable interest can collect" (1883). It was not necessary to have a financial or emotional stake in the topic of an insurance policy in order to be reimbursed under one before to 1745. Even in the lack of an interest, insurance is not prohibited under English common law, according to Roche J. [4]

Although it did not use the phrase explicitly, The Marine Insurance Act of 1745 introduced the idea of an insurable interest. Later, the Life Assurance Act of 1774 made contracts for life insurance without insurable interest unlawful. The Maritime Insurance Act of 1906 further states that contracts for marine insurance that lack Insurable Interest are void. [5]

According to the Marine Insurance Act of 1963, the situation is the same in India. .[6]

The landmark definition for Insurable Interest is provided in the case of *Lucena vs. Crawford*[7] by Justice Lawrence as:-

2 Section 30, Indian Contract Act, 1872
3
4 Williams vs. Baltic Insurance Association of London, (1924) 2 KB 282 (n.d.).
5 Section 4 Marine Insurance Act 1906
6 Section 6 Marine Insurance Act, 1963
7 (1806) 2 Bos & PNR 269

Interest is defined as "having some relation to, or concerning, the subject of the insurance; which relation or concern, by the happening of the perils insured against. Interest does not necessarily imply a right to the whole or part of the thing, nor necessarily and exclusively that which may be the subject of privation." The individual insuring might be negatively impacted to the point where it causes harm, loss, or discrimination. . And when a man is in a situation where he would be interested in the safety of a thing even if it were subject to certain hazards or dangers, such as when he had a moral certainty of profit or benefit.A person who is concerned about something's preservation is one who is in a position to profit from it's existence and suffer harm from it being destroyed.

As per Justice Lawrence, insurable interest is a kind of relationship which could be over whole or part of the thing. The nature of the relationship is such that the insured is interested in safety & preservation of the thing and will be benefitted by the existence & prejudiced from its destruction.

Creation of Insurable Interest can take place:-

1. By the means of common law
2. By the means of contract
3. By the means of statue

The Concept of insurable interest can be seen to be working on the following two principles:-

1. The interest is needed to be enforceable by law
   The relationship must be such which is enforceable by law in India e.g. as per Hindu Marriage Act a person is not allowed to marry second time if the first wife/Husband is alive.[8]

A is legally married to B, as per the Hindu Marriage Act, 1955. A marries C subsequently. Here A can validly have insurance on life of B and Vice-versa, however as per the Insurance laws in India A and C can't take Life insurance on each other's life because the second marriage is not valid as per the law governing the Parties.

2. The principles of Insurable interest is based on certainty and not hope, however strong it may be.
   This can be understood by taking example of Fiancées who are engaged and are to get married but till the date they are not recognized as husband and wife as per the law governing them, they do not acquire any kind of Insurable Interest in each other's life. Similarly, *en ventre sa mère* i.e. child in the womb of the mother has property rights in India but for the purpose of Insurance Law there is no right meaning that Parents can't insure the live of their child who is in the womb.

The definition by Justice Lawrence is the guiding light which is being followed in India but it is noteworthy that none of the relationships have been mentioned

8 Section 5, Hindu Marriage Act, 1955

or excluded specifically and every insured must qualify for the relationship as described. While certain relationship like parent- child, spouses etc have already got the Insurable interest in each other's life there are few other relationships which have to prove the existence of Insurable interest as defined in *Lucena vs. Crawford* like creditor – debtor, mortgagor-mortgagee. Live-in-relationship is one such relationship wherein it's the time to address the issue of insurable interest considering the inclination of today's generation towards the set up of such relationship.

In order to understand the insurable interest vis-à-vis Live-in-relationship in India first of all it is necessary to understand the legal position with respect to the same.

STATUS OF LIVE-IN-RELATIONSHIPS IN INDIA

Last few decades have witnessed a drastic change in the societal pattern in India where youth is embracing the western concept of cohabitation in form of live-in-relationship. Live-in-relationship as such has no statutory recognition or a legal definition in India but Courts in India time and again have granted various reliefs to the Partners staying in such relationship.

Simply, it could be understood as a walk-in and walk-out relationship[9] in which the partners who could be of the same sex or opposite sex decide to live and share the same household and in case of any kind of disagreement they may move out of the arrangement without following any formal legal procedure like it is followed in an institution of marriage.

In the case of *Badri Prasad v. Dy. Director of Consolidation (1978 AIR 1557, 1979 SCR (1))*, where a stay of 50 years as husband and wife was recognised, the Hon'ble Apex Court gave one of the first recognitions to such a relationship.

When a couple has lived together as husband and wife for a significant amount of time, Justice Krishna Iyer claims that there is a strong presumption of marriage. It is possible to refute the assumption, but doing so comes with a heavy weight. Law favours legitimacy and discourages stuttering.

Further, in the landmark judgment of *Indra Sarma vs. V.K.V.Sarma*[10], while deciding the applicability of Domestic Violence Act, 2005 in matter pertaining to a Live-in- relationship the Hon'ble Apex Court held that

> *"a live-in relationship will fall within the expression "relationship in the nature of marriage" under Section 2(f) of the Protection of women Against Domestic Violence Act, 2005 and provided certain guidelines to get an insight of such relationships."*

9 Alok Kumar vs. State & Another 2010 SCC Online Del 2645 (n.d.).

10 (2013) 15 SCC 755

Further, the Supreme Court in *Vidyadhari v Sukhrana Bai*[11] made a precedent-setting decision in which the Court accorded inheritance to the offspring of the in question live-in relationship and bestowed upon them the status of "legal heirs." In "*Indra Sarma vs VKV Sarma*[12]," the Supreme Court[13] it was highlighted that not all live-in relationships had the characteristics of marriage in them during the detailed discussion of the live-in relationship in comparison to marriage.In the present instance, it was determined that the appellant got into a live-in relationship with the respondent while being fully aware of that person's marital status.Due to the lack of characteristics that are necessary and inherently present in a marriage, this relationship has not been recognised as one.

The Court further was bound to make following observations in this case:- [14].

- *Such relationships have the potential to persist for a very long time and might result in a pattern of vulnerability and dependency. Given the prevalence of these relationships, it is imperative that women and any offspring produced as a consequence of a live-in relationship are given sufficient and effective protection.*
- *Legislation cannot, of course, encourage premarital sex, but since these relationships are frequently highly intimate, both supporters and opponents of the practise are free to express their opinions.*
- *In order to assure the safety of women and the children born out of such relationships, even if they might not be unions with features of marriage, the Parliament must take into account these concerns, pass suitable laws, or amend the Act suitably.*

Although there is no official definition of a "live-in relationship," precedents have acknowledged the legitimacy of the arrangement for a number of rights, including maintenance, protection from domestic abuse, and inheritance rights for children born in such a relationship. We discover that there is still a vacuum to be filled with regard to the existence of insurable interest in such interactions.

INSURABLE INTEREST vis-à-vis LIVE-IN-RELATIONSHIP

The existing trend in the Insurance Sector suggests that none of the Insurance Companies in India are allowing live-in-partners to insure each other's life citing lack of insurable interest, that is to say that Life Insurance options are unavailable to any couple who are not married as per the personal laws applicable to them in India. Some of the companies though provide Health insurance policies to

11 "Sci.gov.in." Accessed November 1, 2022. https://sci.gov.in/jonew/judis/30159.pdf.

12 "Indra Sarma vs V.k.v.sarma on 26 November, 2013 - Ijtr.nic.in." Accessed November 1, 2022. http://www.ijtr.nic.in/Indra_Sarma_vs_V.K.V.Sarma_on_26_November,_2013.PDF.

13 "Indra Sarma vs V.k.v.sarma on 26 November, 2013 - Ijtr.nic.in." Accessed November 1, 2022. http://www.ijtr.nic.in/Indra_Sarma_vs_V.K.V.Sarma_on_26_November,_2013.PDF.

14 Narayan CL, Narayan M, Deepanshu M. 2021. "Live-In Relationships in India—Legal and Psychological Implications." *Journal of Psychosexual Health.* 2021;3(1):18-23. Assessed October 10, 2022. doi:10.1177/2631831820974585.

the live-in-partners.[15] The premiums paid for any life insurance policies that cover the policyholder, their spouse, any dependent children, and any other members of the Hindu Undivided Family may also be tax-deductible under Section 80C of the Income Tax Act of 1961. This clearly demonstrates the legislative intent to not grant the partners in a live-in relationship with any such benefit.

Considering the rapid augment in number of people opting for Live-in-relationship over the conventional institution of marriage in India[16], the time is ripe to address the issue of Live-in-Insurance vis-à-vis the Life insurance Sector in India. Secondly, Life Insurance not only provides monetary support post demise of the insured but also works as a tool of social Security ensuring that the survivors of the insured are not rendered helpless monetarily due to death of the insured, so it's the need of the hour that such social security measures be extended to the couples opting for cohabitation in form of live-in-relationship.

Going by the judicial trend, undoubtedly it can be said that Courts in India have addressed the issues pertaining to the legal status of live-in-relationship time & again and to some extent, if not fully the legality has been conferred upon such relationships in India. In light of this, merely because the traditional notion of insurable interest doesn't support such relationship, it doesn't appear justified to not at all consider such relationships as insurable.

Since, the trend is inclination towards the live-in-relationship over the conventional set-up of marriage in India, a clear No to insuring the lives of partners in such relationship appears violative of the basic Fundamental Right of Equality of such partners.

Generally, while denying insurability to partners in live-in-relationship on each other's life the non-binding nature of such partnership is used as an excuse. Undoubtedly, in a live-in- relationship the exit option is always available without any formal recourse but it can't be denied that despite presence of the formal and legal exit options in a marriage, the marriages stay forever of they don't break.

If partners in a live-in relationship are permitted to insure one another's lives and the partners later decide to break up, there won't be any changes to the law of insurance because the insurable interest in a life insurance contract is only necessary when signing the contract for life insurance, not after.[17.] This brings the status of a separated partner

15 Kamini Mathai / TNN / Jun 7, 2022. "Razorpay Expands Health Insurance Policy to Include LGBTQIA+ and Live-in Partners - Times of India." The Times of India. TOI. Accessed November 1, 2022. https://timesofindia.indiatimes.com/business/india-business/razorpay-expands-health-insurance-policy-to-include-lgbtqia-and-live-in-partners/articleshow/92054368.cms.

16 Jawale, Kalpana Vithalrao. "Live-in Relationship: Recent Development and Challenges in India." *SSRN Electronic Journal*, 2012. https://doi.org/10.2139/ssrn.2046460.

17 Griffiths vs. Flemings, (1909) 1 KB 805

in a live-in-relationship equals to the divorced partners who have the option of either terminating the Contract of Life insurance or changing the nominee.

SUGGESTIONS AND RECOMMENDATIONS

In order to address the issue of non availability of option to insure each other's life in a Live-in-Relationship, the researcher proposes following solutions and recommendations

It is simpler to work toward include live-in partners within the scope of life insurance since the definition of insurable interest is extremely dynamic in nature and there is no statutory definition for the same.The Insurance Regulatory and Development Authority (IRDA), which is responsible for regulating, promoting, and ensuring the orderly growth of the insurance industry in India, can accomplish this by issuing the necessary policy guidelines. The IRDA is the watchdog for the country's insurance industry. [18]

For instance, the idea of friend assurance was unknown in India until some insurance companies like Religare Health Insurance, Max Bupa Health Insurance, and Kotak Mahindra General Insurance proposed it and received approval from the Insurance Regulatory and Development Authority. This will allow individuals to cover not only their family members but also their friends under a health insurance policy. [19] Second, in a recent response to an RTI request from a homosexual couple from Kolkata named Suchnadra Das and Sree Mukherjee, LIC stated that it is acceptable to identify same-sex partners as nominees in insurance plans. As a result, same-sex couples can now be protected in terms of their social and financial security. [20]

Since, flexibility is available under the Indian Insurance sector subject to compliance of the definition of Insurable interest as given in *Lucena vs. Craufurd*[21] and approval by IRDA the live-in-partners can be allowed to insure each other's life by way of Life insurance.

1. The Supreme Court of India's ruling in *D. Velusamy v. D. Patchaiammal*, which outlined the four requirements for a live-in relationship to take the status of marriage, should be followed while evaluating such policies to ensure that the principles of insurable interest are not breached.[22] case, can be taken into consideration by the Insurance Companies-

18 Section 14, INSURANCE REGULATORY AND DEVELOPMENT AUTHORITY OF INDIA ACT, 1999

19 TNN / Updated: Jan 27, 2020. "An Insurance Plan That Covers Your Friends Too - Times of India." The Times of India. TOI. Accessed November 1, 2022. https://timesofindia.indiatimes.com/business/india-business/an-insurance-plan-that-covers-your-friendstoo/articleshow/73649648.cms#:~:text=CHENNAI%3A%20Friend%20Assurance%20feature%20proposed,awarded%20to%20the%20healthiest%20group.&text=Under%20this%20policy%2C%20custome-rs%20can,friends%20under%20one%20policy%20number.

20 Ians. "LIC: 'Nominating Same-Sex Partners in Insurance Policy Bank Account Is Legal'." Free Press Journal. Accessed November 1, 2022. https://www.freepressjournal.in/india/lic-nominating-same-sex-partners-in-insurance-policy-bank-account-is-legal.

21 (1806) 2 Bos & PNR 269

22 "D. Velusamy. Appellant - Supreme Court of India." Accessed November 1, 2022. https://main.sci.gov.in/judgment/judis/37007.pdf.

(a) whether couple represent themselves as spouses in the society

(b) Individuals in the relationship are of marriageable age as per the law

(c) Individuals are qualified to marry as per the personal law governing them

(d) the cohabitation must be voluntary and for a significant period of time. What is a significant period of time is subjective and can be taken into consideration on a case to case basis.

(e) According to section 2(f) of the Domestic Violence Act, 2005, the cohabitation must be of the "Shared home" variety.

The Hon'ble Apex court in the instant case differentiate Live-in-relationships with the color of marriage from relationships based on merely spending weekends together or a one night stand.

All the 4 conditions as elaborated above are subjective in nature and will depend on a case to case basis, therefore, on proof of the same by the partners interested to insure each other's life may be allowed to do so.

There is a need of legislative intervention by way of amending the Insurance Act, 1938 and Section 80 (C) Income Tax Act, 1961 in order to include the partners. Currently, the word spouse is used which includes only opposite sex married partners contrary to the word "Partner" which is more inclusive in nature and will cover the same sex, opposite sex partners with or without marriage.

CONCLUSION

Live-in or marriage-like relationships are not illegal nor sinful, despite the fact that they are socially undesirable to many Indians. They are instead a very personal decision.Refusing to provide social welfare benefits like life insurance to such partners will not only do no good, but will also place an unjustified financial burden on the state to assist such partners' dependents in the event of an occurrence like death. Providing the prerequisites outlined in D. Velusamy v. D. Patchaiammal are met [23] and *Indra Sarma vs. V.K.V. Sarma*[24] for a live-in-relationship is fulfilled then the requirement of insurable interest should not be a barrier. While, allowing for Life insurance the Live-in-relationships should be differentiated from other relationships wherein there is no intention to stay together and is only temporal and spatial in nature.

A careful study of the changing dynamics of Indian society suggests that through political mobilization many pertinent issues like same-sex cohabitation etc has been addressed and basic human rights of the partners been restored. Looking into the pattern of development wherein gender, marital status etc has no role to play it's appropriate to state that Life Insurance should be allowed for Live-in-partners subject to the fulfillment of the conditions as mentioned in the preceding para.

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23 "D. Velusamy .. Appellant - Supreme Court of India." Accessed November 1, 2022. https://main.sci.gov.in/judgment/judis/37007.pdf.

24 "Indra Sarma vs V.k.v.sarma on 26 November, 2013 - Ijtr.nic.in." Accessed November 1, 2022. http://www.ijtr.nic.in/Indra_Sarma_vs_V.K.V.Sarma_on_26_November,_2013.PDF.

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Artificial Intelligence in Healthcare Sector: Policy and Practice

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Abstract

Artificial Intelligence and Internet of Things are definitely running parallel to humankind and the edge of being faster from humans in work is coming with its own complexities. The researchers in the paper will explore and lift the veil of the usage and implication of AI and IoT in the healthcare sector. The need of maximizing the benefits and sown the seeds of AI, while ensuring minimum risks and potential costs shows the path to need of an AI policy. Healthcare can exponentially improve the productivity and efficiency of the industry and lives of people. Humankind invented and introduced new machines into the lives of people to ensure a smooth living. The covid'19 response to the use of AI and better patient care has been a practice recently initiated and they assist in detection and diagnostics. A lot of data is analyzed to predict patients' outcomes through their electronic health records which also posses a threat to the privacy of an individual. The paper shows the tussle between policies and practice of usage of AI and legal stand.

Keywords: Artificial Intelligence, Internet of Things, Diagnostic, Therapeutic, Operations, Medical technologies, Case study

Introduction

AI has also become a big part in resolving clinical decisions over the old methods of analysis. The process of algorithms is more accurate and precise as it interacts with the data training by letting the human's access unprecedented information about new diagnostics, nourishment techniques, various treatments and the outcomes. Now-a-days algorithms are outperforming almost all the traditional medical processes we can take examples of technologies used in DNA sequencing to combat social distancing situations in hospital by nourishing Corona virus patients with the help of Artificial Intelligence. It's basically not a single technology, but rather a vast collection of different technologies.

Technology assisting humans and technology replacing humans though are two different concepts, but aim at vast possibilities that technology has to offer for humankind at large that one cannot even imagine. These trends can be seen emerging simultaneously across the globe for a range of sectors, including healthcare. Artificial Intelligence (AI) is one such technology with having the abilities of processing natural language and machine learning techniques into innovation that might soon replace humans. We have started being dependent on AI assistants, fitness bands, online software supports, text and chat bots and other applications for every mundane to complex day today activities. The authors have highlighted how AI has proven to be of great help in healthcare in field of medicine, therapies, and complex operations and has assisted clinicians in handling patients physically, mentally and managing their records. There might be some apprehension that while doing amazing and next to impossible tasks with AI in healthcare industry, like replacing doctors, no empathy or human touch while decision making, no emotional intelligence or thinking towards the human and this might be enough to outweigh the good things attached. The practice of usage of AI in healthcare have also led to unwanted issues such as, loss of data and patient privacy concerns, liability fixing, patenting, etc. The need of the hour makes it even more pertinent to focus on the healthcare sector at national and international level as we are in middle of Pandemic-Covid'19 which has proven to be a global crisis. Covid'19 is caused by SARS-CoV-2 virus and was declared to be a pandemic by the WHO. AI's can use their data analytic tools to recognize, predict and explain or treat Covid'19 infections. It can help manage different socio-economic impacts. There has been an increase in the techno-legal perspective on the effect of AI in healthcare by highlighting different government initiatives, legislations and expected amendments to be brought in the existing legislation and new proposed policies. Intellectual Property rights can be closely related to AI technologies and softwares. Different principles of law are analysed to see if AIs could fit in the ambit of legal person or there will be need of a new policy.

The researcher, through this study, seek to discuss the same and its link with Intellectual Property Management, elaborately. The study begins with the researcher tracing the past trends of technology used in the health care industry to the present techniques which are being prominently used by doctors and physicians worldwide, while we are in a pandemic situation.

This would help the readers to under the 'revolution' since its known significant inception. Additionally, the researcher also contemplates the causes that are believed to have triggered such an evolution and its subsequent entry into the medical field. As evidently noticed, COVID – 19 situations have acted as a catalyst for digital innovation in healthcare. On the other hand, the researcher also elaborates as to how management of

IP assets created out of such digital revolution owing to accelerated and ramped up innovation comes into the picture, quite significantly. This shall enable the readers to grasp the connection between the two fields, gradually. Further, the study moves forward to throw light upon some of the most contemporary trends in this field. The study has attempted to elaborate on the basic notion of their functioning, which has enabled the medical arena to incorporate such a sophisticated technology in its latest procedures and how. In addition to the same, the researcher have also analysed the scope of IP management in case of AR and VR, The final two trends discussed by the Study are the significance and impact of Big Data in the health sector and a nascent technology called Digital Twin Technology, which is debated to be one of the tech-creations, leading the digital revolution in the health sector.

Understanding the Evolution: A Brief Literature Review

A successful research study is founded on prior knowledge. As a result, after stating the research problem, the researcher must review the available literature in the specific area of study. This aids in understanding the nature and design of the research investigation and demonstrates that the researcher is aware of what is already known about the research problem. Thus, a review of the literature assists the researcher in avoiding duplication of what has already been done.

The researcher can gain insight into the research problem by using information gathered from the literature, which will allow her to present the problem in the proper context. As a result, studying previous literature can often provide the researcher with useful hypotheses.

Woodrow Barfield and Ugo Pagallo in their book "Research Handbook on the Law of Artificial Intelligence" have discuss how, in the last two decades, the field of artificial intelligence (AI) has made vast changes, but as smart as AI is now it is getting smarter and more autonomous. This poses a host of challenges to existing legal doctrine, including whether AI/algorithms should count as 'speech', whether AI should be governed under the laws of antitrust and criminal law, and whether AI should be treated as an agent under agency law or held liable under tort law for injuries. This book contains chapters on the role of law in an era of increasingly intelligent AI from US and international law scholars, discussing these and other concerns that are crucial to the field's evolution.

Christopher Heath, Anselm Kamperman Sanders, Anke Moerland; in their book Intellectual Property Law and the Fourth Industrial Revolution approaches the fourth industrial revolution from the perspectives of technological history, culture and law, providing the first in-depth legal commentary and study of this highly topical issue. The definitive study of how the data-driven economy affects innovation and the transition of technology is unparalleled. Practicing attorneys in intellectual property rights and competition law, as well as scholars, think tanks and legislators, would be invited.

Craglia in his book has overviewed of the main legal challenges raised by widespread use of AI and found out that it has two ramifications for the legal sector: the modernization of working processes and procedures and the evaluation of the implications of new services in various sectors. AI provides jurists different resources that are useful for carrying out the work, allowing decisions in legal cases to be anticipated, and also allowing for a vast review of documents and pattern recognition. There are AI applications in the area of prevention of corruption to assist law enforcement and judges in their work. Chat bots are now allowing customers, without consulting costly legal experts, to solve their own problems.

María Jesús González-Espejo, Juan Pavón, in their book an Introductory Guide to Artificial Intelligence for Legal Professionals discuss How artificial intelligence is rapidly becoming a part of our daily lives, transforming the way we work, shop, travel, and communicate. However, we are still in the early stages of investigating the various ways in which AI can influence, society, and community, as well as challenge. There are numerous myths and concerns about the existence of AI and the threat it poses to humanity in particular. Given the widespread reservations and reservations, A a factual basis for policy discussions on AI innovation is important. We aim to add evidence through this study and bring clarification to this critical field of debate.

WIPO in its report "Promoting Access to Medical Technologies and Innovation" aims to shed light on the trends in AI innovation since the field's inception in the 1950s, using a thorough analysis of patents and other details. The research included a study of patent data related to AI inventions, as well as data on scientific publications, litigation filings, and acquisition activities. These data results are thoroughly discussed, and feedback from more than 20 of the world's leading AI experts and industry perspectives is provided; more detailed datasets, patent search methodology, and expert contributions are freely available on the WIPO website. We hope that this study will be a valuable resource for companies, scientists, and policymakers in the field, as well as general readers looking for information.

In the WIPO Technology Trends 2019: Artificial Intelligence. Geneva: World

Intellectual Property Organization It is in a way, the best of times at present. While many aspects of our present-day culture could certainly be described as the worst of times,' technological advances have revolutionized our way of life and changed many things for the better. At the same time, it is the age of faith and unbelief, where we rejoice in computers that seem to be able to build and even invent artistic works. The interface between AI and intellectual property (IP) law is readily apparent and there are several possible topics in this article. This chapter gives a bird's-eye view of the current status of research on some of the related legal issues, mainly from the viewpoint of EU civil law.

Firth-Butterfield and Chae in the World Economic Forum's (WEF) white paper Artificial Intelligence Collides with Patent Law A recent study states that since 2011, with an average annual growth rate of 43 percent and 83 patent applications, AI has become one of the fastest growing Fourth Industrial Revolution 19 (4IR) sectors. However there are a variety of legal uncertainties confronting the accelerated rate of patent applications. In this section, a sample of patent-protection problems for AI that consistently occur across jurisdictions and societies is given. One way to better align the promotion of creativity with addressing ethical issues may be to lower the subject-matter patentability requirement for AI innovations relating to fields considered more socially beneficial, such as healthcare, the environment, criminal justice and education.

