

# JIM QUEST

*Journal of Management and Technology*

UGC Care Approved Journal

A Bi-annual Refereed Research Journal of Jaipuria Institute of Management, Indirapuram, Ghaziabad



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**Integration of Social and Environment Sustainability Issues into Balanced Scorecard:**

**A Paradigm Shift in Strategic Focus for Performance Evaluation**

**(A Comparative Case Study of Public and Private Sector Banks in India)**

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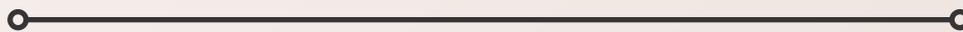
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# JIM QUEST

Journal of Management and Technology

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• Volume 17 • No. 2 • July -December 2021

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# JIM QUEST

Journal of Management and Technology

Volume 17 • No. 2 • July - December 2021



## From the Desk of the Chief Editor

It gives me immense pleasure to reveal the latest issue of the JIM QUEST- a bi-annual refereed research journal providing a platform for researchers, practitioners, academicians and professionals from functional areas of management to share innovative researches & practical experiences in the Indian and global perspective. This present issue includes researches in the field of Agriculture, Health & Lifestyle, Supply Chain, Financial behavior, Impact of COVID-19 on Cement Industry, and various issues related to E-commerce industry. Being a multi-disciplinary journal, this issue has wider implications for Indian agriculture, health, E-commerce and financial sector. Moreover, this issue addresses the challenges in various industries, describing the application of latest techniques and methodologies. Therefore, this issue has come up as a blend of theoretical, empirical and experimental papers that significantly contributes to the disciplines of management and interdisciplinary areas.

I take this opportunity to acknowledge the contribution of authors whose impactful research added value to JIMQUEST's current issue.

I hope that readers will find the content of JIM QUEST informative and valuable in their professional lives.

**Prof. (Dr) Daviender Narang**  
Chief Editor



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# A Systematic Review of Factors Affecting the Behavioural Intention of Farmers Towards National Agriculture Market (eNAM)

Narender Singh Negi \*  
Reshma Nasreen\*\*

## Abstract

*Abstract: The Purpose of this study is to conduct a systematic review of the factors affecting the Behavioural intention of farmers towards the National Agriculture Market (eNAM). This paper is a comprehensive literature review of forty-four articles published on Technology adoption models like the Technology Acceptance Model, Theory of Planned Behaviour (TPB), and Unified Theory of Acceptance and Use of Technology (UTAUT). The researchers identified numerous factors in the adoption of technology. Based on the objectives of our study, existing literature and relative importance of the variable, it was found that system quality, result demonstrability, system relevance, system accessibility, subjective norms, perceived economic wellbeing, image, self-efficacy, system anxiety, perceived risk, facilitating conditions, awareness, age, farm size, and Education/literacy are the factors which are consistently used by most of the researchers.*

**Keywords:** National Agriculture Market, Technology Adoption, Behavioural Intention, Literature review

## Introduction

Technology has changed the way we live our lives. Technology has become integral to our survival and has become all-pervasive. Technology has played a significant role in the progress of the developed nation and in changing the status of an under-developed nation to a developing nation. Technology can be seen in every sphere of life like Health, education, transportation, Finance, Social Networking, Online Games, communication, etc. Technology is effectively used in Service and Manufacturing Sector, but it's the agriculture sector that is lagged. The low rate of technology adoption in the agriculture sector is a significant concern worldwide. In India, with more than 60% of the population engaged directly or indirectly in Agriculture and providing necessities, i.e. food, clothing, etc., to the 1.3 billion people, the role of technology becomes more critical. With the advent of the green revolution in the sixties, production of agricultural produce increased manifold, and India became self-sufficient in food production, but the marketing of agricultural produce stills regulated by year-old provisions of Agriculture produce marketing committees (APMCs) called Mandis in rural areas. APMCs were established to provide an open auction platform to the farmers to sell their

produce at competitive prices, but over a period of time, the APMCs have become the den of Corruption, Nepotism, Political Interference, and exploitation. There is about 7655 APMC mandis in India, and regulation of these mandis is a state subject as per the constitution of India, which means all the laws concerning Agriculture are to be enacted by the respective state. On 14th April 2016, the Ministry of Agriculture and Farmers' Welfare inaugurated the National Agriculture Market (eNAM), an online trading platform for the sale of agricultural produce. The National agriculture market (eNAM) is an electronic trading platform that connects the existing APMC mandis to provide a unified platform for the sale of agricultural produce in India.

In this study, the researcher attempts to explore the factors affecting the behavioural intention of farmers towards the adoption of the National Agriculture Market (eNAM). This paper comprises five sections; the first section is the Introduction section, the second section summaries the available literature related to technology adoption and agriculture marketing in India. The third section explains the Research Methodology used and provides a conceptual framework. The fourth section presents the research findings and results, and the fifth section deals with the conclusion and policy implications.

\*Assistant Professor, Department of Management, Dyal Singh College University of Delhi

\*\*Professor, Department of Management School of Management and Business Studies, Jamia Hamdard

## Literature Review and Hypothesis Development

This section presents the available literature on the adoption of technology and agriculture marketing in India.

### 2.1. Evolution and definition of Agriculture marketing.

Agriculture marketing consists of two terms “agriculture” and “marketing”. Agriculture marketing can be defined as transferring agricultural produce from the producer to the consumer. According to Rehman, Selveraj, & M.Syed (2012), “Agricultural marketing includes all activities involved in moving agricultural produce from producer to consumers through time (storage), space (transport), form (processing) and transferring ownership at various levels of marketing channels”. Acharya & Agarwal, (2004) in their book titled, “Agricultural Marketing in India” explains Agriculture marketing as a “system which includes the assessment of demand for farm inputs and their supply, post-harvest handling of farm products, the performance of various activities required in transferring farm products from the farm gate to the processing industries and ultimate consumers, assessment of demand for farm products and public policies and programs relating to pricing handling and purchase and sale of farm inputs and agriculture products”. In India, Agriculture marketing activities are regulated by APMCs, which are established and regulated by the Respective State Agriculture Produce Market Committee Acts (State APMC Acts). These year-old marketing regulations were enacted to provide a competitive marketing environment for the sale of agricultural produce in the sixties but with the advent of time, they have become inefficient so to provide transparency and competitiveness in discovering the prices of agricultural produce, the Ministry of Agriculture and Farmers’ Welfare had provided an electronic trading platform (eNAM) for sale of agro-produce.

### 2.2. National Agriculture Market (eNAM)

National Agriculture Market (NAM) is a pan-India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities. It was launched by the ministry of agriculture, Government of India, on 14th April 2016 in 21 mandis of 8 states. Integration of mandis with the eNAM requires the states/ union territories to undertake three reforms, namely: (i) a single Trading license to be valid across the state, (ii) single-point levy of market fee across the state, and (iii) provision for e-auction/e-trading as a mode of Price Discovery. On 15th May 2020, 38 new mandis were integrated to eNAM, taking the count to 1000. The introduction of e-auction has led to an increase in prices received by the farmers for their agro-produce as it reduces the chances of collusion among traders. eNAM helps the farmers in

getting timely payment of sale of agro-produce directly to their bank account (Reddy & Mehjabeen, 2019). e-NAM will improve competitiveness in the market through more significant participation of buyers and a more transparent system of bidding (Chand, 2016).

### 2.3. Concept of Behavioural Intention

Behavioural intention (BI): It has been defined as “an individual's subjective probability that he or she will perform a specified behaviour” (Fishbein & Ajzen, 1975). Intentions are the motivating factors that influence the behaviour of an individual. It explains how hard the individual is willing to try to perform a certain behavior. Behavioural intention is a measure of the strength of one's willingness to try and exert while performing certain behavior (Ajzen, 1991). Davis (1989) defined “Behavioral Intention as the degree to which a person has formulated conscious plans to perform or not to perform some specified future behaviour”. Many studies in the literature on technology adoption in the field of agriculture focuses on Behavioral Intention to find out the perception of individuals towards a particular technology (Adnan et al. (2017), Adrian et al., (2005), Zeweld et al. (2017); Alavion et al. (2016)). This research aims to find out the factors affecting the behavioural intention of farmers towards the National Agriculture Market (eNAM).

2.4. Factors affecting Behavioural Intention of farmers towards the National Agriculture Market (eNAM): The factors affecting the behavioural intention of farmers towards eNAM has been categorised as the Technology acceptance model (TAM) construct, system characteristics Construct, Socio-psychological Construct, facilitating conditions construct and demographic construct. All these constructs are discussed below in detail.

2.4.1. Technology Acceptance Model (TAM) Construct: The technology acceptance model was introduced by Davis (1986) to explain the determinants of user acceptance of Information systems. TAM is based on two beliefs, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), which are of utmost importance in IS adoption behaviour. PU and PEOU jointly affect the Attitude towards using (Att.) of an individual, which further influence the Behavioural Intention (BI) towards an Information System. Relevant literature has been discussed in the following sections:

2.4.1.1. Attitude: It refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question (Ajzen, 1991). Attitude is defined as “the degree of a person's positive or negative feelings about performing the target behaviour” (Davis, Bagozzi, & Warshaw, 1989). Davis (1986) in his PhD thesis titled “A technology

acceptance model for empirically testing new end-user information systems: Theory and results”, explained that, “Attitude towards the adoption of technology is determined by Perceived Usefulness (PU), and Perceived ease of use (PEOU) and attitude plays an important role in influencing behavioural intention towards the use of technology”. In literature, there is a mixed response to the inclusion of attitude in Technology adoption models. Some authors favour the exclusion of attitude from intention theories as attitude plays a partial mediating role between PU and BI, and it has a weak direct link to PU (Davis et al. 1989). Several prior studies did not include attitude in their models ( Venkatesh & Davis (2000), Sharif et al. (2017), Caffaro, Micheletti, Roccatto, & Cavallo (2020), Flett et al. (2004), Gupta & Jain (2014), Gao, Zhang, Lu, Wu, & Wu (2017)). However many research shows that attitude plays a vital role in Behavioural intention in agriculture technology adoption (Faham & Asghari (2019), Adnan et al. (2017), Verma & Sinha (2018), Adrian et al. (2005), Alavion et al. (2016)). Therefore, this study chooses to keep attitude as in the original TAM and examine the impact of attitude on Behavioral Intention. So, in this study, we propose:

Proposition 1: Attitude has a positive direct effect on the Behavioural intention of farmers towards the National Agriculture Market (eNAM)

2.4.1.2. Perceived usefulness(PU): Perceived usefulness(PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Perceived usefulness has been used in many technology adoption models with different names. Rogers (1983), in his Diffusion of innovation (DOI) Model, used Relative advantage to measure innovation adoption. Moore & Benbasat (1991) also used the variable relative advantage in his Innovation Diffusion Theory (IDT) model. Relative advantage is similar to perceived usefulness(Sharif et al., 2017). Venkatesh, Morris, Davis, & Davis (2003) have developed a model named Unified theory of acceptance and use of technology (UTAUT). In this model, they have used a performance expectancy which is similar to the variable perceived usefulness. The extensive literature on technology adoption has proved the role of perceived usefulness on behavioural intention(Eun, Park, Wang, Fulk, & Mclaughlin, 2010; Sharif et al., 2017; Verma & Sinha, 2018; Amin & Li, 2014; Caffaro et al., 2020; Tsai, Hong, Yeh, & Wu, 2014; Flett et al., 2004; Gupta & Jain, 2014) and attitude(Dutot, Bhatiasevi, & Bellallahom, 2019; Faham & Asghari, 2019; Moon & Kim, 2001; Tsai et al., 2014; Zeweld et al., 2017; Zhou & Abdullah, 2017). So the following proposition can be made:

Proposition 2: Perceived Usefulness has a positive direct effect on the BI of farmers towards the National Agriculture Market (eNAM).

Proposition 3: Perceived usefulness has a positive direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

2.4.1.3. Perceived ease of use(PEOU): Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Perceived ease of use has been used in many technology adoption models, i.e. TAM(Davis, 1989), TAM2(Venkatesh & Davis, 2000), TAM3(Venkatesh & Bala, 2008), DTPB(Moore & Benbasat, 1991), and UTAUT(Venkatesh et al., 2003) renamed as “effort expectancy”. Empirical studies on technology adoption have shown the role of perceived ease of use in effecting Behavioural intention(Alambaigi & Ahangari, 2016; Faham & Asghari, 2019; Flett et al., 2004; Gao et al., 2017; Gupta & Jain, 2014; Tsai et al., 2014), Attitude(Tsai et al., 2014; Verma & Sinha, 2018; Zeweld et al., 2017; Zhou & Abdullah, 2017) and Perceived Usefulness(Alambaigi & Ahangari, 2016; Faham & Asghari, 2019; Flett et al., 2004; Gupta & Jain, 2014; Kabbiri et al., 2017)). The following propositions can be made based on literature:

Proposition 4: Perceived Ease of Use has a direct effect on the BI of farmers towards the National Agriculture Market (eNAM).

Proposition 5: Perceived ease of use has a direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

Proposition 6: Perceived ease of use has a direct effect on the Perceived Usefulness of farmers towards the National Agriculture Market (eNAM).

2.4.2. System Characteristics Factors: System characteristics are those salient features of a system that can help individuals develop favourable (or unfavourable) perceptions regarding the usefulness or ease of use of a system (Venkatesh & Bala, 2008). It includes external variables such as System Relevance, Result Demonstrability, System Quality, and System Accessibility.

2.4.2.1. System Relevance: Job relevance is defined as an “individual's perception regarding the degree to which the target system applies to his or her job. In other words, job relevance is a function of the importance within one's job of the set of tasks the system is capable of supporting”(Venkatesh & Davis, 2000). Amin & Li (2014), in his study titled “Applying Farmer Technology Acceptance Model to Understand Farmer’s Behavior Intention to use ICT Based Microfinance Platform: A Comparative analysis between Bangladesh and China”, used the term occupation relevance in place of job relevance and found that occupation relevance has a significant positive influence on perceived usefulness. In this study, we analyse the relevance of

the National agriculture market (eNAM) for the farmers. So to understand the behavioural intention of farmers', we have modified the variable job relevance and renamed it System relevance. It is similar to the variable Compatibility, used in the diffusion of innovation theory by Rogers, 1983. "Compatibility is the degree to which the innovation fits with the potential adopter's existing Values, Previous experiences, and current needs" (Rogers, 1983). Many studies have shown the effect of System Relevance on PU(Son et al., 2012, Alambaigi & Ahangari, 2016, Alharbi & Drew, 2014, Amin & Li, 2014) and PEOU (Alambaigi & Ahangari, 2016, Alharbi & Drew, 2014). So following propositions can be made:

Proposition 7: System Relevance has a positive effect on Perceived Usefulness (PU) of farmers towards National Agriculture Market (eNAM)

Proposition 8: System Relevance has a positive effect on Perceived Ease of Use (PEOU) of farmers towards National Agriculture Market (eNAM)

2.4.2.2. Result Demonstrability: The degree to which an individual believes that the results of using a system are tangible, observable, and communicable (Rogers, 1983; Moore & Benbasat, 1991). Result demonstrability has been used in TAM2(Venkatesh & Davis, 2000) and TAM3(Venkatesh & Bala, 2008), and it has a significant positive effect on perceived usefulness(PU). Hanif et al. (2018), in his study on the use of the e-learning system found that result demonstrability has a significant positive effect on Perceived usefulness. The following proposition can be made based on literature:

Proposition 9: Result demonstrability has a positive direct effect on the Perceived Usefulness of farmers towards the National Agriculture Market (eNAM).

2.4.2.3. System Quality: "It is the desired characteristic of the information system which produces the information and the success of a technology depends on the system quality and information quality"(Delone & McLean, 1992). Response time, reliability, functionality, flexibility, data quality, portability, integration, quality of work performance, and job performance are some of the measures of System quality (Calisir, Gumussoy, Bayraktaroglu, & Karaali, 2014; DeLone & McLean, 2003). System quality has a significant positive effect on perceived usefulness and perceived ease of use in different contexts, i.e. online community participation, website use, smartwatch adoption, mobile learning, and use of mobile phones( Chang et al., 2012, Dutot et al., 2019, Eun et al., 2010, Zhu et al., 2012). The following proposition can be made based on existing literature:

Proposition 10: System Quality has a positive effect on Perceived Usefulness of farmers towards National Agriculture Market (eNAM)

Proposition 11: System Quality has a positive effect on Perceived Ease of Use of farmers towards National Agriculture Market (eNAM)

2.4.2.4. System Accessibility: Karahanna & Limayem (2000) has defined "system accessibility as physical accessibility and information accessibility where Physical accessibility can be defined as the extent to which someone has physical access to the hardware needed to use the system, and information accessibility can be defined as the ability to retrieve the desired information from the system". System accessibility implies that an accessible system can be used more conveniently and frequently than a system that is inaccessible and provides barriers in its use (Park, 2009). Problems such as the unavailability of appropriate technical infrastructure and slow speed internet connections hinder system accessibility. System accessibility has a positive effect on perceived ease of use( Hanif et al., 2018, Park, 2009, Park, Nam, & Cha, 2012). Given the context of this study, i.e. agriculture, where most of the population is scattered, and poor accessibility of the system may hinder the use of technology even in the presence of favourable attitude and intention to use, so this variable is included in the conceptual model.

Proposition 12: System Accessibility has a positive effect on Perceived Ease of Use (PEOU) of farmers towards National Agriculture Market (eNAM)

2.4.3. Socio-Psychological factors: These include social and psychological factors that influence individuals' decision making. This study examines factors such as perceived economic wellbeing (PEWB), perceived risk, Image, subjective Norms, self-efficacy, awareness, and computer anxiety to study the effect of socio-psychological factors on the behavioural intention of farmers towards the National Agriculture Market (eNAM).

2.4.3.1. Subjective norm: It refers to the perceived social pressure to perform or not to perform the behaviour (Ajzen, 1991). Subjective norm refers to perceptions of other persons who are important to the individual that influences his or her decision to perform the behavior in question (Fishbein & Ajzen, 1975). Alavion et al. (2016), in their study on "Adoption of Agricultural E-Marketing: Application of the Theory of Planned Behavior," defines subjective norms as the perceptions of whether using e-marketing is socially acceptable and encouraged by the community. Subjective norm has been used in many models of technology adoption i.e. TRA(Fishbein & Ajzen, 1975), TPB(Ajzen, 1991), DTPB(Moore & Benbasat, 1991),

TAM2(Venkatesh & Davis, 2000), UTAUT(Venkatesh et al., 2003) as social influence and TAM3(Venkatesh & Bala, 2008). Subjective norm has significant positive effect on behavioural intention(Adnan, Nordin, & Bakar, 2017; Alavion et al., 2016; Al-Saedi et al., 2020; Park, 2009; Gupta & Jain, 2014), attitude(Verma & Sinha, 2018; Zeweld et al., 2017; Rana et al., 2016; Dwivedi et al., 2017; Park, 2009), perceived usefulness(Verma & Sinha, 2018; Son et al. 2012; Park, 2009; Gupta & Jain, 2014), perceived ease of use(Verma & Sinha, 2018; Amin & Li, 2014; Gupta & Jain, 2014) and perceived economic wellbeing(Verma & Sinha, 2018). Based on the literature following propositions can be made:

Proposition 13: Subjective Norms has a positive direct effect on the Behavioral Intention of farmers towards the National Agriculture Market (eNAM).

Proposition 14: Subjective Norms has a positive direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

Proposition 15: Subjective Norms has a positive direct effect on the Perceived Usefulness of farmers towards the National Agriculture Market (eNAM).

Proposition 16: Subjective Norms has a positive direct effect on the Perceived ease of use of farmers towards the National Agriculture Market (eNAM).

Proposition 17: Subjective Norms has a positive direct effect on the Perceived economic wellbeing of farmers towards the National Agriculture Market (eNAM).

2.4.3.2. Self-efficacy: It “is concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (Bandura, 1982, p. 122). The degree to which an individual believes that he or she has the ability to perform a specific task/job using the computer (Compeau & Higgins, 1995). It is the belief of an individual having the necessary skills to use technology for the accomplishment of a specific task. It’s the belief of the individual performing a specific task using a technology. In the IT usage context, Perceived self-efficacy has a significant positive effect on Behavioural intention(Sharif et al., 2017; Al-Saedi et al., 2020; Park, 2009; Magotra et al., 2017), Perceived usefulness(Park, 2009; Ayse et al., 2012; Magotra et al., 2017) and Perceived ease of use(Eun et al., 2010; Park, 2009; Amin & Li, 2014; Magotra et al., 2017). The following proposition can be made:

Proposition 18: Self-efficacy has a positive direct effect on the Behavioral Intention of farmers towards the National Agriculture Market (eNAM).

Proposition 19: Self-efficacy has a positive direct effect on the Perceived usefulness of farmers towards the National Agriculture Market (eNAM).

Proposition 20: Self-efficacy has a positive direct effect on Perceived Ease of use of farmers towards the National Agriculture Market (eNAM).

2.4.3.3. Perceived economic wellbeing (PEWB): Perceived economic wellbeing can be defined as “an economic outcome of the individuals' comparisons of his current financial situation to his past situation and to other people who are important to him” (Verma & Sinha, 2018). Perceived economic wellbeing is related to financial satisfaction and it reflects the belief of a person about one’s future(Gasiorowska, 2014). It refers to the financial wellbeing of an individual by using information technology. In agriculture, a farmer will use technology when it improves the financial position of an individual. A farmer will find the helpful technology when it increases his wellbeing. Verma & Sinha (2018) in the study titled “Integrating perceived economic wellbeing to technology acceptance model: The case of mobile based, agricultural extension service” found that perceived economic wellbeing has a significant positive effect on perceived usefulness. In this study, we made the following proposition:

Proposition 21: Perceived Economic well-being has a positive direct effect on the Perceived usefulness of farmers towards the National Agriculture Market (eNAM).

2.4.3.4. Image: Image may be defined as “the degree to which an individual perceives that use of innovation will enhance his or her status in his or her social system”(Rogers, 1983). The adoption of an IT system can enhance the status of an individual. The image has been used in many technology adoption models, i.e. DOI, TAM, IDT, TAM2, TAM3 in the IS literature. In the IT system research, Image has been found to have a significant positive effect on Behavioural intention(Gupta & Jain, 2014; Liao & Lu, 2008), Attitude (F.Munoz-Leiva, Climent-climent, & Liébanacabanillas, 2017), Perceived usefulness (F.Munoz-Leiva et al., 2017; Venkatesh & Davis, 2000; Venkatesh & Bala, 2008; Gupta & Jain, 2014) and Perceived ease of use (F.Munoz-Leiva et al., 2017).

Proposition 22: Image has a positive direct effect on the Behavioural Intention of farmers towards the National Agriculture Market (eNAM).

Proposition 23: Image has a positive direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

Proposition 24: Image has a positive direct effect on the Perceived usefulness of farmers towards the National Agriculture Market (eNAM).

Proposition 25: Image has a positive direct effect on Perceived Ease of Use of farmers towards the National Agriculture Market (eNAM).

2.4.3.5. Perceived Risk: Risk may be defined as a probability of loss in any behavioural decision making. Warkentin et al. (2002) have defined perceived risk as “an individual’s belief of incurring a loss in pursuit of a given outcome”. In using an Online technology like eNAM, the user faces risk, which can be the risk of the possibility of monetary losses, risk where using the system may result in loss of personal data, and risk of below-par performance of the system, i.e. inefficient price discovery of agriculture produce. In IT system usage research, perceived risk has a significant negative effect on Behavioral intention (Gao et al., 2017; Jayashankar et al., 2018; Mojtahed et al., 2011; Pavlou, 2003) and Attitude (Dwivedi et al., 2017).

Proposition 26: Perceived risk has a negative direct effect on the Behavioural intention of farmers towards the National Agriculture Market (eNAM).

Proposition 27: Perceived risk has a negative direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

2.4.3.6. Awareness: Awareness is the first stage in the technology adoption process. Awareness is one of the essential factors in the technology adoption process. Rogers (1995) defined Perceived awareness as “user’s knowledge about the capabilities of technology, its features, potential use, and cost and benefits, i.e., it relates to awareness-knowledge”. Awareness has a significant role in technology adoption; technology adoption is not possible until the prospective user is aware of the technology and its features. In IS adoption literature, awareness was found to have a significant effect on Behavioral intention (Rahman & Sloan, 2017), Attitude (Adnan et al., 2017), Perceived usefulness (Zhou & Abdullah, 2017), and Perceived ease of use (Zhou & Abdullah, 2017).

Proposition 28: Awareness has a positive direct effect on the BI of farmers towards the National Agriculture Market (eNAM).

Proposition 29: Awareness has a positive direct effect on the Attitude of farmers towards the National Agriculture Market (eNAM).

Proposition 30: Awareness has a positive direct effect on PU of farmers towards the National Agriculture Market (eNAM).

Proposition 31: Awareness has a positive direct effect on the PEOU of farmers towards the National Agriculture Market (eNAM).

2.4.3.7. System Anxiety: The degree of “an individual’s apprehension, or even fear, when she/he is faced with the possibility of using computers” (Simonson et al., 1987). Computer anxiety is a belief that inhibits forming a positive perception of ease of use of a system (Venkatesh, 2000). A significant body of research in IT adoption has shown the role of system anxiety in the adoption of technology. Venkatesh (2000), in his study titled “Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, Acceptance Model”, found that computer anxiety has a significant effect on Perceived ease of use. Similar results were found in many studies related to technology adoption (Mac Callum et al., 2014; Calisir et al., 2014). Based on literature following propositions can be made:

Proposition 32: System Anxiety has a negative direct effect on the PEOU of farmers towards the National Agriculture Market (eNAM).

2.4.4. Facilitating Conditions: Facilitating conditions represent organisational support that facilitates the use of IT (Venkatesh & Bala, 2008). The facilitating condition has been a highly used variable in IT system research. Various IT adoption models (TPB, DTPB, UTAUT, TAM3) have used facilitating conditions in their model. In their research model, Venkatesh & Bala (2008), in their research model TAM3 has used the term perception of external control and defined it as “Perceptions of external control are related to individuals’ control beliefs regarding the availability organisational resources and support structure to facilitate the use of a system”. Facilitating conditions are concerned with different types of support like organisational support, infrastructure, transportation etc. Facilitating conditions are perceived enablers or barriers in the adoption of technology. In IS system Research facilitating conditions found to have a significant effect on Behavioural intention (Sharif et al., 2017; Rana et al., 2016; Dwivedi et al., 2017; Adnan et al., 2017; Alavion et al., 2016), Perceived usefulness (Rana et al., 2016; Zhou & Abdullah, 2017; Ayse et al., 2012) and perceived ease of use (Magotra et al., 2017; Dwivedi et al., 2017; Zhou & Abdullah, 2017; Ayse et al., 2012). Following propositions can be made based on existing literature:

Proposition 33: Facilitating conditions have a positive direct effect on the Behavioural intention of farmers towards the National Agriculture Market (eNAM).

Proposition 34: Facilitating conditions have a positive direct effect on the Perceived usefulness of farmers towards the National Agriculture Market (eNAM).

Proposition 35: Facilitating conditions have a positive direct effect on Perceived ease of use of farmers towards the National Agriculture Market (eNAM).

2.4.5. Demographic Factors: Traits or states of individuals as literacy, gender, age, size of the farm, and family size that can influence individuals' perceptions of perceived usefulness, perceived ease of use, attitude, or BI. Age has a negative direct effect on perceived usefulness and behavioural intention (Eun et al., 2010, Jain & Rekha, 2017). Larger farms are more likely to invest large amounts of capital, time, and learning to use the technologies than smaller farms. Early adopters of the technology have higher education levels than later adopters (Rogers, 1983). Adrian et al. (2005), in a study on "Producers' perception and attitude toward precision agriculture technologies", found that education and farm size have a significant positive effect on the Behavioural intention of farmers to adopt precision agriculture technologies. Many other authors have explained the impact of education on behavioural intention (Gao et al., 2017; Jain & Rekha, 2017). The following propositions can be made based on literature:

Proposition 36: Age has a negative direct effect on the Behavioral Intention of farmers towards the National Agriculture Market (eNAM).

Proposition 37: Age has a negative direct effect on the Perceived usefulness of farmers towards the National Agriculture Market (eNAM).

Proposition 38: Education has a positive direct effect on the Behavioral intention of farmers towards the National Agriculture Market (eNAM).

Proposition 39: Farm Size has a positive direct effect on the Behavioral intention of farmers towards the National Agriculture Market (eNAM).

### 3. Research Methodology

As the focus of this research is on the behavioural intention of farmers towards eNAM and its determinants, hence we searched several keywords such as Technology Adoption, Behavioural Intention of farmers, ICT in agriculture marketing, Agriculture in India, National Agriculture Market (eNAM) using research databases such as ScienceDirect (Elsevier), Web of Science, Emerald Insight, Taylor and Francis, Wiley Online Library, Google Scholar, and EBSCOhost. Peer-reviewed journal papers were considered from the period 2000 to 2020. One hundred twenty-four articles were identified, and 44 articles that match our research objective were selected for this study.