AI In Platform of Healthcare:

There is no doubt that I will lead to automation of employment and it can also control the workforce but in the case of health care no such employment has displaced human force yet. Though it can be used in performing Digital ways but it is still too risky in direct contact with the patients. AI reads and interprets images while in the course of actions doctors do more than that , there is huge risk as AI cannot be 100% accurate all the times like radiologists and most importantly it requires a lot of labelled data to be attached for image recognition through algorithms . AI is one of the most powerful inventions of human which have both negative and positive impact. The technology is a huge success but it too comes with certain consequences, it can be dangerous and harmful if not used in good intentions to the mankind, especially in the health care sector. It requires a constant power of human for guidance and attention.

The Involvement of AI In Healthcare in Future

The AI in health care is believed to offer many aids in the future. In the case of machine learning it will do wonders in providing a precise medication. As of now AI has to develop a lot in diagnosis and treatment in early state of any health issue but it can be said that it will soon conquer that sphere too. By the help of remarkable image analysis by one day it will replace radiologists and pathologists by its technical machine for examination purposes. It already reaching milestones in patient communication. It seems pretty clear that in upcoming decades AI will take over human help in health care sector.

Internet of Things and It's Applications in Healthcare

The modern world is a huge contrast to the early and traditional life of people. As result types of equipment were very primitive and quite simple which was enough during that age. But as time passed, with a variety of demands from society, technology was required to evolve from the smallest of things to the big so that it could be effective and cope up with the newer change.

Technologies that connect and exchange data with other devices are called the Internet of Things. This was much needed for efficient time management and providing precise results. This has been especially helpful in the healthcare field, to prevent any delays in delivering any health care services. This chapter will specifically concentrate on the applications of the Internet of Things in the healthcare industry. Further, it will also go into the advantages and disadvantages of these technological instalments and lastly, a few ways of improving them.

With the recent trend of obtaining internet-based devices, new and high-tech types of equipment are introduced so applications would be many in general as a result only a few would be discussed.

Implantable Glucose Monitoring Systems- Embedded with sensors, devices could be placed just below a patient's skin which can send information to his or her mobile whenever the glucose levels get low for preventing any further risks.

Activity Trackers- This device could be useful in keeping track of the patient's movements, fatigue, his or her overall lifestyle, etc. The data collected of the whole treatment will alert the fitness instructor if any changes are required.

Heart Monitors- Patients can wear devices that could determine if they have high blood pressure or experiencing an erratic heartbeat then these devices could give a quick report if they are undergoing any strokes, heart attacks, and any impending danger. Ambulances can then be immediately available.

Medical Alert Systems- In an emergency, the individual could wear a medical alert bracelet which can inform the family members by notifying them on their smartphones, any help would be at his or her disposal.

Ingestible Sensors- Sensor pills that can be swallowed and after the ingestion, the information could be passed on to the patient's mobile that could help maintain a balanced routine. People who are under medications should go by a timetable.

Medication Dispensers- Implantable devices could be inserted into the body dispensing steady doses during the day and refilled on a timely basis. This could also be convenient for the doctors as they would know whenever they might have missed doses in their routine visits.

Traceable Inhalers- These could report the causation of asthma attacks by transferring information to their gadgets. Physicians are also well informed with their health and also a constant reminder for the patients when to have their medications.

Connected Contact Lenses- These read the glucose levels of diabetic patients who could renew the focus of the eye and also enhancement of vision.

Location Services- Medical items should be tagged with a sensor so that they don't get lost or stolen.

Remote Monitoring- Fitness trainers can make records about the patient's ongoing surgery treatment and could be alerted as soon as a patient experiences a critical stage. (Iot Applications in Healthcare)

These things open varieties of ways for obtaining valuable data and analyzed information in a quick and sophisticated technique. These devices help in healthcare by giving out practical and reliable data producing much better solutions and discovery of previously unknown issues and also develop existing technology. It tries to fill up the gaps between ways of delivering healthcare, creating a system and not just mere tools. It then brings forward shortcomings in this field and proposes different ways of improvement. It encourages the people of the medical department to expertise in their field of interests in an innovative way.

It helps to achieve better data and equipment that are precise and swift. The devices overall improve the health of individuals in the facilities as well as those in the professional practice. It enables patients to recover their health in environments where they are most comfortable. Individuals can manage independently by themselves and if needed help is always at their back of the call. (5 Iot Applications in Healthcare Field You Must Know)

They lack faithfulness to the privacy of individuals. There are confusions concerning data ownership and regulation. Thus, the data are prone to thefts and it is also vulnerable to cybercriminals compromising personal health information.

Data overload is one of the main concerns as it affects the whole system as well as covers most of the vital and important information. Devices could stop functioning properly if there is an overloading of data. Costs are huge as it requires a great amount for installments as well as an equal amount or more for maintenance. However, the costs are relevant if this equipment solves a genuine problem. At one end it requires a huge amount of money while the other reduces manpower and increases productibility. (Sheldon, 2019)

The devices with IoT can be secured by password protection by creating strong passwords like digital codes and with upper and lower cases which could be only known to the user. Another method to provide IoT security is to restrict the use of the internet on the connected devices by confining to only certain features of the software and it should be updated from time to time. The individual needs to do constant checks and immediate action should be taken to eliminate any bugs or loopholes found. Ignoring these could be devastating as it destroys the whole system and retrieval of all the important data is not easily possible.

The devices should be connected only to their private network preventing other public networks to have access to critical files. There should also be control in access of data for certain devices for the prevention of unauthorized access.

Hacking is the most common threat to this security. It becomes difficult for anyone who falls prey to this crime of advanced hacking attacks on their systems as it is very complicated and it could be done only by the experts. Precautionary measures should be taken to ensure that devices connected to the IoT cannot be spoofed having their own unique identity. (Joshi, 2020) As it is said prevention is better than cure so individuals should not wait for it to happen. It doesn't hurt to be a little cautious ensuring one's security.

Legality of use of Artificial intelligence in Healthcare

Artificial Intelligence (AI) is proving to be game changer in 21st century. In India, health sector is one of the dynamic and largest sectors in the country. This sector is expected to grow $6.6 billion by 2021. Using Artificial intelligence in this sector can give new life to the health sector. Currently, Government of India is working with NITI Ayog to promote artificial intelligence in health sector. Though Government is trying to promote and use artificial intelligence in health sector but there are no specific laws to regulate artificial intelligence in India. There are many fields under which artificial intelligence proposed to be used and is used in health industry. It consists of data storage, monitoring conditions, robotic surgery and data collection. In healthcare industry, hospital, medicine companies and diagnostic firms uses Artificial intelligence (AI). But Indian law will have to be amended and new laws have to be made so that artificial intelligence in health industry should come under the surveillance of legal system.

Liability of the AI's: Consequence of No Express Legal Recognition

In current situation, if anything happens in the hospital during the treatment of the patient then doctor is held liable for its doing. It has been seen in many cases that doctors and other medical staffs were held liable under criminal and civil cases for their negligence. However, under the rules and regulations, doctors and medical staffs are not held liable for the fault of the technology or not using the proper data. Therefore, there is no such liability on the company and the people developing or making the artificial intelligence soft and if a doctor and any medical professional does any wrong during the treatment of person while using artificial intelligence, it is also not clear that the person using the software or artificial intelligence during the treatment will be held accountable or not.

For example, data available in public domain suggest that many artificial intelligence solutions used for curing patients suffering from cancer has given very dangerous recommendations and solutions. Many reports have shown that where artificial intelligence was used to treat cancer patients, it recommended medicine and drug which could worsen the health of the patients. Under current situation, medical professional and doctors can be held liable for giving the drug recommended by the AI and they cannot the defense that the given drug was recommended by the Artificial intelligence solution.

IOT and Data Privacy

During the use of artificial intelligence method, there is continuous exchange of information of the patients between artificial service providers. Than this data are used for validations and generating algorithms. Though we have the data protection bill (DPC 2019) but the crucial information of the patient can be easily exploited for things beyond artificial intelligence.

After looking into this matter, health ministry has issued health security act. This law basically provides criminal and civil remedies for violation of data. It also proposes for the development of the national digital authority which will be primarily used for the protection of the healthcare database.

Intellectual property rights (IPR) issues involving IOT

The matters and authority related to the intellectual property does not accept algorithms patentability. It is the basis of which an artificial intelligence function. Under the provisions of the patents act, it doesn't include algorithms under invention which is used for patent protection. Such rules may become hindrance in the development of the Artificial intelligence in India.

Artificial algorithms are generated with the help of the human work and collected data. Under the provisos of the Indian law, copyrights are granted to the creator of work with rights to regenerate that work again. It is not clear whether generating copies of this work for the development of the artificial intelligence could lead to the infringement of copyright by the developer. Currently, artificial intelligence is facing many challenges which can be solved by making effective law and policies on artificial intelligence. Artificial intelligence is playing and is going to play a major role not only in the health sector in India and it is going to transform each sector of India. And as a result, we need an effective law to deal with the drawbacks of the artificial intelligence. Either parliament can pass it directly or it make laws on artificial intelligence by setting up a committee. In a long run, such steps will be helpful in the development of the artificial intelligence and the country as well.

Conclusion

The lacuna in present IP laws and Competition law has also shown the delay in technology transfer as the policies are not in place. The practice of use of AI for advancement of modern society and for smooth development of AI securing and encouraging innovation and creativity has to focused. The researcher also expects to find a policy structure for including AI in different Intellectual Property legislations, Competition law or propose amendments doing a thorough analytical study of the sui generis legislations.

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A Critical Study on the Management of Innovative Fugitive Coal Dust Pollution Control Practices for a Cleaner Industrial Environment

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Abstract

The entire world including India is inevitably dependent on coal-based energy. Thus, the consumption of coal happens to be maximum and most frequent in comparison to other minerals. But the consumption of coal gives rise to exploitation of coal in situ and thus increases the dust create from the same. Not only the coal dust is produced at the extraction site, the sources are multiple including the transportation, dumping sites etc. The very nature of coal in terms of self-combustion and self-heating aggravates the working environment in industries giving rise to hazards and health problems. The traditional practices of suppressing and controlling fugitive dust are having their own limitations and deficiencies. Therefore, the policymakers, the concerned authorities as well as the industry personnel are constantly searching for innovative approaches which can give better dividends. In this regard, many experiments and techniques proven to be successful to a substantial extent. However, the management of these techniques has to be multi-dimensional and multifaceted. This study conducted at different coal mines in Odisha has been an attempt to understand the deficiencies in the current practices and the benefits of adopting innovations in controlling the fugitive dust polluting air and other environmental elements. This also examines the managerial implications on practicing the innovations towards making a cleaner and industrial environment.

Keywords: AQI, fugitive dust, HECP, innovations, PM, 3R.

1. Introduction

About 25% of world's primary energy requirements come from coal-based energy. In addition to that almost 40% of the total electricity are provided by coal itself. However, coal remains to be one of the biggest contributors of environmental pollution. The pollution from coal does not happen at one place or one process only, rather it arises from various places as well as process of industrial environment, viz. mining, handling, transporting as well as stocking. This environmental pollution due to coal happens because of the coal in powdered form, known as coal dust or more specifically fugitive coal dust (Liu *et al.*, 2018). The prime reason behind making coal dust is to increase the effectiveness of it in burning easily and thus making the process handy. But this in turn makes the working environment unsafe and unhealthy for the workers and engineers alike (Zvyagintseva *et al.*, 2020). The coal dust in the form of air suspension, can create havoc in giving rise to severe health problems related to pulmonary and cardiac disorders as the intake of the former becomes severe and without any control. At the same time, it also increases the maintenance cost of equipment used for material handling. Due to the loading and unloading process also, the air movement of dust can increase the pollution level to an unprecedented high level (Timofeeva *et al.*, 2020).

Coming to India, the country is having the biggest number of coal-based industries. It is also a leading coal importer form different African and Asia-Pacific nations. After reaching the inland, the imported coal remains at ports as well as sea shores thereby causing pollution tremendously. The situation worsens because of dust particulates as well due to its composition of toxic metals at a very low and almost invisible level (Sajn *et al.*, 2021). These small and tiny particles of coal entering into human lungs cannot come out naturally and a persistent intake of these increases the heart and respiratory abnormalities to a significant level. The residents nearby mining and port areas are more vulnerable to these fugitive coal dust, where the annual levels of the latter increase four to five times of permissible limits, i.e., 40 gm/m^3 to 60 gm/ m^3. In addition to pollution caused by coal dust, the self-combustion and self-heating properties of coal add to the problems of industries. As a well-known attribute of coal particles, when exposed to exothermic climatic conditions for a pretty long time, the former starts heating up and sometimes becomes combustible because of auto oxidation. This deteriorates the industrial working environment causing threat to human life as well as declining productivity and profit to the enterprises (Prasad *et al.*, 2020). This is not limited to stockpiles in older mines, rather the mines opened up newly have also to face this dangerous problem because of self –combustion arising out of transportation as well as accumulation of spilled coal on conveyors, silos, and vehicles and so on.

Mitigating these problems by suppressing the dust is not a new idea. There have been numerous methods being followed and practiced by various industrial and mining units in different parts of the world including India. To make a mention of this, polythene sheets are mostly used to cover up coal stacks in different areas. But it is not that easy to overcome the problems of dust generation and self-heating due to coal stack just by covering it with these sheets, the reason being the expensiveness of the process as well as retaining the cover during strong winds. Often, it's a practice to have water sprinkles used on the stacks. In this process, though the heavy particles of dust can be settled, the challenge remains with the settlement of fine particles, which continuously disperse in the open atmosphere thus causing work hazards. The natural quick evaporation of water hardly makes the dust suppression effective. In addition to that sprinkling water continuously and in heavy amount can undoubtedly deteriorate the quality of coal and at the same time form mud thus causing difficulties in working and so on. Over-dependence and usage of water sprinkles can also cause disturbances in water table as well (Nazar *et al.*, 2021).

The pollution caused by these fugitive dust not only limited to air, it also has a subsequent adverse impact on nearby water and inhabitants as well. The coal stacks remaining for a significantly longer period can naturally take along with it the tiny metal pieces and over a period of time if not cleared or looked after properly can cause damage to the eco-system. For example, as the decades long rain water creates a downward flow of these stacks, along with it these toxic materials move thereby mixing with the soil and other clean areas and making them hazardous for cultivation and human consumption (Fayiga *et al.*, 2018). Therefore, the various policy makers over a period of time are searching for effective and innovative practices to address these issues. Considering the protection of human civilization caused by natural degradation and deterioration due to rapid industrialization across the globe, the authorities not limited to any state or country for that reason are now making it a mandate to clear the debris and the subsequent pollution by using methods most suitable for this purpose (Hwang *et al.*, 2019). The present study aims at explaining the factors underlying these perennial problems, the pitfalls of current practices and the glimpses of innovative practices undertaken by innovative players in this area of industrial working environment. The issues addressed can be helpful in providing impetus to the companies, the solution providers and the community at large in their consideration of a green environment and management of the same.

1.1 Objectives

As it has been already mentioned there has been a gap between the existing methods for dust pollution control and the expected results, the current study focused on finding the answers to the following objectives.

- To thoroughly investigate the shortcomings of the current practices in different industries, specifically those where there are massive creation of unwanted dust and other related pollution factors.
- To find out the innovative practices either being currently under use or have got a potential to use which can provide some substantial outcomes in this regard.
- To create a suggestive framework for effective adoption and management of new idea(s) in regard to control the industrial eco-system at large.

To make inroads to these objectives, the earlier studies of relevance were taken into consideration as well as primary data were collected through interaction and observational processes. Thus, the study started with the review of past studies related to dust pollution control.

2. Literature Review

Industries are the contributors to the economic growth and development of any nation across the globe. However, the increase in pollution level in air, land, water etc. causing degradation of climate due to industrial processes cannot be ignored. The problems of working environment in industries due to pollution have been very old and always remain as new and undissolved as ever. Industrial pollution and subsequent impact on climate as well as lifestyle of inhabitants have been a major concern across the globe (Mondal and Singh, 2021). Specifically, the rise of urban areas due to rapid industrialization has fueled the unwarranted growth of pollution in the environment. This in turn affects the ecosystem polluting all the elements like air, water, soil and so on having creating hazards to the health of both human beings and other living animals. There have been numerous studies carried to understand the changes in pollution interacting with public health and environmental factors. All the factors of eco-system are correlated and the damage in one element for example, air cannot be exclusively managed with an assumption that it never has an impact on another element, say soil. Thus, these elements are in totality responsible for the configuration of an environment and pollution caused in one invariably leads to deterioration in others (Ajibade *et al.*, 2021).

Particulate matter, popularly abbreviated as PM, is taken as a measure of air pollutants for understanding the pollution level in air. Based on the diameter size of particles, PM can be range from one to ten, i.e., P_1 to P_{10}. In case of dust pollution contaminating air, this diameter size can be even less than one, i.e., can start from $P_{0.1}$ as well making it almost invisible and dangerous at the same time. Air Quality Index (AQI) as per the US standards is one of the most accepted indicators to understand the impact of air pollution on human health, e.g., at $PM_{2.5}$ levels

(Fig.1). As per the WHO standards, an exposure level less than 10 µg/ m^3 annually can be an indicator of safe and risk-free air (Fan *et al.*, 2018). Though this can work as a benchmark to be concerned about the air quality, the indicators even coming under good category can have an impact on heath of living beings if exposed to that pollution continuously. India is considered to be one of the worst air polluted countries in the world with PM_{10} and $PM_{2.5}$ increased by around 150% and 100% respectively in comparison to National Ambient Air Quality Standards (NAAQS) during 2015-2019. In addition to that the combined reports of the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs), the number of days when the PM_{10} concentration remains greater than 100µg/m^3 has also increased from 62% in 2015 to 74% in 2019 signaling a worst phenomenon of air pollution trend. Though this air pollution can have a significant composition of vehicular and other sources as well, the industrial dust mixing and making them more contaminated cannot be denied at all (Maturo and Moretti, 2018). The consequences of these consistently increasing pollution level can be easily witnessed in the rising trend of premature deaths with infected lungs, cardiac abnormalities, and prolonged illness and so on. In addition to these adverse impacts on human health, the increased air pollution typically in industrial belts and adjacent localities, have caused visible environmental deteriorations, e.g., it has resulted in contaminating water bodies, reducing the nutrients in soil, irregularities and non-uniformity in rain thereby seriously affecting crop yields to mention a few. On the climatic front, the increased level of air pollutants results in global warming, e.g., the combustion of particulates namely black carbon and sulphate increases and decreases the temperature the Earth respectively (Patella *et al.*, 2018).

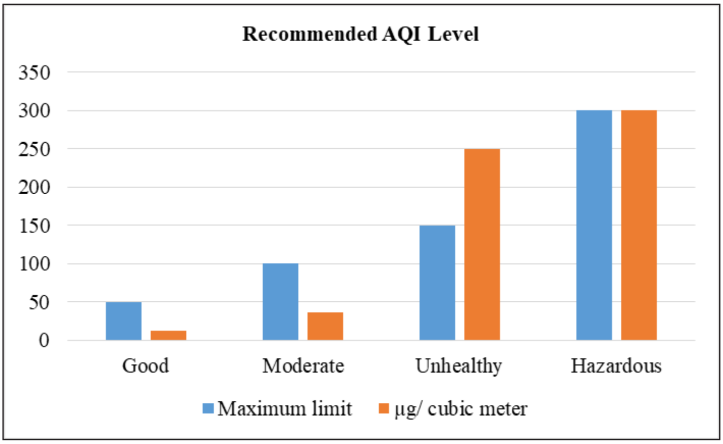

Figure 1 Recommended AQI Level
Source: compiled by the authors for this study

The negative impacts of air pollution are not only limited to this human health, climatic and environmental changes only. It also contributes to the commercial and economic degradation as well. The increased level of dust reduces the machine life in industries and becomes responsible for loss of land productivity and human efficiency. It also causes strain in monuments in the adjacent areas and damages them subsequently. Air pollution also adversely affects the economy of a country, e.g., every year India loses approximately 3% of its GDP in terms of cost incurred on the healthcare issues and all.

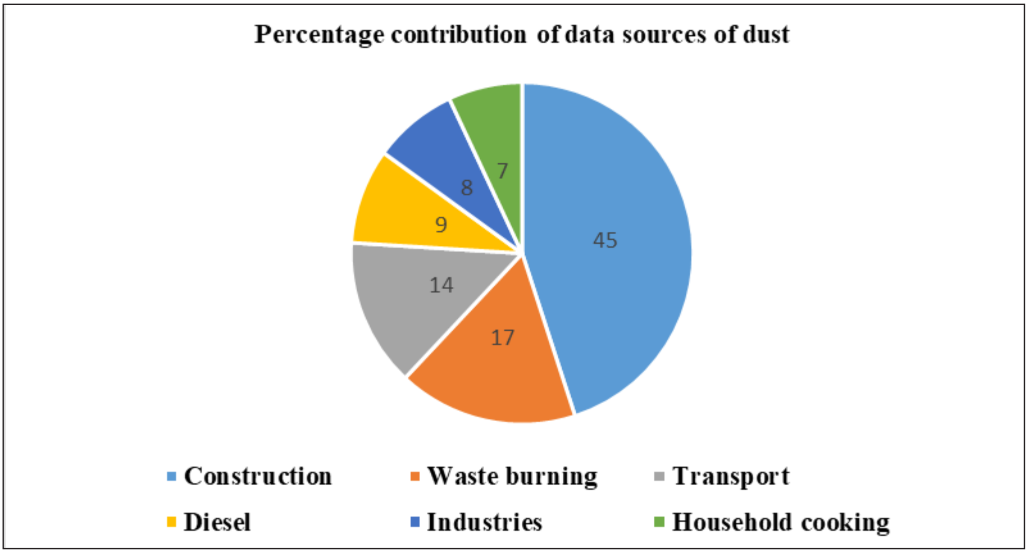

Figure 2 Percentage contribution of data sources of dust
Source: compiled by the authors for this study

Among the various sources of air pollution, dust due to construction and industries as sell as transportation plays a major role (more than 60% of pollution reasons) in India's air pollution (Fig. 2). In order to overcome the challenges posed by dust pollution, the policy makers over a period of time have started taking into consideration various ways of mitigating the same, e.g., by replenishing vegetation and afforestation, encouraging dust management practices at source itself, restoring water body and wetlands natively and setting up emission management practices etc.

Traditionally, mineral handlers have to adequately water the minerals and keep them covered with polythene sheets or sprinkling water on the stacks. But neither of these processes are up to the expectations because of the shortcomings in terms of commercial viability, natural factors as well as environmental impacts. In addition to that the loss due to spontaneous combustion is about 0.05% of a medium size coal user or handler with a monthly managing capacity around 5,000,000 MT. Thus, the policymakers as well as the stakeholders across the globe from time to time are looking searching innovative practices which can help them get rid of these problems, be it natural, economical, technical etc. and equip them with effective management of the same (Costa *et al.*, 2021).

2.1 Potential innovative practices and issues in management

Instead of traditional dust suppressing materials as well as methods to use, the industry stakeholders can plan and implement new materials and methods tested successful in fugitive dust pollution control. For example, conditioners which can be used in prevention of hardening the fly ash, caking or rock phosphates and coagulating coal resulting in easy handling of the materials. As such the conditioners can disrupt the capillary bridging occurred because of rise in surface moisture. The result is in terms of treated materials flowing free thus reducing or eliminating various material handling problems like, plugging, clumping as well as bridging. In case of inhibiting self-combustion, which is caused because of inherent properties of coals (mostly Sub-Bituminous) like porosity, moisture, friability etc. body feeding self-combustion inhibitors can significantly inhibit the oxidation process and thereby prevent self-combustion (Yen *et al.*, 2021).

In the pursuance of protecting soil erosion (resulting because of traditional processes of controlling dust pollution), the use of emerging hydraulic technology can be handy. In the adjacent areas of industrial zones, due to consistent dust pollution, the damaged green environment can be recovered with the use of another state-of-the art technology containing HECP (Hydraulic Erosion Control Product). HECPs are nothing but organic fiber matrix mulches applied with organic binders to support the establishment and growth of vegetation. Another emerging process is that of phytoremediation helping in soil amendment. In this process, VGHR (Vetiver Grass Hedge Row) which is a bio-engineering technique covers a number of environment protection initiatives like land reclamation, soil erosion, sediment control, strengthening embankment etc. (Oshunsanya *et al.*, 2021)

The policymakers and stakeholders of various industries have started realizing the importance of adopting and managing the emerging initiatives towards creating a cleaner and greener environment damaged because of polluted air and other supplementary factors. There are numerous reasons which need to be understood and analyzed before adopting and subsequently creating a framework for managing the same. The 3R policy of reduction, recycling and reutilization can be thoroughly practiced for a better management of resources in the direction of pollution control (Hotta *et al.*, 2021). The implementation of any technology or initiative in this direction can be an expensive process, but a sincere attempt in mitigating the pollution factors even at an initial cost can resolve the future challenges of industries facing problems of environmental degradation in the long run and requiring uncontrollable budget for controlling the same. An early adopter to these new technologies can have competitive advantage in terms of setting benchmarks and can use them as a differentiation tool from the peers. It in other terms can help the concerned industries or companies to formulate innovative marketing practices, constantly helping the stakeholders in searching relevant resources and upgrading them. With a cleaner practice adopted by any company can support its cause of positioning itself as a sensible enterprise and can make itself accepted by global players as an eco-conscious player (Singh *et al.*, 2019). This in turn will enhance the brand image and automatically place it in the preference list of consumers. From the economic front also, the adoption and proper management of emerging technologies in creating a pollution free environment minimizes the cost of production (by proper control of wastages of coal etc.), increases the efficiency of workers (due to a safe and cleaner working environment) and profitability of products because of qualitatively superior outputs (Domirel and Kesidou, 2019). The land reclamation as well as vegetation processes resulting due to new technologies like VGHR also contribute to the generation of employment, new business avenues etc. for the people residing nearby areas. Therefore, the companies can also take strategic steps to make community developments in their efforts to manage the processes successfully.

H_1: There is a relationship between management parameters and innovative practices to control fugitive coal dust pollution

3. Methods

Keeping in mind the factors necessitating the use of cutting-edge technologies in preventing the air pollution by fugitive coal dust, the process of finding the relevant data was initiated. To make an understanding about the management of innovative practices for the said purpose, the primary study was collected from different industries susceptible to continuous dust creation in large quantities. For example, in this case five coal mines in Odisha, an eastern coastal state in India were taken into consideration for collection of data related to their perception on the requirement and management of initiatives in this direction.

4. Data Collection

With the use of convenient sampling a total of 560 personnel in these mines were administered a structured questionnaire containing the determinants of managing new technologies in mitigating the air pollution due to fugitive dust at various places in those chosen areas. The respondent profile was compiled based on the answers to the questions. With the help of a three-point Likert scale (1 = least required to 3 = most required), the data were collected and further analyzed with other statistical tools. The questions used for the interview purpose were typically aimed at the employees of various hierarchy the details of whom were about their engagement in the coal extraction site, material handling process, transportation areas, public relation department, loading and unloading sites and maintenance section.

5. Results and Discussion

5.1 Numerical Results

Most of the respondents belonged to the personnel at the extraction site followed by loading and unloading sites. The people who used to get affected by the pollution were from the material handling sites and other sources of dust creation as well (Table 1).

Table 1: Profile of respondents exposed to air pollution

Details of respondents' engagement at working place	Frequency	Percentage
Source		
At the extraction site	169	30.2
Material handling site	120	21.4
Transportation	69	12.3
Public outreach	45	8.0
Loading and unloading	81	14.5
Maintenance	76	13.6
Total	560	100.0
Years of Working		
Less than 10 years	153	27.3
10 to 15 years	326	58.2
More than 15 years	81	14.5
Total	560	100.0
Severity of illness caused due to pollution		
Less	176	31.4
Mild	181	32.3
Severe	203	36.3
Total	560	100.0

Source: compiled from collected data

It is also observed that the employees are engaged for a substantial period of time and exposed to the pollution caused due to dust and all. The major challenge is in terms of the illness caused due to fugitive dust and as can be seen the severe patients are a bulk of the respondents and these are the kind of people who require regular checkup and consulting with the medical practitioners. Opinion (from the respondents) about the adequacy of current practices along with the incorporation of new methods for the management of seriousness caused by the dust was collected. The respondents were found to be unsure about the effectiveness of the current practices as most of them agreed upon the practices to be inadequate in settling the dust and controlling the pollution.

Table 2: Current practices and innovative techniques

Dust control practices	Frequency	Percentage
Whether the current practices of dust pollution control are adequate		
Yes	500	89.2
No	60	10.8
Total	560	100.0
Whether the company should strategically incorporate new ideas of dust control: Yes	418	74.6
No	142	25.4
Total	560	100.0

Source: compiled from collected data

The respondents saying the existing practices to be adequate were those who were not that regularly exposed to the dust as observed from the interactions. The respondents also opined that the company must think of strategically adopting new and more effective ways of handling the fugitive dust for having substantial control over pollution and all. However, the lack of awareness about the innovative processes about the dust pollution had made almost 25 percent respondents to opine against the incorporation of the new techniques.

5.2 Graphical Results

When asked about the potential benefits the industries are looking forward

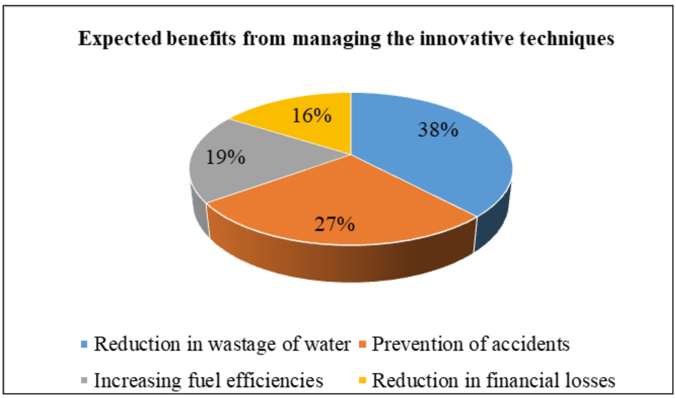

Figure 3 Expected benefits from managing the innovative techniques
Source: compiled from collected data

to while adopting and managing an innovative practice, the responses were recorded on different parameters like reduction in wastage of water, declining possibilities of accidents, increasing the fuel efficiencies as well as reduction in financial losses (Fig. 3).

Most of the respondents were considering the wastage of water in the traditional methods of dust control and the expectation from the innovative technique should be the prevention of wastage of water while suppression of dust etc. Due to the very nature of self-combustion etc. of coal, the industrial personnel are always having a fear of meeting accidents due to explosions in the stacks. The innovative method should have the provision of preventing the accidents. The financial losses to the companies were in terms of losses at transit, degraded quality of coal and so on. The new methods should be reducing the losses at the same time it should increase the fuel efficiency of coal.

5.3 Proposed Improvements

As can be observed from the findings, the personnel working at the extraction site, material handling site as well as at the points of loading and unloading are mostly exposed to severe dust pollution. Thus, it is highly recommended to have the innovative practices of dust control which should be more frequently applied to these industrial sites and can be assessed from time to time about the effectiveness of the same. It is a matter of concern to find out the kind of illness the people at the industrial sites are going through which becomes very severe. There needs to be proper medical attentions to annihilate the criticalness of these situations so as to create a healthy working environment. The environmental pollution control boards need to step in for effective implementation of tested methods and techniques to control dusts at the industrial sites. Various companies in this regard have come up with their innovative and unique approach of controlling the fugitive dust. One such is GreenTec 360 Program by Surface Solutions, an Indian startup which takes care of these problems by covering all possible protections like mineral dust pollution control, soil erosion control and vegetation by HECP system. The SSDUSTKILL Program of theirs adopts encrusting agents, residual agents, wetting agents, foaming solutions, conditioners and self-combustion inhibitors which have been tested and resulted in various industries producing better and more sustainable results than the traditional method. It also has a serious consideration of soil erosion control and revegetation on degraded lands thereby encouraging the local community to get benefits of the process. Thus, the stakeholders including the public at large should participate and actively support in the companies' initiatives in regard to get rid of this hazardous situation.

5.4 Validation

With all factors responsible for management of innovative and state-of-the art technologies in controlling the dust and subsequent benefits to the industries, the relationships between them were validated through Chi-square analysis (Table 3).

Table 3: Relationship between areas of management and innovative practices for fugitive dust control

Areas of management	Chi-square (Calculated)	df (Degrees of freedom)	*p* (Confidence level)	Chi-square (Tabulated)	Remarks
3R policy need to be confirmed	11.65	2	0.05	5.99	Significant
Competitive adoption and utilization cost	4.32				Insignificant
Increasing the efficiency of workforce	-3.89				Insignificant
Enhancing the company image	3.89				Insignificant
Ensuring output quality in tact	10.21				Significant
Encouraging healthy lifestyle of nearby community	12.31				Significant

Source: analyzed from collected data

It is observed that out of six areas of management, three, i.e., 3R policy need to be adopted, ensuring output quality intact and encouraging healthy lifestyle of nearby community were found to have significant relationships with the innovative techniques of fugitive dust control where calculated Chi-square value was found to be greater than tabulated Chi-square value with p at 0.05 (Akoglu, 2018). Therefore, H_1 can be accepted.

6. Conclusion

Pollution caused by the fugitive coal dusts is not limited to the industrial working area only. Rather it spreads and contaminates the environment with maximum impact on the residents nearby. The companies in coal sector along with other industrial zones like ports, mineral industries like iron ore and other minerals, railways and transporters etc. are susceptible to high volume of air pollution. At the same time, eco-system at large includes highways, forests, water resources, infrastructure projects etc. is some way or the other is affected by air pollution and requires control in the form of hillside erosion control, reclaiming barren lands, re-vegetation post forest fires, embankment erosion control, binding and strengthening of river streams, canals and lakes and so on. An effective and long-term solution in the direction of air pollution control can be effective while making other mechanisms of controlling the pollution and hazards of ecosystem. This study in its core provides insights to the factors and processes required to manage the initiatives towards a greener and cleaner environment. However, future studies should focus on understanding the minute gaps in the both technological and non-technological aspects of traditional processes while safeguarding the industry interests. Though the practices towards sustainability of environmental initiatives vis-à-vis industrial working arena are still at the nascent phase, the studies in the right direction can help the policymakers to come up with cutting edge technologies to address the issues properly and creating a better environment for the generations to come. The entire world including India looks forward to cleaner processes to be managed productively in industrial areas to create a feel-good factor among all its stakeholders.

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Digital Intervention in Marketing Horn-Works of Gajapati District of Odisha: An Attempt to Fight the Effect of COVID-19 Pandemic out

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Abstract

Pandemic owing to COVID-19 has its unbearable impact on every sector including Micro, Small and Medium Enterprises (MSMEs), particularly the cottage industry, of Odisha state in India. Gajapati district of Odisha is known for its cottage industry in horn-work. In initial phases of lock-down, all the establishments including cottage industries were not allowed to be operational. Thus, both supply side and demand side of horn works were in halt. However, as the economic activities got permission to resume, supply side of horn-works industry has started taking momentum but the demand side has been failing to cope. Thus, the purpose of this paper is to unfold the extent of sufferings of the proprietors and workers of horn-work industry during the pandemic, and brings forth comprehensive suggestions in the form of digital innovation for the revival of the industry on the basis of in-depth interviews and FGDs.

Keywords: Digital Innovation, Covid-19, MSMEs, Horn-work, Gajapati District, Bottleneck, Demand-side Supply-side.

Introduction

To meet the basic necessities of life everybody needs to work legally in the society freely without any restriction. This is the normal process of economic growth and almost all the parts of the world follows this to maintain a decent standard of living. The recent pandemic COVID-19 disrupted this normal process by halting every process of economic growth due to shut-down and lock down. All the productive process, business activity etc. halted with a fear of death infected by the invisible enemy corona virus. Even this fear continues while adopting relaxation in the shutdown and lock down to adjust the battle of life and livelihood. Further human psychology is not able to leave the fear of death as long as the vaccine and medicine developed to end the invisible enemy corona virus. So most of the people are reluctant to visit the market site after unlock-1 in India. So this affects the producer and seller a lot when demand declined due to the unavailability of consumer. This is the general economic scenario of all over the world and also India. Then how the Gajapati district of Odisha will be left behind from this situation.

Gajapati district is a tribal based district of Odisha state. Nearly 55% of people are tribal in this district.. In the year 1992 Gajapati district got its district status and it is named after[20] Maharaja Sri Krushna Chandra Gajapati Narayan Deo. It has 7 Tehsils, 7 Blocks, 1616 villages, [20] 129 Gram Panchayats, and 10 police stations. With an area of 3850 sq. km it has 5,77,817 Population as per census 2011[20]. [20]Out of which 39,175 SC population and 3,13,714 ST population. The economy of this district is agrarian in nature. However there are some cottage industries like Horn work, Ganjappa, Pattachitra mukha, bamboo work, jaikhadi bag, cane work, siali leaf plate etc are available. Among all these MSMEs its horn work is the most unique one in all over the odisha. Basically the selling point of horn product is at Paralakhemundi M C of Gajapati district. Being a border district to Andhra Pradesh , having so many tourist place and center of the district administration in the Paralakhemundi area regularly many people are coming to this place. This leads to the selling of horn product. But recent pandemic COVID-19 disrupted the coming of people to purchase the product at the time of lock down and also after the lock down period. This brings miserable condition of the horn industrialist in Gajapati district.

Gajapati district of Odisha, India is known for its cottage industry in horn-works, besides being a tribal dominated agrarian district. People having horn-works cottage industry use the horn of cattle to make essential daily-use articles like combs, flower vases, pen-stands, etc. and sell their products mostly at Paralakhemundi, one of the tourists' places of Odisha. However, the cottage industry is no more progressive as usual owing to prolonged lock-down for COVID-19 pandemic. In initial phases of lock-down, all the establishments including cottage industries were not allowed to be operational. Thus, both supply side and demand side of horn works were halted. As lock-down gets slackened, the cottage industries got the permission to resume their operation with social distancing and required level of hygiene. However, as the spread of COVID-19 positive cases is higher in the state as compared to the earlier phases, in spite of unlocking the market, people are not daring to take risk. Although supply side of horn-works industry has started taking momentum, demand side is not matching. In fact, people are not going out for purchasing non-essential commodities for the fear of COVID-19. Thus, the proprietors are not getting their cost involved. Consequently, workers engaged in such works are not getting their remuneration. Both the proprietors and workers are hardest hit for COVID-19. The objective of this paper are to unfold the extent of sufferings of the proprietors and workers of horn-work industry during COVID-19 pandemic, and brings forth comprehensive suggestions for the revival of the industry. For revealing the sufferings, in-depth interviews are conducted among 20 proprietors and 50 workers of horn-work industry. For suggestions to revive the industry, experts' opinion from 10 experts like veteran proprietors, researchers and NGOs working for welfare of the workers have been considered. Selection of sample units is done on the basis of convenient and judgemental sampling.

Review of Literature

Micro, small and medium enterprises help the economic development of the country in various ways like creating employment opportunity, supplying goods and services at a very reasonable price, etc. So Government of India has taken so many steps for the revival of this industry. The study shows that Micro, Small and Medium Enterprises (MSMEs) contribute near about 40% of the total export, 45% of the total industrial output, 45% industrial unit, 42 million employment and near about 8000 product to the Indian economy [1]. MSMEs are an important component for the economic growth of the country. It is the sector which creates more employment opportunity by utilizing very low capital. It helps in removing regional inequality in the country. It is one of the sector where people can become self-sufficient [2].

MSME helps the economy by growing at a rapid rate from 7.8 to 13 percentages from the year 1998 to 2008. Here analysis shows that there is appositive relationship between investment and employment in this industry. The study finds that the growth become rapid by bringing all the SSIs under one umbrella [3]. MSMEs in India lack export competitiveness as they are not updated with the advanced technology. If emphasis will be given for developing advance technology, human resource development in this sector, more research then this sector can able to increase its competitiveness. The analysis has taken coir industry as a case study basis and found that though export has increased the earning from the export has declined. The study found that very few updated with the advanced technology [4].

Though MSME plays a greater role in the economic development of the country it is not uniformly distributed all over the India due to unavailability of raw materials, lack of financial assistance, lack of skill etc. It shows that it is the only industry by which regional imbalance can be solved and it can make the people self sufficient [5]. MSME helps the country by providing balance and inclusive growth. It is the platform where structural change could take place more rapidly according to the necessity of the consumer. However, this industry is faced with so many problem like unavailability of information, lack of advanced technology, etc. [6].

MSMEs establishes base for the development of the Industry in the rural area and reduces inequality. Government of India is taking so many steps for the development of it [7]. For economic growth and development MSMEs plays an important role by creating more employment opportunities. This sector helps in the nation building by reducing regional inequality, improving the backward region etc. It is considered as a hope for the future economy. So different strategy like easy credit facility, subsidy, infrastructure programs are needed [8].

Since independence small industry contributed a lot in terms of output, export and employment. Due to globalization and liberalization the contribution of the small industry declined. It happens because of the lack of credit inflow, reliable infrastructure, technological obsolesce, etc. But the globalization brings new hope in the small industry by opening new opportunity and market [9]. A study evaluates how far the GDP forecast in India made by RBI, NCAER, IMF and ADB is accurate. The study finds that the forecast about GDP made by RBI is favourable as compared to NCAER, IMF and ADB. Further the paper shows that as the forecast of RMSEs are not much different from their naïve techniques, the gains of forecast performance seems to be modest. The error in forecast occurs generally for two reasons- exogenous factors and construction of appropriate confidence interval overtime [10].

The impact of COVID-19 on Indian economy has been assessed on the aspects of it growth, manufacturing, MSME and trade. The study predicts a 0.4 percent growth for the year 2020. The severely affected sectors are MSME, trade and manufacturing, hotel and transport [11]. It is found that in Indonesia the factors which influence SME's export performance are duration for the export document process is long, unofficial fee, barriers in export administrative procedure, incapable to supply product in time, time limitation in cargo etc. Further, it shows that factors for export barriers arises because of human knowledge, government authorities and agencies. This barrier can be overcome by equipping SME's management through training and information [12].

It is argued that in emerging markets banks should take initiative for stepping up MSMEs. It is because 60% of the global banking revenue are lying in the emerging markets, banks in this area finding ways how to remove barriers for serving MSMEs and now technological innovations, risk assessment and business models are facilitating this [13]. Folks and crafts are the main things of Odisha. Globalization integrates the east-west by creating global village. But craft industry face so many problem like mass production, unable to compete, etc. So Government has taken so many steps for reviving the folk industry in Odisha [14]. In India MSMEs are unable to compete with their counterpart after the Globalization. It happens because of lack of updated technology and other reasons. So it needs urgent action. This is studied by taking the case of Coir Industry. The study shows that export did not increase since the last five years. So its competitiveness can be increased by providing new technology, more investment in human resources etc[15].

Type of Industries

To know the different types of micro, small and medium enterprise in Gajapati district we have to divide it into two categories as traditional industry and modern industry

Traditional Industries in Gajapati District [16]

Following are different types of MSMEs are available in the Gajapati district before the development of the modern industry.

(i) Rice preparation: - In Gajapati district Previously rice was prepared from paddy in three ways – (a) Dhenki or Dhinki- made in wood, to support the weight fulcrum is there, it is generally used by the women through their leg to remove the husk from the grain to produce rice. (b) Pohurani- it is made in wood. Used by the women through their hand to remove the husk from the paddy to produce rice. (c) similarly at some place hand stone grinders are used in flour to produce rice from the paddy by removing the husk.[16]

(ii) Pots and jugs: - It is one of the traditional crafts where around sixty workers in various parts of the district are engaged. These are prepared by some potters of the village Bagusala and Badaneelabadi of Gosani Block, Paralakhemundi M C and Rayagada and Narayan village of Rayagada Block. The raw materials are available with in the district and also the products are marketed with in the district. Due to the lack of profit they are diverting their production to modernized terracotta products.[16]

(iii) Oil: - It was prepared from the oil seeds through Oil Ghani by the village telies.[16]

(iv) Bamboo Products: - Most of the artisans of the Bamboo are living in Khanja Medari Street and Seri Street in Paralakhemundi and in different villages like Madhusudanpur of Gosani Block, Jeerango and Hatibadi of Rayagada Block, Naktipada and Badapada of Nuagada Block, Lubursing and Tabarsing village of R Udayagiri Block and Chandragiri and Damadua village of Mohana Block. Their main problem is unavailability of raw bamboo. They are not organized. Different items like changudi, dooli, luduru, kula, jhudies etc were prepared by them using Bamboo. [16]

(v) Cotton cloth: - Cotton cloth was prepared using Tanta (Handloom) by the Dora and Pana People. Small size towel were prepared by the Kandha people. Similarly windows, doors are prepared. [16]

(vi) Metal Utensils: - Brass and bell metal utensils were prepared by the Khadara people.[16]

(vii) Gold and Silver ornaments: - Ornaments were prepared by using gold and silver by the Bania and Sunaries. [16]

(viii) Cottage industry:- some cottage industries like Horn work, Ganjappa, Pattachitra mukha, bamboo work, jaikhadi bag, cane work, siali leaf plate etc. are available. [16]

Modern Industry [16]

Even though some of the traditional industries continue, the products of it are refined. The industries which are found in Gajapati district in the modern era are horn industry, cane industry, terracotta, silver products, brass and bell metal, embroidery, clay models and pattachitra, dhokra castings, and black smithy,

Efforts by Government to preserve the Industries

Government has been putting concerted efforts at different levels starting from district level to state level and then to nation level.

A. **Governmental Steps at the District Level**

Table-1. Governmental Steps at the District Level

Sl. No.	Scheme	Year	Type of industry supported	About the scheme	Process of receiving Monetary benefits
01	District Industries Center (DIC)	04-01-2020	MSMEs, Handicraft and Cottage industries, Ancillary and Down Stream Industries	The main task of the DIC is to identify the economically feasible technology and potential entrepreneurs for the development of the MSMEs.	After identifying its target is to prepare and also recommend to different institutions for taking necessary steps for promoting this industry.
02	Prime minister employment generation programme (pmegp)	2008-09	Khadi and Village Industries	for creating employment opportunties by establishing Micro enterprise	Here the application is received from the candidates and they are selected under the chairmanship of the district collector for the sanctioned project. For timely completion of the project every type of assistance is provided.

03	Odisha Food Processing Policy'2013	15.03.2013	Mega Food Park	increase the supply chain from farm to market, creating employment opportunity etc.	As admissible
04	**Odisha msme development policy'2009**	2009	**MSME**	**Addressing the issues like infrastructure, raw material, export promotion, marketing, technology upgradation, credit, rehabilitation and revival of sick units, etc.**	As admissible
05	Industrial policy resolution-2015	24.08.2015	Industry	with objective of industrial promotion by providing institutional support, infrastructure support and production incentives	As admissible
06	Micro Small Medium Enterprise Act 2006	2006	Micro Small Medium Enterprise	for enhancing the development of these enterprise by increasing their competitiveness	On the basis of the type of industry

Source: https://gajapati.nic.in/district-industries-centre

The Gajapati district industries center, District Industries Center (DIC) rendered its service in the District since 04.01.2020 with the objectives for promoting MSMEs, Handicraft and Cottage industries, Ancillary and Down Stream Industries and also for implementing the Government policies meant for these industries. So the main task of the DIC is to identify the economically feasible technology and potential entrepreneurs for the development of the MSMEs. After identifying its target is to prepare and also recommend to different institutions for taking necessary steps for promoting this industry. PRIME MINISTER EMPLOYMENT GENERATION PROGRAMME (PMEGP) programme is introduced by merging two schemes named Prime Minister Rojgar Yojana and Rural Employment Generation Programme for creating employment opportunies by establishing Micro enterprise. This is implemented by the Khadi and Village Industries Commission at the national level. At the state level, the scheme is being implemented through state KVIC Directors, State Khadi&

Village Industries Board (KVIB) & DIC & Banks. This centrally sponsored scheme implemented in the district since 2008-09 by the DIC, Gajapati Here the application is received from the candidates and they are selected under the chairmanship of the district collector for the sanctioned project. For timely completion of the project every type of assistance is provided. Odisha Food Processing Policy'2013 is for increasing the income of the farmer by adding value and reducing waste in the district Odisha Food Processing Policy 2013 implemented in the district on 15.03.2013 in conjuction with Industrial policy resolution 2007 and Micro Small Medium Enterprise Development Policy 2009. Here priority is given for the Mega Food Park, increase the supply chain from farm to market, creating employment opportunity etc. **ODISHA MSME DEVELOPMENT POLICY'2009 focuses on growth of MSME sector addressing the issues like infrastructure, raw material, export promotion, marketing, technology upgradation, credit, rehabilitation and revival of sick units, etc.** INDUSTRIAL POLICY RESOLUTION-2015 is implemented in the district on 24.08.2015 with objective of industrial promotion by providing institutional support, infrastructure support and production incentives. Micro Small Medium Enterprise Act 2006 implemented for enhancing the development of these enterprise by increasing their competitiveness. It clearly defined the Micro, Small and Medium enterprise in both manufacturing and service sector. It facilitate for the establishment of specific funds, development of competitiveness, progressive credit policies, effective mechanism for the solving the problem of delayed payment etc.

Besides the above policies, Different Cooperative Societies and rehabilitation centers are functioning in the district for the development of the MSMEs.-

(i) **Paralakhemundi Biswakarma Cooperative Society Ltd., Paralakhemundi**.

This society is established as Paralakhemundi Biswakarma (Horn) Cooperative Society Ltd., Paralakhemundi, by taking of 53 members, which controls the 20 daily horn workers.