#### 3.1. Steps in Methodology

##### 3.1.1. Data Search

Here we systematically search online databases to find out the relevant paper for this study using the following parameters:

- Keywords: Technology Adoption, Behavioural intention of farmers, ICT in agriculture marketing, Agriculture in India, National Agriculture Market (eNAM).
- Databases: ScienceDirect (Elsevier), Web of Science, Emerald Insight, Taylor and Francis, Wiley Online Library, Google Scholar, and EBSCOhost.
- Year: 2000 to 2020

##### 3.1.2. Listing and Categorisation of Papers

All the research papers/articles have been listed in the MS excel sheet by Author, Name of Paper, date of publication, and Publisher. Duplicate papers are then removed from the selected research papers/articles. For the extensive literature review, the selected papers are then categorised under various heads in the MS excel sheet like S.No., Name of Author, Paper/Article Name, Year of publication, Journal name, country of study, study type, the objective of the paper, information system/technology studied, Situation/Research Context, Theory/model used, variables used, sample size, sampling technique, data analysis test/technique used, results of the study and limitation/future research/managerial implications.

##### 3.1.3. Analysis of Variables

After Listing and categorising the research papers/articles, we extracted the papers that focus on factors affecting farmers' adoption/behavioural intention towards agriculture marketing. As the number of studies on the adoption of technology in agriculture and agriculture marketing (only 1 study) is relatively less, we also selected papers that focus on technology adoption where the population under study is public at large, i.e. e-learning, internet/mobile banking, and where the adoption of technology is not mandatory as the technology under this study (eNAM) is voluntary. The extracted papers were then reviewed, and all the variables were clustered and complied with all the details of the identified studies. The variables were selected based on the objective of the study, systematic analysis of literature and the relative significance of variables. The variables were then classified under four Contexts, i.e. System Characteristics Context, Socio-psychological Context, facilitating conditions Context, and demographic Context.

### 3.2. Research Framework

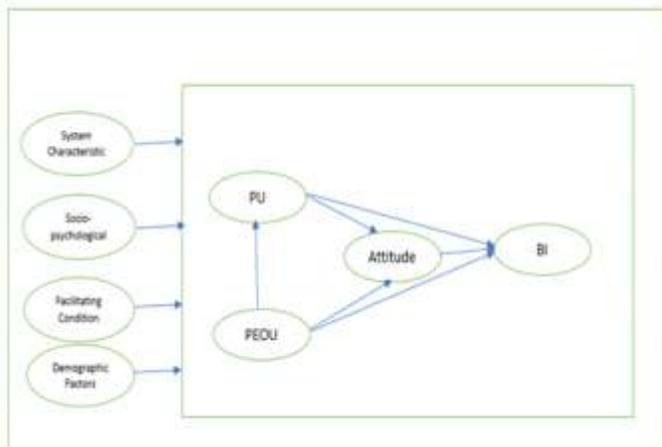


Figure 1: Conceptual Framework

## 4. Result and discussion

### 4.1. Classification of articles by the year of their publications

We have taken the time frame for the research study from 2000 to 2020, and the distribution of the articles is shown in Table 1, and the graphical representation of the same is Figure 2.

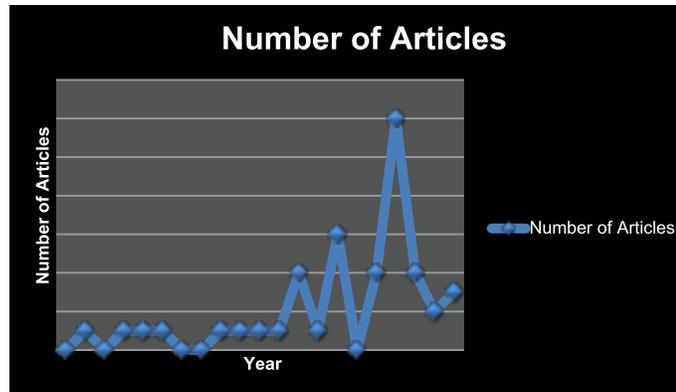


Figure 2: Year-wise publication of Articles

Table 1: Number of Articles published Year wise

Year	Author	Publications
2000	-	0
2001	Moon & Kim,(2001)	1
2002	-	0
2003	(Pavlou, 2003)	1
2004	Flett et al. (2004)	1
2005	Adrian, Norwood, & Mask (2005)	1

Year	Author	Publications
2000	-	0
2001	Moon & Kim,(2001)	1
2002	-	0
2003	(Pavlou, 2003)	1
2004	Flett et al. (2004)	1
2005	Adrian, Norwood, & Mask (2005)	1
2006	-	0
2007	-	0
2008	Liao & Lu (2008)	1
2009	Park (2009)	1
2010	(Eun et al., 2010)	1
2011	(Mojtahed et al., 2011)	1
2012	Chang et al.(2012); Zhu, Lin, & Hsu (2012); Son et al. (2012); Ayse et al. (2012)	4
2013	Roy(2013)	1
2014	Mac Callum, Jeffrey, & Kinshuk 2014); Tsai, Hong, Yeh, & Wu (2014); Alharbi & Drew (2014); Amin & Li (2014); Gupta & Jain (2014), (Calisir et al., 2014)	6
2015	-	0
2016	Alavion et al. (2016); Rana et al 2016); Park, Lee, & Kim (2016); Alambaigi & Ahangari (2016);	4
2017	(F.Munoz-Leiva et al., 2017), (Sharif et al., 2017); Adnan, Nordin, & Bakar (2017); Verma & Sinha (2017); (Zeweld et al., 2017); Dwivedi et al. (2017); Zhou & Abdullah (2017); Gao, Zhang, Lu, Wu, & Wu (2017); Magotra, I., et al. (2017); Kabbiri, Dora, Kumar, Elepu, & Gellynck (2017), (Jain & Rekha, 2017), (Rahman & Sloan, 2017)	12
2018	Jayashankar et al. (2018); Sarcheshmeh, Bijani, & Sadighi (2018); Beza et al. (2018) (Hanif et al., 2018)	4
2019	Faham & Asghari (2019); Dutot, Bhatiasevi, & Bellallahom (2019)	2
2020	Caffaro, Micheletti, Roccato, & Cavallo(2020); Chatterjee & Kumar Kar (2020); Al-Saedi, Al-Emran, Ramayah, & Abusham, (2020)	3
	Total	44

4.2. Factors and their relationship: This section presents a detailed analysis of the relationship of different factors under different contexts based on available literature. This helped us in the formulation of propositions and developing the conceptual model.

4.2.1. System Characteristics context

S. No	Variable	Relationship	Authors
1	System Relevance/ Job Relevance	JR-PU	(Son et al., 2012),(Alambaigi & Ahangari, 2016),(Alharbi & Drew, 2014),(Amin & Li, 2014)
		JR-PEOU	(Alambaigi & Ahangari, 2016), (Alharbi & Drew, 2014)
2	System Quality	SQ-PU	(Eun et al., 2010),(Chang et al., 2012),(Dutot et al., 2019),(Zhu et al., 2012)
		SQ-PEOU	(Eun et al., 2010), (Chang et al., 2012), (Dutot et al., 2019),(Zhu et al., 2012)(Gupta & Jain, 2014)
3	System Accessibility	SA-PEOU	(Park, 2009), (Hanif et al., 2018), (Park et al., 2012)
4	Result Demonstrability	RD-PU	(Hanif et al., 2018)

4.2.2. Socio-psychological context

S. No	Variable	Relationship	Authors
1	Subjective Norms/Social Influence	SN-BI	(Adnan et al., 2017), (Alavion et al., 2016),(Al-Saedi et al., 2020),(Park, 2009),(Gupta & Jain, 2014)
		SN-ATT	(Verma & Sinha, 2018),(Zeweld et al., 2017), (Rana et al., 2016),(Dwivedi et al., 2017), (Park, 2009)
		SN-PU	(Verma & Sinha, 2018),(Son et al., 2012), (Park, 2009), (Gupta & Jain, 2014)
		SN-PEOU	(Verma & Sinha, 2018),(Amin & Li, 2014), (Gupta & Jain, 2014)
		SN-PEWB	(Verma & Sinha, 2018),

2	Self-Efficacy	SE-BI	(Sharif et al., 2017),(Al-Saedi et al., 2020),(Park, 2009),(Magotra et al., 2017)
		SE-PU	(Park, 2009),(Ayse et al., 2012), (Magotra et al., 2017)
		SE-PEOU	(Eun et al., 2010), (Park, 2009),(Amin & Li, 2014), (Magotra et al., 2017)
3	Perceived Economic Wellbeing	PEWB-PU	(Verma & Sinha, 2018)
4	Computer Anxiety	CA-PEOU	(Mac Callum et al., 2014), (Calisir et al., 2014)
5	Image	Image-ATT	(F. Munoz-Leiva et al., 2017)
		Image-BI	(Gupta & Jain, 2014),(Liao & Lu, 2008)
		Image-PU	(F. Munoz-Leiva et al., 2017),(Gupta & Jain, 2014)
		Image-PEOU	(F. Munoz-Leiva et al., 2017)
6	Perceived Risk	PR-BI	(Gao et al., 2017). (Jayashankar et al., 2018) (Mojtahed et al., 2011),(Pavlou, 2003), (Rahman & Sloan,

4.2.3. Facilitating condition context

S. No	Variable	Relationship	Authors
1	Facilitating Conditions	FC-BI	(Sharif et al., 2017),(Rana et al., 2016),(Dwivedi et al., 2017),(Adnan et al., 2017),(Alavion et al., 2016)
		FC-ATT	(Ayse et al., 2012)
		FC-PU/PE	(Rana et al., 2016),(Zhou & Abdullah, 2017), (Ayse et al., 2012)
		FC-PEOU/EE	(Magotra et al., 2017), (Dwivedi et al., 2017), (Zhou & Abdullah, 2017),(Ayse et al., 2012)

#### 4.2.4. Demographic context

S. No	Variable	Relationship	Authors
1	Age	AGE-PU	(Eun et al., 2010),(Jain & Rekha, 2017)
		AGE-BI	(Eun et al., 2010), (Jain & Rekha, 2017)
2	Education	EDU-BI	(Adrian et al., 2005),(Gao et al., 2017), (Jain & Rekha, 2017)
3	Farm Size	FS-BI	(Adrian et al., 2005)

#### 5. Discussion and conclusion

The evolution of humans in society needs technological support. The current study focuses on the technological adoption intention in agriculture marketing, i.e. eNAM. In this study, the researcher highlights the importance of certain factors found in the existing Information System literature. In this study, we have adopted the Technology acceptance model and borrowed some factors from other adoption models. Based on our objective, existing literature and relative importance of the different variables were identified, divided under four contexts, i.e. System Characteristics, Socio-psychological context, Facilitating Condition Context and Demographic Context. Under System characteristics context, the factors identified are System quality, System relevance, system accessibility and result demonstrability. In the socio-psychological context, the most cited factors are subjective norms, perceived self-efficacy, awareness, image, system anxiety, perceived risk and perceived economic wellbeing. Only one factor was studied in facilitating conditions, i.e. facilitating conditions, as different studies used facilitating conditions with other names, i.e. perception of external control in TAM3. The demographic factor has age, education and farm size as the most significant factors.

Some other most used variables were not used in the study as the variables were presented in different models with different names. i.e. relative advantage and performance expectancy is related to Perceived Usefulness, complexity and effort expectancy is closely related to Perceived Ease of Use, and usability, trialability are studied under the System Quality factor.

#### 5.1. Implications for research and management practice

The understanding of perceived enablers and barriers will encourage the farmers the adoption of technology (eNAM) for the sale of agricultural produce. This study provides a conceptual framework that contributes to the existing literature in understanding the Behavioural Intention of farmers towards

the National Agriculture Market. There is a plethora of research in agriculture, but the adoption of technology in agriculture marketing is in the nascent stage. Agriculture plays a vital role in an economy, so the government should focus on adopting technology by farmers in agriculture production as well as agriculture marketing. This study will help the policymakers and practitioners effectively develop the right mix to increase the awareness and use of technology in agriculture.

Construct validity of the study variables was assessed using convergent and discriminant validity. Convergent validity is the 'degree to which different measures of the same construct are highly correlated' (Hair et al., 2007). For convergent validity, we have used factor loadings, Scale Composite Reliability (SCR), and Average Variance Extracted (AVE). From Figure 2, it may be seen that the values of factor loadings are more significant than 0.6. From Table 2, it may be seen that the importance of SCR is more than 0.7 (recommended by Hair Jr., 2007), and those of AVE are more significant than 0.5 (Fornell & Larcker, 1981; Hair Jr., 2007). We may conclude that constructs of the study possess construct validity. The constructs' internal consistency is assessed by Cronbach's  $\alpha$  and a measure of composite reliability, which is regarded as more suitable as it does not assume that all indicators are equally reliable (Hair et al., 2012). The reliability score of all these variables is above 0.7088 except for personality type and financial risk attitude, which are 0.6294 and 0.6511, respectively; these are above the minimum threshold level for the variable (Nunnally, 1978). Therefore, all the constructs have good reliability. Multicollinearity is not an issue in this study as the variance inflation factor (VIF) is smaller than 5 (Hair Jr. et al., 2012).

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# Addictive use of Tech Gadgets on Health and Lifestyle

Mohit Kumar \*  
Dr. Lalit Singla \*\*  
Dr. Yashmin Sofat \*\*\*

## Abstract

*Technological gadgets have been a boon to us and will continue to do so in future. However, their excessive usage in times of stress and change the life style a matter of concern. A study has been conducted on 80 students in khanna of these 45 male and 35 female students. The age of the students 19 to 21 years with an average age 20 years. Most of the students use two or more than two technological gadgets. The questionnaire had been framed on the basis of problems associated with excessive use of gadgets. The study has been conducted on the area like how much time spent by students with gadgets, examine the intension behind the use of gadgets and health problems they were facing because of their excessive usage like anxiety , stress, headache, disturbance in logical thinking, memory level etc. and their excessive usage change the life style of students.*

**Keywords:** Technological gadgets, impact, health, life style

## Introduction

The term technology comes the Greek word techne which means the art or skill used in order to solve problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function .Recently every day information technology invents lucrative gadgets are attracting the attention of present generation. As a vulnerable group the youth becomes the largest consumers of such devices and services. The term gadgets include mobile phones, smart phones, laptops, computers, or any others wireless enabled devices. The introduction of modern technology gadgets in the present era has captured the attention of global population. The dependency of the people specially students on these gadgets has reached at such level that without these they can't think a step forward in the direction of their growth . It is observed that teenagers are the most vulnerable group among the population to be addicted to technology / technological gadgets. Now a day life is hard to imagine without technological gadgets. Students have become used to these gadgets that they can keep skip there meals but can't afford to live a single day without these gadgets. As it is known , anything in excess is not good, similarly technology in the long run has negative effects on individuals. It can make the students weak in real life practical skills and it also takes them away from the reality.

## Review of Related Literature

Samson (2010) Investigated from the his study that when students use laptop and other technological devices by the instructor advice they are connected to course learning are better in performing cognitive tasks. The effective use of these gadgets may have positive impacts on cognitive thinking and also make them master multitasking. Dr Mahavir p. Nakel and Dr Sameer Naval (2017) examined in their paper impact and dependency of the technological gadgets on health and life style of the students, most of the students using technological gadgets for longer period were feeling sad ,anxious, stressed, and nervous in the absence of technological gadgets ,this show over dependency of students on technological gadgets. Subha Revathi K, Sushil Nair, Anitha Achuthan ( 2019 ) Examined in their paper influence of technological gadgets on health and life style of medico in a negative direction which could be attributed to overuse. Mr Sunil Malhar Kulkarni , Dr (Mrs) Nilima Rajan Bhore (2019) examined in their paper assess the effects of electronic gadgets (Television , Mobile Phone and Computer) on health status among secondary school students in the selected districts of Maharashtra adolescents are more vulnerable to effect of electronic gadgets on many aspects of health status they need health education guidance and counselling regarding healthy use of electronic gadgets this should be included in the curriculum. Mitchel ( 2012 ) examined in their study students

\* Research Scholar, Department of Commerce and Management, SGGS World University, Fatehgarh

\*\* Assistant Professor, Department of Commerce and Management, SGGS World University, Fatehgarh

\*\*\* Assistant Professor, Department of Commerce and Management, SGGS World University, Fatehgarh

should be encouraged to develop in a technological world the necessity of social networking computer games or digital habits of them should be understood by the elders. But simultaneously the consequences of those habits should also be studied. It is better to study the relationship between technologies. Parents should facilitate a healthy and balanced relationship between technology and their children helping them to use the social media effectively. CH B Praveena Devi , Shahesta Samreen (2019) examined in their study impact of electronics devices on youngsters. Most of the respondents possess more than two technological gadgets and using their gadgets more than 6 hours are having several problems in logical thinking headaches, depression, anxiety .

## RESEARCH GAP

There are many previous studies related to the impact of technological gadgets on the health and life style of the youngsters. However, no study was found in the state of Punjab.

## RESEARCH METHODOLOGY

### Objectives

1. To examine the time spent by the students with their technological gadgets.
2. To examine the intentions behind the use of technological gadgets.
3. To study the impacts of the addictive use of the technological gadgets on mental health and life style of the students.

Research design	Descriptive study
Primary data collection	Through Structured Questionnaire
Sampling Method	Convenience Sampling
Sample Size /unit	80 / Students
Scaling Techniques	Percentage method
Sample Location	Khanna

### Significance of the study

There are number of research work related to this study conducted basically in western countries and the countries having a developed society. The study may also help the students to understand the impacts of the addiction to the technological gadgets and make them aware about the use of the technological gadgets.

## Research Design

For the research work, data have been collected from primary sources. Primary data was collected from the respondents through a well structured questionnaire and distributed among the respondents.

## Sample size

A purposive sampling method was followed to collect information from the 80 students of the college out of which 35 females and 45 males students. The average age of the students is 20 years.

## Data Analysis and Interpretation

The questionnaire used in this study is structured one. The first part of the questionnaire is consisting of the declaration and demographic / economic profile of the parents / family of the students / respondents.

Table -1

Possession of the gadgets by the respondents

No of Gadgets	User	% Of possession
One Gadgets	44	55
Two Gadgets	22	27.5
Three Gadgets	12	15
More than three Gadgets	2	2.5
Total	80	100

Table 1 depict that 55 % of the respondents have one gadgets, 27.5 % of the respondents have two gadgets, 15 % of the respondents have three gadgets, and only 2.5 % of the respondents are those have more than three gadgets. It shows the addiction of the respondents towards the technological gadgets.

Table -2

Time spent with the gadgets by the respondents

Time (Hours)	User	% Time
1-2 hrs	4	5
2-4 hrs	10	12.5
4-6 hrs	42	52.5
More than 6 hrs	24	30
Total	80	100

Table 2 depict that 5 % of the respondents spent 1-2 hrs with these gadgets, 12.5 % of respondents spent 2-4 hrs with these gadgets, 52.5 % of respondents spent 4-6 hrs with these gadgets this also mean that 25 % of their time is spent with their gadgets and 30 % of the respondents spent more than 6 hrs with these gadgets .It can be understood that beside their college hours , sleeping hours and the daily activities the respondents are using all their time in making themselves busy with the technological gadgets.

**Table -3**

**Intention behind the use of gadgets by the respondents**

Purpose	User	% Time
Study	16	20
Communication	20	25
Entertainment	44	55
Total	80	100

Table 2 depict that 5 % of the respondents spent 1-2 hrs with these gadgets, 12.5 % of respondents spent 2-4 hrs with these gadgets, 52.5 % of respondents spent 4-6 hrs with these gadgets this also mean that 25 % of their time is spent with their gadgets and 30 % of the respondents spent more than 6 hrs with these gadgets .It can be understood that beside their college hours , sleeping hours and the daily activities the respondents are using all their time in making themselves busy with the technological gadgets.

**Table 4**

**Impact of the addictive use of technological gadgets on health**

Time (Hours)	Physical discomfort- Eye Strain, Headache, etc	Sleeping Problem	Anxiety, Stress Level	Logical thinking and Memory
1-2 hrs	25%	25%	20%	50%
2-4 hrs	20%	30%	40%	30%
4-6 hrs	38%	32%	36%	40%
More than 6 hrs	80 %	70%	72 %	80%

Table 4 depict that respondents using technological gadgets between 4-6 hrs or more than 6 hrs having eye strain , headache and pain on regular basis because light and radiations coming out of the gadgets may be the causes of headaches, respondents

using their gadgets more than 6 hrs having sleeping problems respondents using gadgets for a limited time period have a sound sleep in the night rather than the respondents engaged to the addictive use. Anxiety /stress level normal in case of the less use of the technological gadgets and it increase with the increase of the time period of use from mild to severe. A healthy and sound individual is expected to think about the things he comes across, logically and clearly it mean the functioning of the his memory is well enough to think something logically.The respondents using technological gadgets more than 6 hrs are more vulnerable towards the problem in logical thinking.

**Impact of addictive use of technological gadgets on Life Style**

A life style concept is qualitative in nature for the analysis of this aspects one has to depend upon the data collected from the questionnaire .The change in the life style of any individual happens in a particular interval but it is dependent upon some driving force which may be the cause behind changing patterns in their life style. The respondents who spend large amount of time to their technological gadgets always use them at night. They remain awake till late night and generally are late to leave the bed. Many of them also bunk the classes in the morning hours. The addictive users of technological gadgets are generally observed not to be active in any physical exercise. Physical fitness of these youth is very low. This signifies that life style of the respondents is changing by the influence of the technology.

**FINDINGS**

1. The study shows that most of the respondents spent their time with the gadgets for the purpose of entertainment rather than study.
2. The study shows that there is no significant difference between intention behind the use of technological gadgets and time spent by them in these gadgets. Means where the youngsters spent less or more time on these gadgets , their intention remains the same.
3. The study shows that most of the respondents using the gadgets for a long period of time have negative impacts on their health.
4. The study shows that addiction to the technological gadgets has impacts on the life style of the respondents.
5. The study shows that respondents prefer indirect communication through social media than direct interaction with others.

## SUGGESTIONS

It is suggested that the dependency of the present generation on the modern technological gadgets and services provided by them is in the peak position. So the issue of this technological addiction among the youth should be addressed as youth is the foundation of any society to grow or develop. It is serious concern for the developing country like India and its youth. They are in a stage of adoption of the new technology and therefore they can control and regulate the use of the technology in a constructive way.

## CONCLUSION

Most of the students using technological gadgets for longer period were feeling sad , stressed, anxious and nervous in the absence of the gadgets. This shows over dependency of the students on the gadgets. Thus technological gadgets though necessary seem to have influenced our health and life style in a negative direction due to overuse. These problems need to be addressed and an awareness regarding the same must be created to bring back on the right track.

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# Integration of Social and Environment Sustainability Issues into Balanced Scorecard: A Paradigm Shift in Strategic Focus for Performance Evaluation (A Comparative Case Study of Public and Private Sector Banks in India)

Dr. Ashok Kumar Gupta\*  
Dr. Meenu Maheshwari\*\*  
Dr. Sudarshana Sharma\*\*\*

## Abstract

Now it's a time to go for the revolutionary deviations in the business philosophies, vision, mission and strategies by all the organizations which should focus on socially and environment responsible approaches instead of focusing solely on profit-oriented approach because it is a key factor for success. Incorporating sustainability as a part of the strategic objective demands for measurement and management of its performance so that corrective actions can be taken on time. This research study is an initiative in this regard which aims to identify the possible measures on Social and Environment Perspective and evaluates, compare and analyse the performance of 10 Public Sector and 10 Private Sector Banks in India. Data for the study have been compiled through secondary sources. 8 variables under 4 strategic objectives on social and environment aspects have been selected for banks after thorough literature review and performance is thus measured on these variables. Performance score scale for each measure has been created separately. For drawing statistical inferences non-parametric methods have been used. A significant difference is found in the performance on social and environment perspective among public sector banks and among Private sector banks when an inter-bank comparison is drawn and no significant difference is found in the performance between public sector banks and private sector banks when an inter-sector comparison is drawn. Banks should identify measures on Social and Environment Perspective and incorporate within their Balanced Scorecard and continuously evaluate and improve their performance as it affects the long-term profitability of the banks.

**Key Words:** Balanced Scorecard, Public Sector Banks, Private Sector Banks, Social and Environment Perspective, Sustainability

## Introduction

Restructuring the relationship between corporate world and stakeholders has become necessary in the recent years. Greater accountability and transparency have been questioned from corporate management by the stakeholders. It was required that business should be conducted in such a manner that it is economically profitable, law-abiding, ethical, socially and environment supportive (AB Carroll, 1983). Corporates cannot be successful in long term without taking social and environment concerns into consideration. If you do something for the welfare of all stakeholders, communities, environment it will always pay for you.

As the importance of social and environment concerns have increased these days, companies should try to renovate their business philosophy, vision, mission and strategies by focusing on socially responsible approaches instead of focusing solely on

profit-oriented approach. Organizations are moving towards the creation and implementing the sustainability as a part of their strategies as it has already been realised that investment in more capital is not only the sole determinant of firm's success. Sustainability refers to handling of non- financial factors on environment and social with the economic issues. Organizations incorporating sustainability as a part of their strategies are required to assess, measure and manage the objectives of sustainability strategy.

### Balanced Scorecard and Sustainability:

For measuring the strategic objectives of an organization, BSC is a widely accepted tool which measures the performance on four dimensions i.e., Financial, Customer, Internal Business processes and Learning & growth. Sustainability Balanced Scorecard is the innovated form of traditional Balanced Scorecard which aims to incorporate social and environment concerns into the scorecard in a structured form. Combining

\* Principal, Govt. College, Ramganjmandi, Kota (Raj.)

\*\* Associate Professor, Department of Commerce and Management, University of Kota, Kota (Raj.), India

\*\*\* Assistant Professor, Amity University, Gwalior, Madhya Pradesh, India

sustainability Management with Balanced Scorecard helps in resolving the problem of corporate contributions to sustainability in an integrated form. It is assumed that if companies are incorporating sustainability development as a part of their strategies, it is needed to improve the corporate performance in all the three dimensions of sustainability i.e., economic, environment and social (Figge et al. 2001a).

## **1.2 Social and Environment Sustainability Perspective into Balanced Scorecard Model of Banks:**

The main strategic objectives now a days for the banks in India are achieving Sustainability, Competitiveness, Liquidity and Profitability. To achieve these objectives, it has become inevitable to measure, analyse and improve the performance of banks on all the parameters of people, processes, products, infrastructure, sustainability, competitiveness, profitability, liquidity etc. to identify the areas which are profitable and which are not. Incorporating the social and environment issues in Balanced Scorecard appears to be a promising tool as it claims to identify the strategic issues of business and now a days paying attention social and environment concerns are a part of strategies of banks. Secondly, BSC establishes the causal contribution among the issues that contributes to successful achievement of a company's strategies so linkages between social and environment strategies of banks and financial performance can be established with the help of BSC tool. Women empowerment and welfare, gender equality, financial inclusion initiatives, health and safety measures, community development, financial literacy, priority sectors development, environment protection through energy efficiency, carbon emissions, wastage recycled etc. are some of the social and environment concerns of the banks which should be focused upon and performance of these activities should be get measured as the environment friendly and socially responsible image of the banks indirectly affects the reputation of banks in the eyes of all concerned stakeholders. It will lead to satisfied employees, satisfied customers, thus increase the market share and financial performance of the bank.

## **2. Review of Literature**

This part of research paper aims to identify the effect and fruitfulness of integration of social and environment perspective with 4 basic perspectives of Balanced Scorecard and to understand the process of adding this new perspective through reviewing the concerned literature on national and international level. Figge, Hahn, Schaltegger and Wagner (2002) in their article discussed the various possible forms of Sustainability Balanced Scorecard and described the process and steps for formulating a Sustainability Balanced Scorecard for

a business unit. They asserted that BSC is a suitable tool for incorporating social and environment aspects for gaining a competitive advantage. While formulating BSC, all the objectives and measures are deducted from long-term strategies of a business unit so objectives and measures from sustainability strategy can also be deducted and incorporated into a BSC through establishing cause-effect relationship. They concluded that SBSC as a strong tool for sustainability management which helps to overcome the drawbacks of previously implemented approaches of environment, social and economic management systems. Hubbard (2009) developed a Sustainability Balanced Scorecard with adding two more quadrants of Social and Environment performance in the conventional Balanced Scorecard. The author acknowledges that leaving social and environment issues from the ambit of organization attention will not be useful as organizations are under significant pressure to measure and report their social, environment and economic performance. They will require to report their sustainability performance in the not-too-distant-future and adopt a stakeholder view and develop their strategies accordingly rather than relying on shareholder's performance. He concluded that SBSC is a pragmatic choice for measuring and reporting social and environment performance because BSC is the most familiar approach for management of organization's performance. SBSC reporting may vary from company to company and industry to industry. Purnamasari and Hastuti (2014), analysed the effect of environment perspective on four BSC perspectives and examined the relationship between the non-financial perspectives with financial perspective. The study concluded that the environment perspective was influenced by financial perspective not by learning & growth perspectives, internal business processes and customer perspective. Internal business perspective and learning & growth perspective positively affects the consumer perspective which in turns affects the financial performance. Companies with good financial performance cares and are more attentive on environment perspective. It has been further recommended that the government regulations should encourage companies to think and focus on incorporating CSR obligations. Kalender and Vayvay (2016) in their study aimed to highlight the sustainability issue as a fifth pillar of the Balanced Scorecard. As per the views of researchers every company should realize the importance of the sustainability aspects and accept sustainability as their core strategies. The study asserted that the addition of social and environment concerns in management systems gives several financial benefits and suggested that relationship between current strategies of companies and sustainability aspects should be investigated and comprehended in detail so that better future plan for implementation of a right measurement system can be provided. Chaker, Idrissi and Manouar (2017) in their research

paper critically evaluated the Sustainability Balanced Scorecard as a decision aid framework and proposed directions for research in constructing a promising SBSC. It has been found that the analysis of construction methodologies and designing of the sustainability balanced scorecard is the critical framework in sustainability management. Architecture structure, connecting to the value system, design orientation and design confinement were described in the existing literature. The study suggested that future research must focus on investigating the systematic methods for constructing a SBSC which must be more holistic, adaptive enough and strategic too. It must include ethics and governance as two additional and distinctive perspective of the scorecard. Yilmaz and Inel (2018), assessed the sustainability performance of Banks by Topsis method and balanced scorecard approach. The study concluded that the economic, environmental and social all the three activities are necessary for confirming the sustainability of the organizations for long term. It has also been recommended that each sector has its own sustainability indicators so separate model for each sector can be created. Other methods like expert opinion, group interviews, extensive research etc. can be used to develop sustainability models.

## 2.1 Research Gap

Most of the above research studies focused light on importance of Sustainability Balanced Scorecard, steps and process of integrating the social and environment measures BSC and identified the casual relationship among all perspectives. It has been identified no particular study on national and international level has been conducted to measure the performance of banks including measures of this perspective. This research is an initiative in this regard.

## 3. Research Methodology

3.1 Objectives of the Study: -This research paper is intended

1. to explore the importance of Social and Environment Perspective of Balanced Scorecard.
2. to identify the possible measures for Indian Banks on Social and Environment Perspective.
3. to evaluate, compare and analyse the performance of Indian Banks on this perspective.
4. to suggest for improvement in the performance of Indian Banks on Social and Environment Perspective and underline the future scope of the study.

3.2 Sample Size: - SBI, Bank of Baroda, Punjab National Bank, IDBI bank, Canara bank, Bank of India, Indian Bank, Central bank of India, Union Bank of India and Syndicate bank from Public Sector Banks and HDFC Bank, ICICI Bank, Axis Bank, Indusind Bank, Yes Bank, Kotak Mahindra Bank,

Federal Bank, City Union Bank, RBL Bank and Karur Vysya Bank from Private Sector Banks constitutes the sample of the study. These banks have been selected on the basis of highest market capitalization.

- 3.3 Study Period: - The time period taken for the study includes 10 successive financial years starting from 2007-08 to 2016-17.
- 3.4 Data Collection: Annual reports of the sampled banks, Business responsibility reports, sustainability reports, various publications of RBI, different websites, journals, articles, reports etc. have been used as secondary data sources to collect the data on measures.
- 3.5 Hypotheses of the Study: The following inter-bank and inter-sector null hypothesis have been mounted for this research paper:

### Inter-Bank Hypothesis

H0-There is no significant difference in the performance on Social and Environment Perspective among Public Sector Banks and among Private Sector Banks.

### Inter-Sector Hypothesis

H0- There is no significant difference in the performance on Social and Environment Perspective between Public and Private Sector Banks.

### 3.6 Data Analysis Procedure and Techniques:

Following steps have been taken for evaluating the performance of Public Sector Banks and Private Sector Banks on Social and Environment Perspective:

1. Selection of 8 measures under 4 common strategic objectives on Social and Environment perspective of Indian banks.
2. Collection of data and measurement of performance on each measure during the study period.
3. Development of performance scale for each measure on the basis of performance by banks and assignment of a total score of 400 (a maximum score of 50 for each measure multiple by 8 measure) for Social and Environment Perspective.
4. Calculation of total score and average score after assigning the score on the basis of performance in each year for inter-bank and intra-sector comparison.
5. Testing the hypothesis of the study by applying non-parametric tests like Kruskal Wallis and Mann-Whitney U tests using IBM SPSS 22.

### 3.7 Variables/Measures of the Study:

Strategic Objectives	Measures
Increasing Monetary Contribution towards Society	Percentage of CSR Expenditure to Net Profits
Promoting Gender Equality and Empowering Women	Percentage of Female employees to Total employees
Promoting Financial Inclusion Plans	Growth in Branches in Rural & Semi urban Areas
	Ratio of Priority Sector Advances to Total Advances
	Total No. of beneficiaries of PMJDY accounts
	Total Deposits in PMJDY accounts
Promoting Environment Sustainability	Amount invested on Environment Sustainability
	Steps Taken for Environment Protection

Source: Compiled by the Authors through review of different research studies.

### 3.8 Limitations of the Study:

1. Due to non-availability of data on many measures of social and environment perspective, various measures have been excluded which must be included to evaluate the performance of banks on social and environment
2. Non-availability of data on selected measures in the beginning years might affect the results of this study.

### 4. Data Analysis and Interpretation

4.1 Inter-bank and Inter Sector Comparison of Public Sector Banks and Private Sector Banks on Social and Environment Perspective

This part of the paper highlights the Inter-bank and Inter-sector comparison of Public Sector Banks on Social and Environment Perspective of Balanced Scorecard. For this, performance score of each bank for each measure has been calculated as per their performance in each year. The score was then summed up and total or average score has been used for drawing statistical inferences.

#### 4.1.1 Inter-Bank Comparison of Performance of Public Sector Banks and Private Sector Banks on Social and Environment Perspective

**Table: 1 Performance Score of Public Sector Banks on Social and Environment Perspective**

Name of the Bank	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
State Bank of India	80	80	90	100	100	200	200	270	340	320
Bank of Baroda	70	70	70	70	70	150	170	200	250	280
Punjab National Bank	90	90	90	120	120	170	180	200	260	260
IDBI Bank	40	60	60	60	60	80	140	220	260	240
Canara bank	80	120	120	120	110	190	220	240	280	270
Bank of India	70	80	80	80	80	160	170	200	250	260
Indian Bank	80	110	110	120	120	120	180	190	230	230
Central Bank of India	90	90	90	90	80	100	110	130	180	240
Union Bank	80	80	110	120	120	160	180	200	260	240
Syndicate Bank	80	80	80	80	70	70	70	170	240	210

**Table: 2 Performance Score of Private Sector Banks on Social and Environment Perspective**

Name of the Bank	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
HDFC Bank	40	60	60	70	110	180	170	210	250	260
ICICI Bank	60	60	60	70	80	170	160	160	180	240
Axis Bank	50	50	60	70	80	170	190	270	320	310
InduSind Bank	60	60	60	70	70	190	190	250	300	300
Yes Bank	60	50	60	60	100	170	170	230	270	260
Kotak Mahindra Bank	60	60	60	50	60	150	170	190	250	210
Federal Bank	80	80	80	90	120	110	120	160	190	230
City Union Bank	80	80	70	80	80	80	90	140	190	230
RBL Bank	100	70	70	70	70	70	70	130	170	200
Karur Vysya Bank	70	70	70	70	70	80	90	120	180	240

**Table: 3 Mean ranks of Public Sector Banks and Private Sector Banks**

Name of the Public Bank	N	Mean Rank	Name of the Private Bank	N	Mean Rank
State Bank of India	10	72.15	HDFC Bank	10	52
Bank of Baroda	10	62.8	ICICI Bank	10	82
Punjab National Bank	10	60.05	Axis Bank	10	76.75
IDBI Bank	10	67.75	Indusind Bank	10	51.9
Canara Bank	10	55.3	Yes Bank	10	80.25
Bank of India	10	56.4	Kotak Mahindra Bank	10	9.65
Indian Bank	10	27.95	Federal Bank	10	44.3
Central Bank of India	10	21.3	City Union Bank	10	33.05
Union Bank	10	50.6	RBL Bank	10	39.45
Syndicate Bank	10	30.7	Karur Vysya Bank	10	35.65
Total	100		Total	100	

**Table 3 shows that:**

1. the performance of SBI bank followed by IDBI and Bank of Baroda was the best as the mean rank is the highest i.e. 72.15, 67.75 and 62.8 respectively on social and environment perspective as the performance score of these banks was the highest in almost each year as compared to other banks as shown in Table 1. This is basically because of these banks have spent more on CSR activities than other public banks. They are ahead in promoting gender equality through increasing number of female employees each year and in promoting financial inclusion through increasing number of branches in unbanked rural areas and providing financial assistance to maximum people through opening maximum PMJDY accounts.
2. Performance of Central Bank of India and Indian Banks is the poorest among public sector banks as the mean rank is the

lowest i.e. 21.3 and 27.95 respectively as they scored low in almost each year than other banks as shown in Table 1. Low expenditure on CSR activities, less number of female employees in the workforce, fewer beneficiaries in PMJDY accounts and low deposits, low ratio of priority sector advances to total advances were the primary reasons for their poor performance on social and environment perspective.

3. ICICI Bank performed the best as the mean rank is 82 on Social and Environment Perspective followed by Yes Bank and Axis Bank as the mean rank is the highest i.e. 80.25 and 76.75 respectively. This is primarily because these banks spend minimum required amount on CSR activities and environment protection. All these 3 banks retained the highest female employees in their workforce which depicts that they have promoted gender equality and empower women in their organizations. They have the maximum no. of branches in rural and semi-urban areas and these banks also provide maximum

advances to priority sectors. These private banks have taken all the necessary steps to protect environment.

4. Kotak Mahindra Bank and City Union Bank were the poor performers among private sector banks on this perspective as the mean rank is the lowest i.e. 9.65 and 33.05 respectively as they scored low in each year as compared to other private banks as shown in table 2. The amount spent

on CSR activities and environment protection was too low by both banks. No. of female employees to total employees, growth in branches in rural and semi-urban locations, ratio of priority sector advances to total advances, growth in number of beneficiaries and deposits in PMJDY accounts were too low than other private sector banks. Therefore, their performance score was poor than other banks.

**Table: 4 Results of Kruskal Wallis test for Public Sector Banks and Private Sector Banks**

	Chi-Square	Degree of freedom	p-value	Hypothesis Accepted /Rejected
Public Banks	33.882	9	0	Rejected
Private Banks	59.086	9	0.000	Rejected

Table 4 shows that for public banks since p-value is 0.000, which is less than 0.05. This implies null hypothesis is rejected at 5 % level of significance. Hence, there is a significant difference in the performance of all the ten Public Banks over the mentioned financial years on social and environment perspective. Table 4 also shows that since p-value is 0.000, which is significantly less than 0.05 for private banks. This implies null hypothesis is rejected at 5 % level of significance. Hence, there is a significant difference in the performance of all the ten Private sector Bank over the mentioned financial years.

**Suggestions:**

1. Banks should spend minimum expenditure on CSR activities and environment protection. For spending in the year of losses and low profits, banks can create reserves when profits are high.
2. To promote gender equality and empower women, banks should increase the number of female employees in their workforce.

3. Banks should provide more facilities on basic saving accounts like PMJDY to encourage the saving habits of women, poor people, low income groups and farmers in rural and semi-urban areas.
4. Banks should take necessary steps for environment protection such as creating policies and separate board for environment protection, initiatives taken for emission of carbon or recycling of e-waste, energy efficiency initiatives etc. Banks should disclose the information regarding this in their reports.
5. Bank should increase its branches in rural and unbanked areas so that more financial assistance can be provided to more rural people and farmers.
6. Banks should increase the percentage of advances to priority sectors to support overall economic development of the country.

**4.1.2 Inter-Sector Comparison between Public Sector Banks and Private Sector Banks on Social and Environment Perspective**

**Table: 5 Average Performance Score of Banks on Social and Environment Perspective**

Public Sector Banks	Average Score	Private Sector Banks	Average Score
State Bank of India	178	HDFC Bank	141
Bank of Baroda	140	ICICI Bank	124
Punjab National Bank	158	Axis Bank	157
IDBI Bank	122	Indusind Bank	155
Canara bank	175	Yes Bank	143
Bank of India	143	Kotak Mahindra Bank	126
Indian Bank	149	Federal Bank	126
Central Bank of India	120	City Union Bank	112
Union Bank	155	RBL Bank	102
Syndicate Bank	115	Karur Vysya Banka	106

Table 6 shows that the performance of Public Sector Banks was the best on Social and Environment Perspective as the mean rank is the highest i.e. 12.4. This is primarily because these banks

spent more on CSR activities. They have the largest number of branches in rural and semi-urban areas. They acquired more beneficiaries in PMJDY accounts and provided more advances to priority sectors.

**Table: 7 Results of Mann-Whitney U test**

	Mann-Whitney U	Z-score	p-value	Null Hypothesis Accepted /Rejected
Score	31	-1.438	0.15	Accepted

Table 7 shows that since p-value is 0.15, which is greater than 0.05. This implies null hypothesis is accepted at 5% level of significance. Hence there is no significant difference in the performance of both public and private sector banks over the mentioned financial years based on Social and Environment perspective.

## 5. Major Findings

This study shows that a significant difference is found in the performance on social and environment perspective among Public sector banks and among Private sector banks when an inter-bank comparison is drawn and no significant difference is found in the performance between public sector banks and private sector banks when an inter-sector comparison is drawn.

## 6. Conclusion & Recommendations

The strategic focus of banks these days is moving around achieving sustainable competitive advantage and thinking beyond maintaining liquidity and improving profitability. Actions are needed to get engage in the activities which are law abiding and beneficial for all stakeholders including society so that they can survive in the long run. Focusing on social and

environment concerns improve the image and reputation of the bank in the eyes of stakeholders thus it leads to satisfied employees, satisfied customers, improved business growth, increased market share and high profitability. Banks should identify measures on Social and Environment Perspective and incorporate within their Balanced Scorecard and continuously evaluate and improve their performance as it affects the long term profitability of the banks.

To improve the performance of banks on social and environment perspective following suggestions are given:

1. All Public and Private sector banks should spend minimum expenditure on CSR activities as prescribed by Companies Act, 2013. Banks can create reserve for CSR activities to spend in the year of losses or low profits so that they can maintain a positive image in the eyes of stakeholders.
2. Due to non-inclusion of information by most of the banks on various identified measures these have been excluded from social and environment perspective which should be incorporated by the banks while creating their individual Balanced Scorecard. The measures are as follows:

Measures
Number of Activities for Health, Education, Skill development, Natural Calamities, Rural Development, Women and Children Welfare, Financial Literacy etc.
Expenditure Done Per Social Activity
Emission Per Employee
Energy Consumption Per Employee
E-Waste Recycled
Paper Conservation
Measures on Ethics and Corporate Governance

3. Banks should disclose all the information required for the above mentioned measures and variables taken for the study in their annual reports or sustainability reports.
4. Banks should increase the number of females in total employees so as to promote gender equality and empower women.
5. Banks should conduct more awareness programs for promoting financial schemes /facilities in rural and semi-urban areas. Banks should offer customized products & services as per the needs of local area population.

## 7. Future Scope of the Study:

The relevance of strategic issues like social and environment is increasing day by day as it has already been realized that these aspects play an important role in improving the financial performance of any organization so future studies on measuring the performance of organizations through Balanced Scorecard should incorporate this perspective. It should not be confined to banking sector only. The suggested measures like number of activities for health, education, skill development, financial literacy etc, carbon emission per employee, energy consumption per employee, measures on ethics and corporate governance etc. should be included in evaluating the performance of banks on social and environment perspective.

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\* Acknowledgement

This research paper is based on the ideas, model, concepts and research methodology given in the doctoral thesis submitted and awarded by University of Kota, Kota (Raj.) entitled, "Application of Balanced Scorecard in Measuring Performance of Banks-A Comparative Study of Public and Private Sector Banks in India" by Ms. Sudarshana Sharma under the supervision of Dr. Ashok Kumar Gupta. Valuable insights are given by Dr. Meenu Maheshwari.

# Practice and Challenges of Supply Chain Management at BGI Ethiopia PLC, St. George Beer Hawassa Factory

Gobena Beri Deressa \*  
Prof. (Dr.) Ajay Trivedi \*\*

## Abstract

*Supply Chain Management is the handling of the entire production flow of a goods or services. Thus, the purpose of this study is to assess the practice and challenges of supply chain management at BGI Ethiopia PLC, St. George Beer Hawassa Factory. For the accomplishment of this study, the study was employed a descriptive research design with both qualitative and quantitative data collection methods. Accordingly, the selections of the respondent were carried out by using purposive and convenience sampling techniques. The data were analyzed by using SPSS software which helped the researcher to analyze data described in the table easily. The major findings indicate that most SCM practice is poorly practiced by BGI Ethiopia St. George Beer Hawassa Factory which all are represented with group mean value of below 2.61. That means among seven items developed to evaluate the current practice SCM practice of the case company six of them practiced poorly. However, relatively customer service satisfaction scored a mean value of 3.2 means it is moderate.*

**Keywords:** BGI Ethiopia, Challenge, Practice, Supply chain Management,

## Introduction

Due to the revolutionary age of the world, the stiff competition of ravel and easy-going nature of the customer, organizations are urged to change the current traditional way of supply distribution environment to formal and professional nature of manufacturer, agents, sub-agent and retailers since the business environment is characterized by unpredictability and changeability. Therefore, adopting a more integrated approach to supply chain (SC) relationship management has been increasingly viewed as a way of meeting changing customer needs (Eyong, 2009).

Supply Chain Management (SCM) characterizes a significant change in how most organizations see themselves. Customarily, firms see themselves as having customers and suppliers. Historically, an organization did not consider the potential for either its supplier or its customer to become a companion. In many industries each firm was very competitive with its suppliers and customers, fearing that they would be taken advantage of by them (Fredendall, & Hill, 2016). Many companies are now focusing on improving and developing their supply chain processes because they can play a significant role in customer service and profitability. Therefore, the

researcher was decided to study the supply chain management practice of BGI Ethiopia PLC Hawassa Beer Factory and the result will be compared with the result of the existing studies in the field to help the generalization of SCMP and add literature review in the industry (Eyong, 2009). The general objective of this paper was to study or look into the supply Chain Management Practice of BGI Ethiopia PLC St. George Beer Factory, Hawassa Branch. Furthermore, the researcher targeted to study the relationship between manufacturer and customers, to assess the extent of information sharing practice among supply chain partners, to assess the level of information technology application in the supply chain, to assess the training practices of the organization, and to identify the challenges of effective supply chain management implementation.

## REVIEW OF LITERATURE

### 2.1. Concepts of Supply Chain Management

The term supply chain management was applied in 1982 by Keith Oliver, a management consultant at Booz Allen Hamilton (Ballou, et al., 2000). According to Stock and Boyer (2009) supply chain management is defined as a total system approach to managing the flow of information, materials, and services from

\* Research Scholar, Faculty of Commerce, Parul University, Waghodia, Vadodara Gujarat.

\*\* Dean, Faculty of Commerce, Parul University, Waghodia, Vadodara Gujarat.

raw materials suppliers to end user. Once up on the time thinking about Supply Chain Management (SCM) was a concept more than a reality, since there were many challenges that could not easily be achieved in supply chain management. As a result, managers are highly interested in managing their supply chain much better than before for the three main reasons. One, technology is moving fast. Second, management styles are updated regularly. Third, skilled manpower are entering to the industry. The above three major changes in the market, push firms to make SCM a reality. Therefore, those companies who master SCM has competitive advantage over competitors. That mean we can say SCM is income and means to win rivals or competitive advantage. By increasing the integration of the entire supply chain, all the firms in the chain can increase their profits (Lawrence et al, 2011).

## **2.2. Practice of Supply Chain Management**

Many manufacturers and distributors are waking up to the potential for the major cost reduction and service improvements offered by implementing best practices in their supply chain. A number of literatures show many different perspectives of SCM practices (Chen and Paulraj, 2004; and Li et al., 2005). These different writers perspectives suggested a multi-dimensionality of SCM that covers set of activities and processes from upstream, firm's internal operations to downstream of the supply chain.

Supply Chain Management is currently known as a critical business process for companies manufacturing or distributing products. This is because customers' request for most products are ever more demanding in response time, in choice and in seeking more inexpensive prices and thanks to globalization, customers can choose from money different number of suppliers (Lazarovic et al, 2007).

## **2.3. Challenges of Supply Chain Management**

Starting from production to end user, facing challenges throughout the supply chain management is a common situation. Among them, the major once are risk management, uncertainty and bullwhip effect.

### **2.4.1. Risk Management**

According to Nichols et al. (2019), risk is ubiquitous within supply chain management in today's global business environment. When the firms expand their supply chain, there is high probability that they are venerable to different types of risks associated costs. As a result, managing of risk from alpha to omega and managing risk proactively is highly advised. Kivet

(2019) noted that there are five steps need to be followed to mitigate risks associated with supply chain movement. First, clearly identify your potential supplier. Second, assure your received what you ordered. Third, don't pay for undelivered service. Forth, resolve any issue in the supply chain on time and fifth, evade any risks unpredicted before.

### **2.4.2. Uncertainty**

Another risk associated with supply chain management is uncertainty or forecast. SCM basically comprises of suppliers, manufacturers and customers. Producers usually enter into a very complex relationship with suppliers in a supply chain that involves abundant sources of improbability. Generally Davis(1993) identified three major sources of uncertainty: manufacturing, demand and supply uncertainty.

### **2.4.3 Bullwhip Effect**

Another obstacle that different organizations have been facing in their supply chain is bullwhip effect. The concept has its roots in Forrester's Industrial Dynamics (1961) and thus it is also known as the Forrester Effect which is resulted from inaccurate or distorted information flows. This phenomenon has been observed across most industries resulting in increased cost and poorer service.

## **3. RESEARCH METHODOLOGY**

The researcher applied/decided to use descriptive research type, since this helps to use both qualitative and quantitative data analysis. Even though supply chain management is necessary for both manufacturing and service companies, this study was targeted on the beer manufacturing company particularly BGI Ethiopia St. George Beer. Furthermore, the exact sample units of respondents were considered from the company's management, major customers/agent/ and retailers. Purposive sampling technique was used to interview managers who are directly related to the topic under investigation. Since the agents are two in numbers the researcher decided to interview both of them with a pre-defined question. The researcher selected two sub-city found in Hawassa town namely "Meneharia and Bahiladarash" on a purposive sampling technique method because the high number of retailers is found in these two sub-cities. In these two sub-cities, there are 58 hotels and 16 groceries. That means the researcher used 100% of the sample. However, out of 74 questionnaires distributed, 65 valuable questionnaires were returned with 87.83% of the response rate. Both primary and secondary sources of data were utilized through questionnaires, interviews, and documentary sources. The

primary data conducted in the form of personal interviews with major customers/agent/, General Manager, production, marketing, and human resource managers. As the secondary data; books, articles, journals, magazines, theses, and brochures were reviewed. On the other hand, the collection of relevant to validate the investigation demands appropriate and convenient techniques of data collection are used. In general, there are two types of data analysis techniques namely: qualitative and quantitative whereby the choice of these methods greatly depends on the type of information the researcher has at hand. Therefore, as determined in the data collection tool for this study, data were collected in both questionnaire and interview. Accordingly, the collected data were analyzed quantitatively and qualitatively. Particularly, descriptive statistics such as frequency, percentage, mean, and standard deviation were employed to analyze the data.

## **4. RESULTS AND INTERPRETATION**

### **4.1. Manufacturer and Customers Relationship**

The results of Table 1 indicated that the group means of manufacturer and customers' relationship is 2.26 which is an almost poor performance with respect to the overall measures taken into consideration. Specifically, joint product planning with the manufacturer and with major customers/agents shows the mean value of 1.68, and 1.96 respectively. Likewise, the level of relationship with manufacturer and compliance acceptance represents mean values of 2.32 and 2.39, respectively. This implies that the case company has a poor relationship with retailers and the average compliance acceptance system. The same to this, compliance response on time and level of retailer's cooperativeness with an agent are relatively moderate.

The group means value result implies that SCM practice from the perspective of the manufacturer and customers' relationship of the case company is moderate, which is 2.26. Therefore, the simple sale-buy and weak relationship of the case company with its customers resulted in not fully satisfy its customers' needs.

### **4.2. Information Sharing Practice**

Under this section, the following table indicates the mean value of each item and group mean that can generalize the information-sharing practice of the case company with its down-stream SPC partners. Refer Table 2. Relatively, the high and the lowest mean values are scored by a sense of trust and confidence along the SC and other product information sharing that is 2.60 and 2.22 respectively. On the other hand, the Sales forecast information sharing with suppliers and overall

efforts of information coordination and sharing scored the same mean value of 2.31. This implies that the case company has poor information sharing practices with its customers particularly on other product-related information sharing.

In fact, as the qualitative data collected by interviews, customers like agents and sub-agent are closer to the retailers. They have a better opportunity to forecast information from the manufacturer. Sharing forecast information with such customers would help the case company and consolidate its market demand forecasts. So, having a poor relationship with such partners is a cause for poor information sharing practices which makes the forecast of the case company weak and unrealistic.

### **4.3. Information Technology**

As table 3 reveals that, three items were used to measure IT application of the case company. Out of three items developed to see the extent of IT application in BGI Ethiopia St. George Beer Hawassa Factory, the importance of a relatively IT system scored the highest mean value that is 2.6. That means it is moderately important to have an IT system in the chain. The Up-to-datedness of IT throughout the supply chain and IT-based automated ordering from retailers revealed almost the same mean value of 2.27 & 2.12 respectively. Generally, the group's mean value of SCM practice from an IT perspective is 2.33, which is interpreted as there is poor IT application practice across the BGI Ethiopia St. George Beer Hawassa Factory supply chain.

### **4.4. Training practice**

Table 4 shows four items developed to investigate the training practice of BGI Ethiopia St. George Beer Hawassa Factory. Even if the training practice is considered as one of SCM practices, all of the items given almost the same including the group mean (2.16). This clearly implies that there is a great problem with the human resource management area of the case company. The interview result also indicated that there is no well-organized training program within the company to the employees and managers so that they could train their partners' intern.

### **4.5. Challenges of Effective SCM Implementation**

As illustrated in Table 5, out of five items used to determine the extent of challenges in supply chain management: willingness to share risks and benefits shows the lowest mean value, which is 1.72. This implies that the participants in the SC of BGI Ethiopia St. George Beer Factory are not willing to share risks and benefits associated with their supply chain. When there is poor willingness to share risks and benefits with the SC partners that

convey weak relationship and integration among the SC partners. The implication is that the supply chain practice is traditional. It means, partners/members within the chain do their own decision and take the responsibility for any risk in a disintegrated manner. Similarly, the remaining items also scored poor mean values. Accordingly, inventory fluctuation due to the bullwhip effect, and institutional trust to share confidential data represented a mean value of 2.04 and 2.20 respectively.

## 5. CONCLUSION AND RECOMMENDATIONS

There is moderate service in the training of customer service. This is due to the fact that the training of customer service that has a direct effect on the company's ability (potential) to embark on external integration. In other words, its effect is clearly reflected on customers not getting what they need when they need it, long lead time, and poor complaints management, poor integration with suppliers, not having an effective flexible production system that could respond to the changing market and customer's preference.

From supply chain management practices, the case company has a great problem with training and IT practices. These two practices play a decisive role in creating effective and efficient supply chain management. Poor IT facilities lead to poor information sharing and poor information sharing practices make supply chain management ineffective. On the other hand, supply chain management needs an effective internal operation for creating integration with external partners. Therefore, training practice to make both employees and managers competent is the poorest out of the seven supply chain management practices.

The main challenge that prohibits effective SCM of BGI Ethiopia St. George Beer Hawassa Factory like, manufacturing, supply and demand uncertainties and fluctuation of inventories due to distorted information (bullwhip effect) are because of poor relationships between SC partners. Therefore, it is noticeably explained that internal integration is vital in increasing the potential of the company to get external integration. BGI Ethiopia St. George Beer Hawassa Factory is suggested to integrate the internal operational units, so as to bring about flexible, responsive and efficient production.

In addition, BGI Ethiopia St. George Beer Hawassa Factory is highly suggested to prepare a training program for its employees and managers in order to enable them to be competent, committed, responsive, finally which makes them able to give training to agents and retailers. This can be done by creating relationships with training institutions to strengthen the internal human resource department, internal sourcing. Likewise, the researcher suggested to the company's

marketing department to improve the relationship with customers through a continuous information sharing, follow-up and get feedback.