(ii) Tibetan handicrafts Cooperative Society Ltd. Situated at Chandragiri by taking 153 members of Woolen Carpets producer.

(iii) Simhagiri Mahendra Bamboo Workers Indl. Cooperative Society Ltd, situated at Kanja Madari Street Paralakhemundi by taking 56 members those are producing bamboo products like basket, kula, jhudi etc.

(iv) Palm Gur Indl.Cooperative Societies established for the promotion of the Palm Gur Artisans.

Despite the above cooperative societies there other societies like Gopabandhu Talaguda ICS, Bardango Talaguda ICS, Manikeswari Talaguda ICS, MallikeswarTalaguda ICS, Nuagada Talaguda ICS, AttarsingTalaguda ICS, AmedaTalaguda ICS, RamagiriTalaguda ICS and BhaliasahiTalaguda ICS are available in the district.

Rehabilitation of Handicrafts Artisans (RHA):-

(i) DIC, Gajapati district provides maximum amount of Rs 50000/- with subsidy of 20% for to an individual artisan for establishing handicraft.

(ii) DIC, Gajapati imparts training craft artisans by taking a group of 30 artisans.

(iii) Financial assistance of Rs 70,000/- is provided for constructing the house to an artisan who have kacha house.

(iv) Solar Lantern are freely distributed to the artisans in the Gajapati district.

(v) Insurance benefit is given to the artisans under Aam Admi Bima Yojana.

(vi) Finacial assistance in between Rs 3.00 lakh to Rs 50.00 lakhs is given to the individual artisans for modernizing and upgrading the technology.

B. **Governmental Steps at the State level**

Different Acts made by the Government of Odisha for the development of the MSMEs are;

(i) THE STATE FINANCIAL CORPORATIONS ACT, 1951

(ii) The MSME Development Act 2006

(iii) Khadi Village Industries Commission Act, 2008

(iv) The Odisha Industries (Facilitation) Act , 2004

Different Policies made by the Government of Odisha for the development of the MSMEs are;

(i) Amendment to Odisha MSME Development Policy 2016

(ii) Odisha MSME Development Policy 2016

(iii) Amendments to OFPP 2016

(iv) Odisha Food Processing Policy 2016

(v) Odisha Startup Policy 2016

Different Schemes made by the Government of Odisha for the development of the MSMEs are;

(i) NMCP Scheme

(ii) MSE-CDP

(iii) CLCSS for technology upgradation

(iv) Credit Guarantee Scheme

(v) ISO 9000/ISO 14001 Certification Reimbursement Scheme

COVID effect on these Industries.

COVID-19 pandemic has toll on horn-work industry of Gajapati district of Odisha heavily. It has impacted three important stakeholders of the industry, i.e., producers, Sellers and Workers very badly.

A. **Effect on Producers**

In the Gajapati district, generally producers are registered under the Government of Odisha, who imports raw horns only from Hyderabad. This work is going on since long time. Government has taken the responsibility to develop horn industry since 1948 in Paralakhemundi. As per the statement of the sample producers, raw horns are imported from the Hyderabad. Then these raw horns are supplied to the craftsmen for preparing the final horn product. There are 12 karigars are working in this industry in Paralakhemundi area. During the lock down period producers are not given any financial support from anybody else. During this period they maintain their family with their saving income. During lock down period it is not possible to continue production due to lack of raw materials even if workers are ready to wok. As per the version of the sample producers, previously the product was imported to outside India besides different parts of India. Now the product is sold only in Paralakhemundi and Cuttack area. The people of Cuttack learnt this from the craftsmen of Paralakhemundi so many years back. Even if this is produced from the horn of the death animal, many social activists are claiming that this is produced by killing the animals. So it is not possible to sell even in other parts of India. Now they were selling it in different parts of Odisha only during different occasions. They replied in a very disappoint manner that there is no marketing strategy for this product. During the lock down period producers neither receives any subsidy nor learnt any innovative way of producing the product. As most of the producers are become old, there is no scope to work in any other sector for him. Most of the sample producer denied for continuing this business by any of their family member. So, financial and technical assistance are necessary for continuing this business. They expect this industry will collapse with in a very short period of time after the death of all the Old mechanics. Most of them are above 50 years old. No young people are taking interest in this business. They expect if Government will take some proactive steps then this industry will be saved. They did not pay wage to the workers during the lock down period as they faced difficulty in managing their family.

B. Effect on Sellers

Of the total selling point 33% run by the Government and 67% run by the private people. Because of the lock down, shops are closed. The earning of the horn work sellers reduced to zero after the outbreak of the COVID-19 which was on an average Rs. 4000/ to Rs. 5000/- per month prior to this. Even after unlock-1, very rarely customers are coming to the market. Generally, people those are coming from other place of Paralakhemundi, they are purchasing this product. In addition to that, these products are sold at different occasions like Gajapati Mahotsaba, Palishri Mela, Ratha Yatra etc. In other parts of odisha on the similar type of occasion these products were sold. Because of Pandemic COVID-19, these occasions are stopped. Similarly very few people are coming to their job place to Paralakhemundi in fear of the pandemic disease.. Even if people are coming, they fear to visit market. There is no scope to sold outside the country or outside the state on legality point of view. Now there is no market strategy available with us. Silmilarly, Government is not encouraging to sell it on-line so that it will be available all over the world. During the lock down period Sellers did not get any scope to sell it in a different way. Still the business continues as there is no other occupation available with the existing sellers. As per their statement, they will not encourage their next generation to continue this business. During the lock down period they maintain their family with the existing income. Now it becomes difficult as selling of the product is not possible without customer. Urgently they need some financial assistance from the Government to continue this business. According to them if Government will export it to different parts of the world then they will get benefit.

C. Effect on Workers

There are 12 workers working in the said unit. on an average 4 people are depending on each worker's income. They were receiving wage on the basis of the product they supplied. The mechanic will make product and some of the family member will engage in polishing the product. During the lock down period they engaged in their work till the availability of the raw materials. Now even after the unlock-1 they are unable to produce anything because of unavailability of raw materials. Generally raw horns are coming from Hyderabad. And it is not possible to import. Because of the pandemic COVID-19 they did not get any wage from their producer. So all of them informed to the ministry of Odisha for any financial assistance. But till now they did not get any type assistance. During this lock down period they did not get any innovative way to produce it differently. They will continue this work as they did not have any option. They are not interested to engage their next generation in this industry. if Government take some step to provide us better wage, technical expertise etc then we will engage our family member. Some family member's children now opt to work in different occupation. As it does not provide us a better standard of living we wish my family need to engage in other sector of the economy. Right now we are not getting any type of assistance from anybody else.

Objective, Hypothesis and Methodology

The objectives of the paper are;

(i) To explore the availability of different types of Micro, small and Medium enterprises in Gajapati district of Odisha with focus on horn industry.

(ii) To examine how COVID-19 affects the horn industry of Gajapati district.

(iii) To make a way out through digital intervention for the revival of horn industry in the Gajapati district.

Hypotheses:

On the basis of the theoretical background, following hypotheses have been set.

(i) Gajapati district of Odisha is the home for different types of Micro, small and Medium enterprises.

(ii) MSMEs, particularly the horn industry, in Gajapati district has been affected badly for COVID-19.

(iii) Digital Intervention has the potential to revive the horn industry in the Gajapati district of Odisha

Methodology:

To address the above objectives following methodologies are adopted.

i. To explore the availability of different types of Micro, small and Medium enterprise in Gajapati district of Odisha with focus on horn industry, both primary and secondary data are collected. The information regarding different types of MSMEs available in Gajapati district are collected from the secondary source. To substantiate this, data are collected from experienced expert through an unstructured questionnaire. Accordingly, we can conclude the availability of different types of MSMEs in Gajapati district. Further, more details like type of industry, origin of it, number of dependent on these industry, any assistance received from the Government etc. are collected from the secondary source and this is added by the primary data collected from different 100 proprietors/industrialists (Questionnaire is given in Appendix) of horn-work industry of Gajapati district, Odisha.

ii. How COVID-19 affects the horn industry of Gajapati district is examined on the basis of case study. A structured questionnaire is prepared according to the objectivity of the study. Primary data is collected on snow ball sampling basis from the three horn industrialists, and thirty workers and sellers of Gajapati district. Snow ball sampling technique is used to trace the sample for the study purpose. Accordingly we can conclude how this affects the horn industry of Gajapati district.

iii. To make a way out in the digital intervention for the revival of horn industry in the Gajapati district suggestions are given on the basis of the primary data collected from the targeted industrialists of Gajapati district. Further, suggestions are collated from the experts for the revival of the horn industry in Gajapati district.

RESULT AND ANALYSIS

Analysis and result have been presented objective-wise.

A. **Different types of Micro, small and Medium enterprises in Gajapati district of Odisha.**

Following are different types of Micro, small and Medium enterprises in Gajapati district of Odisha.

Horn Industry

It is expected that the horn-work exists in Paralakhemundi since 1914. Previously some tribal of the Paralakhemundi Zamindaris were preparing the horn products . On the encouragement of the K V APPARAO here people learnt the technique of preparing horn work from the mechanics of Madras and Vijayanagaram. On the basis of the local view because of the patronage of Mr. K Appa Rao Chetti horn work developed in Paralakhemundi in the early part of the 20^{th} century. At the initial stage he financed Rs 1500/- for this. During that period they were purchasing the raw horns at Rs. 4 to Rs 8 per kg from the local Muhammadans. During that period product were exported to Coimbatore, Tanjanore, Trichinopoly, Madura and Madras. In the mean time the horn work of Paralakhemundi got a special status amongst the work of Calcutta, Punjab, Trivandrum, and Kakinada. After 19^{th} century some skilled craftmens of badhei caste from the village Pitala (Aska, now under Ganjam district) are appointed by the ruler of the Paralakhemundi Maharaja Krushna Chandra Gajapati. Craft mens who are engaged in this work are known as Maharana. It is one of the popular cottage industries in the district. It provides livelihood to near about 100 craftsmen family as per the District Industrial Center, Gajapati. Previously ivory was used as a medium of art. But due to the decline of elephant horn was used in place of ivory for art work. In the Paralakhemundi M C of the Gajapati district palace street is famous for the horn work. These products were exported to USA, European countries at the early times of 1950s.

Raw horns are generally imported from Hyderabad, Velur and Vizag of Andhra Pradesh. Raw horns are generally used to design different images like crocodile, peacock, steamer, prawn, monkey, flower tree, cow, calf, scorpions, lobsters, duck, deer , pen stand, statue, tiger, dancing girl, Walking Stick, snake, horse, fighting bulls etc. The horns of the death animal like cowshed, dear and other forest animal are used. In the meantime due to lack supply of raw horn in some part of the product plastic is used. The instruments used in the production process are- driller to hole the horn, press machine to cut the horn, pull machine, hammer, hand saw, clamps, etc. The production process goes in three stage-(i) in the first stage raw horn is designed according to the necessity of the product (ii) in the second stage polishing of the product (iii) in the third stage further polishing is made for glazing purpose. After collecting the raw horn the mechanic cut the horn according to the need of the preparation. The shape of the horn is changed by using fire flame. Further with the technique of iron machine it is polished. Sand paper and coal are also used for polishing the product and giving a jet-black look. Generally male member of the family engaged in preparing the product and female member engaged in polishing it.

Problems

The mechanics are suffering from different types of disease engaged in this work. Further till now they are using old technique of production. No separate training and modern technology is given to them. Most of them are losing interest in this business as lack any support from the Government to develop it. Further artisans engaged in this activity are facing respiratory problem due to continuous work in heat and smoke.

Cane Craft

Cane crafts are developed traditionally. But in the modern era it is designed in lucrative manner to attract the customer. Different products like phultola, chair, table, tea poy, self, hanger, stool sofa etc. are produced by using the cane. The raw materials are generally imported from the Cuttack, Banapur block of khurdha district and also from Assam.

The people of Gajapati district collecting Cane from the deep forest and after that tied and bent it to prepare different product like chair, baskets, racks etc. These products are durable and tensile. The product can be used for the indoor and outdoor decoration. Here the skilled artisans engaged themselves as one of the main occupation as cane work. Following are the different steps used while preparing cane furniture.

(i) Collection of the cane from the forest

(ii) Bent it in the hand according to the necessity of the product

(iii) Polishing the cane

(iv) For creating frame canes are attached with a screw.

(v) After polishing coat of lacquer is applied to it.

(vi) Then rounding it for making the furniture.

Terracotta

It is one of the ancestral industrial activities of the district. Now it has been improved to sophisticate the product by providing skillful training to its producer. Generally these products are produced seasonally particularly for the religious purpose. Here the clays are used for preparing new pottery, idols etc. Further these products are also used for the decoration purpose. The artisans engage themselves some time on this terracotta activity and some other time in the agricultural activity.

Silver product

Though it is one of the traditional industries in the district, now it has been designed in a attractive manner to improve the industry. Raw materials are imported from the neighboring district like Ganjam and from Andhra Pradesh. As per the District Industrial Center there are 30 sunari (Bania Workers) are preparing Silver ligree in the district. These products are generally sold with in Gajapati district.

Brass and Bell Metal

It is one the traditional industry of the Gajapati district. Bell metal is otherwise known as Kansa which is one form of bronze having lower content of copper. It is used for making bowels, platws etc. Brass is otherwise known as Pitala having substitutional alloy of copper and zink. It is used for making plates for worshiping purpose, idols, singhasana etc. As per the District Industrial Center, Gajapati there are only 10 traditional brass metal workers are working in this field. Different caste people like Kamar, Kansari, Khadara, sunari and Bania are engaged in this work. These artisans are available in the Mohana Block, Kashinagar and Paralakhemundi. Generally they are producing different products like jugs, pots, plates, buckets, glasses, kadai, dekchi etc.

Embroidery

It is one of the new industry practiced by around 30 persons in the district as per the District Industrial Center, Gajapati. There are collecting raw materials from the neighboring district of Ganjam. Further the products are sold by themselves.

It is one of the oldest forms for the beautification of the surface widely popular in India. This sector even if organized in India it lacks in marketing. It is one of the unorganized manufacturing sectors in India. As per the 2011 market research report people of India are spending Rs 8.00 per annum for the embroidery consumption. Different types of embroidery are plain embroidery, sequin operation and cording or coiling. In the plain embroidery work is done only with threads, in the sequin operation sequin is small and flat which is stitched in embroidery and in the cording threads of large thickness is used for the embroidery work.

Clay Models and Pattachitra

Though it is a traditional industry but as per District Industrial Center, Gajapati now 30 people are engaged in this work by refining it in a innovative way. The raw materials used here are locally available and they are marketing their product.

Dhokra Castings

This traditional industry continues till now but with some new way. As per DIC, Gajapati now 20 people are engaged in this activity. This is available in the Badapur village of R Udayagiri Block and Saradhapur village of Gumma Block. The raw materials are locally available and also the products are sold with in the local area.

Dhokra is one of the traditional industry goes back to 4000 years back and also found in the Harrapan civilization. The word Dhokra is coined after the tribe of Dhokra Damar. Following are the different processes-

(i) Modeling in beeswax.

(ii) Moulding in clay

(iii) Keep it for dried purpose.

(iv) After drying it is dewaxed.

(v) Then molten metal poured into the mould.

(vi) Keep it for solidification.

(vii) Once solidification the clay mould is broken and metal product is giving a finishing touch.

Black Smithy

The People of the Kamar and Bindhani are engaged in this work. They are available in different areas of the district like Khajuripada, Nuagada, and R.Udayagiri etc.

These are the different types of industries are available in Gajapati districts of Odisha. Most of of the industries available in the modern era have the traditional origin. Further people lack skill to develop this industry. They need proper training to compete with the outside the world. It is because of this the profit oriented activity of the economy is not able to prosper in this low level of literacy and tribal based district. So it needs the direct intervention of the Government to encourage the people to develop this industry. If this could be possible then Gajapati district would prosper. In this Pandemic COVID-19 situation the repatriated migrants can be engaged in this MSME sector.

Here there is prospective to develop some other industries like Idli suji, processed spices, modern rice mill, Leaf cups and Plates, proper marketing of local agricultural product like honey etc.

B. **Effect of COVID-19 on the horn industry of Gajapati district**

MSMEs in India, particularly in Odisha have been serving a huge population in the form of providing employment and finished goods to consume. However, COVID-19 has put heavy toll on these enterprises and hence data related to percentage of workforce reduced, per cent of new employees hired and number of employees needed to be reduced during April, May and June 2020 (as shown in figure-1) have been discouraging.

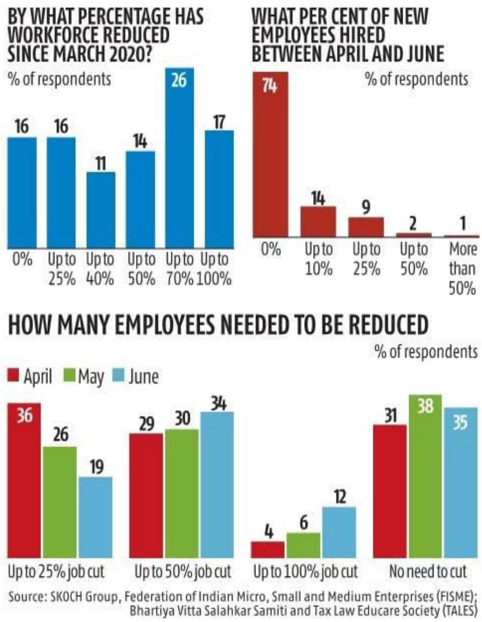

Figure-1: Data on percentage of workforce reduced, per cent of new employees hired and number of employees needed to be reduced during April, May and June 2020

It is found that 26% of respondents opine that there has been reduction of up to 70% of workforce during April, May and June 2020. Similarly, 74% of the respondents express that there has been no new employees hired between April and June 2020. However, most of the respondents (31% of the respondents in April, 38% respondents in May and

35% respondents in June 2020) felt that there was no need to reduce employees in the said period, but the MSMEs were reducing.

Problems the horn-work industry faces due to COVID-19 are;

(i) Unavailability of raw materials:

Most of the raw horns are coming from the Hyderabad. Because of lock down and partial unlock importing of raw materials is not possible due to transport problem.

(ii) Labour are sitting idle:-

Labours are preparing the product in their own home. They need not go anywhere for production purpose. Once raw material is available they can produce the product. As raw material is not available it is not possible to start production rather to sit idle. Further they do not have any other option to work somewhere else.

(iii) Producers are not getting any profit as production could not take place.

From the producer or employer point of view he has to import the raw horn and distribute it to the labour. As it is not possible to import raw horn he is unable to engage its labour. Accordingly, he is unable to earn any profit.

(iv) Sellers are not getting opportunity to sell the existing product.

From the sellers point of view there is no opportunity to sell the product. Paralakhemundi is one of the interior areas of the Odisha state. People from other parts of Odisha are generally coming to this place as posted by the Government in the collectorate Office, different Colleges, Tehsils, Panchayats etc. Their number is very few. Similarly, some people are coming to visit the different sites of Gajapati district like, B N Palace, Jeeranga, Ganda hati etc. Now in the ongoing pandemic COVID-19 situation the tourist activity is stopped. Another important festival of the Gajapati district is Car Festival. Here so many people from different parts of the Odisha are coming to celebrate car festival in Gajapati District. Now this stopped. So there is no chance of consumers to come here. There is no way to sell the product in on line mode. So the sellers are unable to sell the existing product available with them. As a result they are not able to pay the EMI of the bank loan used for purchasing the product. So they are maintaining a very miserable life.

(v) Lacks of demand as consumer are not coming to Paralakhemundi.

It is a clear indication that as consumers are not available the demand is declined sharply.

(vi) Most of the workers engaged in this business are reluctant to continue this business with their upcoming generation as there is no opportunity for them. As now days the demand for this product is declining and there is no initiative taken by the Government to uplift this industry, they are not interested to engage their next generation in this industry.

MSMEs across the globe have been badly impacted due to COVID-19 pandemic; so also the MSMEs of Gajapati district in Odisha (India). Horn-works industry of Gajapti district is no exception to the trend. It has been very badly devastated owing to prolonged lock-down in the state. All the important stakeholders of the industry are leading miserable lives as they don't have income for last few months. As such, they don't have savings to use in this trying period for their livings. It has made them undone to continue with the same job as the normalcy is restored post pandemic. However, the industry has high level of potential to cater employment with profitability. The need of the hour is intervention of the government to safeguard the interest of all the stakeholders. Government intervention in the form of assistance in financing the producers is necessary who can expand production both from quantity and quality perspectives. It will make the producers capable to produce exportable products. Besides, government intervention in the marketing of the products is a must for avoiding legal issues and establishing reasonable price that will make the industry profitable. Making the social media platform accessible by the local artisans and owners of horn-work establishments is a must as through the social media, the products can have wider visibility and will be easily marketable. Thus, digital intervention is the need of the hour for fighting out the effect of COVID-19 on horn-works industry of the Gajapati district of Odisha.

The unique horn industry of Gajapati district is running with so many difficulties. The pandemic COVID-19 added more difficulty to this. Unless and until some big push package with a technical committee is formed for the revival of the industry then it will lose its existence. That will be a great humiliation not only the patronage king who built modern Odisha to the king of the Gajapati but also to the technician who invented to produce in a so much profitable manner by utilizing the waste material like raw horn of the animal. So it is high time to think of his for the revival of the tradition old horn industry.

C. Digital intervention for the revival of horn industry in the Gajapati district

Horn-work industry of Gajapati district in Odisha could be revived well and made a good source of employment generation in the district. For the purpose, things that need attention, as per the experts' opinion, are bifurcated as follows.

Steps (Including Digital Intervention) to Revise the Horn-work Industry

- As most of the workers, business men, producers are engaged in the horn work in an informal way, the Government need to identify them and prepare a complete data structure. It will be a win-win situation in both ways; to the people engaged in this work and also to the Government. The people engaged in this work will get every type of assistance like loan, subsidy, technical guidance, exportability of the product, etc. as per the Government rule. Similarly, by preparing a data base Government can earn revenue from this business.

- As all the mechanics are preparing this product at their home, a central room is required where they can work.
- Similarly modern technology needs to be applied in this industry.
- Jandhan, Aadhar and Mobile (JAM) can be utilized for the benefit of the horn industry in the Gajapati district of Odisha.
- Government and social groups need to organize camps to provide technical skill to the people engaged in this sector so that they can produce quality product which can be demanded outside India.
- Government in proper frame work will collect the raw horn only from the dead animal. Accordingly Government will legalize this industry all over the world. As a result these people will not face any difficulty while selling the product throughout the world.
- Government needs to connect it to the different festivals/exhibition/Melas/Mahotsavas for selling this product.
- Government should emphasize to stretch the market base of this product outside India. Priority needs to sell the product through e-commerce.
- During this pandemic COVID-19 situation most of the people engaged in this business have sufficient time to take part in any training. So Government needs to impart training during this period by strictly following COVID-19 rule.
- Now vocational educations are opened in higher education of Odisha. So Government, in order to support this industry, needs to add this vocational course in the educational institutes of the Gajapati District Thus, more educated people will prefer to join in this industry. And we know that different studies show that productivity increases with increase in education. This way, it will increase the employment opportunity.
- As most of the people in Gajapati District are tribal and poor, Government needs to streamline credit facility for opening this business.
- People are facing difficulty in getting raw horns. And we know every day raw horn are wasted in different parts of the world. So Government needs to import those raw horn from different parts of the world. When raw horns will increase it will attract the industrialist to produce more. So it will invite many skilled expert industrialist to invest in this business. This will create more employment opportunity. Government needs to prioritize for exporting this products

to different parts of the world. So that it will be a profit oriented industry. once it turns into a profit oriented industry many experts from different parts of the world will be attracted to this type of industry. so Government needs to provide Patent or GI status to this activity of the Gajapati district.

- Now many of the repatriated migrants are coming to Gajapati district. They are searching for job. So Government needs to collect about their expertise. Many of them can be engaged in this sector by getting proper training. So it will create an employment opportunity in the district.
- The competitiveness of any industry depends on the technological upgradation and its efficient utilization. So Priority needs to be given for the how MSMEs are equipped with such technological advancement.
- Among the different bottlenecks that the Micro, Small and Medium Enterprises are facing, lack of infrastructural facility is a serious one which disrupts the value chain process of the production, consumption and distribution. So priority needs to the given at the Government level or at the industrialist level for improving the infrastructure.
- Finance is highly required for the MSMEs. So priority needs to be taken for the easy availability of the credit.
- The effect of COVID-19 is immense on the demand side of the horn work industry. Although the production process and quantum of output have come back to the track slowly, there is difficulty in marketing the output.
- Social media has a great role to play in the marketing of the items of the horn-work industry. Catalogue of different horn-works needs to be posted on different social media. In fact, besides selling the items through the e-commerce sites, the MSMEs and local NGOs need to market directly through social media.
- Government and NGOs need to train the MSMEs dealing with horn-works how to make use of the social media for marketing their output.