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**Table 1: Manufacturer and Customers Relationship Practice of SCM**

Items	Mean	SD
Joint product planning with manufacturer	1.6875	1.0965
The level of relationship with manufacturer	2.3281	1.2731
The level of compliance acceptance	2.3968	1.4204
Compliance respond on time requirements	2.6349	1.2864
The level of cooperativeness of agent	2.6032	1.3142
Joint product planning with major agents	1.9683	0.9832
<b>Group Mean</b>	<b>2.2698</b>	

**Table 2: Manufacturer and Customers Relationship Practice of SCM**

Items	Mean	SD
Sales forecast information sharing	2.3175	1.1616
Other Product related information sharing	2.2222	1.0541
Overall efforts of information coordination and sharing	2.3175	1.2025
Adequacy and quality of information sharing	2.3968	1.2513
Sense of trust and confidence	2.6094	1.3872
<b>Group Mean</b>	<b>2.3727</b>	

**Table 3: Information Technology Practice**

Items	Mean	SD
IT based automated ordering	2.1290	1.2212
Up-to-datedness of IT	2.2742	1.2567
Importance of IT system	2.6066	1.4523
<b>Group Mean</b>	<b>2.3366</b>	

**Table 4: Training Practice of SCM**

Items	Mean	SD
Adequacy of training for partner	2.1270	0.9918
Employee training in the chain	2.2031	1.0717
Provision of diversified skill training	2.2063	1.0342
Downstream training	2.1290	1.1521
<b>Group Mean</b>	<b>2.3366</b>	

**Table 5: Challenges of Effective Supply Chain Management Implementation**

<b>Items</b>	<b>Mean</b>	<b>SD</b>
Supply uncertainty	1.9841	0.9587
Institutional trust	2.2063	1.1935
Willingness to share risk	1.7242	0.8524
Inventory fluctuation due to information	2.0469	1.1876
Manufacturing uncertainty	2.0328	1.1968
<b>Group Mean</b>	<b>2.3366</b>	

# A Study on Impact of Covid-19 Pandemic on the Financial Performance of Indian Cement Industry

Dr. Bidyut Jyoti Bhattacharjee \*  
Dr. Dibyojyoti Bhattacharjee \*\*

## Abstract

*It is the time to examine the financial performance of every company particularly for emerging economy irrespective of nature of industry and country to see the impact of Covid 19 pandemic. Nevertheless, this research studies focuses on the performance of Indian cement companies because it contributes 5.4% of global GDP, 7.7% of world employment and nearly 10% of India's GDP. The role of the cement industry in India's GDP is of great significance to the country's economic development. The cement industry in India is one of the oldest industries in India driven by tremendous growth in the housing sector, infrastructure development, and transportation system construction. In recent years, the country's infrastructure construction has been the driving force of demand for the cement industry. As the use of accounting method to measure the performance of the company has its own limitations and criticisms, the present paper mainly give emphasis on the use a weighted linear aggregation method (OWA weight) applied on the available accounting information to compare the financial performance of companies. The study observed that Covid 19 did not affect small size cement companies but little bit affect has been seen among the performance of larger companies. This affect is temporary, no affect on long term business as because of goodwill of the business and adoption of sound strategic management decision.*

**Key Words:** Covid 19, Pandemic, Financial Performance, Cement Industry, Weighted Linear Aggregation Method

## 1. Introduction

The stakeholders of business organisation always want to measure the business performance before taking decision. The investor wants to invest money in those companies which are relatively less volatile and can provide maximum return on investment. The business owner wants to see that the organisation should sustain for long term period with prosperity; therefore wants to measure performance of organisation periodically and compare the performance of their business house with others in the same segment. By measuring the performance of the organisation one can identify the strength and weakness easily and weakness of the organisation can be resolved by adoption to strategic management. To be a successful business, strategic management plays a crucial role for any type of firm. Strategic management aids a company's long-term profitability and viability in the marketplace. According to the findings of earlier studies, those firm that are sophisticated users of strategic management, are more successful than firms that have not yet acquired strategy making skills (Pekar & Abraham, 1995). Some researcher like (Eden and

Ackermann, 1998) suggested that the strategy-making process may be the most critical aspect in determining a company's capacity to achieve its strategic goals. Furthermore, a company's strategy-making process can have a significant impact on its performance. (Hart and Banbury, 1994). As a result, a firm's performance is an important constraint in the strategic management process. In the discipline of strategic management, one of the most important constructs is company performance. (Rumelt et al., 1994). It may be necessary to design a construct to measure firm performance in such a way that it may be used as the firm dependent variable. (Eichard et al., 2009). Despite its importance, research on firm performance is plagued by issues such as a lack of consensus, indicator selection based on convenience, and a lack of regard for its dimensionality. (Combs et al., 2005; Crook et al., 2008).

Now a day a business need to adopt adequate strategic management decision in such a way which can help the organisation to sustain for long term and able to face all kinds of business risk. Recently, the Covid-19 pandemic becomes a matter of concern for development of every sector of economy

\* Assistant Professor, Department of Commerce B.H.College, Howly, District: Barpeta Assam (India)

\*\* Professor, Department of Statistics Assam University, Silchar, Assam (India)

of a country. The unfold of the virus is probably to retain disrupting financial activities and negatively effect manufacturing and service provider industries. As outbreaks of novel influences aren't probably to vanish in coming future, proactive global moves are required now not only to save the lives however additionally to guard financial prosperity (Pakael Sisen D.P, 2020). The industry sector has been one of the maximum prone sectors at some point of pandemic due to its size, scale of commercial enterprise availability of monetary resources. Studies and survey confirmed that about 95% companies had been impacted negatively because of country wide lockdown imposed in April 2020, 70% of commercial enterprise remained disturbed until August 2020 (Tripathi P, 2021). All India Manufactures Organisation conducted survey on MSME and showed that the self hired MSME units, predominantly 35% of MSME industry do now no longer have any scope of healing for his or her commercial enterprise. Therefore, a modified business strategy is necessary for the business houses to sustain in the market in such an unprecedented situation. With the pandemic situation prevalent in the country, at varying rates for nearly two years, the time is now to measure the performance of every business to understand if the companies have adopted to appropriate strategy given the nature of their business during the pandemic.

Moreover, the pandemic affected almost all the sectors of business world badly especially cement, tourism and hospitality, entertainment, engineering etc,. In India, cement industry plays an important role in the development of economy by meeting the demand of the construction sector. India is the second largest cement producer in the world. It accounts for more than 7% of the world's installed capacity. Some of the recent Indian government initiatives such as the development of 98 smart cities are expected to give the sector a significant boost (IBFE, 2021). During the pandemic, due to the lockdown of the country and the relocation of workers from work place to their own village, the country's construction scenario was badly hit as regular construction activities were suspended. As operations across production facilities and construction sites came to a standstill with the global lockdown to contain the spread of the virus, cement production and consumption declined throughout the globe. Even in countries where construction was excluded from the list of economic activities prohibited during the lockdown was down significantly and weak consumer sentiment led to a decline in cement purchase towards the end of the first quarter of 2020. As a result, the cement industry had to reframe their strategy to deal with the pandemic situation. This paper seeks to compare the financial performance of some Indian cement companies by considering the time before and during/after the pandemic in order to understand the Indian cement company's ability to manage unavoidable business risks.

## Literature Review

The paper contributes the expanding literature assessing the economic impact of Covid-19. The World Health Organization (WHO, 2019) declared Covid-19 as a global pandemic. The pandemic has infected more than 45 million people and caused more than 1 million deaths by the end of October 2020 (ECDC, 2020). Desperate efforts to curb person-to-person transmission of Covid-19 resulted in community lockdowns and business closings (Akpan et al., 2020a). In the wake of this global health crisis, and in order to avoid a shutdown of economic activity, the use of some technologies that were not considered essential by small businesses became critical to avoiding a total shutdown of the world economy (Ting et al., 2020). Many companies of all sizes have since implemented technologies such as virtual meetings and other methods (Ting et al., 2020; Webster, 2020). Most of the income from the breakdown of work to other firms to firms and from long-term agreements is likely to cope better in times of economic hardship and in conditions of economic uncertainty. Fairlie (2020) examined the impact of Covid-19 on small business owners and his research provided the first analysis of the impact of the pandemic on the number of active small businesses in the US. Early-stage losses for small businesses have important policy implications, loss of income and future economic inequality. Garg, Gupta and Kumar (2021) examined the impact of Covid-19 on the Indian stock market. They observed that the rising number of Covid-19 cases had a direct impact on the stock market. Agarwal and Singh (2020) examined the impact of Covid-19 on the Indian economy. Their work sheds light on the sectors that are booming from the Covid-19 outbreak. The study showed that involving the right one could be able to solve challenges in a new platform that is exposed to and sustained environmental damage to humanity, possibly through pollution, self-centered growth or inequality. Kar, Ghosh and Gupta (2021) examined the effects of the corona virus outbreak on society, air quality and the economy in India. They found that the trend and volatility of two broad Indian stock market indices, SENSEX and NIFTY-50, recovered during the forty-day lockout period. Archarya and Steffen (2020) note a sharp rise in US company cash on hand in March as Covid-19 fears materialized. Bhalla-Elliott et al. (2020) note that delays in reopening stores in the United States after the lockdown can be explained by low expected demand rather than health concerns. Aum et al. (2020) point to fear of infection rather than lockdown as the main reason behind the decline in local employment, suggesting the pandemic has hit the high-contact trucking industry hardest. Julie (2021) found that community based small family businesses that survived the crisis of resilience, entrepreneurship and the celebration of their ethnic cultures in tourism. Small-scale tourism, which is closely related to the community, family and people, can offer more promising prospects for tourism. Oamen (2021) noted that the Covid-19

pandemic generally had little impact on the operations and bottom line of the pharmaceutical sales force in Nigeria. The global Covid 19 pandemic has impacted e-commerce in a good aspect, it is expected to bring in over \$843 billion in sales this year. The pandemic has additionally impacted on the restaurant business. The pandemic has impacted the retail zone, shopping zone around the world because of adopting a strategy of decreasing hours or closing down temporarily. As of March 2020, the footfall to buying centres fell via way of means of as much as 30% with full-size effect in each continent (Aislelabs, 2020). The pandemic has impacted the movie enterprise. Almost all blockbusters to be launched after the March establishing weekend had been postponed or cancelled around the world resulting huge losses bears by film producer. The pandemic caused a growth in medicine -associated factors which includes plastic surgery. Moreover investment like different financial hobby fell substantially as a right away end result of lockdown restriction. This impact became especially noticeable in the second quarter of 2020, whilst investment reduced 19% year on year as maximum barriers had been launched via way of means of the summer (Sakoui, Anousha, 2020). It has been noticed from the literature, every sector of the economy throughout the world suffered badly resulting all the sphere of economy particularly service and industry sectors were bound to adopt strategy to recover the losses. Mentioned earlier it is the time to examine the performance of Indian company as emerging economy irrespective of nature of industry to see the impact of Covid 19 pandemic.

Nevertheless, this research studies focuses on the performance of cement companies because it contributes 5.4% of global GDP, 7.7% of world employment and nearly 10% of India's GDP. The role of the cement industry in India's GDP is of great significance to the country's economic development. The cement industry in India is one of the oldest industries in India driven by tremendous growth in the housing sector, infrastructure development, and transportation system construction. In recent years, the country's infrastructure construction has been the driving force of demand for the cement industry.

### Objectives of the Study

- To use Ordered Weighted Average (OWA) method to measure the performance of company
- To examine the impact of Covid-19 on the financial performance of Indian Cement Companies.

### Objectives of the Study

In this section we discuss the methods that are applied in the paper to attain the objective laid down in the previous section.

Initially we identify the companies of the cement companies that are considered for the study.

### 2.1 Selection of the Companies

Fifteen Indian cement companies are selected on the basis of the size of the companies. The size of companies are measured using sales volume of the company and while selecting top companies for the study, rank given by money control.com on the year 2020-21 is utilized. Accordingly five top larger size companies, five top medium size companies and five from top small size companies were considered for the study.

Name of Company	Net Sales as on March 2021 (Rs. in Cr)	Name of Company	Net Sales as on March 2021 (Rs. in Cr)
Ultratech Cement Ltd	43188.34	Orient Cement Ltd	2324.09
ACC Ltd	13784.54	Birla Corporation Cement Ltd	1697.23
Ambuja Cement Ltd	11371.86	Star Cement Ltd	1664.00
Shree Cement Ltd	12588.39	Udaipur Cement Ltd	735.12
J K Cement Ltd	6388.28	Dalmia Bharat cement Ltd	148.09
J K Lakshmi Cement Ltd	4384.71	Barak Valley Cement Ltd	132.82
India Cement Ltd	4436.67	Andhra Cement Ltd	0.10
Rain Industries	3007.74		

### 3.2 Financial Performance Parameters

In this study the dimension of firm financial performance like profitability performance, growth performance, market value performance, valuation of firm performance are considered to examine the performance of the companies. (Selvam, Gayathri, Vasant, Lingaraja, Marxialoi, 2016). The table below shows the dimension of firm performance along with the sub-parameters that are used to measure the dimensions in the formulation of Composite Index.

**Table: List of Ratios/ Parameter for each Dimension of Firm Performance used to Develop the Performance Index**

Sl. No	Dimensions	Ratios/ Parameter
1	Profitability Performance	Return on Assets (ROA), Assets Turnover Ratio (ATR), Return on Net worth (RONW), Return on Capital (ROC), Net Profit Margin (NP)
2	Growth Performance	Turnover Growth, Net Profit Growth, Net Assets Growth
3	Market Value Performance	Earning Per Share (EPS), Dividend Yield (DY), PBIT Per Share
4	Valuation of Firm Performance	MC/NOR, Retention Ratio (RR), Earning Yield (EY), Price/ Net Operating Ratio

Source: Compiled by Authors from Various Studies. Also based on the availability of data

### 2.3 Ordered Weighted Average Index

Yager (1988) introduced the concept of ordered weighted average (OWA). The method proposed by Yager can be modified to obtain averages using any criteria like the minimax, maximin, equally likely and so on. The main objective of the technique is to determine the weights of the different components participating in the in the formation of the composite index. Wang and Parkan (2005) modified the OWA introduced by Yager (1988) and proposed a simple yet effective method named the minimax disparity approach, for generating weights. The solution to this optimization can be obtained using the Solver add-in available in Microsoft Excel. In the literature of multi criteria decision making, there are several methods of weighting and aggregation. The main reason for preferring OWA, is that the ranks of the competing companies obtained through this method is not much sensitive to change of weights. The method also provides more importance to the components in which a particular company (in this case) is doing well by choosing the value of  $\alpha$  (to be discussed subsequently) more than 0.5. Also this method can minimize the difference between the weights ensuring that the relative importance of the participating components in the index is not in much variation to each other.

Briefly speaking, the method of computing the weights, along with the relevant terminology is discussed below. The discussion is based on the works of Yager (1988) and Wang and Parkan (2005). In this paper, there are different components of the companies, which are to be aggregated into a weighted

composite index. The normalized values of the components are represented as  $x = (x_1, x_2, \dots, x_n)$ . We define the composite index as,

Normalization is generally done when components having different units of measurement are to be aggregated. The process of normalization scales all the values between [0, 1], with zero for the minimum value of the series and one for the maximum value of the series. The process of normalization also makes each of the values free from unit and so the components having different units of measurement can now be aggregated after normalization. If  $(z_1, z_2, \dots, z_n)$  be a set of values,

then the normalized value of  $z_1$  is

$$z_1^* = \frac{z_1 - \min(z_1, z_2, \dots, z_n)}{\max(z_1, z_2, \dots, z_n) - \min(z_1, z_2, \dots, z_n)}$$

However, if the values

$$F(x) = WY = \bigoplus_{i=1}^l w_i y_i \dots (1)$$

Where  $y_i$  is the  $i$ th largest observation of the component  $x$ . Also,  $W$  is defined as  $W = (w_1, w_2, \dots, w_n)$  where

$$w_i \geq 0, i = 1, 2, \dots, n \dots (2)$$

$$\text{and } \bigoplus_{i=1}^l w_i = 1 \dots (3)$$

are the corresponding weights associated with the ordered values of the component  $x$ , that is  $Y$ .

Accordingly, some OWA operators are defined,

$$Disp(w_1, w_2, \dots, w_n) = - \bigoplus_{i=1}^n w_i \ln(w_i) \dots (4)$$

hich is an entropy function explaining the dispersion in the weights. Another, OWA operator called the orness is defined as,

$$C = Orness(w_1, w_2, \dots, w_n) = \frac{1}{n-1} \bigoplus_{i=1}^l (n-i) w_i \dots (5)$$

The dispersion operator defined in (4) acts as a constraint while obtaining the weights, designed in such a way so as to see that all the components have a reasonable contribution on the overall composite index. The Orness operator defined in (5) is a constraint the value of which lies between 0 and 1 i.e., and provides a control to the researcher in regulating the relative importance of the components. For example, if then

$$Orness(w_1, w_2, \dots, w_n) = \frac{1}{n-1} \sum_{i=1}^n (n-i)w_i$$

which is obtained for,  $w_1 = 1$  and  $w_i = 0 \quad i = 2, \dots, n$ . Thus, for such values of the weights we have the composite index as,

if  $z$  is of negative dimension (lesser the value, better it is) then it is normalized as

$$z^* = \frac{\min(z_1, z_2, \dots, z_n) - z_1}{\max(z_1, z_2, \dots, z_n) - \min(z_1, z_2, \dots, z_n)}$$

$$F(x) = WY = \sum_{i=1}^n w_i y_i = 1 \cdot y_1 + 0 \cdot y_2 + \dots + 0 \cdot y_n = y_1$$

i.e., the largest observation of the components of  $x$ . If then

$$Orness(w_1, w_2, \dots, w_n) = \frac{1}{n-1} \sum_{i=1}^n (n-i)w_i$$

which is obtained for,  $w_n = 1$  and  $w_i = 0 \quad i = 1, \dots, n-1$ . Thus, for such set of weights the composite index is,

$$F(x) = WY = \sum_{i=1}^n w_i y_i = 0 \cdot y_1 + 0 \cdot y_2 + \dots + 1 \cdot y_n = y_n$$

i.e., the smallest observation of the components of  $x$ . Another special case is reached when  $\alpha = \frac{1}{2}$ , for which the Orness

constraint provides  $w_i = \frac{1}{n} \quad i = 1, \dots, n$  and accordingly the composite index converges to the simple average.

Precisely speaking, it is observed that higher values of ' $\alpha$ ' gives more importance to the components with larger values and vice-versa (Amin and Sharma, 2014). The composite index defined in (1) with weights determined using OWA technique has the property that –

$$\min \{x_i, i = 1, 2, \dots, n\} \leq F(x) \leq \max \{x_i, i = 1, 2, \dots, n\}$$

i.e. the ultimate value of the composite index shall lie between the highest and the lowest value of the participating components in formation of the index.

Obviously, the most challenging part of the implementation of

the OWA aggregation method is about determining the corresponding OWA weights. Though there are several methods available for determining the OWA weights but in this paper the linear programming method using the minimax disparity rule proposed by Wang and Parkan (2005) is used. Here the issue is to-

Minimize  $d$  ... (6)

Such that,

$$\sum_{i=1}^n w_i - i \cdot d = c \quad c \in [0, 1] \quad \# \text{ to ensure that the linear combination of the weights produce the value of the orness operator which is determined by the researcher}$$

$$\sum_{i=1}^n w_i = 1 \quad \# \text{ to ensure that the sum of the weights is 1}$$

$$|w_i - w_{i+1}| \leq \epsilon, \quad i = 1, 2, \dots, n-1 \quad \# \text{ to ensure that the difference between the weights can be minimized}$$

$$w_i \geq 0 \quad \forall i \quad \# \text{ to ensure that none of the weights are negative}$$

The model shall try to minimize the deviation between consecutive weights as much as possible keeping all the weights positive and the sum total of weights to unity.

The solution to the above linear programming problem shall provide the corresponding weights of the composite index.

If  $W^* = (w_1^*, w_2^*, \dots, w_n^*)$  be the OWA weights obtained by solving the linear programming defined in (6), and  $x_{ij}$  denotes the normalized value of the  $j$ th company in the  $i$ th component then the OWA aggregation is given by,

$$F(x_j) = w_1^* \cdot x_{1j} + w_2^* \cdot x_{2j} + \dots + w_n^* \cdot x_{nj}$$

The value of  $F(x_j)$  is computed for all the  $k$  (say) competing companies ( $j = 1, 2, \dots, k$ ) and the company with the highest value of  $F(x_j)$  may be considered as the best company in that category (Profitability, say) based on the values of all the components considered for aggregation. This can be repeated for each of the categories viz. Profitability (five components), Market Performance (three components), Valuation (four components) and Growth (three components) separately. Once these are done, OWA aggregation of the companies are

computed for all the parameters considered under Profitability, Market Performance, Valuation and Growth taken together. This shall provide a single value for each company and accordingly spelling out the holistic picture of a company relative to its counterparts (higher the value better is the company in aggregate) with respect to all the fifteen components.

Once the ordered weights are determined for the different components under each of the categories viz. Profitability, Market Performance, Valuation, Growth and the overall separately, the values of the composite index for the different companies are computed for the aforesaid categories with the normalized values of the components using (1). This exercise is repeated for the year 2018-2019 (before pandemic) and for the year 2020-2021 (after/during the pandemic). Based on the values of the composite index the 15 participating companies are ranked for 2018-2019 and for 2020-2021 for each of the categories mentioned above. Scatter plots are drawn with ranks of the companies in 2018-19 along the X-axis and 2020-21 along the Y-axis for each of the categories separately. We also draw a 45 degree line, called the 'Line of Agreement' in the graph. In the graph, each plotted point represents a company. The position of a company in the graph is determined by its rank in 2018-19 (X-coordinate) and the rank of the company on Profitability, say, in 2020-21 (Y-coordinate) for any of the category, Profitability say. In case, there is not much variation in the rank of a company, derived from its composite index, for the two periods then the dot representing the company shall be close to the Line of Agreement, otherwise it shall be far from the line. In case the dot representing a given company in the scatter diagram is above the Line of Agreement and much away from the line- it indicates that the company has lost its position relative to its competitors following the pandemic. However, if the dot representing a given company is below the Line of Agreement and much away from the line then it indicates that the company has improved its position in comparison to its competitors in the category under consideration by devising some dynamic strategies during the pandemic. Working in similar lines, conclusion for the all the categories can be drawn,

### 3.4 Data Types and Source

The data is collected from the annual report of 15 different companies of Cement industry for the financial year 2018-19 and 2020-21 on the different components related to the different dimension of firm performance viz. Profitability, Market Performance, Valuation of Company and Growth of the company. 2018-19 is the financial year immediately prior to the pandemic period and the year 2020-21 is the period during the pandemic. The researchers believe that the time periods selected for the study shall be able to portray the impact of Covid-19 pandemic on the financial performance of the companies. The values of the different companies corresponding to the different components under each of the

broad heads are placed in the different tables under Appendix A. For computation of the composite index the normalized values are used instead of raw data as normalized values are unit free and supports aggregation.

### 3. Calculation and Results

Based on the data collected from the source mentioned in the previous sub-section and the formulae explained in sub-section 3.3 the composite index values of the 15 competing companies from the Cement Industry are computed for the dimension of Profitability, Market Performance, Valuation, Growth and the overall separately. This exercise is repeated for the years 2018-19 and 2020-21. Later the companies were ranked (in descending order) for the years and the dimension separately. The details can be seen in Table 5 under Appendix B. Using the Kendall's Coefficient of Concordance based on ranks (Details of the coefficient is provided in Appendix C) the agreement between the relative positions of the companies in 2018-19 and 2020-21 are computed for the different dimensions or performance parameter. The results of Kendall's W are placed in Table 2 below.

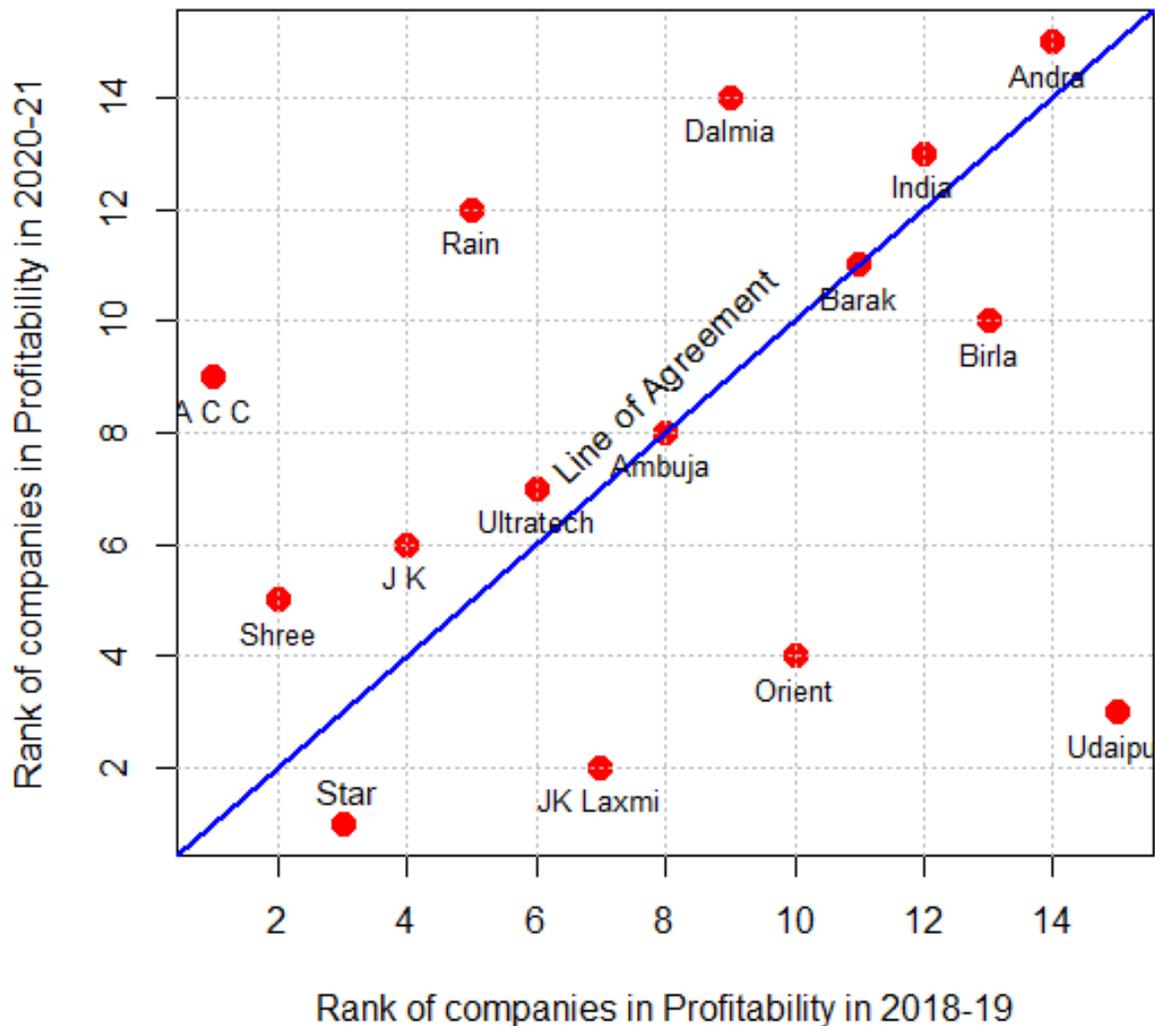
**Table 2: Values of the Kendall's Coefficient of Concordance (W) for the measure of similarity of the ranks of the companies under the different categories between 2018-19 and 2020-21**

Categories	Kendells' Coefficient of Concordance (W)
Profitability	0.6678
Market Performance	0.9786
Valuation	0.6018
Growth	0.5339
Overall	0.7125

The values of Kendall's Coefficient of Concordance (W) lies between 0 and 1. Values of W towards 1 indicates high agreement between the ranks and towards 0 indicates lack of agreement or disagreement. A look at the values of W for the different categories indicates that except for Market Performance, in all the other categories the pandemic situation has disturbed the agreement in ranks. Precisely speaking while some companies improved their ranking in 2020-21 compared to what it was in 2018-19, there were some other companies whose rank deteriorated in the corresponding years in the different performance categories except in case of Market Performance.

The scatter plots are drawn with ranks of the companies in 2018-19 along the X-axis and 2020-21 along the Y-axis for each of the categories separately and are placed in the figures below.

Figure 1: Scatter diagram showing the ranks of different cement companies for Profitability for 2018-19 versus 2020-21



In Figure 1, containing the scatter diagram of the ranks of different cement companies for Profitability for the year 2018-19 versus 2020-21, we find that some companies like JK Lakshmi, Orient Cement, Udaipur Cement Limited, ACC Ltd, Dalmia Bharat and Rain Industries are far away from the Line of Agreement. Out of these companies JK Lakshmi, Orient Cement and Udaipur Cement Limited are much below the Line of Agreement indicating that they have significantly improved their ranks in Profitability following/during the pandemic. JK Lakshmi which was ranked seventh in Profitability in 2018-19 is ranked second in 2020-21. Orient Cement with rank tenth in Profitability in 2018-19 has climbed up to fourth position in 2020-21 and Udaipur Cement Limited improved from fifteenth

to third position in Profitability. The companies which are big losers in Profitability because of the pandemic are ACC Ltd, Dalmia Bharat and Rain Industries as they are distant from the Line of Agreement and are above the said line. ACC Ltd. which was at first position in profitability in 2018-19 has gone down to ninth rank in 2020-21, Dalmia Bharat from ninth to fourteenth and Rain Industries from fifth to twelfth. Based on the values of the composite index in 2018-19 ACC Ltd., Shree Cement Ltd. and Star Cement Ltd. acquired the first three positions. But, in 2020-21 the first three positions were acquired by Star Cement Ltd., J K Lakshmi and Udaipur Cements Ltd. respectively (c.f. Appendix B: Table 5).

Figure 2: Scatter diagram showing the ranks of different cement companies for Market Performance for 2018-19 versus 2020-21

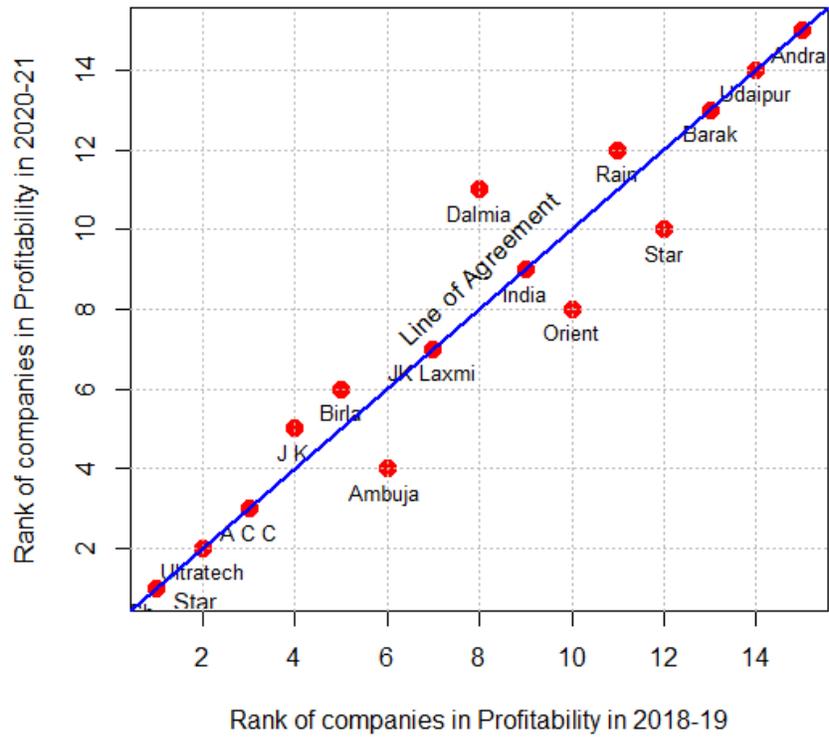
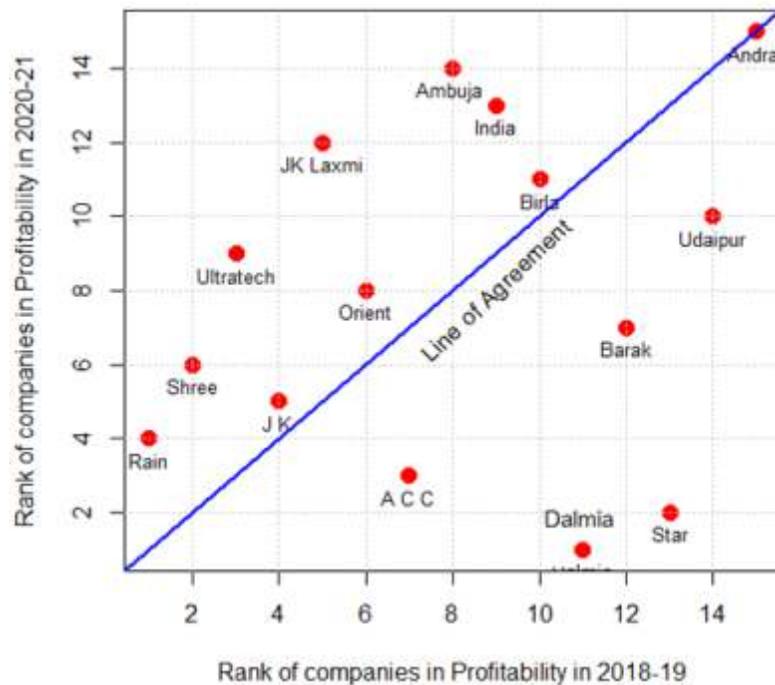


Figure 2, contains the scatter diagram of the ranks of different cement companies for Market Performance for the year 2018-19 versus 2020-21. Here we find that most of the companies are on the Line of Agreement and other companies are closer to the line. This indicates that in terms of Market Performance the

relative positions of the companies have not changed much. The top three positions were acquired by Star Cement Ltd., Ultratech Cement Ltd. and ACC Ltd. both before and after the pandemic registering no change in the top positions before and after the pandemic..

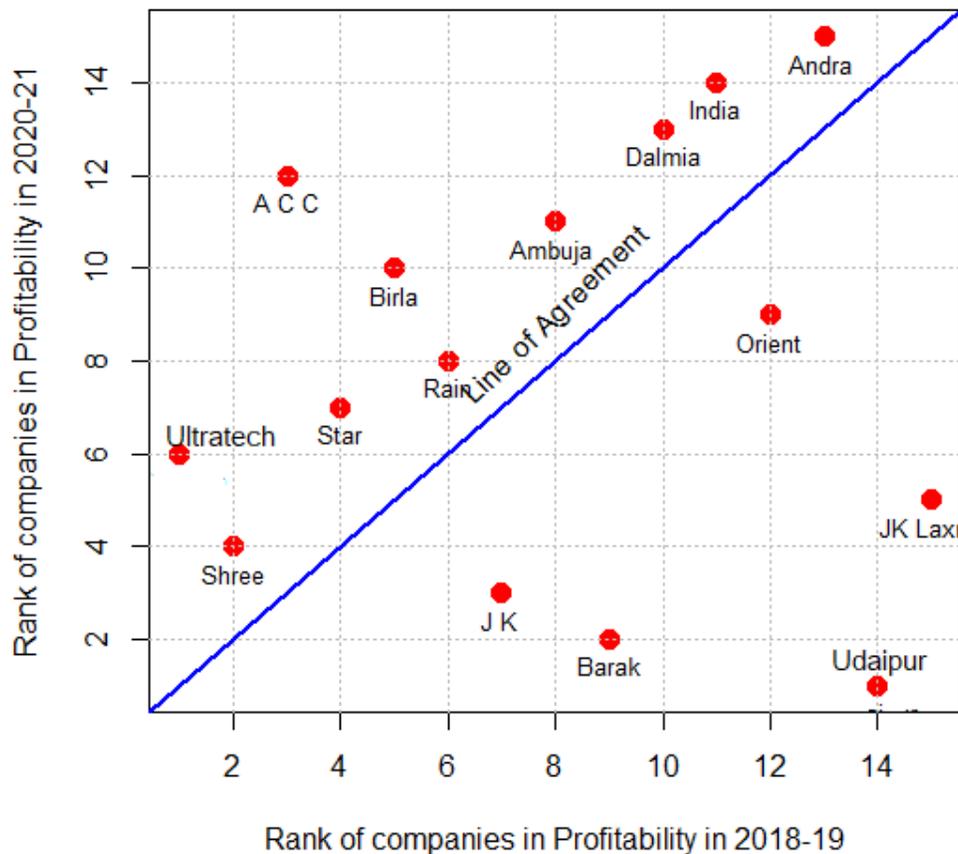
Figure 3: Scatter diagram showing the ranks of different cement companies for Valuation for 2018-19 versus 2020-21



In Figure 3, provides us with the scatter diagram of the ranks of different cement companies for Valuation for the year 2018-19 versus 2020-21. Here, we find that most of the companies have placed themselves far away from the line of agreement. This indicates that the pandemic situation has disturbed the relative positions of the cement companies in terms of their Valuation. While ACC Ltd, Dalmia Bharat, Star Cement Ltd., Barak Valley Cement Ltd. and Udaipur Cement Ltd. improved their position in terms of Valuation of the companies; JK Lakshmi, Ultratech

Cement Ltd., India Cement Ltd., Ambja Cement Ltd. and Shree Cement Ltd. are the big losers. Based on the values of the composite index for Valuation in 2018-19 Rain Industries, Shree Cement Ltd. and Ultratech Cement Ltd. acquired the first three positions. But, in 2020-21 there was a complete change and the first three positions in Valuation were acquired by Dalmia Bharat, Star Cement Ltd. and ACC Ltd. respectively (c.f. Appendix B: Table 5).

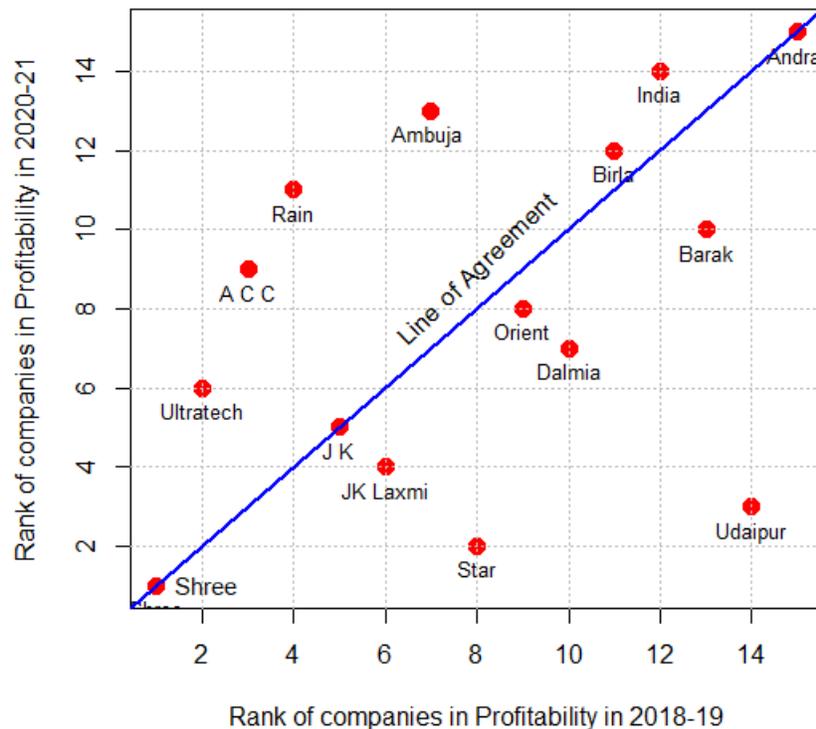
**Figure 4: Scatter diagram showing the ranks of different cement companies for Growth for 2018-19 versus 2020-21**



The scatter diagram in Figure 4, displays the scatter diagram of the ranks of different cement companies for Growth for the year 2018-19 versus 2020-21. Here, we find that the big losers in ranks in 2020-21 are Ultratech Cement Ltd. (rank 1 in 2018-19 to rank 6 in 2020-21), Birla Corporation (rank 5 in 2018-19 to rank 10) and ACC Ltd. (rank 3 in 2018-19 to rank 10). However, companies like JK Lakshmi, Barak Valley Cement Ltd., JK Cement Ltd. and Udaipur Cement Ltd. improved their position in terms of Growth of the companies.

Based on the values of the composite index for Valuation in 2018-19 Ultratech Cement Ltd., Shree Cement Ltd. and ACC Ltd. acquired the first three positions. But, in 2020-21 there was a complete change and the first three positions in Valuation were acquired by Udaipur Cement, Barak Valley Cement Ltd. and JK Cement Ltd. respectively (c.f. Appendix B: Table 5).

Figure 5: Scatter diagram showing the Overall ranks of different cement companies for 2018-19 versus 2020-21



The composite index values of the companies are aggregated over all the components considered under the different dimension or parameter of companies performance to get their overall position. In the usual fashion we have done this for both the years viz. 2018-19 (before pandemic) and for 2020-21 (following/during the pandemic). The companies are then ranked separately for the different years and then the ranks are represented in a scatter diagram in Figure 5. The Line of Agreement indicates that there are three companies viz. Shree Cement Ltd., JK Cement Ltd. and Andhra Cement Ltd. which has retained its overall position both before and after the pandemic. The top gainers of the pandemic situation aggregating over all the components are Star Cement Ltd. (rank 8 in 2018-19 to rank 2 in 2020-21), and Udaipur Cement Ltd. (rank 14 in 2018-19 to rank 3 in 2020-21). The big losers in this regard are Ultratech Cement Ltd. (rank 2 in 2018-19 to rank 6 in 2020-21), ACC Ltd. (rank 3 in 2018-19 to rank 9 in 2020-21), Rain Industries (rank 4 in 2018-19 to rank 11 in 2020-21) and Ambuja Cement Ltd. (rank 7 in 2018-19 to rank 13 in 2020-21).

### Concluding Observation

Measurement of performance is big challenge for the companies for non-availability of accounting method. It is a usual practice that the companies used accounting data for examining the financial performance of the companies. To test

the strategic decision taken by the companies whether these are working properly or not companies measure their financial performance by comparing their financial position with the financial position of the other companies having business in the same domain. Recently stakeholders of every company are interested to know the impact of Covid-19, one of the business risks on the financial performance of the companies. As the use of accounting method to measure the performance of the company has its own limitations and criticisms, the present paper mainly give emphasis on the use a weighted linear aggregation method (OWA weight) applied on the available accounting information to compare the financial performance of companies. Secondly, ranking of the companies using the composite index to see whether the Covid-19 has any impact on a sample of Cement Company is achieved.

Though there are different methods available in the literature for the determination of the OWA weights but in this paper the minimax disparity method discussed in Wang and Parkan (2005) is used. Other methods like the maximum entropy approach, the exponential smoothing approach and the parametric geometric approach requires the implementation of non-linear constraint optimization problem or a higher-order non-linear algebraic solution, making the matter computationally difficult to handle. However, the minimax disparity model used here is based on the linear programming model and can be easily

implemented on any package providing basic support to solution of optimization problem like Solver add-in in Microsoft Excel or LINDO.

OWA weight has showed that considering all the dimension of financial performance Shree Cement Ltd., JK Cement Ltd. and Andhra Cement Ltd. are able to retained its overall position both before and after the pandemic remarkably. The cement companies like Star Cement Ltd. (rank 8 in 2018-19 to rank 2 in 2020-21), and Udaipur Cement Ltd. (rank 14 in 2018-19 to rank 3 in 2020-21) have improved their position further because of increase of sales, they have taken the place of renowned/national cement companies. The study found that the Covid-19 has significant negative impact on the financial performance of the company of Ultratech Cement Ltd. (rank 2 in 2018-19 to rank 6 in 2020-21), ACC Ltd. (rank 3 in 2018-19 to rank 9 in 2020-21), Rain Industries (rank 4 in 2018-19 to rank 11 in 2020-21) and Ambuja Cement Ltd. (rank 7 in 2018-19 to rank 13 in 2020-21) mainly because of fall in the growth of sales during this period. These companies are comparatively larger companies and sell their product throughout the nation, doing business in every corner of India. Due to lockdown of the nation they could not reach in every part of the country as a result the local cement or small size companies like Udaipur Cement Ltd, Star Cement Ltd fulfil the demand of customer. Therefore, some of the Indian cement companies especially medium size companies and small size companies able to face the business risk during the pandemic because immediately after the withdrawal of lockdown they increase the sale and became the substitute of the product of Ambuja Cement Ltd, Ultratech Cement Ltd and ACC cement Ltd. But on the other hand, in case of Ambuja Cement Ltd, Ultratech Cement Ltd and ACC cement Ltd, other segment of financial performance did not affected by Covid 19; like market valuation of the company as they are renowned companies, doing business with prosperity for last few decade. It can conclude that Covid 19 did not affected small size cement companies but little bit affect has been seen among the performance of larger companies. This affect is temporary, no affect on long term business as because of goodwill of the business and adoption of sound strategic management decision.

In this paper we have considered only four parameters of financial performance like growth of the company, firm valuation of the company, profitability of the company and market performance of the company to rank the company by using OWA weight. Other dimension of strategic performance like employee satisfaction, customer satisfaction, environmental performance, social performance, corporate governance performance are excluded in this paper because of non-availability of data. Future researchers can include all these dimensions of performance and compute OWA weight to examine the overall performance of the companies belonging to other major industrial sectors like pharmaceuticals, Car Industry, Garment Industry, Electrical Industry etc.

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## Appendix A

Table 1: Raw and Normalized values of different components under Profitability Analysis for the different companies for 2020-21 and 2018-19

	2020-21					2018-19				
	Components of Profitability Analysis									
Name of Company	ROA	ATR	RNW	ROC	NP	ROA	ATR	RNW	ROC	NP
Ultratech Cement Ltd	6.64 (0.5251)	53.7 (0.4809)	12.32 (0.553)	15.32 (0.943)	-12.36 (0.5877)	4.1 (0.7103)	54.78 (0.6069)	8.6 (0.8327)	10.88 (0.848)	7.49 (0.4248)
ACC Ltd	-7.8 (0)	76.04 (0.6886)	11.17 (0.5013)	14.4 (0.9316)	10.26 (0.7216)	6.14 (0.8276)	89.22 (1)	9.77 (0.8608)	13.93 (1)	6.89 (0.4179)
Ambuja Cement Ltd	7.02 (0.5389)	44.62 (0.3965)	8.81 (0.3954)	11.92 (0.9009)	15.74 (0.754)	5.07 (0.7661)	42.46 (0.4663)	6.25 (0.7761)	8.42 (0.7253)	11.94 (0.4759)
JK Cement Ltd	5.09 (0.4687)	69.55 (0.6283)	12.79 (0.5741)	16.98 (0.9635)	7.32 (0.7042)	3.6 (0.6816)	64.27 (0.7152)	11.26 (0.8967)	13.11 (0.9591)	5.61 (0.4032)
Star Cement Ltd	19.7 (1)	109.54 (1)	19.56 (0.8779)	19.7 (0.9972)	12.33 (0.7338)	5.04 (0.7644)	80.9 (0.905)	12.74 (0.9323)	7.29 (0.669)	6.23 (0.4104)
India Cement Ltd	2.04 (0.3578)	40.8 (0.361)	3.95 (0.1773)	7.04 (0.8406)	5 (0.6905)	0.93 (0.5282)	49.79 (0.5499)	1.93 (0.672)	5.16 (0.5628)	1.88 (0.3604)
Udaipur Cement Ltd	5.64 (0.4887)	75.41 (0.6827)	22.28 (1)	14.88 (0.9375)	7.48 (0.7051)	-4.86 (0.1954)	42.23 (0.4636)	-25.98 (0)	-6.13 (0)	-11.52 (0.2066)
Andra Cement Ltd	16.79 (0.8942)	14.25 (0.1142)	0 (0)	-60.93 (0)	-111.7 (0)	-8.26 (0)	27.98 (0.301)	0 (0.6256)	0.14 (0.3126)	-29.52 (0)
Shree Cement Ltd	10.98 (0.6829)	59.83 (0.5379)	15.16 (0.6804)	18.67 (0.9844)	18.36 (0.7695)	9.14 (1)	64.93 (0.7227)	15.55 (1)	11.36 (0.8719)	14.07 (0.5003)
Dalmia Bharat	0.33 (0.2956)	1.96 (0)	0.34 (0.0153)	0.61 (0.7611)	16.89 (0.7608)	0.92 (0.5276)	1.61 (0)	8.38 (0.8274)	1.31 (0.3709)	57.6 (1)
Birla Corporation	5.39 (0.4796)	55.89 (0.5013)	8.87 (0.3981)	8.27 (0.8558)	9.64 (0.7179)	1.5 (0.5609)	48.58 (0.5361)	2.78 (0.6925)	1.72 (0.3913)	3.09 (0.3743)
Rain Industries	2.27 (0.3662)	3.96 (0.0186)	2.99 (0.1342)	4.85 (0.8135)	57.32 (1)	4.62 (0.7402)	8.05 (0.0735)	6.6 (0.7845)	7.77 (0.6929)	57.39 (0.9976)
Orient Cement	7.61 (0.5604)	82.64 (0.75)	16.4 (0.7361)	18.34 (0.9803)	9.21 (0.7154)	1.5 (0.5609)	75.56 (0.8441)	4.32 (0.7296)	1.92 (0.4013)	1.98 (0.3616)
JK Lakshmi	7.8 (0.5673)	94.06 (0.8561)	17.5 (0.7855)	19.93 (1)	8.29 (0.7099)	1.87 (0.5822)	76.01 (0.8492)	5.77 (0.7645)	9.49 (0.7787)	2.46 (0.3671)
Barak Valley Cement Ltd	1.91 (0.3531)	70.41 (0.6363)	4.76 (0.2136)	8.17 (0.8546)	2.72 (0.677)	0.73 (0.5167)	59.72 (0.6633)	1.9 (0.6713)	6.69 (0.6391)	1.22 (0.3528)

**Note:** Figures in the brackets are the normalized values computed from raw data

Source:

**Table 2: Raw and Normalized values of different components under Market Performance for the different companies for 2020-21 and 2018-19**

	2020-21			2018-19		
	Components of Market Performance					
Name of Company	EPS	DPS	PBIT/Share	EPS	DPS	PBIT/Share
Ultratech Cement Ltd	185.2 (0.2954)	37 (0.6167)	322.85 (0.3572)	81.27 (1)	10.5 (0.21)	171.68 (0.3051)
ACC Ltd	75.35 (0.1254)	14 (0.2333)	102.18 (0.1145)	48.75 (0.6164)	26 (0.52)	74.51 (0.1327)
Ambuja Cement Ltd	9.02 (0.0228)	18 (0.3)	12.58 (0.0159)	6.29 (0.1156)	3.6 (0.072)	8.69 (0.0159)
JK Cement Ltd	51.82 (0.089)	7.5 (0.125)	136.28 (0.152)	30.14 (0.3969)	8 (0.16)	88.19 (0.157)
Star Cement Ltd	5.25 (0.017)	1 (0.0167)	6.56 (0.0093)	1.91 (0.0639)	0 (0)	3.39 (0.0065)
India Cement Ltd	7.15 (0.0199)	1 (0.0167)	18.96 (0.0229)	3.47 (0.0823)	0.8 (0.016)	14.81 (0.0268)
Udaipur Cement Ltd	1.77 (0.0116)	0 (0)	3.78 (0.0062)	-1.47 (0.0241)	0 (0)	-0.29 (0)
Andra Cement Ltd	-5.74 (0)	0 (0)	-1.87 (0)	-3.51 (0)	0 (0)	0.04 (0.0006)
Shree Cement Ltd	640.7 (1)	60 (1)	907.1 (1)	3.97 (0.0882)	50 (1)	563.27 (1)
Dalmia Bharat	1.33 (0.0109)	1.33 (0.0222)	2.43 (0.0047)	3.75 (0.0856)	1.7 (0.034)	0 (0.0005)
Birla Corporation	55.6 (0.0949)	10 (0.1667)	72.7 (0.082)	14.95 (0.2177)	6.5 (0.13)	35.76 (0.064)
Rain Industries	0.81 (0.0101)	1 (0.0167)	1.39 (0.0036)	1.8 (0.0626)	1 (0.02)	2.88 (0.0056)
Orient Cement	10.45 (0.025)	2 (0.0333)	20.85 (0.025)	2.16 (0.0669)	0.75 (0.015)	9.73 (0.0178)
JK Lakshmi	30.9 (0.0567)	3.75 (0.0625)	56.93 (0.0647)	7.14 (0.1256)	0.75 (0.015)	25.5 (0.0458)
Barak Valley Cement Ltd	1.91 (0.0118)	0 (0)	5.46 (0.0081)	0.68 (0.0494)	0 (0)	3.61 (0.0069)

**Note:** Figures in the brackets are the normalized values computed from raw data

Source:

**Table 3: Raw and Normalized values of different components under Valuation of Company for the different companies for 2020-21 and 2018-19**

	2020-21				2018-19			
	Components of Valuation of Company							
Name of Company	MC/NOR	RR	EY	Price/NO	MC/NOR	RR	EY	Price/NO
Ultratech Cement Ltd	4.5 (0.022)	0 (0.52)	0.03 (0.9571)	4.5 (0.022)	3.64 (0.0849)	87.69 (0.9878)	0.02 (0.9762)	3.64 (0.0849)
ACC Ltd	2.21 (0.0105)	81.41 (1)	0.05 (0.9625)	2.21 (0.0104)	2.41 (0.0562)	65.12 (0.763)	0.03 (1)	2.49 (0.0581)
Ambuja Cement Ltd	4.35 (0.0213)	-88.57 (0)	0.04 (0.9598)	4.35 (0.0212)	5.15 (0.1202)	55.5 (0.6673)	0.02 (0.9762)	5.15 (0.1202)
JK Cement Ltd	1.33 (0.006)	66.22 (0.9106)	0.06 (0.9651)	1.33 (0.006)	1.74 (0.0406)	86.73 (0.9782)	0.03 (1)	1.74 (0.0406)
Star Cement Ltd	1.59 (0.0073)	81.14 (0.9984)	0.08 (0.9705)	1.59 (0.0073)	0 (0)	0 (0.1147)	0 (0.9286)	0 (0)
India Cement Ltd	1.17 (0.0052)	0 (0.5211)	0.04 (0.9598)	1.17 (0.0052)	0.82 (0.0191)	63.13 (0.7432)	0.02 (0.9762)	0.82 (0.0191)
Udaipur Cement Ltd	0.86 (0.0036)	0 (0.5211)	0.09 (0.9732)	0.86 (0.0036)	1.79 (0.0418)	0 (0.1147)	-0.06 (0.7857)	1.79 (0.0418)
Andhra Cement Ltd	0.33 (0.001)	0 (0.5211)	-3.54 (0)	0.33 (0.001)	0.76 (0.0177)	0 (0.1147)	-0.39 (0)	0.76 (0.0177)
Shree Cement Ltd	8.45 (0.042)	0 (0.5211)	0.02 (0.9544)	8.45 (0.0419)	5.73 (0.1337)	88.92 (1)	0.02 (0.9762)	5.73 (0.1337)
Dalmia Bharat	198 (1)	0 (0.5211)	0 (0.9491)	198.33 (1)	0 (0)	62.5 (0.737)	0 (0.9286)	0 (0)
Birla Corporation	1.65 (0.0076)	0 (0.5211)	0.06 (0.9651)	1.65 (0.0076)	1.47 (0.0343)	56.52 (0.6774)	0.02 (0.9762)	1.47 (0.0343)
Rain Industries	89.34 (0.4508)	-23.19 (0.3846)	0.01 (0.9517)	89.35 (0.4501)	42.86 (1)	-11.52 (0)	0.01 (0.9524)	42.86 (1)
Orient Cement	0.86 (0.0036)	0 (0.5211)	0.11 (0.9786)	0.86 (0.0036)	1.29 (0.0301)	76.83 (0.8796)	0.02 (0.9762)	1.29 (0.0301)
JK Lakshmi	1.16 (0.0052)	0 (0.5211)	0.07 (0.9678)	1.16 (0.0051)	1.6 (0.0373)	87.33 (0.9842)	0.02 (0.9762)	1.6 (0.0373)
Barak Valley Cement Ltd	0.14 (0)	0 (0.5211)	0.19 (1)	0.14 (0)	0.5 (0.0117)	0 (0.1147)	0.02 (0.9762)	0.5 (0.0117)

**Note:** Figures in the brackets are the normalized values computed from raw data

Source:

Source:

**Table 4: Raw and Normalized values of different components under Growth of Company for the different companies for 2020-21 and 2018-19**

	2020-21			2018-19		
	Components of Growth of Company					
Name of Company	Sales Growth	Net Profit Growth	Total Assets Growth	Sales Growth	Net Profit Growth	Total Assets Growth
Ultratech Cement Ltd	6.64 (0.5251)	53.7 (0.4809)	12.32 (0.553)	24.69 (0.1116)	-15.07 (0.9284)	45.72 (1)
ACC Ltd	-7.8 (0)	76.04 (0.6886)	11.17 (0.5013)	19.05 (0.0932)	51.99 (0.9674)	11.52 (0.3717)
Ambuja Cement Ltd	7.02 (0.5389)	44.62 (0.3965)	8.81 (0.3954)	13.71 (0.0758)	34.01 (0.9569)	3.22 (0.2192)
JK Cement Ltd	5.09 (0.4687)	69.55 (0.6283)	12.79 (0.5741)	6.1 (0.0509)	107.92 (1)	6.27 (0.2752)
Star Cement Ltd	19.7 (1)	109.54 (1)	19.56 (0.8779)	-9.5 (0)	42.85 (0.9621)	15.11 (0.4376)
India Cement Ltd	2.04 (0.3578)	40.8 (0.361)	3.95 (0.1773)	-7.56 (0.0063)	-42.19 (0.9126)	4.9 (0.25)
Udaipur Cement Ltd	5.64 (0.4887)	75.41 (0.6827)	22.28 (1)	296.9 (1)	-1608.77 (0)	-8.71 (0)
Andhra Cement Ltd	16.79 (0.8942)	14.25 (0.1142)	0 (0)	19.82 (0.0957)	56.06 (0.9698)	-8.57 (0.0026)
Shree Cement Ltd	10.98 (0.6829)	59.83 (0.5379)	15.16 (0.6804)	5.15 (0.0478)	3.36 (0.9391)	36.7 (0.8343)
Dalmia Bharat	0.33 (0.2956)	1.96 (0)	0.34 (0.0153)	21.35 (0.1007)	80 (0.9837)	-1.93 (0.1246)
Birla Corporation	5.39 (0.4796)	55.89 (0.5013)	8.87 (0.3981)	0.62 (0.033)	-46.26 (0.9102)	16.83 (0.4692)
Rain Industries	2.27 (0.3662)	3.96 (0.0186)	2.99 (0.1342)	7.45 (0.0553)	3.22 (0.939)	12.05 (0.3814)
Orient Cement	7.61 (0.5604)	82.64 (0.75)	16.4 (0.7361)	7.79 (0.0564)	1.21 (0.9378)	0.43 (0.1679)
JK Lakshmi	7.8 (0.5673)	94.06 (0.8561)	17.5 (0.7855)	6.45 (0.0521)	-237.5 (0.7988)	-2.5 (0.1141)
Barak Valley Cement Ltd	1.91 (0.3531)	70.41 (0.6363)	4.76 (0.2136)	11.71 (0.0692)	-169.76 (0.8382)	10.65 (0.3557)