Acceptance of Digital Intervention by the Stakeholders of Horn-work Industry

Digital intervention has immense potential to make Indian agriculture sustainable and turn the Indian rural economy around. However, designing a good product and making that accessible won’t suffice to get the best out of the product. Extraction of the most form the best product is possible only when we use it aptly. Thus, the success digital intervention depends upon it acceptability by the stakeholders of the horn-work industry. In order to assess the degree of acceptability of the digital intervention, in-depth interviews have been conducted among 100 horn-work industry proprietors from Gajapati district of Odisha. On the basis of experts’ opinion, variables identified for assessing the accessibility of digital intervention are;

Digital Intervention facilitates augmenting efficiency (v1).

It is cost effective (v2).

It reduces wastage (v3).

Facilitates reducing anxiety of the horn-work proprietors by increasing the productivity (v4).

Facilitates reducing anxiety of the households of the proprietors (v5).

Improve the image of horn-work industry (v6).

Attract the youth to do this industry (v7).

Improve the image of local economy (v8).

It is time-saving from the perspectives of time required to apply and time required to get the result (v9).

It is interesting and motivating (v10).

It is handy to incorporate (v11).

In cases of any difficulty to use, ready-made tips are available on demand (v12).

On adequately informed, use will be wholehearted (v13).

As the proprietors get benefited, the societal trauma in the form of psychological disorder get reduced (v14).

It makes the consumers get the product at a lesser price as multiple channels get abolished (v15).

Digital intervention has the potential to revive the horn-work industry of Gajapati district of Odisha sustainable and hence it is acceptable by its stakeholders (v16) is the dependent variable. The variables v1, v2, …………………….., v16 as mentioned above are independent variables. Data has been collected from 100 stakeholders of horn-work industry in Gajapati district of Odisha through direct personal interview. A five-point rating scale has been used. The variables identified and data collected on them have passed the reliability test as the value of the Cronbach's Alpha is 0.926 (Table-2 & 3).

Table-2: Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Source: SPSS output

Table-3: Reliability Statistics

Cronbach's Alpha	N of Items
.926	16

Source: SPSS output

ANOVA for Hypothesis Testing

In order to find out whether digital intervention has the potential to revive the horn-work industry in Gajapati district of Odisha and hence acceptable by its stakeholders, ANOVA and Regression Analysis is done.

Null Hypothesis: Digital intervention has the potential to revive the horn-work industry in Gajapati district of Odisha and hence it is not acceptable by its stakeholders.

For testing the null hypothesis, ANOVA was computed and presented in Table-4.

Table-4: ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.240	15	1.016	1.875	.037[b]
	Residual	45.510	84	.542		
	Total	60.750	99			
a. Dependent Variable: v16						
b. Predictors: (Constant), v15, v4, v7, v3, v8, v1, v14, v9, v10, v11, v13, v6, v5, v12, v2						

Source: SPSS output

The p-value is 0.037 and it is less than the level of significance (i.e., α) 0.05. Thus, the null hypothesis is not accepted. Thus, it is inferred that the digital intervention has the potential to revive the horn-work industry in Gajapati district of Odisha and hence it is acceptable by its stakeholders.

Conclusion:

MSMEs across the globe have been badly impacted due to COVID-19 pandemic; so also the MSMEs of Gajapati district in Odisha (India). Horn-works industry of Gajapti district is no exception to the trend. It has been very badly devastated owing to prolonged lock-down in the state. All the important stakeholders of the industry are leading miserable lives as they don't have income for last few months. As such, they don't have savings to use in this trying period for their livings. It has made them undone to continue with the same job as the normalcy is restored post pandemic. However, the industry has high level of potential to cater employment with profitability. The need of the hour is intervention of the government to safeguard the interest of all the stakeholders. Government intervention in the form of assistance in financing the producers is necessary who can expand production both from quantity and quality perspectives. It will make the producers capable to produce exportable products. Besides, government intervention in the marketing of the products is a must for avoiding legal issues and establishing reasonable price that will make the industry profitable. Making the social media platform accessible by the local artisans and owners of horn-work establishments is a must as through the social media, the products can have wider visibility and will be easily marketable. Thus, digital intervention is the need of the hour for fighting out the effect of COVID-19 on horn-works industry of the Gajapati district of Odisha.

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Life or Livelihood of Migrated Workers of Odisha (India) Amid Covid-19 Effect

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Abstract:

Pandemic COVID-19 has made the lives perilous genuinely across the globe. Especially, the migrant workers faced the hardship as they are jobless in one hand and unable to come back to their native places on the other hand. Being India as the second most populous country of the world, it is most important to study the living status of migrant workers of the country. However, due to diversity in population, varying Covid rate in different states and large number of migrant workers of the country, it is tedious to ascertain the impact of Covid situation in the entire country. Therefore, we have considered one state Odisha to study the situation of migrant workers during the pandemic time. This will be helpful to study the situation of migrant workers of entire country and the world. In this paper we have devised the following approaches. It is primarily a descriptive research based on both primary and secondary data. Data collected for this study is through content analysis and telephonic in-depth interviews. For telephonic in-depth interviews, 20 migrant workers are selected on the basis of convenient sampling method. For telephonic opinions, five experts are selected on convenient sampling method. This research aims to ascertain how the migrant workers of Odisha (India) come across the complicated problem of choice between life and livelihood during socioeconomic emergency that caused due to Covid-19.

Keywords: Life, Livelihood, Migrant workers, Covid-19, Pandemic.

Introduction:

Pandemic caused due to coronavirus has made the world handicapped. Super powers of the Globe are struggling to stand before the invisible enemy. Due to movement of migrant workers, the positive cases rapidly spread across the country. So, India has sought for lock-down uniformly across the country and imposed shut down in the regions that are identified hot-spots and demarcated as containment areas. The number of Covid-19 affected cases and casualties have both decreased as a result of this proactive policy, which clearly produced the desired results. However, the deadly Covid-19 virus has caused the nation to halt all economic activity. This also applies to the state of Odisha. In fact, it goes one step further in locking down and shutting down than the national level does.The affluent people did not find difficult to maintain their living as they are getting their basic requirements either at the door step or from the nearby essential shops. Similarly poor people are also managing the situation by virtue of governmental intervention in the form of supplying free essential commodities, free LPG cylinder and some monetary help. But the hardest hit out of this precarious situation worsen the down trodden group of the society i.e. migrant workers.

The number of migrant workers of the Odisha in the country is considerably large in comparison to other states. A sizeable population of the state has been working in other states and even in other countries. Migrants from Odisha those are working in other countries, they will somehow manage the situation even they lose their jobs after pandemic period as they might have saved huge money. However, migrants from Odisha who are employed in other states across the nation are truly in difficulty. Due to the considerable increase in the number of workers per room in the areas where the lock-down and shut-down were applicable, their work establishments ceased operations, and they remained inside their so-called dwelling. Even though they followed the advice to “remain at home; stay safe” in order to combat the virus, the nature of their isolation rendered them more susceptible because they were unable to maintain the necessary social distance and hygienic etiquette. They are not eligible for government assistance in their new jobs because they do not have ration cards in their new locations.

To protect the lives of the migrants, the government declared that the businesses where they were employed would provide for their basic needs, including food. The announcement, however, was not at all what happened. How long can they support the idle workers when the businesses are no longer in operation and have a negative return on investment As a result, migrant employees either went hungry or were only partially fed. Due to the prohibition on using any form of transportation while the area was under lockdown, they were unable to return to their homes. This has been resulted in unthinkable actions by the migrant workers. Some of the workers were walking thousands of miles to reach at their villages although they knew very well that they won't be allowed to their villages and homes without staying in quarantine for 14 days in their Gram Panchayatas. For the sake of earning something, some of the migrant workers were adjusted with some sort of ad hoc works at their migrated places as they were afraid of walking such a long distance to their homes. They were violating the Covid-19 recommendations in this way. They had to make the difficult decision between life and a means of support in both cases. In the first instance, as they travelled a great distance to perform an earning task in their hometowns, they risked their lives due to the physical strain of the lengthy walk and the vulnerability of Covid-19. In the latter instance, as they sought out further employment in their new location in an effort to make some money, they left themselves vulnerable to the deadly virus' attack. The question of how to prioritize life and livelihood in an unorthodox scenario, particularly in the context of migratory workers, is thus something for researchers and planners to consider.

1. **Review of Literature:**

Migration is one of the pertinent livelihood strategies, even if there are many different ones available to the majority of individuals who live in poverty. While migration is typically prompted by chronic poverty, there are rare instances where migration itself triggers chronic poverty as a result of an incorrect strategy [Kothari, 2002]. Given that migration is a significant source of income for many rural residents, encouraging policies for population mobility should be in place, and there should be investigation into ways to strengthen the positive benefits of migration [Haan, 1999]. Migration should be viewed as one of the main techniques used by families, sometimes combined with other methods, and a two-way process that allows migrants to maintain strong ties to their home communities for a lot longer than is typically assumed [McDowell & Haan, 1997]. The movement of people, ideas, and money around the world has had a huge impact on people's lives and means of subsistence. From the forced movement of slaves during colonialism and the uprooting of the peasantry during industrialization to the most recent victims of ethnic cleansing, the recognition and cognitive content of the migrant have drastically changed through time [Papastergiadis, 2000].

The restrictions brought on by COVID-19 have led to a generalised humanitarian crisis and increased vulnerability among migrant workers in terms of access to food and cash. The migrant worker situation has not been adequately addressed by the government or the legal system, according to this report, which was based on the Stranded Workers Action Network (SWAN). Both quantitative and qualitative data analysis were used to conduct the analysis. According to the study, India's relief initiatives NREGA and PDS need to be improved more than they were [Adhikari et al., 2020].

India's poverty and inequality over various time periods. According to the report, regional differences rose while poverty decreased in the 1990s, with the south and west performing far better than the north and east. Within cities and between cities and rural areas, economic disparity continued to rise. While social indicators showed varied trends, some health and education-related indicators showed sustained improvement [Deaton and Drèze, 2002].

According to the forces of supply and demand, agricultural products do not sell for a profit. Additionally, the product's supply chain is very shoddy and unreliable, which results in consumers paying outrageous costs and farmers receiving lower prices. According to the study, adding some productive labour will help to some extent resolve the issue. An influx of migrants is currently occurring in the original country due to pandemic COVID-19. In order to address the issues of price and supply and demand for food, these repatriated migrants can now be incorporated into the supply chain of agricultural products [Sahoo and Swain 2022].

It has been discovered via the use of the All-India Debt and Investment Surveys (1991 and 2002) that wealth levels have increased while interpersonal wealth inequality has slightly but noticeably increased. The analysis demonstrates that there is inequality between middle- and upper-income states and low-income states. According to the study's findings [Jayadev, Motiram, and Vakulabharanam, 2007], income disparity has increased more sharply in states with higher economic growth.

It is apparent from the literature reviewed above that the migration is inevitable as it has been proved as one of the important means of livelihoods. So, it has been treated as a tool to fight out chronic poverty. However, there is paucity of literature on choosing one between life and livelihood for migrant workers. Moreover, the said problem of choice during a pandemic situation, which the world is confronting at present has not been taken up by any researchers. Therefore, we have considered this problem to address the importance of Life or Livelihood and discussed details on the basis of interpretation of data obtained from different sources. Hence, this research is new and its novelty of study will give new dimension in the research of socio science.

2. Objectives and Methodology:

On the backdrop of a complex problem of choice between life and livelihood, the objectives of this paper are to;

- Describe the effect of Covid-19 on lives and livelihood of the humanity across the Globe.
- Analyze the preparedness of the State of Odisha (India) to fight the invisible enemy - Covid-19.

- Ascertain how the migrant workers of Odisha (India) come across the complicated problem of choice between life and livelihood during socioeconomic emergency caused due to Covid-19.
- Devise the way out to address the issue of life or livelihood.

To accomplish the objectives, the following methodology is adopted.

- It is primarily a descriptive study using both primary and secondary data..
- Data collection for this study is done through content analysis and telephonic in-depth interviews
- For telephonic in-depth interviews, hundred migrant workers are selected on the basis of convenient sampling method
- For telephonic opinions, ten experts are selected on convenient sampling method.

3. Effect of Covid-19 on lives and livelihood of the humanity across the Globe:

According to the International Labour Organization, the two billion employees in the world's informal economy would become more vulnerable and live in greater poverty as a result of Lockdown policies. Covid-19 has been affecting the world economy very badly. Different sectors like hospitality, manufacturing, travel and tourism which provide about 50 million jobs and about 10% of the global GDP are severely affected. Projection done by various research organizations as presented in Table-1 reveals the intensity of the Covid-19 effect.

Table-1. Economic growth projection for the financial 2021.

Agencies	After Covid-19(in Percentage)	Before covid-19(in Percentage)
Moody's	5.3	6.6
OECD	5.1	6.2
UBS	5.1	5.6
Barclays	5.6	6.5
Fitch	5.4	5.9

Source: MOSPI, Ministry of Commerce

As revealed in Table-1and Figure-1, growth prediction by different agencies is undoubtedly a point of concern for the policy makers of the country. Figures reflected in the Table insist the planners to choose some effective alternative path to rebound the economic growth into 'V' shape. Before the outbreak of the pandemic situation, Moody projected that the economy would grow by 6.6%, but considering the present situation, it predicts that the growth might decline to 5.3%, with a reduction in projected growth rate by 1.3%. Other growth rate projecting agencies such as OECD, UBS, Barclays and Fitch have also

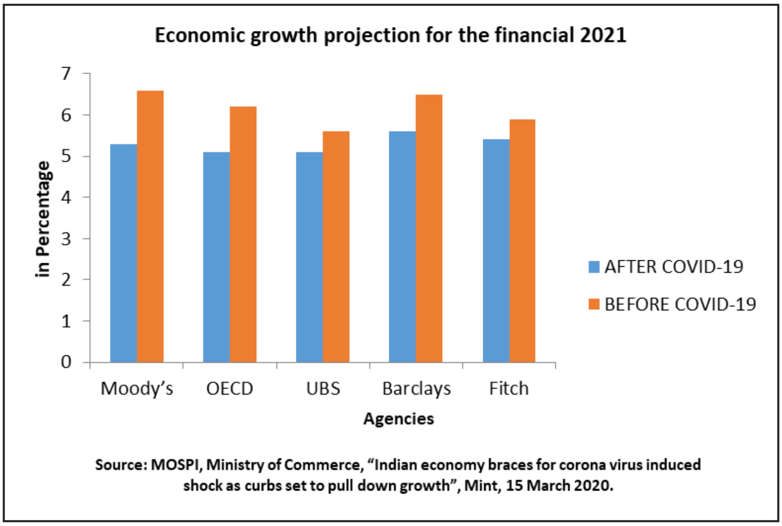


Figure-1

reduced their projected rates by 1.1%, 1.5%, 0.9%, and 0.5% respectively from their original projection owing to the outbreak of Covid-19. Thus, the situation warrants that the Government needs to put some extra effort for bringing the growth track back to the original.

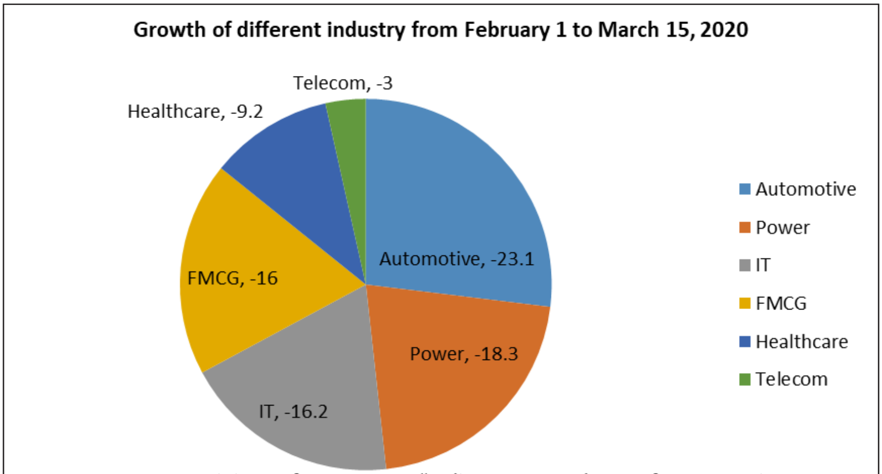
Growth of different industries since the outbreak of the Coronavirus attack, as presented in Table-2, supplements the fact that Covid-19 has been doing the damage that may not repaired in near future.

Table-2. Growth of different industry from February 1 to March 15, 2020:-

Industry	Growth in Percentage from February 1 to March 15, 2020
Automotive	-23.1
Power	-18.3
IT	-16.2
FMCG	-16
Healthcare	-9.2
Telecom	-3

Source: MOSPI, Ministry of Commerce, "Indian economy braces for coronavirus-induced shock as curbs set to pull down growth", Mint, 15 March 2020.

Table-2 clearly highlights how different industries are badly affected due to the pandemic covid-19 situation. Among the industries mentioned in the Table, most affected industry is Automotive which has experienced an exemplary fall in growth rate by 23.1% from February 1 to March 15, 2020. Other industries such as; Power, IT, FMCG, Health Care, and Telecom have also experienced fall in their growth rate respectively by 18.3%, 16.2%, 16%, 9.2% and 3%. Negative



Source: MOSPI, Ministry of Commerce, "Indian economy braces for coronavirus-induced shock as curbs set to pull down growth", Mint, 15 March 2020.

Figure-2

growth rate in almost all the industries of the country may push the economy to drastic instability causing irreparable loss due to negative multiplier effect in a multidimensional way. Thus, proactive steps by the government are needed to break this chain and revive the economy into mainstream. The pie diagram as shown in Figure-2 indicates the decay in the growth rate of different industrial sectors.

All the sectors of the economy have been affected badly due to Covid-19. Important sectors that have become the victims of the pandemic are;

- Agriculture sector - Crisis in agriculture is mainly due to unavailability of labour and disruptions in marketing due to the ongoing covid-19 situation. This is having negative effect on local, national and international levels.
- Travel and Tourism sectors - Because of the pandemic covid-19 situation, tourism sector is badly affected. This deadly virus has made the domestic carriers to cancel and suspend flights in all routes for a considerable time period. This sector contributes around 11.5% of global GDP. It is expected that EU's tourism industry may lose around €1 billion per month due to this deadly virus. International Air Transport Association (IATA) predicts that passenger revenue may reduce by US$252 billion, i.e., 44 per cent lesser than what it was in 2019.
- Auto sector -Basically the development of this sector in India depends on the business of this sector in China, as India supplies raw-materials to china. Different studies show that the manufacturing of this sector will be contracted by 8-10%.

- Electronics Sector - As far as electronics is concerned, India depends on China for both the raw materials and final products. So, now this type of industry may face reduction in production, fear in the supply of the final product and volatility of price.
- Pharmaceutical sector - In the 2019 fiscal year, India purchased drugs from China worth over Rs 24,900 crore. About 40% of total domestic consumption is represented by this. Importers now run the risk of supply shortages and unforeseen price changes due to the Covid-19 scenario.
- Chemical sector -China is the primary supplier of chemicals and intermediates to India. Nearly 20% of the goods is anticipated to be impacted by the import disruption.
- Solar Power Sector - Chinese industries supply near about 80% of solar cells and modules used in India. Due to this Covid-19 situation, India is now facing short-fall of these materials.
- Information Technology Sector -This sector depends on the software development by the intellectuals. But due to lockdown, people are unable to move and complete their jobs. Also, the business sectors are closed due to lockdown and shutdown. So, this sector is badly disrupted.
- Textiles Sectors - It is expected that cotton yarn export may decline by 50%. Because of lockdown, consumers' demand have been reduced. In Bangladesh, this industry may lead to loss of around US$3 billion, affecting some 2.17 million workers.

The Covid-19 pandemic eruption has altered the global price structure of certain goods. Table 3 shows how much the price index of three important sectors fell between January 2018 and March 2020.

Table-3. Fall in Price Index of three major sectors (Index US $)

Month & Year	Energy	Agriculture	Metals
January -2018	100	100	100
February-18	94.71	101.88	100.04
March-18	95.13	103.45	95.37
April-18	101.03	105.31	97.6
May-18	107.89	105.52	97.99
June-18	106.79	102.18	98.2
July-18	107.82	99.21	90.7
August-18	106.28	97.47	88.2
September-18	112.45	94.95	87.44
October-18	113.91	95.8	89.6
November-18	96.32	94.48	87.5

December-18	85.42	94.94	85.89
January-19	86.79	95.94	85.55
February-19	91.01	96.23	90.46
March-19	94.01	95.37	91.56
April-19	99.0	95.46	92.13
May-19	96.17	94.48	88.8
June-19	85.91	97.08	88.66
July-19	88.02	95.71	91.49
August-19	82.76	93.12	85.86
September-19	86.56	92.79	87.3
October-19	83.38	94.53	86.32
November-19	87.75	97.97	86.05
December-19	90.47	100.3	87.47
January-2020	87.55	101.76	87.73
February-2020	76.41	98.87	82.44
March-2020	49.42	95.81	77.57

Source: World Bank

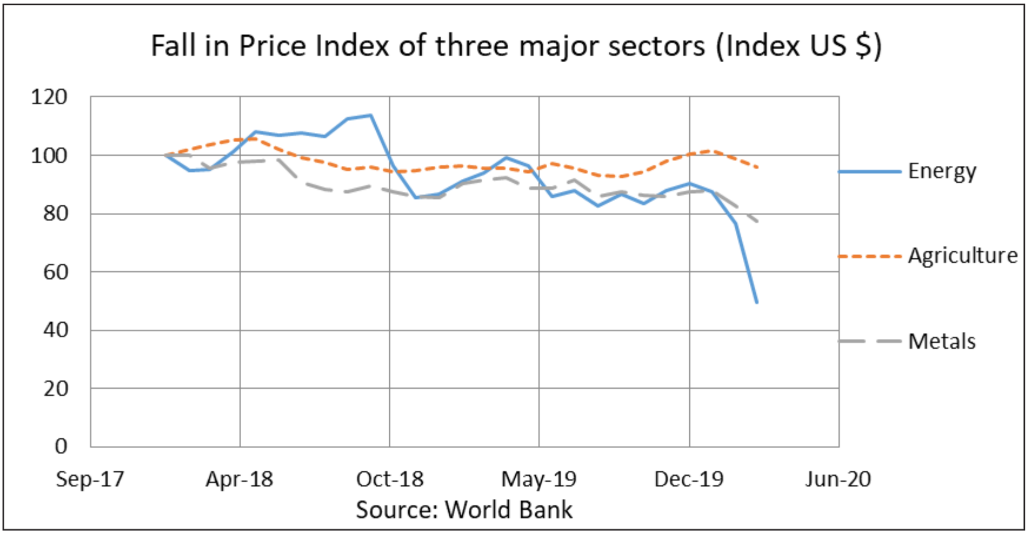


Figure-3

The Figure-3 explains the fall in Price Index of three major sectors in which the energy sector is more declined than the other two sectors. Price index presented in Table-3 is taken for three sectors of the world- energy, agriculture and metal. The indices show that in the year 2018, the prices of these three sectors had marginally declined. In the year 2019, the prices remained almost stable. But in the year 2020, from January 2020 to March 2020, the prices of energy have drastically reduced. The prices of metal have marginally declined and the prices of agricultural product though marginally reduced but have remained stable. Thus, energy sector has been proved to be the hardest hit owing to Covid-19.

Odisha in not an exception to the trend presented in Table-3. Since agricultural products are put in the basket of essential commodities having the exemption from the restrictions of lock-down, the marketing of these products are taking place although the demand has drastically fallen owing to consumers' fear of getting affected if they go out. Still, decline in the prices of agricultural products is not that considerable because the supply has also been declined owing to non-availability of workers to harvest appropriately.

Data on decline in Oil demand since 1974, as presented in Table-4, clearly makes the impact of Covid-19 transparent.