**Note:** Figures in the brackets are the normalized values computed from raw data

Source:

## Appendix B

**Table 5: Values of composite index computed using OWA method for the different categories along with their corresponding ranks**

Company Name	Profitability Analysis		Market Performance		Valuation of Company		Growth of Company		Overall	
	2018 -19	2020 - 21	2018 -19	2020 - 21	2018 -19	2020 - 21	2018 -19	2020 - 21	2018 -19	2020 - 21
Ultratech Cement Ltd	6 (0.7263)	7 (0.6596)	2 (0.584)	2 (0.4552)	3 (0.6415)	9 (0.4797)	1 (0.7688)	6 (0.7623)	2 (0.7114)	6 (0.6123)
ACC Ltd	1 (0.8721)	9 (0.6491)	3 (0.4714)	3 (0.1696)	7 (0.5754)	3 (0.6135)	3 (0.5649)	12 (0.6726)	3 (0.6867)	9 (0.6003)
Ambuja Cement Ltd	8 (0.6775)	8 (0.6533)	6 (0.0778)	4 (0.1413)	8 (0.5644)	14 (0.3346)	8 (0.5054)	11 (0.6812)	7 (0.559)	13 (0.5344)
JK Cement Ltd	4 (0.7832)	6 (0.7137)	4 (0.262)	5 (0.1283)	4 (0.6293)	5 (0.5854)	7 (0.5369)	3 (0.8127)	5 (0.6443)	5 (0.6351)
Star Cement Ltd	3 (0.7859)	1 (0.9464)	12 (0.0299)	10 (0.0151)	13 (0.3478)	2 (0.614)	4 (0.5628)	7 (0.7515)	8 (0.5579)	2 (0.7025)
India Cement Ltd	12 (0.5605)	13 (0.5529)	9 (0.0483)	9 (0.0205)	9 (0.5473)	13 (0.4742)	11 (0.4803)	14 (0.4157)	12 (0.5056)	14 (0.4574)
Udaipur Cement Ltd	15 (0.2196)	3 (0.8138)	14 (0.0104)	14 (0.0071)	14 (0.3151)	10 (0.4782)	14 (0.4333)	1 (0.9877)	14 (0.3025)	3 (0.6774)
Andra Cement Ltd	14 (0.3115)	15 (0.2838)	15 (0.0003)	15 (0)	15 (0.0478)	15 (0.1777)	13 (0.4528)	15 (0.3139)	15 (0.2631)	15 (0.251)
Shree Cement Ltd	2 (0.8684)	5 (0.7711)	1 (0.7872)	1 (1)	2 (0.6641)	6 (0.4863)	2 (0.6962)	4 (0.7977)	1 (0.764)	1 (0.7668)
Dalmia Bharat	9 (0.6426)	14 (0.458)	8 (0.0485)	11 (0.0144)	11 (0.5221)	1 (0.9122)	10 (0.4913)	13 (0.6675)	10 (0.5313)	7 (0.6098)
Birla Corporation	13 (0.5436)	10 (0.6379)	5 (0.1526)	6 (0.123)	10 (0.5346)	11 (0.4769)	5 (0.5585)	10 (0.6941)	11 (0.5151)	12 (0.5508)
Rain Industries	5 (0.7322)	12 (0.5736)	11 (0.0351)	12 (0.0114)	1 (0.8295)	4 (0.6104)	6 (0.5469)	8 (0.7404)	4 (0.6523)	11 (0.565)
Orient Cement	10 (0.6318)	4 (0.7839)	10 (0.0384)	8 (0.0286)	6 (0.5896)	8 (0.48)	12 (0.4755)	9 (0.7292)	9 (0.5418)	8 (0.6065)
JK Lakshmi	7 (0.713)	2 (0.8242)	7 (0.0732)	7 (0.0621)	5 (0.6221)	12 (0.4769)	15 (0.3963)	5 (0.7847)	6 (0.5724)	4 (0.6359)
Barak Valley Ltd	11 (0.5984)	11 (0.6105)	13 (0.0237)	13 (0.0078)	12 (0.3685)	7 (0.4859)	9 (0.4979)	2 (0.831)	13 (0.4754)	10 (0.5714)

**Note:** Figures in the brackets are the normalized values computed from raw data

Source:

# Small Business Sustainability in Pandemic driven Stressing Times: A Bibliometric Visualization Analysis

Shubham Kumar\*  
Saransh Royal\*\*  
Ramesh Chander\*\*\*

## Abstract

*Small business sustainability has emerged as a rapidly sprouting phenomenon in academic publications in recent times. The paper reported a systematic bibliometric and network investigation that delivers insights into not only the previous reviews but also into the varied bibliometric orientations. The analysis focused on categorizing over 3144 studies, which are further refined down to research work of recognized influence, time period, linguistic, and those related to our subject matter counting to 1031 thematics. Using rigorous bibliometric paraphernalia and procedures, reputable and nascent research clusters were recognized, identification of significant study themes, co-citation network, and collaboration outlines. This systematic-mapping of the research matter has vividly demonstrate the publication progression over time and categorize subject areas of contemporary research interests and probable directions for impending research study. The analysis reported in this paper has accredited widely deliberated themes such as sustainable development, entrepreneur orientation, competitiveness, and corporate sustainability.*

**Keywords:** Entrepreneurial orientation, Small business competitiveness, MSMEs sustainability, Covid-19 pandemic, Bibliometric analysis, Sustainable ecosystem.

## Introduction

The world stands halted when humanity got confronted by a noxious virus. A micro and concealed felonious accountable for these upturned circumstances that have created panic all over the globe. The SARS(CoV-2) pandemic is the defining worldwide health catastrophe of the present time and the greatest challenge humankind has ever confronted since “World War II”. Accentuating every one of the realms it touches, it has the latency to generate a shocking social, economic and political paraphernalia that will leave profound and longstanding blemishes on human footprints. The International Labor Organization (ILO) projected that 400 million jobs have vanished due to this hidden culprit i.e. SARS COV-2 (COVID-19: Stimulating the Economy and Employment: As Jobs Crisis Deepens, ILO Warns of Uncertain and Incomplete Labour Market Recovery, 2019; OIT, 2020).

Small Businesses have been the spine of parsimonies globally and play a crucial part in the developing states. The sector is a source of employment and income generation across the world and has been identified as a foremost chauffeur of poverty alleviation and been oblige as a vehicle of development. The

subdivision provides employment to a larger segment of the vulnerable section of the workers including women, youth, and individuals from poorer domiciliary. The sector has constantly been the foremost defendant to the societal requirements and delivers the safety net of inclusiveness and acts as a conduit for equitable development. Statistics from “International Council for Small Business” pronounces that MSMEs form ninety percent of the businesses, which reasons for on an average, 60-70% of entire employment and 50% of GDP, across the nations globally (ICSB | International Council for Small Business | Advancing Entrepreneurship Worldwide). The segment is also a key job benefactor to the private sector accounting for eighty-seven percent of global employment. Regardless of the limitation of competitiveness, small businesses theatres an imperative role in the worldwide economy and have a momentous implication on global commerce. Small businesses also have a significant say in export dealings, MSMEs makes an extensive contribution to the exports of any economy, it accounts for 35% in emerging economies and around 50% in advanced economies (Small Industries Development Bank of India, SME competitiveness outlook, p.128). Engaging in a small business can be one of the best ways to earn by doing something you admire (Small Business Study: SMB Facts and Statistics for

\*Research Scholar, University School of Management, Kurukshetra University, Kurukshetra (Haryana) - 136119 India

\*\*Research Scholar, University School of Management, Kurukshetra University, Kurukshetra (Haryana)-136119 India,

\*\*\*Professor, University School of Management, Kurukshetra University, Kurukshetra (Haryana) - 136119 India

2020, 2020). But the description of small business varies depending on the country of origin. The U.S. Small Business Administration describes a small business rendering to a set of standards-based on precise industries on the basis of number of working personnel and revenue yield (Size Standards). For mining and manufacturing undertakings it was established in accordance to number of workers i.e. should not surpass 500 employees. Correspondingly for wholesale business it was established at 100 employee at most(What Is a Small Business? | ASQ). Also in the Canadian state, a small business is that which has less than 100 working personnel(Canadian Small Business Definition). In the U.K a small establishment is one that has a gross revenue of not exceeding six million British pounds, a balance-sheet not exceeding 3.26 million British pounds, and working personnel's not exceeding 50 in number (Small & Medium Size Enterprises (SMEs) | Procurement Services - UCL – University College London). In the Indian republic, a small business is demarcated based on "Investment in Plant and Machinery" and annual turnover, so it is the one in which investment don't outdo ten crore and annual revenue do not surpass Fifty crores in value(What's MSME | Ministry of Micro, Small & Medium Enterprises).

Business sustainability has come a long way since the beginning of the contemporary environmental crusade and the establishment of environmental protocols in the 1970s, it has become a deliberate apprehension driven by market forces(The Next Phase of Business Sustainability). It is becoming more imperative for all companies, across businesses. Sixty-two out of hundred officials contemplated that the "sustainability tactic" is essential to be competitive in today's scenario, and another twenty-two reasons that it is a must strategy for impending generations (Why All Businesses Must Embrace Sustainability and Lead the Way, 2016). There may be many interpretations of the word sustainability in accordance with various perspectives, but our focus is more on the business perspective. In accordance with the business perspective, sustainability refers to doing business without impacting the environment, civic, or humanity as a whole. Business sustainability commonly addresses two manifestations: the consequence a business has on the environmental settings and the outcome a business has on the civilization. The foremost objective of a sustainable business tactic is to style a positive impression on at least one of those expenses which were previously mentioned. When Business establishments fail to shoulder accountability, the contrary can transpire, leading to problems like environmental deprivation, disparity, and social prejudice (What Is Sustainability in Business? | HBS Online, 2020). Business sustainability, also branded as corporate sustainability, is the management and harmonization of ecological, societal, and monetary demands and apprehensions to certify responsibly, ethical, and enduring success(What Is Business Sustainability? - Definition from

WhatIs.Com, 2013). Covid-19 has exposed the fault lines in the conventional way of doing business. Also, there is a mounting prominence globally on the prerequisite to build a better ecosystem and ensure resilient recovery post-Covid-19 situation. Experience from the Covid-19 contagion and the lockdown has underlined that shielding workers, communities, and the environment is not only the right thing to do for businesses' sustainability but also vital to long-term business resilience.

Bibliometric analysis has emerged as the finest tool for discovering detailed research inclinations in a certain field over a certain time period (Khan et al., 2016). Bibliometric analysis is also being considered as an advantageous instrument in weighing the superiority of a journal and the articles listed in it (Thanuskodi, 2010). The bibliometric study is well known to be a customary set of quantitative approaches that were betrothed in analyzing and quantifying the degree and distinction of books, articles (manuscript) and other sources of publications" (Valérie & Pierre, 2010). Bibliography analysis has gradually been used for the valuation of research studies of a precise field of investigation in a subject matter (Singh et al., 2007), or an individual or an association of persons (Maharana, 2012), or nation (Zhu & Willett, 2011). To make a review study research recital, a few pointers are engaged in the bibliographic studies. The bibliometric analysis, therefore, is devised into three-pointers: quantitative pointers, which quantify and defined research outcomes. It also quantifies the superiority of a researcher and also outcome. It also quantifies publications, authorship, and spaces of multiple studies (Valérie & Pierre, 2010). Bibliometric is thus the solicitation of quantitative and statistical analysis to the whole catalog of scientific literature, records, and supplementary constituents"(Pritchard, A. 1969). In other words, it is a method of organization, grouping, and quantifiable assessment of the publication configuration of a large set of data, along with their source summary, by quantitative and statistical counting.

In view of the above-cited impetus, the paper objects to map scientific studies on Small businesses from the perception of "sustainability" in SCOPUS Electronic Databases (EDs). The present investigation has focused and pondered on Small Business sustainability from the 21st-century time window with the resolve of enhancing a healthier understanding of research yields in this area of research.

## Methodology

The dataset for the current analysis is derived from the SCOPUS electronic database- an expertly curated abstract and citation databanks, with enriched data and associated scholarly content.

For sorting literature, the PRISMA technique is aimed to assist the authors in improving the commentary of systematic reviews of literature and meta-analysis to generalize reported research outcomes of the concerned subject area (Liberati et al., 2009; Moher et al., 2009) in a sequential process.

Multiple keywords were used for finding the relevant literature. It includes five keywords that were selected based on deep debates and discussion.

1.	Small business	3.	Entrepreneur
2.	Small ventures	4.	Sustainability
5.	Sustainable development		

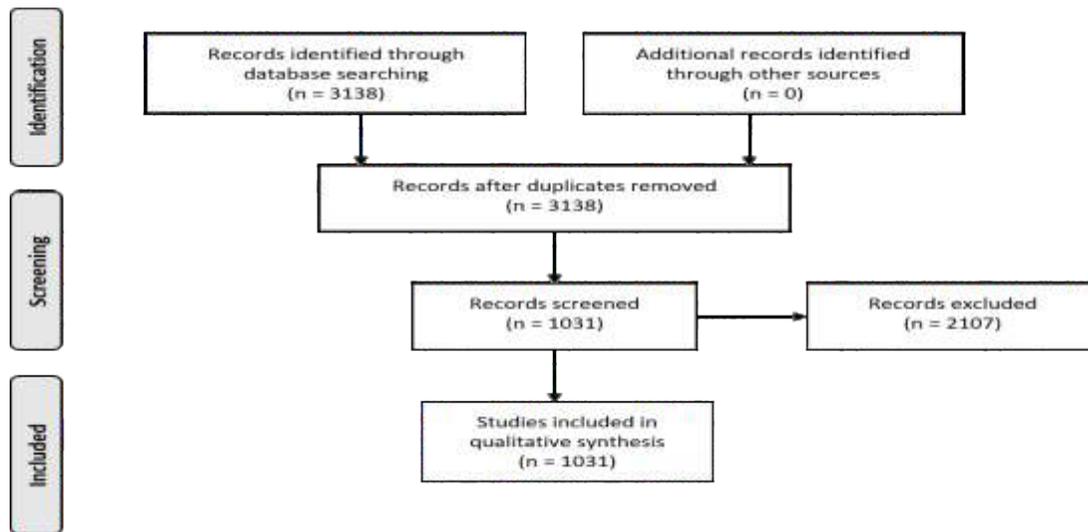
Supplementary, the publications were searched and downloaded from the SCOPUS database using the following search strings in the search tab in the table given below:

1.	"TITLE-ABS-KEY((" Small business" OR "Small ventures" OR "Entrepreneur" ) and ("Sustainability" OR "sustainable development"))"
2.	"TITLE-ABS-KEY ( ( "Small Business" OR "Small venture" OR "Entrepreneur" ) AND ( "Sustainability" OR " Sustainable development" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) ) AND ( LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) OR LIMIT-TO ( PUBYEAR , 2009 ) OR LIMIT-TO ( PUBYEAR , 2008 ) OR LIMIT-TO ( PUBYEAR , 2007 ) OR LIMIT-TO ( PUBYEAR , 2006 ) OR LIMIT-TO ( PUBYEAR , 2005 ) OR LIMIT-TO ( PUBYEAR , 2004 ) OR LIMIT-TO ( PUBYEAR , 2003 ) OR LIMIT-TO ( PUBYEAR , 2002 ) OR LIMIT-TO ( PUBYEAR , 2001 ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )"

For sorting of literature, PRISMA technique is used, purposes to assist authors in escalating the commentary of systematic appraisals and meta investigation (Liberati et al., 2009). The below table presents the selection criteria used for the assortment of required literature on the subject area.

Sequence	Criterion	Inclusion	Exclusion
1.	Time frame	2001 to March 2021*	Any study published before 2001.
2.	Thematic area of interest	Business, Management and Accounting; and Economics, Econometrics, and Finance.	Any other research area.
3.	Publication type	Peer-reviewed journal (Articles)	Any supplementary publication including newspaper, periodicals, conference papers etc.
4.	Linguistic preference	English	Other

In the next steps, the identified researches on the above strings have been further screened using the *PRISMA* protocol given below:



**Figure 1. PRISMA Protocol presentation of the reported researches**

According to the search result for “Small Business Sustainability” (( "Small Business" OR "Small venture" OR "Entrepreneur" ) AND ( "Sustainability" OR " Sustainable development" )) in March 2021, it indexed 3138 results. Further exploration was performed to recognize the significant literature on the subject matter to pinpoint researches published in the 21st century that is from 2001-2021\*(up to 30th March 2021). The articles were filtered in accordance with the subject matter (Business, Accounting, Economics, and Econometrics). Only those articles were selected which were published in journals and only English language articles were selected. Utilizing the aforementioned stratagem, a total of 1031 thematics were salvaged from the SCOPUS database (Scopus - Document Search Results | Signed In, n.d.). These articles were downloaded into a CSV format and as a reference file format. these were further analyzed two tools; Biblioshiny in

R- Studio version 1.4.1106 (Aria & Cuccurullo, 2017) and VOS-viewer i.e. visual scientific surfaces viewer version 1.6.16 (VOSviewer - Visualizing Scientific Landscapes, VOSviewer — SAGE Ocean | Big Data, New Tech, Social Science, 2018) and are presented in detail in table 4 given below.

### III.Result and discussion

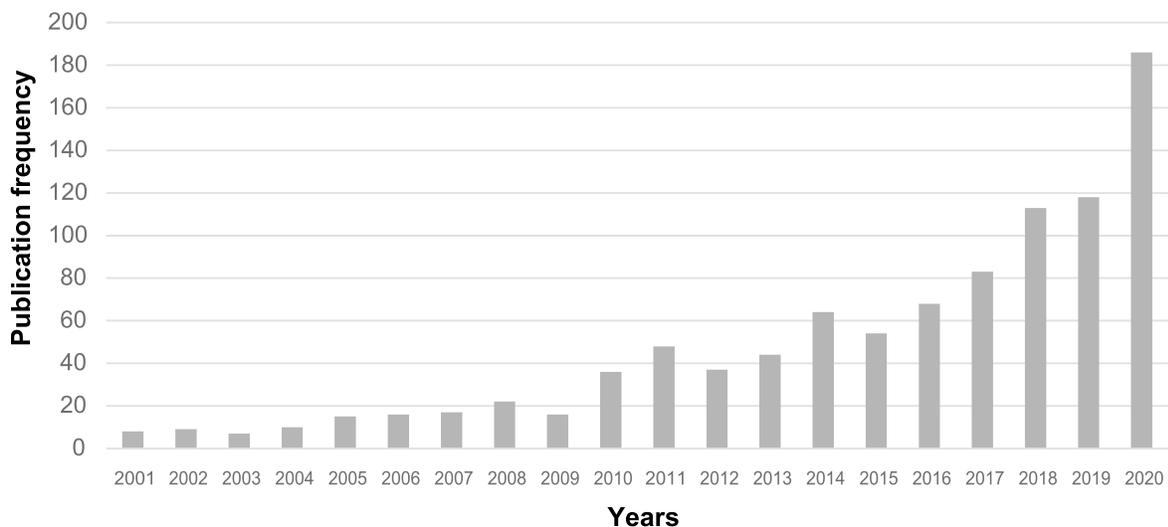
The data set identified, and the annual scientific publications said databases describing distinctive features are reported below in table 5. Out of 1031 documents, the average citation per document stood at 20.62. The author’s collaboration stood at 2.6. The metric of average documents per author is 0.439 which means in most of the documents there were more than two authors.

Table 5. Descriptive research outcomes in the identified Dataset	
Describing the Dataset	Results
Timespan	2001-2021*(till March 31, 2021)
Sources (Journals, Books, etc.)	396
Documents	1031
Average years from publication	5.42
Average citations per documents	20.62
Average citations per year per doc	2.55
References	54735

<b>DOCUMENT CATEGORIES</b>	
Article	1031
<b>DOCUMENT CONTENTS</b>	
Keywords Plus (ID)	1450
Author's Keywords (DE)	2945
<b>AUTHORS</b>	
Authors	2351
Author Appearances	2579
Authors of single-authored documents	191
Authors of multi-authored documents	2160
<b>AUTHORS COLLABORATION</b>	
Single-authored documents	201
Documents per Author	0.439
Authors per Document	2.28
Co-Authors per Documents	2.5
Collaboration Index	2.6

The below Fig 2. shows almanac scientific production over the last 21 years on the theme. It can also be inferred that there is an annual growth rate of 10.6 % over the years. It may be perceived

that after 2019 there is an escalation in annual scientific production related to small business sustainability which signifies the sprouting curiosity in the current field of study.



**Figure 2. Sustainability of Small Businesses Publications, 2001-2021**

Further, 2007 is the most cited year with mean total citation per year equivalent to 123.058 and mean total citation per year quantified at 9.218; preceded by 2005 and 2002 which were represented in table 6 below.

Year	Mean Total Citation per Art	Mean Total Citation per Year	Citable Years
2001	21.625	1.08125	20
2002	77.88888889	4.099415205	19
2003	46.57142857	2.587301587	18
2004	91.6	5.388235294	17
2005	87.46666667	5.466666667	16
2006	62.4375	4.1625	15
<b>2007</b>	<b>129.0588235</b>	<b>9.218487395</b>	14
2008	40.63636364	3.125874126	13
2009	19.6875	1.640625	12
2010	59.72222222	5.429292929	11
2011	40.6875	4.06875	10
2012	18.24324324	2.027027027	9
2013	23.36363636	2.920454545	8
2014	18.40625	2.629464286	7
2015	17.68518519	2.947530864	6
2016	26.02941176	5.205882353	5
2017	15.06024096	3.765060241	4
2018	13.62831858	4.542772861	3
2019	4.118644068	2.059322034	2
2020	2.322580645	2.322580645	1
2021	0.233333333	N.A	0

In addition to the above, the impact of publications in terms of h-index of the most frequently published papers on the small business sustainability are reported below in terms of its quantitative publishing metric for the most valued and impactful 20 sources of publications and their citations to explain underlying standing, implication, and researcher’s

cumulative contributions on small business sustainability research (Hirsch, 2005). The most prominent among these include “the Journal of Cleaner Production” followed by the “Business Strategy and the Environment”, Technological Forecasting and Social Change” as well as the Journal of Sustainable Tourism.

Source	“h-index”	“g-index”	“m-index”	TC
“Journal of Cleaner Production”	21	39	1.235294	1621
“Business Strategy and the Environment”	18	32	0.947368	2653
“Emerald Emerging Markets Case Studies”	1	2	0.090909	8
“Journal of Sustainable Tourism”	11	22	1	490
“Technological Forecasting and Social Change”	13	21	0.722222	444
“International Journal of Entrepreneurship and Small Business	8	12	0.5	167
“Journal of Small Business and Entrepreneurship”	5	7	0.294117	68
“Journal of Enterprising Communities”	7	10	0.538461	108
“Journal of Business Ethics”	7	12	0.368421	611
“Academy of Entrepreneurship Journal”	2	3	0.25	14

### 1. Publication metrics of corresponding Authors

The author's holistic impact of their publication relation to underlying G-index values H-index values M-index values are presented below in Table 8.

Author	"h-index"	"g-index"	"m-index"	Total Citation	Publication frequency
MUNOZ P	5	6	0.714	250	6
BLOK V	5	5	0.625	228	5
COHEN B	5	5	0.313	470	5
ALONSO AD	4	5	0.308	62	5
HEKKERT MP	4	5	0.286	137	5
KANTABUTRA S	4	5	0.364	68	5
DANA LP	4	4	0.2	44	4
LANS T	4	4	0.5	220	4
OMRI A	3	5	0.75	141	5
CANTELE S	3	4	0.75	88	4

### 2. Geographic Spread of Research Publications on the Small Business Sustainability, 2001-2021

The sample data was analyzed based on the country of origin. The analysis was further divided under two subheadings: Most cited geographic nationalities based on the number of citations and the top collaboration between countries based on their collaboration map given below.

Country	Total Citations	Average Article Citations
<b>USA</b>	<b>3896</b>	<b>44.27</b>
UNITED KINGDOM	2801	35.91
NETHERLANDS	1652	34.42
GERMANY	1458	38.37
CANADA	1182	33.77
AUSTRALIA	968	26.89

From the above table 9, it is inferred that the USA is the most cited country based on total citation numbering 3896 and average citation with average scoring of 44.27. The USA was preceded by the Netherlands with an average citation

equivalent to 35.91. India stood at 13th position with a total citation equivalent to 10 and an average citation score equivalent to 6.42 in terms of publication on small business sustainability during the study timeline, 2001-2021.

### 3. Filtered Small Business Sustainability research papers citation matrix analog

The below table. 10 represent the most globally cited research papers on the Small Business sustainability verticals such as total citation and total citation per year.

Paper	DOI	Total Citations	TC per Year
<b>DEAN TJ, 2007, J BUS VENTURING</b>	10.1016/j.jbusvent.2005.09.003	<b>591</b>	39.4
VOHORA A, 2004, RES POLICY	10.1016/S0048-7333(03)00107-0	583	32.3889
SCHALTEGGER S, 2011, BUS STRATEGY ENVIRON	10.1002/bse.682	572	52
SEELOS C, 2005, BUS HORIZ	10.1016/j.bushor.2004.11.006	480	28.2353
MARTIN CJ, 2016, ECOL ECON	10.1016/j.ecolecon.2015.11.027	479	<b>79.8333</b>
LI TM, 2007, ECON SOC	10.1080/03085140701254308	464	30.9333
BOS-BROUWERS HEJ, 2010, BUS STRATEGY ENVIRON	10.1002/bse.652	329	27.4167
YORK JG, 2010, J BUS VENTURING	10.1016/j.jbusvent.2009.07.007	288	24
HWEE NGA JK, 2010, J BUS ETHICS	10.1007/s10551-009-0358-8	251	20.9167
COHEN B, 2006, BUS STRATEGY ENVIRON	10.1002/bse.428	246	15.375

From the above table 10, it was noted that “Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action (Dean & McMullen, 2007)” is the most globally cited publication. The other relevant publications are Sustainable Entrepreneurship and “Sustainability Innovation: Categories and Interactions (Schaltegger & Wagner, 2011)” and “Social entrepreneurship: Creating new business models to serve the poor (Seelos & Mair, 2005).”

### Word Analysis

The trendy topics corresponding to each year were obtained by analyzing the frequency of occurrence. For each year there is a different trendy topic, the topic is selected based on the frequency of occurrence in each year. For the year 2020, the trendiest topic is sustainable development goals.

Item	Frequency	year
Sustainable Development Goals	10	2020
Gender	17	2019
<b>Sustainability</b>	<b>229</b>	<b>2018</b>
Sustainable Development	104	2017
Entrepreneurship	147	2016
Environment	21	2015

The below cloud is obtained using the authors’ keywords. “Entrepreneurship” occurred the most number of times i.e 147 times which was followed by Sustainable development(104 times).

Identification of these verticals speaks louder of its relevance to the theme and its paramount significance in its manifestations.



Figure 7. Word cloud for small business sustainability.

The following figure 8 represents the thematic map, the map was prepared using “Bibliometrix using the R package” (Aria & Cuccurullo, 2017). The themes were identified by analyzing the keywords and the minimum cluster frequency per 1000

documents was set at 5. After filtering and applying all the settings the below-mentioned thematic map is obtained (ThematicMap: Create a Thematic Map in Bibliometrix: Comprehensive Science Mapping Analysis).

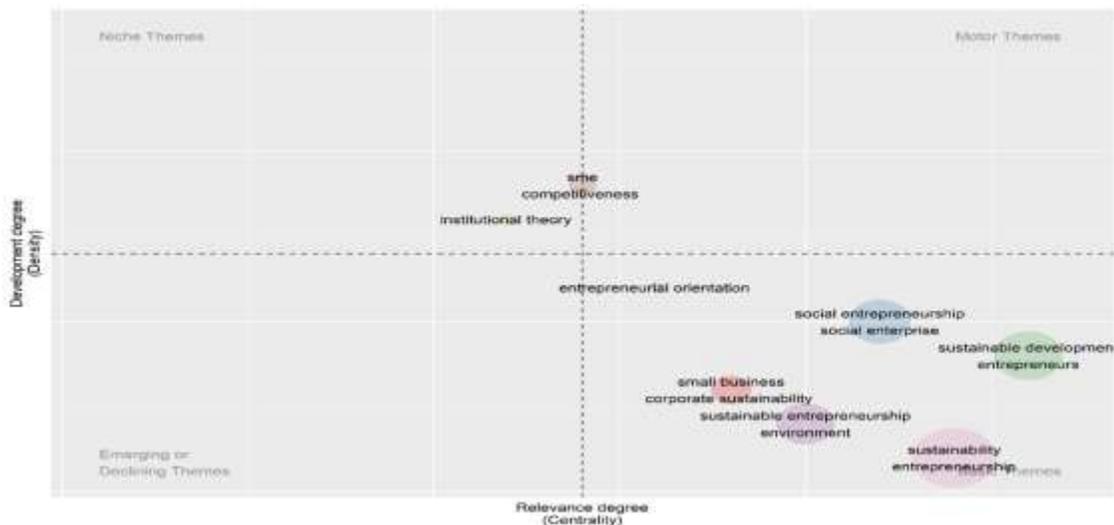


Figure 8: Thematic map of key small business sustainability, 2001-21

The identified small business sustainability themes are further summarized in two protruding categories as given below:

1. Basic theme: Small Business, entrepreneurial orientation, Corporate sustainability, sustainable entrepreneurship, Sustainable development, social entrepreneurship, and social enterprise.
2. Motor theme: SMEs and competitiveness.