Table-4. Percentage Decline in Oil Demand

Year	% decline
1974	-1.42
1975	-0.83
1980	-4.12
1981	-3.08
1982	-2.69
1983	-0.24
1993	-0.22
2008	-0.66
2009	-0.97
2020	-9.3

Source: World Bank

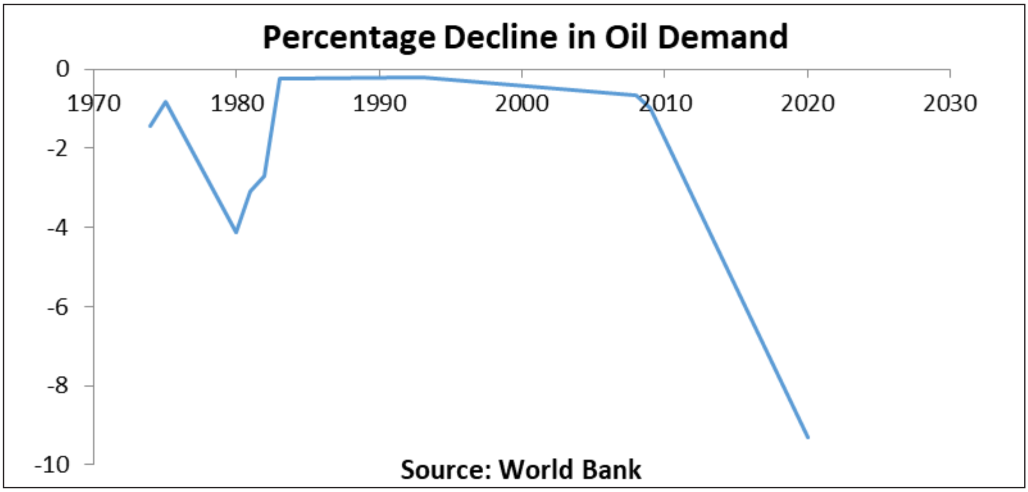


Figure-4

Table-4 and Figure-4 shows the reduction in the demand of oil in different years. Although there have been decline in oil demand in different years, the rates of decline were marginal until 2020. However, in the year 2020, the decline in demand for oil is exceptional. It is reduced by 9.3%, which is the highest ever since the year 1974.

4. The preparedness of the State of Odisha to fight the invisible enemy - Covid-19

Different schemes like Biju Swasthya Kalyan Yojana, Free Blood Services, Nirmal Khusi, Sunetra, Nidan and Swastha are implemented by the Government of Odisha (India) to tackle the challenges in health sector to promote the health status of the people in general and migrant worker in particular.

Table-5. Odisha vis-a-vis India in Health Indicators

Key Health Indicators	Odisha (NFHS-2015-16)	India (NFHS-2015-16)
IMR	40	41
U5 Mortality	48	50
Use of Family Planning Method(Any method(%)	57.3	53.5
Mother who had full antenatal care(%)	23	21
Institutional birth(%)	85.4	78.9
Children age(12-23 months) fully immunized	78.6	62.0
Children under 5 who are stunted(%)	34.1	38.4
Children under 5 who are wasted (%)	20.4	21.0
Children under 5 who are underweight (%)	34.4	35.8

Source: Odisha Economic Survey 2019-20

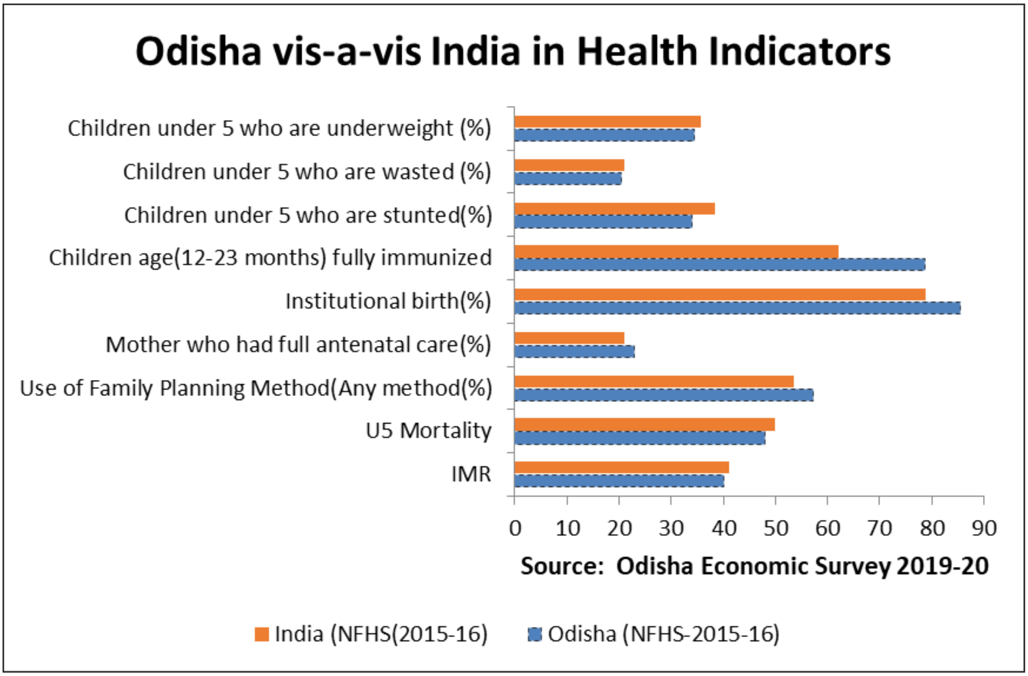


Figure-5

Odisha has made major improvement in health outcomes in comparision to national achievements as presented in the Table-5 and Figure-5 through particular emphasis on health sector reforms.

4.1 Covid-19 specific steps initiated by the Odisha Government

The Government of Odisha have taken major initiatives for the safe return to home places of the migrant workers during the lockdown periods. The district wise number of migrant workers are shown in the Table-6.

Table-6: District Wise List of Returnee Migrants.

Sl.No.	District Name	Rural data	TMC data	Urban Data	Total
1	Angul	9165	1027	183	10375
2	Baleshwar	56197	15731	464	72392
3	Bolangir	105532	2067	870	108469
4	Bargarh	18389	918	292	19599
5	Bhadrak	36934	6833	1809	45576
6	Boudh	4225	324	52	4601
7	Cuttack	24714	1845	447	27006
8	Deogarh	3220	483	44	3747
9	Dhenkanal	10982	2020	250	13252
10	Gajapati	14029	2231	275	16535
11	Ganjam	210542	10961	4099	225602
12	Jagatsinghpur	16630	3246	122	19998
13	Jajpur	26805	3183	153	30141
14	Jharsuguda	1847	1223	112	3182
15	Kalahandi	39743	1876	283	41902
16	Kandhamal	11207	1618	73	12898
17	Kendrapara	46906	11440	391	58737
18	Kendujhar	16019	2448	336	18803
19	Khordha	16955	3862	853	21670
20	Koraput	11467	887	136	12490
21	Malkanagiri	20387	894	53	21334
22	Mayurbhanj	35687	6016	196	41899
23	Nabarangapur	15715	1326	56	17097
24	Nayagarh	12349	1304	154	13807
25	Nuapada	64240	860	685	65785
26	Puri	19233	2511	145	21889
27	Rayagada	14578	1834	303	16715
28	Sambalpur	5114	757	810	6681
29	Sonepur	8417	405	274	9096
30	Sundergarh	19341	4337	2374	26052
	Total	896569	94467	16294	1007330

Source: https://ommcomnews.com/odisha-news/over-10-lakh-migrants-returned-to-odisha-during-lockdown

Due to lockdown and shutdown, the migrant workers did not get their livelihood residing in the outside of the state, so huge numbers of migrants started to return to their home state Odisha by means of walking, cycling and vehicles provided by the Government or their own arrangements. These numbers of returnee migrants to different districts of state are depicted in table no.6.

Table-7: Migrants returned from different states of India

Sl.No.	Name of the States	Number of Workers returned
1	Andhra Pradesh	111475
2	Bihar	2316
3	Chhattisgarh	9169
4	Delhi	11438
5	Goa	12058
6	Gujarat	193791
7	Haryana	5503
8	Jharkhand	240
9	Karnataka	50473
10	Kerala	31621
11	Madhya Pradesh	2385
12	Maharashtra	71217
13	Rajasthan	3873
14	Tamil Nadu	120353
15	Telengana	147265
16	Uttar Pradesh	22962
17	West Bengal	27046
18	Others(Remaining States and Union Territories	184145
	Grand Total	1007330

Source: https://ommcomnews.com/odisha-news/over-10-lakh-migrants-returned-to-odisha-during-lockdown

The migrant workers of Odisha those were returned from different states of the country to the Odisha are shown in table no.7. This will be helpful to interpret and analysis of disease prone area, transportation facility and livelihood status of the workers so that the implementation of Government policies will be fruitful.

Following steps are initiated by the Government of Odisha to tackle pandemic Covid-19 situation.

- The Government of Odisha has increased the nutrition budget from 41.35% to 49.77% in order to improve the nutrition of women and children.

- Medical, public health, and family welfare spending in Odisha climbed from 3.3% to 5.5% of total spending over the previous eight years.
- The state of Odisha has established two COVID-19-specific hospitals with a combined capacity of 650 beds, including 150 beds at Ashwini Hospital in Cuttack and 500 beds at KIMS Hospital in Bhubaneswar.
- Further, many Covid-19 hospitals have been established at each district of the State.
- Odisha Government provides training to 1.72 lakh health personnel - 8023 doctors, 8296 staff nurses, 4105 Paramedical staff and laboratory technicians, 4114 Ayush doctors, 4905 ambulance drivers, 135820 ANM/ASHA/AWW workers, 7236 sanitation workers have been trained to fight against covid-19.
- A procurement committee has been established in Odisha, which aids in the timely and appropriate availability of testing kits, masks, and personal protective equipment.
- Odisha Government has made mandatory registration for all the migrants to control the spread of covid-19. There is a call center for the migrants.
- A call centre (104) has been established for the covid-19 related queries.
- Tablighi Jamaat event in Nizamuddin- To aid in their swift tracing, the government enlisted the police and named the IG, Crime Branch as the state coordinator for contact tracing. Previously, this task was handled by health and municipal officials. The company, which has a Covid-19 budget approved of Rs 630 crore, ordered supplies worth Rs 32 crore just in the past week.
- The Government of Odisha has given the power of collector to Sarapanchas for the effective implementation of Covid-19 act at the grass root level.
- The fact that Odisha now has 299 operational ICU ventilators and has placed orders for 424 additional ones provides an indication of the scope of the situation. Of these, 57 have arrived; however, 7700 nebulizers and 1000 oxygen concentrators are still on the way. Since the end of January, its employees have been alert.
- Government of Odisha has increased the quarantine period from 14 days to 28 days.
- A specimen daily report of Covid hospitals is presented in Table-6 which speaks about the approach of the State towards fighting against Covid-19

Table-8. Specimen Daily report of Covid Hospitals of Odisha (Data as on:22.04.2020)

Sl. No.	Particulars	Data		
A. GENERAL INFORMATION				
1	Number of General Beds	4969		
2	Number of ICUs	337		
A1	Man Powers Deployed in three shifts	Total	Trained	Trained for ICU
3	Number of Doctors Deployed (3 shift)	355	236	54
4	Number of Nurses Deployed (3 shift)	843	603	123
5	Number of Paramedics Deployed (3 shift)	372	268	26
6	Number of Group D (3 shift)	572		
B.	PATIENT INFORMATION	Male	Female	Total
7	Number of New Patients admitted today in General Beds	26	5	31
7(i)	Suspected Cases	20	3	23
7(ii)	Confirmed Covid Cases	6	2	8
8	Total Number of Patients in General Bed	78	28	106
8(i)	Suspected Cases	41	13	54
8(ii)	Confirmed Covid Cases	37	15	52
9	Number of New Patients admitted today in ICU Beds	1	1	2
10	Total Number of Patients in ICU Beds (Susp+Confirm)	5	4	9
11	Number of Patients relieved/discharged	17	10	27
12	No of Deaths	0	0	0
C.	INFORMATION ON PPE AND EQUIPMENTS			
13	Number of N95 masks available	11113		
14	Number of Surgical mask available	325181		
15	Number of PPE available	28808		
16	Amount of Hand Sterilizers available	Available in All Covid Hospitals		
17	Availability of Oxygen	Available in All operational Covid Hospitals		
18	Number of Ventilators Available	164		
19	Number of Medical Ambulance Available	48		

Source: Department of Health and family welfare, Government of Odisha

The state Government tackled the situation effectively by providing better health facilities to the citizens of state. The disease successfully controlled by the Government by implementing the clinical and non-clinical Covid-19 measures like lockdown, shutdown and special Covid hospitals in different parts of the state. Health personnel viz: paramedical staff (nurse, pharmacist, technicians etc.) and trained doctors were engaged with special incentives to treat the symptomatic patients suffering from Covid-19. The health department of the state has implemented the 3T rule i.e. T for trace, T for test and T for treatment. The human resource and medical equipment used for this is shown in table no.8.

5. **Choice of the Migrant Workers between life and livelihood during Covid-19 situation:**

As lockdown due to Covid-19 has been announced, the migrant labourers are badly affected. They are affected by the loss of livelihood and thereby living without food, shelter, health and other basic needs. In Odisha near about 10 lakhs people are staying outside the state. As bus and rail services shut down people were faced difficulty in getting essential goods and this leads to artificial increase in price and shortage of essential commodities. Most of the migrants are living lonely. It creates mental distress to them. If such things continue then another problem of psyche disordered may not be avoided. Without any work they do not have income. So they are unable to purchase the basic needs. If such a situation continues then they will die in starvation. If people go out then there is fear of corona virus and if they will be infected then they will die.

So on this critical situation it is very difficult to choose whether life or livelihood.

Some of the migrants without any help walked miles and miles kilometer to reach at their home. Some other people en routed via water ways by purchasing boats. It became difficult for them. Even when they got close to their neighbourhood, local officials imposed a 14-day quarantine on them to stop the disease from spreading. The government of Odisha has launched an online registration system for migrants who desire to return to the state after realizing the hardship. For their homecoming, the government had intended to set up the bus system. Additionally, the government had established guidelines for them, stating that once they arrived at their home country, they would be kept in quarantine facilities. They can return home once the quarantine period is up.

6. **Way out to address the issue of life or livelihood:**

The government should divide planning measures into short-term, medium-term, and long-term measures in order to address this problem.

Short-Term Measures: In coordination with the Central Government and other state Governments, the Government of Odisha should prepare a list of the Odia migrants living outside the state. Then to test the covid-19 report of all the migrants who wants to return. Government should arrange for the smooth arrival of these migrants and isolate them in quarantine center for 21 days. Before doing this government needs to arrange the quarantine center with the availability of food and other basic necessities. Focus must be given in such a way that they should not use the public amenities like ponds, temple available near the quarantine center. As to shelter near about 10 lakh migrants, most of the migrant centers are to be arranged at panchayat level. If the quarantine people use the public amenities then it will collapse the plan of the Government to stop the spread of the deadly virus.

If this is possible then migrants would be mentally satisfied by staying near to their village. As they are supplied with basic needs there is no fear of death due to hunger.

In this situation government needs to counsel the villagers as they need to support for this. If village people will not accept the quarantine center near to their village then it create another problem of hostile attitude of not cooperation. If anybody breaks the quarantine norm then there is high chance of community spread. So, extra cautious needs to be given. Through this the Government can save the life in both ways, i.e by testing and by staying at quarantine center. Further, their life will be saved from the starvation if the Government will provide basic needs.

Medium-Term Measures: Once all the migrants will be in the quarantine center then plan must be made for their engagement to work at the quarantine center to earn something for their livelihood. It needs the area specific approach of micro industry. E.g. Stitching Khali (Indian eating plate made with big leafs), Painting, Plantation, Cleanliness of the environment and other needs of the local products. Government will provide them the raw materials. After the completion of the work the product will kept separately for 3-4 days. Even if any corona virus exists then it will die with in that period. The Government will take necessary steps with the help of villagers to sell the product. After the completion of the quarantine period and with covid-19 testing, people will be freed from the quarantine center and proper plan will be made to engage them in the agricultural and industrial sector at the village level.

Primary Sector - In Odisha, most of the lands remain unused after the harvesting of paddy crops. So lands remain barren from the month of December to June. So people will be encouraged and supply them the necessary things with proper guidance so that they can cultivate it. Using this food shortage at the village level will be solved and the administration will help to take the surplus product to town level for selling purpose. So this will save the livelihood of the people. By staying near the village it will also save them from the corona virus.

Dairy firms are now in the loss as people are not able to use it. So, some of them can be engaged in this area. Some other people may be encouraged to produce mushroom. There are many other sources are also available for earning in the primary sector. For this a high level committee needs to be formed at the Government level.

Secondary Sector - Primary sector is not sufficient enough to absorb all the laboures of the village. Government will provide the surplus labour area specific training to engage them in the micro industry like- weaving and food processing industries. This will allocate the primary sector product for converting it into high value product. For non-agricultural industry, machinery and raw-material will be supplied to the trained people. It may employ both skilled and unskilled labourers.

Tertiary Sector - Most of the teachers are available at the village level. As now schools are closed, they may be engaged to counsel the people and monitor the work . Further they may be encouraged to teach the students at the village level by maintaining social distance. Further a teacher will teach a student near to its house irrespective of school. Lawyers and other professionals may be engaged to counsel and provide knowledge related to their profession to the people. So it will create a great opportunity to the villagers for learning.

Long-Term Measures: Once Medium term plan become successful it can be transformed into long term plan. After the deadly virus extinct or all the human being vaccinated against the disease most of the people will be engaged at the village level and if any surplus labour exists they again will be migrated.

Different sources for collecting and utilizing the revenues could be; a) Different religious establishments have huge resources, which can be used for this purpose, b) For this time, Government may relax the FRBM act to some extent, c) Government may borrow internally from different institutions like RBI and also from the public by selling the Government securities, bonds etc., d) Government also can borrow externally from different institutions like World Bank, IMF, ADB etc., and e) For the time being, many welfare programmes may be halted to utilize this fund in this manner. Once people find employment, there will be automatic mechanism that may bring the economy back on the track. Consequently, both lives and livelihoods of the people could be saved.

7. **Conclusion:**

In this article, we discussed the problems of the migrant workers during the lockdown and shutdown period due to Covid-19. The data from different sources are interpreted graphically and analytically. Different tables and graphs reveal the true facts of the problem of the migrant workers, i.e., how they faced the difficulty to live. This investigation shows the importance of life than the livelihood because first an individual have to live then to earn for life. Hence, this study will be helpful for other researchers to extend this research using other parameters. Also it will be helpful for the Government to carry out different plans, execution and implementation of policies. Although life owns the edge over livelihood, without a decent livelihood, life becomes lifeless. Thus, while people are to be cautious for protecting their lives, governmental intervention has a role to play as a facilitator for ensuring livelihood.

Both life and livelihood are equally important for any human being. While former matters more in short-run, the latter matters more in long-run. If we neglect life, we will lose our existence now, but if we neglect livelihood, we may have our life now but will definitely lose that subsequently. Thus, strong intervention from government is required to save both lives and livelihoods of migrant workers who have been on the crossroad of life and livelihood. A genuine query may arise pertaining to successful implementation of the policies that could strike balance between lives and livelihoods during a crisis like outbreak of Covid-19. For the purpose of saving both lives and livelihoods, huge fund is required under two heads; i) To spend on fighting out Covid-19 and providing essential commodities to all the citizens during the new normal. ii) To provide packages to different establishments to restart operation post Covid-19 normalcy.

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Contribution of Indigenous People to the impending crisis of Climate Change: A Study in Tribal Odisha

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Abstract:

For centuries, the Indigenous population has been the custodian of this Planet and has lived in harmony with nature. They were skilled in the art of existing with mother earth instead of harming it. Up until the early 21st century, Indigenous people were even looked down upon as sufferers of climate change rather as defenders of the environment. But in reality, developing the science and knowledge of the impact that climate change has on the lives of these people, can actually help develop the policies, plans and programmes that can combat and reduce the effects of global warming. Their representatives have in fact been energetically looking forways to combat the climate crisis by active participation in various environmental conferences and involvement both regionally and nationally since 2008. This paper asserts that the Indigenous population, particularly forest inhabitants, have a chief role in fighting the impending crisis of climate. They have reorganized the potential that they have in making decisions at global and local levels that may play a part in saving our earth.

Keywords: Indigenous People, Environment, Climate Change, Forest, Ecology

Introduction

Since time immemorial, the efforts of indigenous people in being involved in global climate concords are of utmost significance. In 1997, the representatives of indigenous people were actively involved in the climate change agreement which was held in the Kyoto Protocol to minimize worldwide carbon emissions. By 2004, the Rio de Janeiro Earth Summit hosted negotiations that were supported by the United Nations Framework Convention on Climate Change (UNFCCC). Their representatives have been taking part in international conferences since 2013, which has allowed them to collaborate to advocate both their own rights and those for the protection of the environment under local, state, and international laws. Having secured the rights for the "Convention concerning Indigenous and Tribal peoples" in 1989, the ILO has been a constant support for the Indigenous people. This right came into effect on 5th September 1991 and has since then laid the foundation with reference to the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP) of 2007.As per the news of UN Climate Change, 9th August 2021 – "The International Day of the World's Indigenous Peoples" is celebrated as a reminder of the indigenous peoples' noteworthy contribution to the battle against climate change. Despite contributing to less than 5% of the world's population, indigenous people defend more than 80% of the world's biodiversity simply by living peacefully with nature. The main reason for this is simply the centuries of traditional knowledge that has been handed down from their forefathers. Patricia Espinosa, the UN's executive secretary for climate change, said "That knowledge has a significant worth that just cannot be overstated and must not be. Achieving the Paris Agreement targets of keeping the temperature increase to 1.5°C above pre-industrial levels worldwide requires taking into account the rights of these indigenous groups and taking their perspectives into consideration when formulating climate policies. At the UN Climate Change Conference in Paris in 2015, it was created the Local Communities and Indigenous Peoples Platform (LCIPP) as a result of this recognition, providing indigenous peoples a voice and allowing them to participate more effectively in the UN climate process. Patricia Espinosa, the UN's executive secretary for climate change, cited the Intergovernmental Panel on Climate Change (IPCC)., the empowerment of indigenous people is crucial since it enables better supervision of forests for climate mitigation. This is what Archana Soreng, a 26-year-old Khadia girl at COP26, from Odisha promotes the use of local methods to combat the climate catastrophe. Indigenous peoples must take the lead in addressing climate change, not become its casualties. If other people adopted the techniques and equipment employed by the tribal people on a broader scale, they would aid in protecting the ecosystem and battling climate change, according to Ms. Soreng. These techniques and instruments included organic farming, rainwater gathering, and preserving biodiversity.

The condition of indigenous people is significantly different from poor people given the grand scale of threats they face in their livelihoods, cultures and ways of life with respect to climate change. But at the same time, Indigenous people employ their centuries-old knowledge and occupation in mitigating the climate crisis and adapting several transition policies. For there to be any success in the climate action, the contribution of Indigenous Peoples must be recognized and they must be given further scopes and opportunities to take part in the creation and assessment of sustainable strategies aimed at this crisis, at a global level. At the same time, the factors that make indigenous tribes especially affected by climate change must also to be addressed and worked out distinctly.

The unique coastline of Odisha stretches from Balasore district to Ganjam across some 480 kilometres. This geographical advantage plays a significant part in the socio-economic health of the state. The marine environment has a strong interconnection with the state's industrial development, aquaculture, agriculture and port-related commerce and transport. Rising sea levels are a recurrent phenomenon and have been linked with annual disasters like cyclones over the years. Ocean dynamics and coastal topography play a major influence on climate change. The main cause for the rise in sea levels, increased activity in tropical cyclones, droughts, and rainfall can directly be linked with human activities like fossil fuel burning, greenhouse emissions and coastal development which contribute majorly to climate change.

Objectives

The principal objectives of this study are the following:

1. To examine the increased climate change's effects on the indigenous peoples dispersed in different districts of Odisha.
2. To demonstrate the various ways in which these people are affected by global policies and initiatives aimed at resolving the issue as well as by climate change in general.
3. To study the vital role these tribes, play as agents of change for the success of the policies and actions aimed at controlling the climate crisis.

Methodology

For the present study, a stratified random field survey was carried out in the tribal districts of Odisha. Based on their traditional knowledge of farming and irrigation, the interviews have been performed in the research region. Besides, Focus Group Discussions (FGDs) were conducted with tribal-village people to determine visible influences of low and heavy rainfall on farming, livestock and complete livelihoods in the areas. Along with survey and interaction with the indigenous peoples, reviewing several literatures helped a lot in collection. A digital camera was employed in the study area to record the documentary.. Secondary data has been gathered mostly from Gram Panchyaets and District Irrigation, Agriculture and Departments of Statistics.

Impact of changing climate in Odisha

Soil degradation is a result of large-scale monoculture farming, which guarantees a better yield to the agri-business in order to meet the rising food demand and turn agriculture into a lucrative economic activity. Large scale single crop farming that ensures a higher yield to the agri-business so as to face the increasing demand for food and make agriculture a successful economic activity, leading to soil deterioration. Such farming practices not only act against nature but also destroy the quality of the land due to their association with inorganic pesticides and fertilisers. They also lend a huge hand in the loss of local biodiversity, health and way of life for local residents and ultimately exacerbate the impacts of climate change throughout time. They also have a significant role in the decline of the area's biodiversity, health, and which eventually exacerbates the long-term effects of climate change. In several districts in Odisha, the mad rush to get high-yielding crops has caused an irreparable change in the soil. A prime example of this can be seen in Koraput's Kadamguda village where the Gadaba Tribe began cultivating high-yielding-variety (HYV) paddy crops after relentless persuasions by the government.