### 5. Authors cross-collaboration network

This paper reviewed and obtained two collaboration networks using VOS-viewer software (VOS-viewer — SAGE Ocean | Big-Data, New Tech, Social Science). The first network was obtained

related to the co-citation network and the second one was of co-occurrences network of the keywords that appeared in the studies reviewed on the small business sustainability, 2001-2021. It is represented by Fig 10. which is a co-citation network that uses the Author as the unit of analysis and the full counting method was used.

It is curious to note that, out of 2352 author, 31 meet the threshold, and the remaining were lacked per se relatedness in terms of their publications on small business sustainability in the sampled universe, as presented in fig 10. given below:

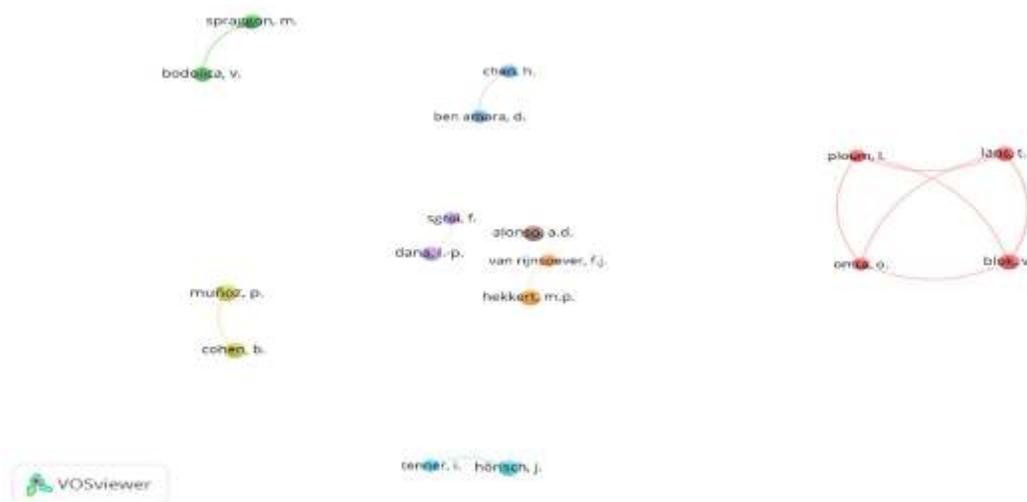
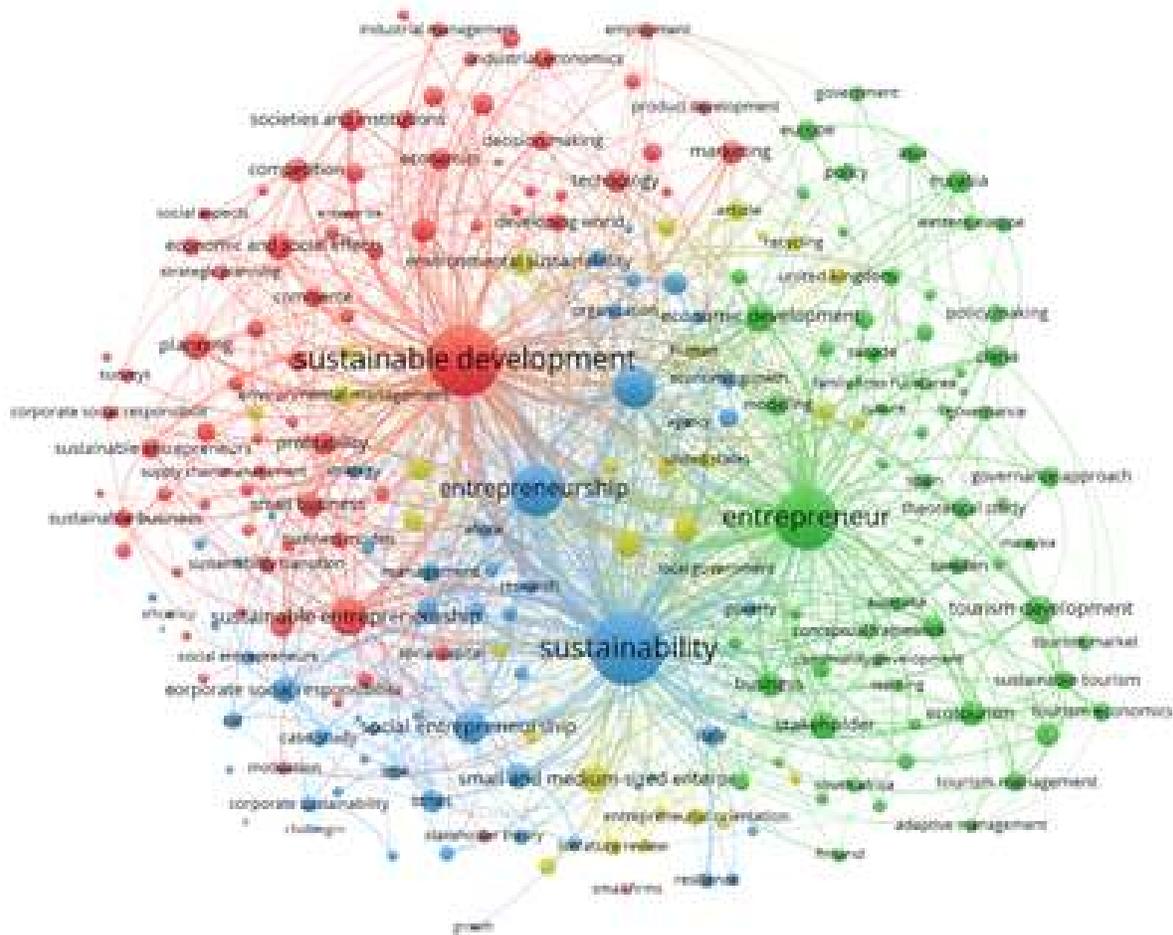


Figure 10. Authors Co-citation Network on Small business sustainability, 1997-2021

The above fig 10. shows the co-citation network representing 22 clusters with 31 items and 22 on the small business sustainability during the study time, 2001-2021. Similarly, the co-occurrence network of small business sustainability verticals presented in table 13 represents the top 20 keywords

occurrence has been shown based on total link strength. Similarly, figure 11 does the same in relation to the small business sustainability manifestations in sorted publications during the period, 2001-2021.



**Figure 11. Small business sustainability verticals Co-occurrence network, 2001-2021**

It is evident from the above figure that the sustainability have the mximum co-occurrences followed by sustainable development, entrepreneur, and entrepreneurship respectively.

**IV. Conclusion and Policy Implications**

In the 21st century, Small Business Sustainability has expanded significant traction in academia both in rapports of empowerment apparatus and the underlying policy instrument in evolving societies. Its verticals in terms of entrepreneurial orientation, Corporate sustainability, sustainable entrepreneurship, Sustainable development, social entrepreneurship have seen an earsplitting appreciation in terms of research inquisitiveness all over the globe, and there is a persistent escalation in research curiosity since 2001. The

sorted research publications were analyzed and presented in a speckled way in standings of their geographic spread, authors' intellectual profundity, frequency of citations and cross citations, the degree of collaborative wisdom, publishing journals, and its peer citations. The analytical ramifications were diagrammatically exemplified for instant conception and understanding of the publications on Small Business Sustainability. The maximum number of studies were reported from the USA. The analysis reported in this paper has also acknowledged manifold widely deliberated themes as sustainable development, entrepreneur orientation, competitiveness, and corporate sustainability. Also, the themes acknowledged will act as a substratum for future academicians and will act as a guiding light for imminent investigators for the identification of significant research expenses. The issue is very

much germane in contemporary times as régime is beading its policy in standings of sustainability, furthering inclusivity to every sphere of society as a whole.

The study is not bereft of restrictions. Foremost, the present research relies only on the Scopus catalog for literature pursuit. Future studies can enlarge the pursuit possibility by using manifold databases. Also, the contemporary analysis emphasizes only journal articles and thus castoffs other forms of works such as subject books and “gray literature”, i.e. conference papers, working papers, government hearsays, research hearsays. These supplementary forms of literature might contain fascinating verdicts that may offer further acumens.

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# The Implication of an E-commerce Platform on Farmers of Rural Areas of North 24 Parganas, West Bengal, India

Sowrav Biswas\*  
Dr. Shibnath Banerjee\*\*

## Abstract

In this paper, we are considering the implication of an e-commerce platform for farmers of rural areas of North 24 Parganas for transforming agricultural business activities, a subject that needed to receive more importance and attention. We raise critical questions about how an e-commerce platform can be established in the agricultural sector in the rural area. We conclude that the analysis of the data collected from the farmers in the rural area of North 24 Parganas that under E-commerce platform, will bring new demand, a wider range of consumers, information regarding the demand and modification and confidence in decision making, also create opportunities to earn profit which will lead to developing their standard of living. The successful implementation of an E-commerce company in a rural area can reduce or end the food crisis.

**Findings-** Found the limitation and the challenges that the farmers are facing which have been arisen due to this pandemic situation. And found the alternatives which will help the farmers of rural areas to fight those obstacles.

**Practical implementation-** The outcome of the study shows that the e-commerce platform companies can start operation in this rural area with the farmers which will be beneficial for farmers as well as for the E-commerce company and to reduce the food crisis.

**Originality-** Our study has initially performed the work to bring the limitation and the challenges which the farmers are facing through proper interviews and interaction with the experienced farmers and agricultural business experts.

**Keywords:** *E-commerce platform, consumers, farmers, agriculture.*

## Introduction

The increasing population is facing growing levels of acute food insecurity. Before the COVID-19 pandemic situation, the acute hunger issues are there due to various factors like conflict, natural hazards, climate change, socio-economic conditions, and pests. The COVID-19 has reduced the income of the people in the whole world and also disrupted the supply chain. Due to the pandemic situation, new rules and regulations have been implemented which led to an increase in global food insecurity.

The primary risk to food security is mainly the higher retail prices, reduction in income which means more and more family's had to reduce the quantity of quality of their food consumption. Many countries are facing the problem of high

inflation in food prices at the retail level, a reflection of the supply disruption due to new rules and regulations of COVID-19 measures, currency devaluation, and some other factors. The high prices of food products are badly affecting the low and middle-level income people since they have to spend a large share of their income on food. According to a UN report on the state of food security and nutrition in the world they have released a statement that between 720 and 811 million people in the world went hungry in the year 2020.

### Food crisis and root cause.

Acute food insecurity occurs when a human being's inability to access and consume adequate food puts their livelihood in grave danger.

\*Research Scholar, Department of management, Brainware University, Kolkata

\*\*Professor, Department of management, Brainware University, Kolkata

### Root causes are as follows;

- Population explosion.
- Government policy.
- Crop failure.
- Crop diseases.
- Increased in demand from the middle class in developing countries.
- Climate changes and natural catastrophes.
- Lack of access to safe water.
- Gender inequality.
- Conflict.
- Poverty.

### Changes in root causes of food crisis due to COVID-19.

- Lockdown.
- All imports and export stopped.
- All transportation stopped, Air, Water, Road.
- Fear of lockdown leads to stockpiling of the excess food product.
- Increase in demand for food products.
- No supply of food products in the market.
- Many markets closed.
- Income stopped for many people.
- Increase in prices of food products.

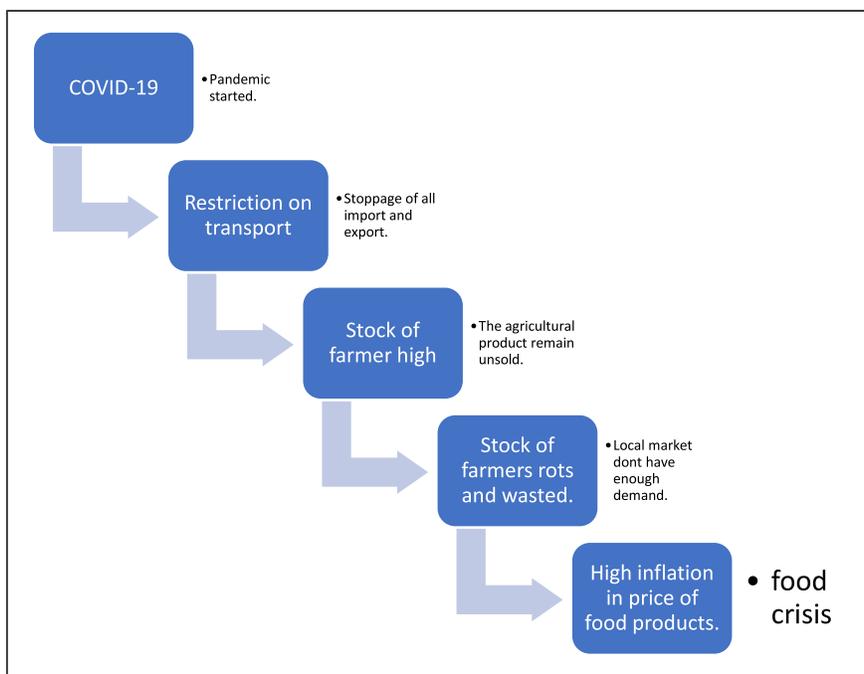
From all this root cause we have can understand that whatever the reason is, the solution to this crisis is food.

To deal with the food crisis we have to find out the challenges and limitations of farmers that they are facing. To find the challenges and limitations of the farmers we have done a survey at rural area of North 24 Parganas and collected data and information from experienced farmers and business experts of agricultural products.

### Challenges and limitations of farmers.

- All markets, hats, mandis have been given a fixed time limit to open.
- Decrease in rate of consumers in haats due to fear of getting infected with the coronavirus.
- Many states have been closed borders which lead to the stoppage of export and import.
- As per instruction of government all transportation has been shut down which leads to increase in private transport of farmer which eventually leads to increase in the price of the product.
- Farmers who visit the far market to sell their products have been stopped due to lack of transportation as many farmers cannot afford private transportation.
- Maximum transactions of the farmers are physical hence the rate of spreading the corona virus is very high.

**Figure no. 1 Graphical representation of steps of the food crisis**



From figure no. 1 we can clearly understand the five steps which are leading the food crisis. So to solve the issues we have to go through steps wise to get the solution to the food crisis which is practically possible.

1st step- COVID-19 pandemic situation was started at the end of the year 2019. This pandemic stops all the social and economic activities all over the world. We cannot have a coronavirus solution in our study but all we can do that, can take vaccination and take precautions. We have to maintain all the guidelines of the COVID-19 to ensure the safety of the individual.

2nd step- Restriction on transport which includes airways, roadways, and waterways. To solve this issue we can implement the electronic commerce platform. E-commerce will take care of the transportation of agricultural products. Many countries have given some relaxation to E-commerce companies to continue their operation, to maintain the supply of essential items. E-commerce when providing the facilities like transportation so, the cost of production will decrease. The farmers have to pay a high amount of income only on transporting the agricultural product. When e-commerce will take care of the transportation the farmers don't have to suffer and look for alternative transport for a lower cost.

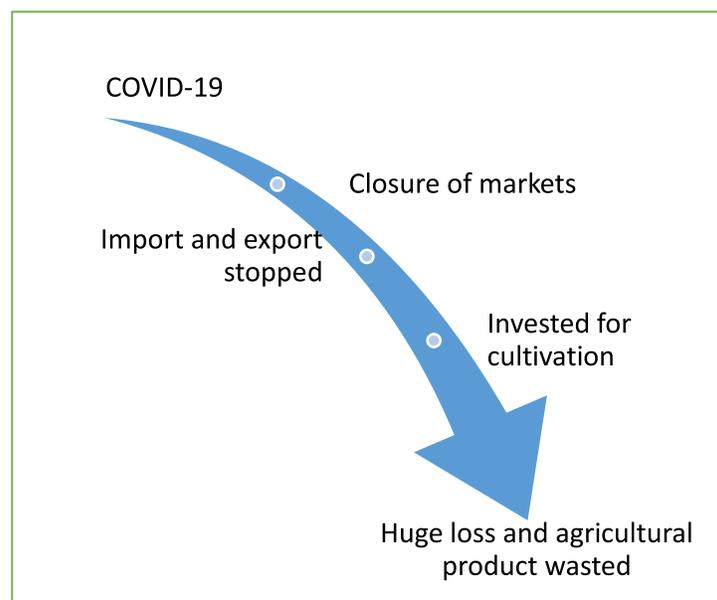
3rd step- Stock of farmer high. When all the export and import at the national and international level has been stopped, the farmer has already produced as per their regular quantity. The stock of the farmer includes the stock for export and the nearest local market. When the export and import had been stopped then the farmer doesn't have any place to sell his/her agricultural product, then the only option remains that is the local market where the demand for that particular agricultural

product is low. In this situation, the supply is more and the demand is the same which leads to a decrease in price. This situation doesn't only imply to a single farmer, all the farmers are in the same situation. So, in this situation, the stock remains with the farmer until all products are sold in losses or rot in the stock of the farmer due to the lack of a cold warehouse. In some places, people are sleeping on an empty stomach, and in some places, the agricultural products are rotting.

4th step- The stock of farmers rot or is wasted due to the restriction on transportation. To resolve this issue the E-commerce platform can play an important role. The E-commerce platform can easily distribute the agricultural product where the demand is high because of a huge number of consumers in the E-commerce platform. The E-commerce platform will act as a platform for buyers and sellers through which consumers, as well as the farmer, can be benefitted. The E-commerce platform have a huge number of consumer registered so, the farmers don't have to search for a buyer in the market physically who will give the best price for their products. This digital market will keep the farmers safe from the coronavirus and will help them to develop their social and economic conditions.

5th step- High inflation in the price of the food product. With the implementation of the E-commerce platform when the proper distribution will take place then the supply will be an increase in the market. The increase in supply will result in calm in prices of products. In this situation of COVID-19, the low cost of the food prices will be like a blessing for the people who are struggling to purchase one time of food. At the end of the step, the food crisis will be decreased which is practically possible.

**Figure No. 2 Result of COVID-19**



In figure no.2 the first point is the COVID-19, the pandemic of COVID-19 has started at the end of the year 2019. In March 2020, the coronavirus has been spread all over the world and has been declared a nationwide lockdown. This pandemic situation had stopped all the economic activities.

The COVID-19 situation not only stopped all the economic activities but also lead to a close the local market of the local farmers. The closure of the market result in huge financial loss to the farmers and the agricultural products have been wasted and rotten.

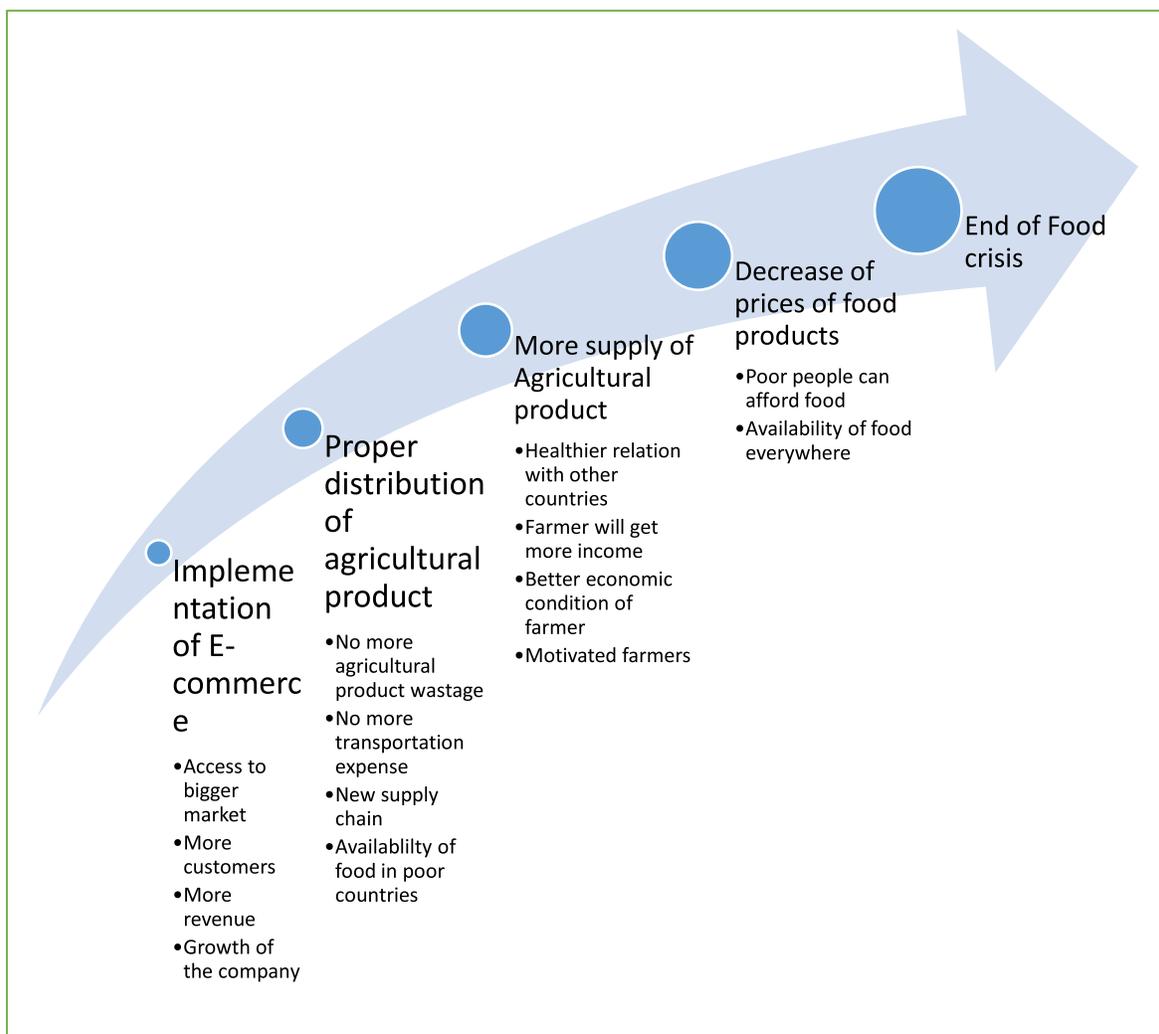
Due to this pandemic situation, transportation has been restricted so, the import and export within the country as well as with the other countries have been stopped. This means the farmers had enough stock of agricultural products with them but the products had remained unsold which is a direct loss and demotivation for the farmers.

In this critical situation, the farmers had a direct financial loss and had stocked with them but still, the farmers have to invest for cultivation for the next season. This is the production cycle of the farmers where the economic and social conditions have to avoid and have to continue the farming process and produce the product.

These four steps are going in the negative and downward slope which is total financial loss as well as agricultural product wastage. This is a very devastating situation because in this condition how much the farmers can go on without any of the profit. We cannot forget that without the farmers there is no food and without food, there is no life.

To overcome this challenge of farmers and provide the necessary agricultural product where the crisis is high will be the solution. To find the solution we had created a conceptual diagram in figure no. 3.

**Figure no. 3 Process to end the food crisis.**



In figure no. 3 we have shown that what will be the effect and benefits of the implication of E-commerce platform in the agricultural system. From this conceptual diagram, we can easily understand that how the introduction of an E-commerce platform can end the food crisis.

Why still the E-commerce platform have failed to end the food crisis?

### History of E-commerce platform

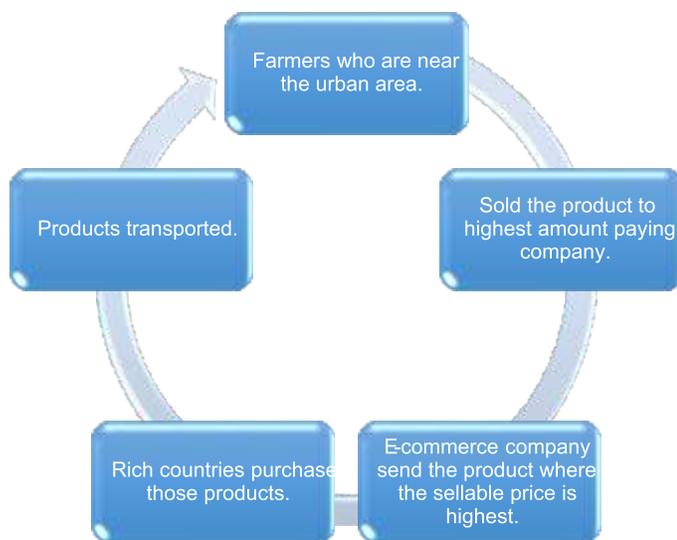
“E-commerce originated in a standard for the exchange of business documents, such as orders or invoices, between suppliers and their business customers. Those origins date to the 1948–49 Berlin blockade and airlift with a system of ordering goods primarily via telex.” (britannica, 2021)

### Present scenario of E-commerce

Nowadays there are many developed technologies and various sources to access the internet. Many E-commerce platforms such as Flipkart, Amazon, Jio mart, Groffers, etc. which are operational in several countries. But the question remains the same why still many countries facing the crisis of food?

To understand the reason behind the failure of E-commerce to provide food security we have made a graphical figure.

**Figure no. 4 typical E-commerce operation.**



In figure no.4 we can understand that the main aim and objective of the E-commerce platform is to earn profit to the maximum. And those countries who can afford the product can place the order to purchase. In this scenario, the population who are rich and medium-class people have food security. This old sale and purchasing cycle the poor country cannot enter into this cycle that why the E-commerce platform is still a failure to end the food crisis.

To withstand the figure and the statement we have taken some practical examples.

According to The United Nations World Food Programme (WFP)

- The Democratic Republic of Congo  
The number of severely hungry people skyrocketed from 13M in 2019 to over 26M in 2021.
- Yemen  
More than 16 million people wake up hungry every day.  
More than two million children are severely malnourished.
- South Sudan  
About 2.4 million people are at risk of starvation.
- Syria  
Over 12.4 million Syrians to high levels of hunger.
- Nigeria  
13 million Nigerians are facing hunger including 4.4 million in the three Northeastern states
- The Sahel  
More than 6.5M don't know when they'll eat the next day.

From this data, we clearly understand that the poor country is mostly facing a food crisis.

As our area is North 24 Parganas rural area there is more rural area which has enough agricultural product with them as stock due to unsold in the market because of COVID-19.

To reduce or to stop the food crisis we have to make changes in E-commerce operations such as:-

- E-commerce companies have to reach more and more rural areas to get more supplies.
- Rural area farmers are already experienced in production in a large amount.
- The pandemic situation had to stop the operation of import and export of the farmers of the rural area so, the E-commerce platform has to reach them.
- The E-commerce platform has to properly distribute the agricultural product on per demand basis, not on a profit basis.
- The proper distribution will give the E-commerce more buyers as well as the seller.
- Purchasing from the rural area will help the farmers to make their lives better and distributing the product at necessary places will help the population to survive in this tough condition of the pandemic.
- Changes in policies.

**Figure no.5 change in the pattern of E-commerce and its benefits.**



From figure no. 5 we can understand that where should the changes have to take place to reduce the food crisis. The E-commerce platform companies first have to distribute the agricultural products to the required places where the population is in very critical condition to purchase food. While implementation of proper distribution the E-commerce company have should provide priority to the population who are facing the critical condition to purchase food. In this process, the E-commerce company cannot supply to those countries that can have more purchasing power. The priority list should have first those countries who are poor in terms of purchasing food. The prices should be less in those countries so that the country can survive in this critical condition of the pandemic. After those countries then the E-commerce can sell the agricultural products to any other country according to the required demand and at higher prices so that the E-commerce companies can balance their revenue. To implement this process the E-commerce company has to purchase the agricultural products directly from the farmers in the rural area so that the cost of purchasing the agricultural product will be less. And then supply according to the priority list. This process will give the E-commerce company more and new suppliers as well as more customers. This process will lead to reducing or ending the food crisis with the help of an E-commerce platform company.

In a successful implementation of E-commerce and proper distribution there will be some policies that have to be modified which are as follows;

- The E-commerce company transportation should be excluded from the restriction of movement from the COVID-19 lockdown.
- Changes in laws in various countries those who have restrictions on import or export.

- Relaxation in taxes related to agricultural products transactions.
- Providing subsidies from the government in poor countries.
- Special concession and subsidy to E-commerce companies dealing in the poor country.
- Interest-free loans for farmers who will be attached with E-commerce companies.
- New tools and machinery with the latest technology will be available to purchase at a cheaper rate from the market.
- Insurance of crops.
- Treatment of crops and free help from the local government without any delay.

### Conclusion

From this study, we have learned the obstacles that the farmers of rural areas of North 24 Parganas were facing. And we have also found that the pandemic situation of COVID-19 has created some new restrictions and obstacles which are leading to the total loss of farmers. In this critical situation of the pandemic, numerous countries are already facing the difficulty of the food crisis and in the rural area, the agricultural product is rotting. To overcome these obstacles of farmers and to reduce or to end the food crisis by the implementation of the E-commerce platform companies. The implementation of an E-commerce company can help the farmers as well as the poor countries that are facing the food crisis. We have also recommended some changes in policies and some laws so that the operations of E-commerce platform companies can be easier.