We had to make loans to meet these needs because it needed frequent input in the form of chemical fertilisers and pesticides. The yield was initially good. Due to persistent summer heat and little rainfall two years later, the crop failed. According to Bhagaban Gadaba, a 62-year-old member of the Gadaba tribe and farmer, "we went through a lot and had to find other employment to pay back the loans". Chandar Gadaba, 68, claims that while HYV seeds were grown, other crops, such as native tuber crops and other conventional crops, failed to sprout on the margins and borders of our land. We discovered that common visitors as the insects and birds stopped coming to the fields where HYV crop production was taking place. A wide range of food plants also disappeared from the area.

These instances clearly show evidence that the soil at Kadamguda village did not immediately support the native variety of crops when the farmers stopped using the HYV seeds. "The ground becomes poisoned after three years of chemical application," Purushottam Gadaba observed that when displaying a variety of native seeds he raises in his own fields without the use of any inorganic substances. Overusing fertilisers drastically increases the alkalinity and salinity of the soil and kills the natural micro flora present in it.

A traditional method still exists where the Dongria Kondh farmer grows multiple crops simultaneously in their donger without using any chemical fertilisers in Rayagada district. Our donges are primarily inspired by the forest ecosystem and are typically located on the periphery of woods. We plant more than 60 different varieties of crops, including vegetables, paddy, millets, legumes, and leaves in a season starting in May and harvesting them one by one throughout a nine-month period starting in August, according to Pala Urlaka from the hamlet of Darukona.

Kanhu Radhika, a 65-year-old from the Tikarpada village observed, Land is not something we make; it is a gift from nature. It provides us with everything we need, including food, energy, resources for making cloth, space, and all of our building supplies. Everyone can use it, including people, animals, birds, plants, and other wildlife. We should coexist peacefully with all of them rather than in strife.

Chemical fertilizers not only destroy the quality of the soil but also harm biodiversity which in turn exacerbates climate change and the overall ability of an environment to control diseases. They disrupt the interactions between pathogens and hosts that take place in pristine ecosystems, speaking on the sensitive interaction between viruses, people, and wildlife, Bernard Bett of the International Livestock Research Institute noted that it increases the possibility of zoonotic spillovers.

"We used to produce most of our food on our land," viewed by Budhbari Mandra, a farmer from village of Baunsapada of Malkangiri district. "However, things have evolved over time. Our crops are frequently destroyed by heavy rain. Farming is now less profitable."

Sukruni Kirsani, a 33-year-old tribal woman, stated, "Last year, flash floods damaged our paddy. The fertile top layer of soil was washed away by the torrential rain.

"Our grounds have grown less fertile as soon as we began adding chemical inputs in an effort to enhance crop productivity," Kirsani claimed. "And hybrid seeds frequently couldn't tolerate extreme weather conditions."

This hypothetical situation illustrates the plight of hundreds of other Bonda farmers who have been severely impacted by climate change, torrential rain, flash floods, and landslides.

According to Fredrick Stephen, director of the Asha Kiran Society, an NGO located in Koraput that has been working on the general development of the Bonda community for more than 20 years, "Young Bondas have started travelling to cities for better possibilities."

Recurrent landslides and flash floods from soil erosion have been destroying mono-crops over the past few decades in Odisha. But innovative measures like conventional millet cultivation and surface soil conservation have enhanced and the damaging effects caused by soil erosion have dramatically decreased on the Bonda hills. By returning to the farming of naturally occurring millets that are resistant to salinity, drought, excessive heat, pests, and diseases, Indigenous Bonda women are coping with the effects of climate change and nutritional problems. This is mutually beneficial to both the farmers as well as to several other communities cohabiting the bottom valleys of Bonda Hills.

With regard to the attack of insects and pests on crops, Raibari Mandra, a Bonda woman of Malkangiri district said that they never use any type of chemicals on their crops but permit verities of insects and birds prey on other insects and pests. "This is a sustainable method of defending our crops. They are a part of Mother Nature, the living things. The drafter of the Odisha Organic Policy 2018, Dinesh Balam, stated that "These women farmers are reaping different benefits from their indigenous climate-smart crops." Basically, the introduction of organic farming policy has been helpful to the indigenous people to boost farmers' income levels, boost their confidence, and make farming more climates resilient. The farming methods used by the Bondas have developed in step with nature; their ecology and climate resiliency are inextricably entwined.

Government Policies and Action

The Chief Secretary stressed the need for continuous State and local government leadership while taking note of the ongoing climate change measures in Odisha. The SAPCC 2018-23 adheres to the first plan's format and is organised using the Monitoring Framework of the progress report, as well as making reference to co-benefits. Therefore, it is necessary to consider the SAPCC 2018-23 in light of these findings as a whole rather than separately.

According to the report, Odisha's agriculture, forestry resources, industry, fisheries resources, environmental priorities, energy needs, freshwater supply, aquatic and terrestrial ecosystems, and human health are all likely to be impacted by the changing global climate. This assessment is done at the state level to undertake evaluations, a thorough literature analysis, and model projections, the Cell collaborated with a working group comprising department nodal officials, consultants, and experts for peer review. It also provides an overview of certain significant climatic events, their effects, and potential future occurrences.

Indigenous, regional, and traditional knowledge sources are a significant resource for coping with climate change, according to the IPCC (5th Assessment Report). Indigenous peoples and other natural resource-dependent cultures have a long history of adapting to drastically different and shifting social and ecological environments. However, the effects of climate change will decrease the value of local, traditional, and indigenous knowledge. Since such forms of knowledge are typically disregarded in policy and research, the mutual acknowledgment and integration of such types of information with scientific knowledge will increase the effectiveness of adaptation. One of the best widely used strategies is climate-smart agriculture, which is advocated by the Food and Agriculture Organization of the UN (FAO) for adapting and mitigating to climate change. It integrates a combination of both modern and traditional techniques incorporated by the initiatives of private and public enterprise based on indigenous knowledge.

Forests are the main source of livelihood of large number of forest dwellers. As per the FSI (Forest Survey of India), the cover area of forest has been increasing in the state. It is a good sign of improvement that is possible through large scale plantation and conservation of forest. In the western and northern parts of Odisha, the flora and fauna might be influenced by the current temperature rise in Odisha which directly affect the biodiversity system. Frequent natural disasters make the state of Odisha more victims to floods, drought, cyclones, heat waves and tamados due to its precise geo-climatic situation. Out of 30 district of Odisha, eighteen districts are flood prone areas. Basically, Odisha state experiences natural calamities in the month of September and October. The worst tropical cyclones to hit the state of Odisha were the super cyclone in 1999, Phailin in 2013, and severe cyclonic storm Fani, which caused water-borne and vector-borne diseases.

The Way Forward

To lessen the impact of the climate change crisis, the way forward may be:

i) Coastal Protection in tribal belt of Odisha: The coastal regions should be preserved by research, awareness, prompt forecasting, adaptation, evacuation, and warning systems.

ii) Water Efficient Technology: By using rain water harvesting, better drainage system, preservation of wetlands, use of ocean water and effective irrigation system, the state of Odisha is able toreduce the whimof climate change.

iii) Green and Sustainable Economy: It can be attained through protecting flora and fauna, creating Afforestation and adopting sustainable agriculture.

iv) Skill Development Strategy: Adopting skill up-gradation, providing training and employability to get sustainable livelihood in tribal based areas.

v) Self-Help Group: Involving in SHGs, tribal women can be empowered in drought/flood areas.

Conclusion

Despite countless efforts and government approved policies preventing climate change, there is still a milestone to be achieved in this direction. Climate change is now one of the biggest global issues that we face as a species and it has severe adverse effects on not only our lives but also on the economic systems, socio-infrastructure and biodiversity of the planet. Therefore, now is the time for the most influential institutions in the world, both public and private, to support indigenous peoples' efforts to be included in decision-making regarding actions that will secure their rights and help combat climate change. This study provides an overview of the climate issue and its impacts on the tribal region of Odisha while keeping the larger context in mind. Several attempts have been taken by the state to solve this issue and consistent higher allocations made to the budget. Although the state is actively taking charge of this problem, current studies indicate that climate financing must be mobilized more forcefully for there to be an equalized pressure on the state budget.

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MSMEs for Attainment of Sustainable Development Goals: A Study of SHGs of Odisha in Digital Milieu

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Abstract

The micro, small and medium enterprises (MSMEs) maneuver a crucial part in both developed and developing countries for their contribution towards employment generation, capital formation and inflow of foreign exchange. In the context of India, their contribution is immense and in states like Odisha they are indispensable for overwhelming dependence of the state on them. However, owing to multiple factors like natural conditions, political set-up, macroeconomic parameters, style of entrepreneurial leadership, availability of capital, usage of digital infrastructure, etc., the performance of MSMEs in Odisha is unpredictable. As such the performance of all MSME units in the state of Odisha is not at par. While some of the units are performing well, some are struggling a lot. If the factors that cause good performance of the successful MSMEs are traced and the same set is adapted in struggling units, maybe all the MSME units can perform well and facilitate achieving first three sustainable development goals (SDGs), i.e., SDG-1: no poverty, SDG-2: zero hunger, and SDG-3: good health and well-being. Thus, the objective of this paper is to identify the factors that make the MSME units, specifically the self help groups (SHGs) successful and devise strategies for effective usage of digital infrastructure for sustainable performance. The paper is based on Time Series secondary data pertaining to number of MSMEs, capital investment and number of employees.

Keywords: Sustainability, Digital Infrastructure, MSMEs, Odisha

1. Introduction

The micro, small and medium Enterprises (MSMEs) give large in amount to value addition, create job opportunities, cause for export and total development of a country. In Odisha itself MSME units are providing maximum employment next to agriculture. MSMEs offer a worldwide economy. It is an important giver in the Market Economy, generating new ideas, feed technological advancement, creates job opportunities and other aspects of social development. In MSMEs of Odisha, in the manufacturing sectors, various types of Industries like Textiles, Power, Non conventional energy, Fire wood, etc. primarily cater its end product to the economies globally. Although the service sector in India dominates in the context of contributing to the economy's GDP, the manufacturing sector not lagging much behind in this front. One of the major contributors to the GDP of India is the manufacturing sector. As a result, it is essential to the process of wealth creation, economic expansion, and poverty reduction.

Performance of MSMEs in India is a function of multiple exogenous factors like economic, social, political, natural, etc. and endogenous factors like managerial skill, leadership style, etc. Thus, it is pertinent to know the specific key factors that influence the performance of MSMEs leading to their sustainability. Moreover, as there is a paradigm shift of the society to digital world, sustainability through the use of digital infrastructure is the panacea at present. Thus, MSMEs need to make the best use of digital infrastructure for their sustainability and growth.

2. Literature Review

Based on mixed methodology study, it is discovered that the primary challenges and obstacles faced by MSMEs are the difficulty in getting the required finance, cumbersome official procedure, unavailability of avenues for credit, and gloomy enterprise conditions. Inadequate government assistance, arbitrary legislative changes, and a lack of training are other concerns for MSMEs [Ahmad, 2012]. The places of establishments of small and medium-sized businesses (SMEs) are a major factor for their endurance. The success of SMEs depends on their access to resources and the local business climate. Thus, in order to alleviate the effects of their resource limitations, many businesses have exploited location-specific endowments [Banwo et al., 2017].

The conflict resolving power of the leaders has direct bearings with the role perception of leaders. It is immensely important because style of resolving conflict by leaders is a leading anxiety in SMEs owing to its value in problem-solving, employee retention and employee motivation (Karadakal, et al., 2015). Owing to bottlenecks for small firms in India and highly competitive environment, technological innovation influencers (TIIs) can be treated as a panacea. Performance of small firms can be improved by effective TIIs. This is the best way for accomplishing the objectives of growth and sustainability of small firms in India [Singh et al., 2016].

Regional Innovation System is the key to success of small firms. Firms need to develop their competence with the desired degree of autonomy. For this, strategic investments are required. Thus, appropriate financing capacity is a must for infrastructure needed for strategic investments that facilitates positive innovation. Further, to enhance systemic potential of the small firms, regional cultural bases need to be prioritized [Cooke et al., 1997]. Innovative SMEs and non-innovative SMEs differ from one another. Additionally, there are differences between SMEs with sluggish sales growth and SMEs with successful sales growth. SMEs need to have "own resources and capabilities" in the form of domestic strength and a well-defined internal strategy if they want to innovate successfully. Younger, smaller companies that are "entrepreneurial" in character and innovative contributed to greater sales growth for SMEs in comparison to older, larger companies that are "salary-substitute firms" in nature and lack innovation [Subrahmanya, 2015].

Factor markets are inherently unfinished. As a result, any company that wants to stay in business must accumulate a sufficient amount of assets. The capacity of assets to be replicated or replaced easily determines how sustainable a firm's asset position will be. Limitability is associated with the following aspects of the asset accumulation process: causal ambiguity, interconnectedness, asset erosion, and time compression diseconomies [Dierickx & Cool, 1989]. Technical skills at the intermediate level are more crucial than those at the advanced level. The patterns of relationship between firm-level innovativeness and a number of indicators of skills, skill requirements, and training activities are studied on the basis of a study on a sample of 1345 SMEs in Northern England. According to the most reliable and agreeable statistical relationships, there is a negative correlation between "firm-level training magnitude" and "innovativeness" of products, processes, manufacturing, and services. The most inventive businesses train their employees more.[Freel, 2005]

SHGs may be able to aid in the development of women. The expansion of SHG activities has allowed rural women to take part in economic activities and household decision-making at both the household and societal levels. As a result, rural development takes on a democratic, participatory character, making sustainable development possible. In actuality, SHGs aid in the positive development of rural areas [Sharma, 2005]. With access to financing, women should be given the freedom to make their own decisions, participate in training programmes, and launch their own businesses, all of which will benefit their families financially and elevate their social status, thereby significantly reducing their poverty [Devi. 2014]. The SHGs are motivated by a group approach. Rural women who receive loans may be able to launch and grow their own businesses. Liberation, self-respect, strength, and courage are felt by the ladies. Women in rural areas now have a voice thanks to SHGs as they discuss their thoughts on becoming self-sufficient in a variety of productive spheres of life. Their political rights might now be exercised as well [Pandey et al. 2012].

3. Objectives, Hypotheses and Methodology

3.1. Objectives

The paper has the following objectives.

- To determine the variables which lead to the success of SHGs/MSME units, and
- To devise strategies for effective usage of digital infrastructure for sustainable performance.

3.2. Hypotheses

To determine the link between two variables in an experiment, a hypothesis is utilised. The performance of MSMEs units is impacted by a variety of factors in the current study. A model has been created specifically for this study with the goal of describing the variables affecting MSMEs. Consequently, creating the study hypotheses that are described in the next sections.

3.2.1. Capital investment and MSMEs units.

Funds are the act of providing finance for business activities, for purchase or investment. The main difficulties of financial support faced MSMEs sector. There are various factors affecting the performance of entrepreneurship over a period of time. The Government changes its policy to give a power-up to entrepreneurship in the country for the growth of the MSMEs units to invest their capital.

Null Hypothesis (H0): The volume of the investment under management and the MSMEs units are unrelated.

Alternate Hypothesis (H1): The volume of the investment under management and the MSMEs units are correlated.

3.2.2. MSMEs units and Employment Generation

MSMEs are one of most contributors of the country's economy, particularly in the context of employment generation. MSME sector ranks second, only after agricultural sector, in providing employment to human resources. Nearly 120 million Indians have got employment in MSME sector and the sector also reasonably contributes to GDP of the country. Out of the contribution to GDP by manufacturing sector, around 6.11% comes from MSME sector. Similarly, out of the contribution to GDP by service sector, around 24.63% comes from MSME sector. Moreover, MSMEs in India help to remove regional disparities by industrialization in rural and backward areas. MSMEs also help in improving the standard of living of rural poor.

Hypothesis (Null): Controls of MSMEs and generation of job do not positively correlate with one another.

Hypothesis (Alternate): Controls of MSMEs and generation of job do positively correlate with one another.

3.3. Methodology

The basis of this study is the time series data. Secondary sources have been covered to obtain secondary data pertaining to all the variables identified - MSME units, Volume of investment and Quantum of employment. Published materials of government and non-government organizations such as government websites, magazines, news papers, MSME annual reports of Odisha and the hand book of RBI reports are used, where ever required to collect the secondary data. This paper based on the important contribution of MSMEs in the state of Odisha.

Study time frame: The study's fifteen-year time frame runs from 2000–01 to 2018–19.

Tools of analysis:

- Secondary sources of data,
- Quantitative analyses using the statistical package SPSS have been used to analyze the data.
- In particular, the analysis involves undertaking multiple regression procedures.

4. Analysis and Interpretation

Multivariate analysis is the core of this study. Multiple regression model is used to establish degree of association among a set of variables. For the purpose, time series data from 2000-01 to 2018-19 of MSMEs in Odisha pertaining to MSME units, volume of investment and quantum of employment are considered, as exhibited in table-1.

Table-1. Details of MSMEs units, capital Investment and number of Employee

YEAR	NO. of SSI/MSMEs	Capital Investment (Rs In Lakh)	NO. of Employee
2000-01	3676	15318	18115
2001-02	3919	16523	16582
2002-03	4008	15514	16320
2003-04	4431	17013	20547
2004-05	4511	24558	21898
2005-06	4786	27044	25142
2006-07	4476	12967	18760
2007-08	4710	29551	23301
2008-09	4806	22792	20996
2009-10	4907	29234	23195
2010-11	5010	38502	24451
2011-12	5505	50731	30387
2012-13	5931	43290	27104

2013-14	7009	66941	32136
2014-15	7508	71321	35642
2015-16	53920	267964	166731
2016-17	57783	303463	175221
2017-18	50158	232445	147252
2018-19	69673	319656	194770

Source:- Annual Report 2000-01 to 20018-2019 GoI, Ministry of MSMEs

Thus, we choose capital investment and number of employee as two independent variables and MSMEs units as one dependent variable. Ordinarily, we construct regression model to association the degree of association between a dependent variable and a set of independent variables. In this study, multiple regression models is constructed for explaining the variation in dependent variable, i.e., MSME Units by identified independent variables, i.e., volume of investment and quantum of employment. Generic model of multiple regressions is presented below.

$Y=b0+b1X1+b2X2+\text{-------}+_{bnxn}+E$,
Y= the Dependent variable;
X1= the Independent variable 1 (b1);
X2= the Independent variable 2 (b2);
N= number of observation;
b0, b1, …………., bn = Parameters of the Model, i.e., the constants/coefficients,
E= Error term

The Multiple Regression is to be done to check that the variables are linear and normally distributed. Before carrying out analysis, we should check the assumption. To check the normality of data we have used One Sample Kolmogorov-Smirnov Test. We found that the variables which have been taken are not normal. The significance value of the MSMEs unit is less than .05 (p-value = 0.001) and that of other two factors, i.e., capital investment (p-value = 0.026) and number of employee (p-value = 0.003) is also less than the level of .05 (as presented in table-2). As per the SPSS output as presented in table-2, the significance values are less than the usual level of significance, i.e., 5%, so we infer that data considered for this study are not confirming normal distribution.

Table-2. One-Sample Kolmogorov-Smirnov Test

		No. of SSI	Investment made	No. of Employment
N		19	19	19
Normal Parameters[a,b]	Mean	16143.52	84464.5789	54660.52
	Std. Deviation	22432.65	106677.00	62444.80
Most Extreme Differences	Absolute	.439	.339	.409
	Positive	.439	.339	.409
	Negative	-.289	-.251	-.270

Kolmogorov-Smirnov Z	1.915	1.476	1.783
Asymp. Sig. (2-tailed)	.001	.026	.003
a. Test distribution is Normal.			
b. Calculated from data.			

Source: SPSS output

The Durbin-Watson test is used to determine if the null hypothesis that the residuals from a typical least-squares regression are not auto-correlated is true. When the Durbin-Watson test statistic score is near to 2, there is no auto-correlation. The Durbin-Watson test statistic result of 1.414, which implies positive auto-correlation, is close to non-auto-correlation, according to Table 3.

Table-3: Summary of the Model[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.999[a]	.997	.997	1275.19450	1.414
a. Predictors: (Constant), V3Noemp, V2capinv					
b. Dependent Variable: V1no.msme					

Source: SPSS output

5. Results and Analysis

The study's results, including the testing of the hypothesis and mediating effects, are presented and discussed in this section.

5.1. Hypotheses Testing

Multiple regression analysis is used to look at how the variables relate to one another. A group of independent variables are analyzed in a multivariate fashion to determine their link to the dependent variable. The amount of employment and investment are taken into account as independent factors, whilst MSME units are considered to be the dependent variable. Additionally, the statistical significance of the proposed relationship must be assessed in order to determine the degree of confidence that the true relationship is roughly the estimated relationship.

MSMEs units, capital investment, and employment were supported by the regression test because they had p-values (p-value =.000, 0.024, and.000) less than.05. The null hypotheses are therefore disproved. The capital investment value is negative (value = -0.375), indicating an inverse association between MSMEs and capital investment as indicated in the table (Table-6). However, the value of the other factor, i.e., the number of employees, is positive (value = 1.371), demonstrating a positive correlation between MSMEs and the number of employees. The hypothesis is therefore disproved.

The summary of the model is displayed in table 4. The correlation between the estimated and actual values of the dependent variable is measured by R. R^2 is the square of the correlation coefficient, which measures the relationship between the estimated and observed values of the dependent variable. And R2 shows how much of the total variation is accounted for by the regression model. The regression model accounts for 99% of the variation with an R^2 of 0.997. By the presence of many independent variables, even some of those having no or negligible impact on dependent variable, the value of R^2 gets exaggerated. To nullify that, the adjusted R^2 is usually considered. Since adjusted R^2 value is also 0.997, it means 99% of variations are explained by the model. Conversely, we can interpret that approximately 1% of the variation has not been explained by the model. Thus, we can infer that, there are some other factors which could be responsible for explaining for the remaining variation. Those factors could be social, political, economics, managerial and leadership style, etc.

Table-4. Summary of the Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999[a]	.997	.997	1275.19450
a. Predictors: (Constant), V3Noemp, V2capinv				
b. Dependent Variable: V1no.msme				

Source: SPSS output

Table 5 displays the ANOVA output from SPSS. The ratio of the average sum of the squares to the various degrees of freedom. The MSm/MSR ratio to the corresponding significance values of that is known as the F-ratio. Given that the Sig. value is 0.000, which is lower than the p value of 5%, it may be assumed that the investment volume and employment quantum considerably explain the dependent variable. The null hypothesis is rejected since the Sig. Value (0.000) is less than the p value (5%). It indicates that there is a relationship between the dependent variable and the independent variables (volume of investment and employment).

Table-5. SPSS output on ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9032017320.611	2	4516008660.306	2777.166	.000[b]
	Residual	26017936.126	16	1626121.008		
	Total	9058035256.737	18			
a. Dependent Variable: V1no.msme						
b. Predictors: (Constant), V3Noemp, V2capinv						

Source: SPSS output

Table-6. Regression Coefficients

Model		Coefficients (Unstandardized)		Coefficients (Standardized)	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4126.540	477.075		-8.650	.000
	V2capinv	-.079	.032	-.375	-2.495	.024
	V3Noemp	.493	.054	1.371	9.129	.000
Dependent Variable: No. of MSMEs						

Source: SPSS output

Standardized (β) and Unstandardized (B) coefficients of the model are presented in Table-6. The constant term, i.e., the intercept of the line as denoted as b0 is - 4126.540. The B value for investment, i.e., b1 is - 0.079 which is the gradient and for employment, i.e., b2 is 0.493. Since the Sig. value for capital investment is 0.024 and that of employment is 0.000, which are lower than the level of significance 0.05, these two variables are significant. Thus, the generic model is Y = b0 + b1 Inv. + b2 Emp, where Y is the No. of MSMEs, Inv. is Investment made and Emp. is employment. And the specific model is Y = - 4126.540 - 0.079 Inv. + 0.493 Emp. As per the model, one unit increase in investment will cause 0.079 negative unit growth of MSMEs and one unit growth of employment will cause 0.493 unit growth of MSMEs. Standardized regression coefficient (β) values help us to compare among the independent variables pertaining to their influence on the dependent variable. As β value for investment is - 0.375 and that of employment is 1.371, due to higher β value for employment, employment is the most influential factor for the performance of the MSMEs.

5.2. Factors that have the greatest impact on success of MSMEs

MSMEs units and capital investment are revealed to have a significant link with MSMEs' success, with p-values under.05. MSMEs must therefore concentrate on these elements in order to improve their performance.

Table-7. Summary of Testing of Hypotheses

Research hypothesis	Decision	Reason for accepting or rejecting
The influence of capital investment has Positive association with MSMEs units.	Rejected	Supported at 5% significance level (p-value=.024)
The influence of MSME units has Positive association with employment generation.	Rejected	Supported at 5% significance level (p-value= 0.000)

Source: Output from primary data

5.3. **Discussion and Implication**

The findings show that capital investment has a greater impact on MSMEs than employee count. Numerous research that support the association between entrepreneurial aspirations and motivation and the MSMEs sector also corroborate the conclusion. To perceive an opportunity and take action, one needs motivation (Carsrud and Brannback, 2011). Additionally, research on the relationship between capital investment, employment creation, and the business success of MSMEs units shows that capital investment has a greater impact than employment creation.

As a consequence of our research, MSMEs have the chance to determine the entrepreneurship's strengths and weaknesses as well as current possibilities and threats. Owing to multiple difficulties and threats, MSMEs in India, particularly in Odisha are more focused about their existence rather than expansion. Availing enough credit on time, exaggerated price for availing credit, unable to make use of advanced technologies, denied of innovation through appropriate research and development, improper or no assistance for augmenting skill sets and getting used to with the changing environment, and improper judicial interventions in the form of complicated laws pertaining to labour, etc. are a few of those difficulties that put question mark on the sustainability of the MSMEs.

6. **Conclusion**

MSMEs in India, particularly in Odisha, play a vital role for the economy owing to its performance in employment generation, penetration to otherwise unreachable geographical regions and mobilization savings-investment. However, the potential of the MSMEs is much more than the performance it has been displaying in reality. Factors that influence the performance of MSMEs are utilization of capital and human capital besides some other generic factors like internal and external environment, and leadership style. Very often, owing to inappropriate credit worthiness, the MSMEs get crowded out from the loadable funds market as the financial institutions prefer big business houses over MSMEs to lend. Thus, MSMEs mostly rely on their own capital, which may not be enough to capitalize the potential of the MSMEs the most. Owing to withdrawal of subsidy for the MSMEs, they are directly competing with large industries and it is creating great problem for the MSMEs. Besides, MSMEs are struggling to excel for improper and inadequate infrastructure, difficulties in standardizing their products, maintaining qualities of their products as expected, etc. However, amid various difficulties faced by the MSMEs, a ray of hope for their sustainability is due the change in governmental approach towards them. Instead of protecting the government is now focusing on promoting MSMEs.

Thus, sustainability of MSMEs is at stake for threats from multiple fronts. Enterprises established through SHGs are also in the trap of same threats. Threats can be converted to opportunities only if the MSMEs get digitized. In the digital era, all the functioning of the MSMEs could be done digitally. Resources such as Internet, Broadband, Mobile Networks, Communications Satellites, Data Centers, End-user devices, IoT, Applications, application programming interface (API) integration, etc. comprise digital structure for digitized infrastructure. Optimal usage of digital infrastructure will undoubtedly make the MSMEs sustainable.

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A Study on E-Tailing and the Factors Influencing Consumer Buying Decisions of Dairy Products During the Covid-19 Pandemic in India

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Abstract

During the COVID-19 pandemic and its mutations infecting humans, the Government of India imposed a lockdown all over the country, the exceptions were for commodities covered under the Essential Commodities Act, 1955. The essential commodities act, includes drugs, dairy products, fertilizer, foodstuffs, petroleum products, jute, textile, fruits, vegetables, cattle fodder, and cottonseed. This study will understand how the dairy industries coped during the pandemic by adopting new strategies from e-tailing and related factors. During the ongoing pandemic, this study mainly focuses on using mobile apps and e-stores for online sales of dairy products. The quantitative study uses primary and secondary data. The dairy products included in the study are curd, paneer, buttermilk w.r.t e-tailers like Milky moo, Omfed, Big Bazaar, Fresh express, Home express, Swiggy, and Nature's basket. Many dairy companies have their apps and websites. This study is carried out in the capital city Bhubaneswar.

Keywords: COVID-19, Customer Buying Behavior, Dairy Sales Online, Influence, Price

Introduction

Recently the whole world has gone through the worst crisis due to the COVID-19 pandemic. As there was a widespread of the virus, the Indian government-imposed lockdown all over the country. During the lockdown, shops and stores were shut down, the exceptions were for are the commodities generally covered under the Essential Commodities Act, 1955. The essential commodities are those, which include drugs, dairy products, fertilizer, foodstuffs, petroleum, jute, textile products, fruits and vegetables, cattle fodder, and jute and cottonseed.

Nearly every sector has witnessed a drastic change and has adapted to it accordingly to survive. Dairy is an important part of the food industry in India. It is an important component of both food services and packaged foods. Packaged food includes end products (milk, curd) or by-products like butter, cheese, and dry milk powder. Given its versatile role in our domestic menu as well as in the financial setups like hotels and restaurants, dairy is the backbone of the food industry in India. In the initial period of the COVID-19 pandemic, the dairy industry faced has faced many challenges. These challenges were faced mainly due to the dwindling graphs of demand and supply chain. The challenges were:

1. In the pre lockdown period milk being produced found appropriate channels for its distribution and thus demand and supply chain was intact. During the initial lockdown several restaurants, hotels, tea stalls were shut down. Hence, the milk produced couldn't find its way to the consumers.
2. Due to strict lockdown transportation was greatly affected that adversely affected the milk supply chain.
3. Since, the openings of shops were bound by the timings set by the Government. The average consumption in the market decreased.

To confront these challenges the dairy industries made adjustments such as supply chain simplification and operational flexibility in the business management. The following factors that boosted their success are

1. Digitalization
2. Improvization in manufacturing
3. Coordination throughout the supply chain
4. Rationalization of products

Many companies moved from physical sales to online sales through apps and websites. This has been shown in figure1.

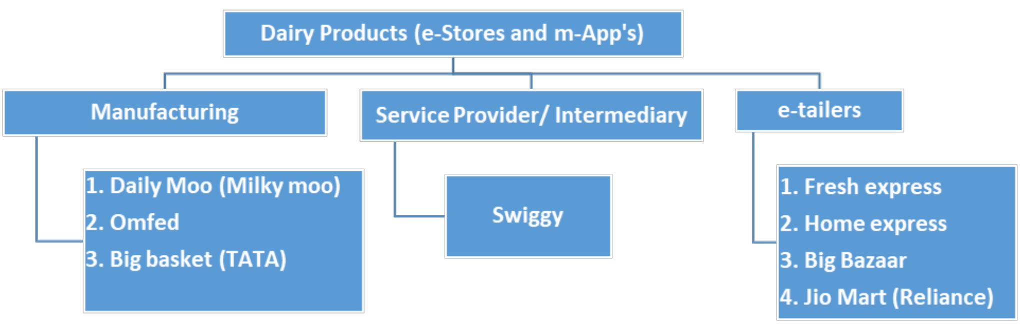

Fig. 1: Transition of dairy retailers to e-tailers or online service providers

In the above figure 1, the dairy products are now transitioned from the following categories as mentioned here to e-tailers or online service providers (e-Stores and Mobile App). The manufacturers of dairy products such as Milky moo have its product available on Daily Moo https://dailymoo.in and in the Google Play store its app is available, similarly the manufacturer Omfed has made its products available at http://omfed.com/default.asp?lnk=home.

TATA has its dairy products available for online consumers at Big Basket https://www.bigbasket.com/ and its m-App is available in the play store for the consumers to buy the products. Swiggy is one of the online service providers /intermediaries for dairy products consumers and they are available at https://www.swiggy.com/, the mobile app is also available. E-tailers such as Fresh express are also available in the google play store. Home express https://play.google.com/store/apps/details?id=com.milkexpress.user, Big bazzaar has its dairy products available in their mobile apps for dairy products at their website. The Jio Mart (Reliance) has its dairy products available for online consumers at https://www.jiomart.com/, and also has its mobile app in the google play store.

The proposed consumer buying decision model of dairy products is given below, the outline is drawn about the literature review, as shown in Fig 2.

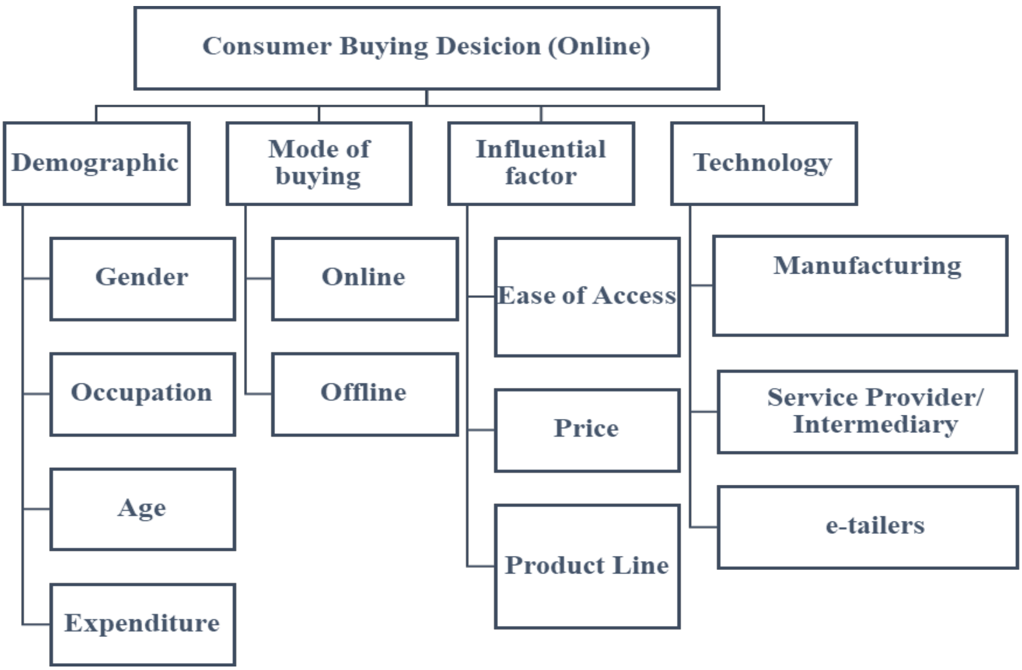

Fig. 2: Dairy Consumer Buying Decision (Online)

In the above figure 2, the consumer buying decision or preference (Online) is influenced by the following factors Demographics (Gender, Occupation, Age, and Expenditure), Mode of buying (Online, Offline), Influential Factor (Ease of Access, Price, Product Line), Technology (Manufacturing, Service Providers/Intermediary, e-tailers). We knew that there were severe restrictions and lockdowns during the first wave, followed by liberal restrictions to containment zones during the second wave of the pandemic, and now during the ongoing third wave with similar restricted measures by central and state government. So, the people become acquainted with the online ordering of dairy products using the website and mobile apps services provided by the manufacturers, service providers/ intermediaries, and e-tailers. The pandemic has made the quick and wider acceptance of the technology adoption among them thereby enabling the transitions as shown in figure 1 above. The consumers found it easy and efficient to use the technology for ordering the dairy products and the sellers facilitating in fulfilling the orders efficiently.

This study is carried out in the Bhubaneswar city also known as the temple city or capital city of Odisha, India, from October 2021 to December 2021. The responses are collected using the questionnaire developed by using the Google forms and the link was shared through Facebook, WhatsApp, email for the consumers to fill in the responses. The data received from 200 respondents and 184 respondents are found to be fit for further study.

Problem Statement

During the Covid-19 pandemic, due to lockdown and restrictions, only essential commodities are accessible. It is found that the following problems are existing in Online sales of dairy products and the consumers have differential influence due to mobile apps and e-tailers becoming easily available for placing orders. In the figure above we can see that the physical delivery mode is now becoming more structured by using mobile apps and e-tailing websites for online orders and delivery of dairy products. The COVID norms and its implementation of social distancing measures have forced consumers to change their dairy buying behavior to online mode.

1. During the initial lockdown several restaurants, hotels, tea stalls were shut down. Hence, the milk produced couldn't find its way to the consumers.
2. Since, the openings of shops were bound by the timings set by the Government. The average consumption in the market decreased.

Objective

1. To determine whether there is an impact of e-tailers and using mobile apps on buying decisions of consumers for dairy products during the pandemic.

2. To identify the important key factors that have influenced online consumer buying decisions.

Literature Review

1. Abhijit Das (2021), This study has concluded that the availability of the required inputs of dairy products at subsidized amounts, procurement price increase of milk, infrastructure supported through the use of technology, and encouraging domestic consumption and export of dairy products are among the proposals to minimize financial loss to various players in the dairy sector.
2. Bharti Aggarwal (2020). The author in her study has focused on the shopping services in the online medium. It is observed that e-commerce organizations have to take the required steps for strategies effective for marketing in the e-commerce sector.
3. Shende Popat (2020), In the paper the author has concluded that due to pandemic, the daily demand for milk in the market is steadily decreasing. In the beginning, the collection centers collected milk regularly, but during the high-risk pandemic period, the milk demand was clutched and the milk produced was kept at farmers' homes without being sold. Farmers have suffered significant economic losses. COVID-19 enslaves not only milk producers but all agricultural workers.
4. Somesh Dhamija (2020), A Descriptive Analysis on the Customer Satisfaction on Dairy Products: During the survey, it was discovered that some of the consumers experienced leakage, so the packing should be done efficiently. Advertising should be increased to improve the image of the company. With changing environment, private dairies are rapidly expanding. To compete, the sales promotion committee must implement new market strategies.
5. Rajeev Kumar (2018), Factors leading to customer satisfaction in the dairy industry: A study in Indian perspective
6. K . Kadakol (2020), A Study on consumer satisfaction towards Nandini Milk Krishna: this study concluded that KMF Nandini Milk has a lot of loyal customers, but it is also facing a lot of challenges and rivalry in the market, and it should maintain good service so that customers do not think about switching to another brand. Factors such as service, taste, quality, price, distribution, availability, and packing should all be maintained strongly so that the company can gain more customers.
7. Gunjan Bhandari (2020), In the study based on a pan-India survey of around 1000 households, this study studied the effect of an ongoing pandemic for household consumption patterns

w.r.t the dairy products across geographical regions, household locations, and income class. During the lockdown, it is observed that there is a significant decrease in the consumption of milk by households. The other products are paneer, butter, and ice cream with a decrease in consumption, but it was also observed that there is no significant change in the consumption of the products such as ghee, curd, and buttermilk.

8. S. Mohanty, et.al. (2019), this research suggested using Technology and e-tailing as relevant factors influencing and positively affecting the consumers buying behavior.
9. Dr. Ganesh Pandit Pathak, In the study, the author has concluded that customers' preferences have shifted for grocery items, FMCG products, and bakery items from organized retailers to unorganized and e-tailers. The main reasons for preferring unorganized e-tailers are their ease of use, security, hustle free, and adherence to all restrictions.

Data and Methodology

Research Design: The finalized research design in this study is designed by using the Exploratory and Descriptive research design.

Selection of sample:

Primary Data: A questionnaire was made using Google forms to collect the data online from the respondents.

Secondary Data: The data was obtained through the websites and also from the other indexed published papers, case studies, reports, books, journals, and other forms of published material.

Sampling Design:

The methodology used is stratified random sampling to select the respondents according to their details obtained from the exploratory study of the respondents between 21 to 40 years of age having accounts on the web and mobile apps for ordering the dairy products.

Sample Size: The respondents finalized for the study were 184 numbers.

Sampling Area: A pilot survey was carried out in Bhubaneswar city, also known as the capital city or temple city of Odisha from October 2021 to December 2021. The questionnaire developed by using an online form in Google was used for collecting the responses from the consumers. 200 respondents gave their responses online in the Google forms and 184 respondents were found fit for further study

Major Variables

Gender, purchasing frequency, age, occupation, website, mobile apps, dairy product range, ease of access, price, product line.

Hypothesis

H_1: Ease of access in e-tailers and mobile apps to buy dairy products have a positive impact on Customer Preference during the pandemic.

H_2: Pricing of dairy products in e-tailers and mobile apps has a positive impact on Customer Preference during the pandemic.

H$_3$: The product Line of dairy products in e-tailers and mobile apps has a positive impact on Customer Preference during the pandemic.

To identify whether there is an impact of e-tailers and mobile apps on the online buying decisions of the consumer. The correlation methods and regression methods were used. The researchers tried and aimed to find the type of relationship and the inferences from the same w.r.t their independent variables (Predictors) and the criterions (dependent variables). The population selected in the study are aged between 21 to 40 years, using e-tailers and having mobile app accounts for online purchases. After editing the data 184 respondents as valid are undertaken for further study and inferences as mentioned below. The study at present includes both descriptive and analytical methods.

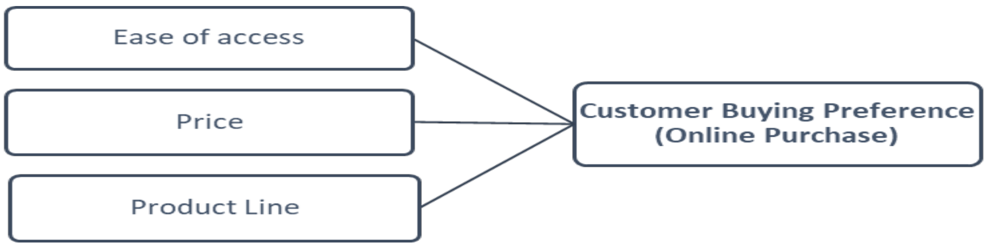

Fig.3:- Conceptual framework by the researcher

EMPIRICAL RESULTS

Table-1.1: Analysis of Respondent's Demographic Variables

S.No.	Characteristic	Distribution	Frequency	Percentage
1	City	Bhubaneswar Cuttack Others	141 29 14	76.6% 15.8% 7.6%
2	Gender	Male Female	91 93	49.5% 50.5%
3	Respondents Age	20 years or Less 21-30 Years 31 to 40 Years	46 120 18	25.0% 65.2% 9.8%
4	Profession	Employed Unemployed Business Student	137 33 3 11	74.5% 17.9% 1.6% 6.0%
5	Mode of Buying	Online Offline	158 26	85.9% 14.1%
6	e-tailing and Mobile App Account	Yes No	184 0	100% 0%

(Source: Survey data, 2021)

From Table 1.1 we can infer that the respondents from the city of Bhubaneswar are in majority 76.6%, it is followed by Cuttack city district with 15.8% respondents and the remaining 7.6% respondents are from another city of Odisha. From the analysis of the respondent's gender, it is found that 49.5% are male and 50.5% are females and are the majority in number. The age of the respondents gives the details as 65.2% respondents are between 21 to 30 Years age group. It is also found that 74.5% of respondents are employed. The majority of the respondents are preferring to buy dairy products using an Online medium and all respondents have e-tailing web and Mobile App accounts.

Table 1.2: Descriptive Outcomes of Statistics

	Mean	Std. Deviation	Skewness	
	Statistic	**Statistic**	**Statistic**	**Std. Error**
Ease of Access	1.10	.339	3.441	.179
Price of Dairy Product	2.59	1.229	-.007	.179
Product Line	2.20	1.028	.197	.179
Consumer Buying Preference (Online)	2.19	.555	.051	.179

(Source: Survey data, 2021)

In the above to identify it from the table, the general nature of research variables descriptive statistics was calculated. The level of the response given for each independent and dependent variable by the sample was identified by the researcher with much effort. We found mean values of the Predictors or independent and the constraints (dependent variables) show the response of the respondents as either agreeing or strongly agreeing with the questions given. It is also found that the mean value for the dependent and independent variables are almost similar during comparison.

Table 2: Cross Tabulation Age of Respondent and Ease of Access

Age of Respondent * Ease of Access Crosstabulation					
		Ease of Access			Total
		Milky moo	Omfed	Swiggy	
Age of Respondent	Below 20	39	6	1	46
	21 to 30	110	9	1	120
	31 to 40	18	0	0	18
Total		167	15	2	184

(Source: Survey data, 2021)

The analysis of Table 2 consists of 184 respondents in total. From the above the relationship of each group is shown along with the ease of access by consumers in buying dairy products online. The Milky moo is the most preferred among the entire sample. It is 110 in numbers (65.9%) from the age group of 21 to 30 years, 39 are below 20 years (23.4%) and 18 respondents (10.8%) respondents are found to be in the age group of 31 to 40 years.

Table 3: Independent sample t-test DV and Gender of respondents

	Gender of Respondent	N	Mean	Std. Deviation	Std. Error Mean	T	Sig.
Consumer Buying Preference (Online)	Male	91	2.20	.600	.063	.183	.855
	Female	93	2.18	.510	.053	.183	

(Source: Survey data, 2021)

In table 3, the inference from the predictors (independent sample t-test) between the criterions (dependent variable) for online purchase and the respondent's gender is conducted to check their significance difference. The result obtained from the t-test reveals the insignificant relationship between the consumer buying preference (Online) and gender ($P > 0.05$).

Table 4: one way ANOVA test of DV and respondents Occupation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.443	3	.814	2.719	.046
Within Groups	53.900	180	.299		
Total	56.342	183			

(Source: Survey data, 2021)

Considering the Table 4 analysis, a one-way ANOVA test is done for finding the difference of the effect between Occupation of the respondents on consumer buying decision (Online) for the selected sample, it is found that the Sig. value is .046, it is less than 0.05. Hence it is significant.

Regression Analysis

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. An error of the Estimate
1	.257[a]	.066	.050	.541

(Source: Survey data, 2021)

Table 6: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.718	3	1.239	4.240	.006[b]
	Residual	52.624	180	.292		
	Total	56.342	183			
a. Dependent Variable (Criterion): Consumer Buying Preference (Online)						
b. Predictors (Independent Variable): (Constant), Price of Dairy Product, Ease of Access, Product Line						

(Source: Survey data, 2021)

From Table 5 analysis, the value of adjusted R square for the regression analysis was .050, hence it is confirming that 5.0% variation for the consumers buying decision (online) was effectively explained by the independent variables (Ease of access, Price of Dairy product, and Product Line).

From Table 6 analysis, the significance value from the ANOVA test is .006. Therefore ($P < 0.05$) it also confirms for the regression line as developed is strong enough for predicting the behavior of the criterions or dependent variable (buying behavior – Online Customer) according to the changes of independent variables (Ease of Access, Price of Dairy Product and Product Line).

Table 7: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.223	.167		13.334	.000
	Ease of Access	-.287	.120	-.176	-2.391	.018
	Product Line	.036	.040	.067	.902	.368
	Price of Dairy Product	.079	.033	.175	2.384	.018
a. Dependent Variable: Consumer Buying Preference (Online)						

(Source: Survey data, 2021)

From the above analysis of Table 7, there are Significance (P) values obtained in Ease of access and Price of Dairy products are .018 and .018. Hence $P<0.05$, therefore the variables are significant and are also the predictors affecting the Consumer buying preference (Online) decisions. However, the Product Line (P) value is 0.368 ($P>0.05$), therefore it is not significant and is not the predictor affecting the consumer buying decision (Online). Hence only two hypothesis Ease of access (H_1) and Price of Dairy product (H_2) are accepted, while the

H_3 (Product Line) is the hypothesis rejected.

Conclusion and Recommendation

This study focuses on the influence of e-tailing and mobile apps on the dairy product industry in Bhubaneswar city for consumer buying preference (Online buying) in the ongoing pandemic time of the COVID-19. These outcomes of the research and study are critical for dairy product manufacturers, distribution channels including their intermediaries, retailers, consumers. It is required to change their strategies in marketing and to understand trends of the current market for Online shopping or ordering preference.

It will also be useful for expanding their business during the challenging times via facilitating the Mobile Apps services because of the pandemic because it is expected to last for a substantial time in the future.

The questionnaire responses obtained from 184 eligible respondents and from those who were able to answer the questions consisting of the customer buying preference (Online Purchase), they have either agreed or strongly agreed for it, the findings also reflecting that e-tailing websites and mobile apps have a significant effect on the dairy product industry.

The second challenge is related to the key factors of e-tailing and mobile apps that affect online consumer buying decisions. This research identified the three factors like ease of access, price, and product line based on the findings of previous research work an exploratory study carried out by the researcher for e-tailing and use of mobile apps.

The inference obtained from the regression analysis suggested that the two independent variables ease of access and price have a positive affiliation with online customer buying preferences for online purchases using their account on e-tailer's website and mobile apps. Whereas the product line has an insignificant association with consumer buying preferences (Online purchases).

It may safely be concluded that the marketers can successfully thrive and develop strategies using the web services (e-tailing) and mobile apps, through digital marketing efforts and target their consumers for ROI by making sales online, as the reports suggest that many consumers tend to shop online and have accounts in the mobile app and e-tailing websites to order the products, thereby they tend to purchase online by following social distancing and safety norms during the ongoing lockdown, restricted movement, new variants of virus mutations and COVID restrictions.

Our research also revealed that the milky moo mobile App (Daily Moo) is the most widely used app for dairy products ordering. Therefore dairy products sellers can use the outcomes mentioned here for their successful online marketing strategy.

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