The changes in laws and restriction is not an easy and quick process but to end the food crisis and betterment farmers' livelihood these changes have to be done. In this study, there are lots of research areas where the researcher can do further research such as changes in transportation model, modification of laws of import and export, how to reach more farmers in the rural area. This study is been limited to the rural area of North 24 Parganas but these changes and E-commerce implementation can be done in other countries as well.

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# Role of the Corporate Social Responsibility during Covid-19 Pandemic

Dr. Alka Agarwal \*

## Abstract

The main aim of the study is to explore the different definitions, explanations of the corporate social responsibility concepts in brief and understanding of corporate social responsibility and serve as a foundation for the future research on the COVID-19 and CSR. CSR play an important role during the pandemic period, which provide actual help to the needed persons in the practice of achieving sustainable growth. This study present the experience and lessons of selected Indian companies in the field of Corporate Social Responsibility during the covid-19 time period. The outcomes of the study depicts that Covid-19 have a significant effect on global economy and its recovery takes longer than expected, companies need to rethink their priorities, work differently and manage their resource carefully. The study also discusses the current pattern, methods and viewpoints which are essential of CSR to take novel steps in the post COVID-19 World.

**Keywords:** *corporate social responsibility, COVID-19, Pandemic, Business houses,*

## Introduction

CSR is a comprehensive activity that can be exhibited in different forms, according to industry and company. With the help of CSR programs, business houses can help the community in a big way and can facilitate the transformation of society.

Social Commitment Commitment to the commitment to improving the well-being of the community through choice of business processes and business resources. (Philip Kotler and Nancy Lee, "The Commitment of Business Compatibility," Wiley, 2007) The social responsibility of the business includes the economic, legal, ethical, and socially inclusive expectations of organizations over a period of time. (Archie B. Carroll, 1979) India created history by becoming the first country to legally mandate the corporate social responsibility. Though it was difficult period or take such a bold decision and developments are taking place in this area since then.

In 2014, India became the first country to officially validate the CSR. That was a difficult time for CSR operations in India and since then the domain has been developing. Many incidents have occurred in the past, especially after the arrival of Covid 19 in India.

After the onslaught of second wave of COVID-19 in 2021, it resulted in massive casualties, in the wake of all this Department

of Commerce declared that companies can take the help of CSR funds to create an infrastructure to combat COVID-19 . Plants, production and supply of air concentrators, ventilators. It was approved to establish temporary hospitals were created with the help of CSR funds.

This set of measures presented by the Department may serve as an example of how a social security network can be built using the mandatory contribution of national corporations. These amendments could change the concept of companies in the country development plan. Also, the transfer funds that have not been used in the "Unused CSR account" or in the fund mentioned in Schedule VII of the Companies Act within the stipulated time period allow companies to reconsider their budget and strategies.

COVID-19 has long term consequences for the social, economic and social environment of the country (He & Harris,2020 . Massive disruptions in social domain in a developing country like India has resulted in a robust partnership between central and state government to control the spread of virus In early 2021, corporate growth felt the impact of the country closure and the CSR budget (which should be a percentage of profit) dropped sharply, the government doubled business requirements, imposed a fine of Rs 25 lakh on non-compliance (which, however, was rejected) and significantly improved compliance papers. Fortunately, the Premier's Citizens' Citizenship and Emergency

\* Director, Mewar Institute of Management, Ghaziabad,

Assistance Fund, which is abbreviated as PM-CARES, qualified for CSR funding last year, solving the problem of many sensitive companies in government.

A world which has been altered by the onslaught of COVID, CSR practices will have to be in accordance with new ideals, practices and standards of business. It can be blessing in disguise to start this activity in a post COVID world as this would redefine and set new standards in the journey towards realizing full potential of CSR activities and eventually resulting in integration of human needs and CSR activities

## REVIEW OF LITERATURE:

Manuel, Timothy and Herron, Terri L. (2020) study the business reactions to the epidemic from an ethical standpoint, along with suggestions. Researcher review the action of the business house during the covid-19 in light of model of motivation for CSR. The result of the study revealed that business houses have involved in a wide range of humanitarian CSR activity during the Covid-19 lockdown period, Businesses have engaged in a wide range of philanthropic CSR actions during the pandemic, likely motivated by both utilitarianism and deontological factors in response to the needs of internal and external stakeholders. The pandemic has disparate impacts, generally hurting lower-income individuals more, likely increasing inequality.

Friedman (1962) opined that business should limit itself to business related activities, whereas Abrams (1954) talked about firm's commitment towards playing a role in reinforcing equality in the society and especially between main stakeholders-customers, public, employees and stockholders. Bowen (1953) proposed the businesses owe their existence to the society and must function within the limits set by society. To corroborate this, Cwert and March (1963) repeated the earlier position that socio-economic considerations should have a bearing on the decision making of corporates.

Newman et al. (1985) stated that acting in a social way emboldens the companies to constantly use the resource for their betterment on daily basis. Lunden (1988) opined that though capitalism results in the upliftment of standard of living but it is still incumbent on managers and companies to initiate activities sensitive to the needs of the society at large. Wood (1991) proceeded with the expansion of ideas and bundled them into three main principles related to social responsibilities as it termed business a social institute and called for judicious use of power by corporates and business is directly responsible for their actions and their repercussions for the society. Individual agents must use morality as a tool to take decisions related to business.

Frederick's concept of CSR (Frederick, 1997) that corporates are accountable to society for their actions besides stockholders

sometimes going beyond the legislations in this regard. In the same manner Wood (1991) proposed that business and society are interconnected units, which is the basic theme of CSR. The World Business School has proposed to give a new definition to the CSR concept as an everlasting commitment by the corporates to behave ethically and play a role in the economic development of the country and also enhancing the standard of living of people simultaneously. The Business Council for Social Responsibility also defines CSR as a practice which helps in achieving corporate objectives by respecting honor and the value of society at large. Steiner and Steiner (2000) proposed that CSR as a concept reflects the obligations of business corporations to create wealth and play a role in economic growth without causing harm to society and natural resources.

McWilliams and Siegel (2001) has characterized CSR as steps to enhance social activities by the corporates which goes beyond the interest of the company and legal system. Forstater et al. (2002) outlined CSR as actions that plays a pivotal role in sustainable development through the primary activities, social thoughts and debate on public policy. For Ford (2003), a company which creates quality products and leave no stone unturned to make earth a healthy place. Finally, Pearce and Doh (2005) exemplified CSR as a concept which advanced the cause of society and going beyond the legislation and stakeholders' interest.

The arguments supporting and criticizing concept of corporate social responsibility has taken place in a substantial part of 20th century. During this period many arguments characterized business as an activity which makes it a trustee of societal property and others pointing out that business is essentially a profit oriented activity. CSR has played a role in which worth of company is estimated in terms of consciousness of the company in relation to the societal concerns.

Forstater et al. (2010) has exemplified corporate social responsibility as actions which are undertaken to maintain the pace of development with the help of primary activities of the business, social decisions and public policy debate. The basic reason behind corporate social responsibility is the imperative of economic growth which has necessitated the existence of social quotient in the decisions of company.

## OBJECTIVE OF THE STUDY:

The main objective of the study has to create a good understanding of actions taken by the companies during an eruption of Covid-19 Pandemic

## RESEARCH METHODOLOGY:

A systematic seek was followed for studies and evaluate of articles on the effect of COVID-19 pandemic on CSR. Similarly, to make sure the credibility of the hunt presented, wide iterative

searches at the concern had been performed with the goal of acquiring a first rate review of papers with relevant insights into the subject that have been otherwise excluded due to unique search mixtures. The insights from the papers had been analysed and highlighted throughout this file

## **IMPACT OF PANDEMIC ON CSR:**

Covid-19 has been a nightmare event for the world economy as described by the UN sustainable development goals (SDGs) on poverty, well-being and starvation. In terms of facts and figure, it is very interesting to note that 130 organizations which are based in India, spent 80 percent of the CSR funds. More than 66 percent of these companies more than 2 percent funds for CSR activities. In addition to this 10 percent of the companies incurred 3 percent of their profits for CSR expenditure. Organizations which have indulged in CSR activities have seen a massive profile enhancement. Many companies have fulfilled the expectations of the community and supported them, and they realized that people have appreciated them for their concern. In their understanding of the actions of the companies during this turbulent period four out of five americans wanted their companies to provide them safety.

Covid-19 in its attack on the economy mainly affected lower income group, which constitute the blue-collar worker segment of the economy and that exacerbate the problem of inequality. People who are deployed in the primary departments of the economy known as Frontline employees like health care, food services, public transportation and delivery, have been considered crucial for sustaining the economy during difficult times. These frontline workers were found to be vulnerable to the infection as they were working without essential protection and they were underpaid for their crucial services.

All over the world business houses participated in CSR activities which can be motivated by many factors and may be a response to the needs of internal and external stakeholders. It has clearly altered the landscape of CSR activities, processes, concept and predictions, During this epidemic, the business world participated in many philanthropic CSR actions, which may have been motivated by both resource use and deontological factors in response to the needs of internal and external stakeholders. It has clearly challenged the number of existing CSR predictions, concepts, and processes.

### **Covid CSR Contributions to Other Indian Companies.**

1. Wipro Ltd, Wipro Enterprises Ltd and Azim Premji Foundation, committed Rs. 1125 crore in dealing with unprecedented health and humanitarian crisis from the outbreak of the COVID-19 epidemic
2. Hindustan Unilever Limited (HUL) has set aside Rs. 100 crores by March 2020 helping India during the epidemic. In addition to

its long-term international relationship with UNICEF, the company has provided more crore and sanitizer soaps to vulnerable communities during the outbreak.

3. The Infosys Foundation (CSR arm of the giant Infosys) tied Rs. 120 million COVID-19 aid in India. More than a third of it was included in the PM CARES fund. Infosys provided 2.4 million meals during this emergency and helped more than one million people.

4. Vedanta makes Rs. 201 crore in the fight against Covid-19 last year, which included Rs. 101 crore in the PM-CARES Fund and an additional contribution of Rs. 100 crore corpus community support, daily paid employees, preventive health care and welfare of employees / contract partners / business partners.

5. Google has announced USD 18 million donation fund to help India. and resources that help to spread important information.

## **Post Covid: CSR Trends**

### **a. Visible Public Participation**

COVID-19 has permanently changed the way companies communicate with their employees, stakeholders, and communities. Over the past two years, we have seen that these forms of communication, in the form of webinars, group meetings, etc., have shown how powerful they are, and will continue to be, in the future of corporate social responsibility.

Other trends that have emerged as a significant volunteer since the 2020 epidemic include:

- Increased volunteerism due to technology (Social media and online search have greatly helped to increase this trend)
- Focus on the involvement of mixed volunteers, which will give communities more options to volunteer directly or in person.
- Changes in general volunteerism, with Millennials and Gen Zs leading the volunteer involvement

Organizations which have tried to make positive changes to the mankind with the help of a spirit of voluntarism, are found to be performing much better than their counterparts who accorded more priority to other things.

### **b. Impact of CSR**

In the aftermath of pandemic the companies will try to judge the CSR activities on the basis of their impact on psyche of the communities. Many parameters are considered for judging the impact of CSR activities launched by a company namely,

employee engagement, customer growth and retention and public return on investment. When all these factors are consistently observed by the company that assures them of the success of the CSR activity.

It has become paramount for the companies to play a proactive role to follow essential parameters in terms of how their products have served the community as a whole. With broad CSR standards it will lead to a conducive environment for companies to make consistent and healthy contributions.

### **c. The company's efforts and its impact**

Also left are companies that participate in programs that have a positive impact on their communities. More and more consumers are choosing to buy from brands that play a significant role in important global issues.

Cisco, for example, is making a huge splash in the corporate social responsibility space for their response to racism and xenophobia.

As companies focus more on important ongoing issues, such as COVID-19, racism, and environmental issues, society as a whole will be better equipped to make these necessary, lasting changes.

### **FINDINGS:**

The finding of the study depicts that 32 million people majorly effected by the pandemic in 2021, its result they degrade their status from poor to very poor condition. A another research which conduct by pew research center showed 54 million people fall over of the middle class worldwide. Covid-19 also undid 70 years of girls' education and women's development progress by widening the gender gap. With such social distresses, the increased urgency to solve "foundational" problems such as education, healthcare, climate change, and addressing poverty and inequality was felt harshly.

### **CONCLUSION:**

Business houses all over the world are realizing their stakes in the society and engaging in various social and environmental activities. The need of the hour is to formulate effective strategic policies and adopt various instruments, according to a company's history, its content and peculiarity in relationship with its different stakeholders so that CSR can be best implemented towards its goals — sustained environmental, social and economic growth.

The 2020 global pandemic was an eye-opener for many people. As consumers look to their favorite brands to help lead the way with effective CSR initiatives, these companies now have a social responsibility that they must uphold.

It's important that companies take note of what is working and what can be improved upon to not only create success within their internal communities but also within the external communities they serve.

Individual companies define CSR in their own limited ways and contexts. The end result being all activities undertaken in the name of CSR is mainly philanthropy or an extension of philanthropy. It seems that CSR in India has been evolving domain of profit distribution. There is a need to increase the understanding and active participation of business inequitable social development as an integral part of good business practice. (Singh, 2010).

It can also be concluded that most companies are building customer loyalty, reputation, employee motivation, brand value and employee-retention CSR activities. It will be wise if the companies focus on areas the society need by understanding them. This will, in turn, ensure universal advancement of the country.

Further, to sustain CSR activities in the post COVID period, businesses should be allowed to contribute in both kind and cash to fulfil their CSR mandate.

The new amendment on CSR envisages covering all the eligible companies in the CSR net and would strengthen the compliance on CSR. The companies engaged in CSR activities have been able to create social value, infuse new technologies, and contribute towards social development. They have also developed various social models addressing social and environmental concerns. The new amendment would be beneficial for the companies that have yet not spent on CSR as they will be able to reap the benefits being part of the social change addressing both social and environmental solutions.

Learning from the past trends, CSR will pave its way towards resilient strategies and robust outcomes. It is expected to become more structured over time and involve mechanisms that better align with SDGs. With due course of time, CSR will aid in more technological innovations and reduced cost of production for many industries. This shall benefit multiple stakeholders in the long run and lay an impact driven footprints for improved development.

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# Plastic Free Packaging: A case study of Amazon E-commerce Company

Dr. Deeksha Dave \*  
Ms. Devika \*\*  
Dr. Y.S.C. Khuman \*\*\*

## Abstract

The surge in the use of plastics in the packaging industry is a cause of worry. Most of the packaging goes into waste and there are hardly any monitoring and assessment mechanisms in place to determine the amount of plastics used in online services. The Amazon, the leading E-commerce company sells apparels, to household items, grocery, shoes and much more. Although initiatives are being taken to minimise the use of plastic and instead go for sustainable packaging through innovative means, there are several challenges and bottlenecks. The study explores the case of Amazon and throws light on the eco-friendly packaging options utilised by the company.

**Keywords:** Packaging, Plastic, Online delivery, Waste, E-commerce

## Introduction

In India, the total annual plastic waste produced is around 3.3 million metric tons (Centre for Science and Environment, 2020) and the amount of non-recyclable waste generated for disposal is forecasted to increase 10 times by the year 2030, from the present value of 1.3 million tons. One of the leading and growing sources of increasing plastic pollution is the packaging used in delivering products through E-commerce (Mutha, Nitin H. et al. 2006).

E-commerce has grown significantly in recent years globally. The concept of shopping from the comfort of home and ease of home delivery has been considered a savior for the perpetually occupied consumer. Today, there are numerous online shopping platforms thriving on such concept and competing with diverse business models to provide service to the consumers. The trend, which was earlier restricted to the urban areas has now expanded to semi-urban regions as well. The success of E-commerce has enabled the consumers to rely completely on these platforms for the logistics of their purchase, i.e. booking order, shipping and delivery of goods. The process has saved time and reduced hassle for the consumers while increased manifold the business for retailers.

A crucial aspect in goods delivery is safe handling of the goods during packaging, shipping and delivery. While traditional offline shopping limited the excess paraphernalia of the packaging, online shopping in contrast, adds to multiple layers

of cushioning and wrapping around the goods. Since the beginning, ecommerce delivery has mostly relied on plastic packaging to secure the goods during transit and against unfavorable weather conditions by utilizing plastic covers, air bags, bubble wraps and envelopes in excess.

This has generated more plastic waste in packaging, than store bought goods. Even in case of multiple orders during an online purchase, separate retailers often result in separately delivered packages, thereby increasing the overall plastic waste generated. Being non-biodegradable, the plastic waste adds to the solid waste accumulated in the region and increases the existing pressure on the landfills and/or oceans. According to a study, around 700 species worldwide are expected to be affected by plastic seepage into the water bodies due to ingestion and entanglement. It is further forecasted that by the year 2025, for every 3 tons of fish in the oceans there is expected to be around 1 ton of plastic waste accumulated. (Dharaiya, Harsh and Paul, Dipen, 2021)

The problem of plastic accumulation due to packaging has been addressed by consumers and organizations considering circular economy. (Economic Times, 2020). This has led to some online businesses switching to sustainable packaging for their products. The transition is still underway for most of the ecommerce platforms and there is a major scope for innovation and new ideas at this initial stage.

\* Assistant Professor, Environmental Studies School of Inter Disciplinary and Trans Disciplinary Studies IGNOU Maidan Garhi New Delhi 110068

\*\* PGDSS Student, SOITS, IGNOU, Maidan Garhi New Delhi 110068

\*\*\* Assistant Professor, SOITS, IGNOU, Maidan Garhi New Delhi 110068

Amazon is one of the leaders in the ecommerce and a pioneer in the industry. Recently, the retailer announced switching to sustainable packaging across various product segments in India by eliminating single use plastic. The retailer has already transitioned to using cardboard and hay for cushioning products for impact resistance. For many items, the external packaging is also made of cardboard. Amazon has been working on various steps to ensure effective immersion of sustainable packaging in deliveries for sustainable impact on the environment. However, the retailer is not completely plastic free in overall packaging. They claim to recycle the plastic by collection, segregation and recycling channels. However, since there has been a surge in ecommerce through the platform in recent times, reducing and managing non-single use plastic in addition to enhancing the scope in sustainable packaging needs to be addressed.

The current paper takes Amazon Online Delivery as a case study and explores the attitude of the customers who are buy online products and utilise the services of Amazon. The paper seeks to know the alternatives to minimise the use of plastics in online business activities.

## REVIEW OF LITERATURE:

Manuel, Timothy and Herron, Terri L. (2020) study the business rAccording to a 2019 report by Packaging Gateway, Packaging is the fifth largest sector in Indian economy. The E commerce retail packaging sector recorded 65 million monthly unique visitors, thereby recording an annual increase of 55%. The revenue was predicted to be the highest in the world, increasing at an annual rate of 51%, even before the COVID-pandemic. The sector has only grown in leaps and bound post pandemic. Packaging Industry Association of India (PIAI) estimates that packaging sector in India is witnessing a growth at 22% to 25% per annum. (Verdict Media, 2019)

Plastic Waste Management (PWM) Policy in India is transitioning to more organized and formal sector, with introduction of Extended Producer Responsibility (EPR) approach. The move is largely attributed to the rise in plastic waste generated under the stress of large population and fast growing economy. This has led to inefficient waste management. (Pani, S. & Pathak, A. A, 2021). With a long haul of COVID-19 pandemic extended, the issue of plastic waste has accelerated with increased demand in disposables, as well as rise in online shopping. In 2020, ecommerce sales witnessed an increase in 20%. This has increased burden on plastic waste accumulation. (Informa Markets, 2021)

In 2019, petitions were filed against the retailer regarding excessive use of plastic packaging material without meeting statutory liability. According to National Green Tribunal (NGT) in September 2020, "Polluter Pays" principle was not being enforced, and hence directed the CPCB to look into the matter.

Amazon, along with other companies using plastic packaging has recently been registered under Central Pollution Control Board (CPCB) as Brand Owner/producer under PWM Rules, 2018. Under this registration, the companies are required to comply with the conditions under the rules and submit their progress reports quarterly. The NGT has also suggested environmental audit by CPCB against the companies. (Report by CPCB)

According to the Logistics Division of Ministry of Commerce and Industry, packaging is a platform between consumers and the logistics providers and that there is a need for environmentally sustainable logistics. In Indian packaging scenario, there are various factors involved for sustainable packaging usage, such as regulations, R&D, standardization of best practices, and up skilling etc. In this regard, importance is given to palletisation, or in other words, placing goods over pallets for efficient space utilization in packaging. Another important area is returnable, reusable and recyclable packaging in the logistics supply chain. Apart from logistics providers, companies in F&B, consumable and chemicals need to attend to such parameters, for overall health and environment safety standards. (Ministry of Commerce and Industry, 2021)

E-commerce companies are highly dependent on packaging for their products, and therefore, need to align themselves with sustainable packaging solutions. In September 2019, Amazon India announced their aim to become more sustainable, including net zero carbon by 2040 and run on 100% renewable energy by 2030. This announcement came after the petition filed against the retailer.

In June 2020, Amazon announced elimination of all single use plastic in packaging that originates in 50 fulfilment centres in India. The company strategized the transition in a phased manner, first starting with inner packing like plastic pillows and bubble wraps with paper cushions in December 2019. This was followed by introducing 100% biodegradable plastic-free packaging in the beginning of the year. Amazon stated to have replaced thin cling films for customer deliveries among other material for a sustainable supply chain. While the plastic that is used in the packaging material at present, is 100% recyclable through Amazon's collection, segregation and recycling channels. The retailer claims that it has collaborated with manufacturers and evaluated the performance of single-use plastic free solutions. (YourStory Media, 2020).

Further, in tune with sustainability efforts, Amazon has initiated an initiative in India as packaging-free shipping (PFS) to around 100 cities. The initiative was reported with 40% of orders being shipped in their original boxes, while 35% without an outer box or other packaging. By 2030, the retailer aims to achieve zero carbon of half of its shipments. In the company's sustainability report for the year 2020, Amazon declared their aim to reduce packaging in Amazon branded devices such as Alexa, a popular virtual assistant, and to 100% curb-side recyclable and plastic-free by 2023.

Amazon Packaging Optimization: Amazon has a range of product shipments across various segments – Household, Electronics, Books, Apparels, Consumables, Personal or Skin Care, and many more. To package such items, the retailer has various options like bags, padded mailers, T-folder (classic book box), cartons and so on. The optimum packaging is a trade-off between shipping costs and the return of damaged products. (Aboutamazon.com)

Amazon introduced Packaging Free Shipping (PFS) in India in June 2019 in nine cities and later expanded this to program to more 100 cities. The retailer believes that PFS is a sustainable solution wherein shipments have original packaging without any add-on packaging, thereby effectively reducing packaging. PFS is modelled around an algorithm that takes into account various parameters, like the location of the customer, product category and the distance that needs to be covered until delivery. Further, machine learning algorithms are applied to customise packaging based on the product journey and the product type. The product types shipped without packaging are home improvement products, footwear, luggage, accessory items, etc. However, fragile items, liquids and other delicate products are shipped with packaging. The orders are carried in reusable tote bags until delivery. As a replacement to single use plastic, Amazon utilizes biodegradable plastic-free paper tape since 2020. (Afaqs.com, 2021)

Sustainable packaging is expected to save money for the retailer as well as the customers. For instance, Ships in Own Container or Packaging Free Shipping programs can eliminate the need for packaging and save expenses in the supply. Amazon claims that such program represents around 40% of shipments in India.

## Study sample

The survey was conducted within a time period of almost a month and the responses. Further, survey sample size is 118 respondents only and it is assumed that the respondents understood the difference between plastic-based and plastic-free packaging. Maximum respondents appear to be consumers between 18-60 years of age and experienced in shopping on Amazon. The survey answers are highly dependent on how well consumers notice packaging, their understanding of different packaging components etc. The survey questions were designed such that the respondents are able to understand the questions and provide the most relevant answers. Also, it is assumed that the respondents remember the packaging of the products they purchased from Amazon and did not answer according to their experience with some other retailer instead of Amazon. Further, most respondents were based in Delhi/NCR or North India and their experience with packaging is expected to be according to Amazon's practices in those areas.

## Methodology

The nature of the study is exploratory type. Both primary and secondary sources of information were collected. The secondary data from credible sources,(reports, publications, newspaper articles) and information from Amazon website regarding their approach, planning and implementation on Sustainable Packaging. The research would further include impact on vendors, prices and consumers. The information will be correlated with consumer preferences on Sustainable Packaging and recommendations will be accordingly provided. A survey was conducted on consumer preferences related to Sustainable Packaging and on the acquired data. Survey was conducted online by using Google Form. Total 118 respondents (demographics of the respondents) submitted the survey. The respondents are within the age group of 16-65 years of age living in India. The analysis presented in graphical format is used for providing recommendations for the current study.

## Results and Discussion

The information received from primary research is presented in the graphical analysis provided below. The findings are corroborated with information available from publicly available secondary sources.

Most respondents (~42%) reported that they rarely receive their orders in plastic-free packaging. Such orders range from electronic gadgets, home and kitchen care, apparels, beauty products and toiletries. Many of the respondents reported that they sometimes receive products in plastic free packaging.

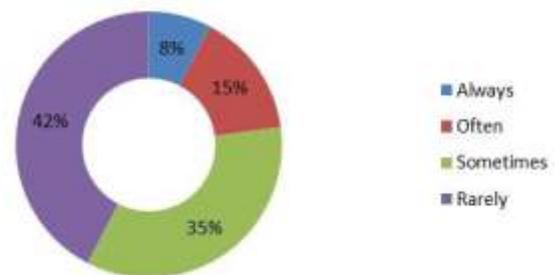


Figure 1: Frequency of receiving products in Plastic-free packaging

Analysis from Figure 1: For products received in plastic free packaging, most respondents (~35%) reported that they receive their orders sometimes in plastic-free packaging. Such orders are usually not fragile like daily consumables (e.g. shampoo, toiletries, products with original sturdy packaging by manufacturer like accessories e.g. earphones, data cable and books that are received in plastic-free packaging.

Most of the respondents have received plastic-free packaging from Amazon at some point of time. Outer parcel like bag, carton, boxes etc. seem to be made of sustainable or natural

material. Inner package is also reported to be made of plastic free material by many respondents. It appears that most plastic in the shipment is utilized as protective wraps, seals or tape. Such type of plastic is usually considered single-use plastic. Outer and Inner Packaging are used for the safe delivery of the products. Outer packaging like outer parcel, carton, and box was used by Amazon whereas Inner package refers to the original product package that means the product packaged by the manufacturer. It was also reported that inner protective wrap like bubble wrap, plastic air bags that are used for cushioning of the delivery package. Also, plastic lamination on the outer carton, box, with seals was also revealed.

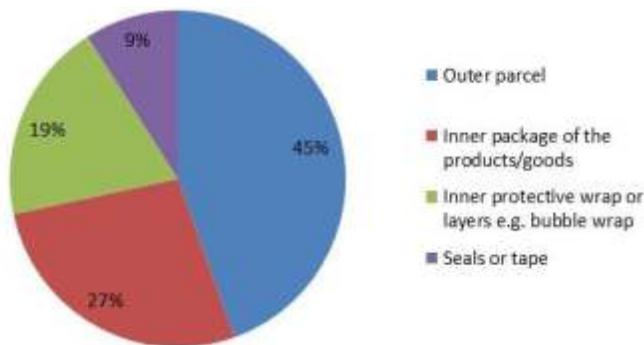


Figure 2: Plastic-free packaging type - component

Product Type: The respondents received plastic-free or sustainable packaging mostly for Consumable items in their order. Examples of consumables are food items (packaged food items, beauty and skin care products, toiletries and refills). This is followed by Electronic items like laptops, mobiles, tablets, speakers, kitchen appliances, electronic accessories like earphones, data cable) Apparel and Books. The observation could also be due to the reason that most respondents' choice of shopping on Amazon is Consumables. Since consumables are a broad category of items, it appears that almost all kinds of products are being shipped in plastic-free or sustainable packaging. The survey was open for more categories of products to be added by respondents. Apart from Books or stationary, a few respondents also received Home Care, Kitchenware, Accessories and Makeup in plastic-free or sustainable packaging.

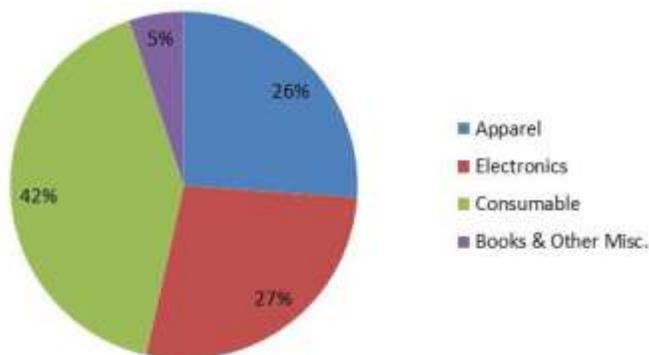


Figure 3: Product Type received in Plastic-free packaging

Maximum respondents received products with mostly plastic packaging or half plastic packaging. Highest amount of plastic in such packaging is Inner protective wrap, followed by outer parcel. Almost plastic free packaging is the one wherein inner layers are minimal.

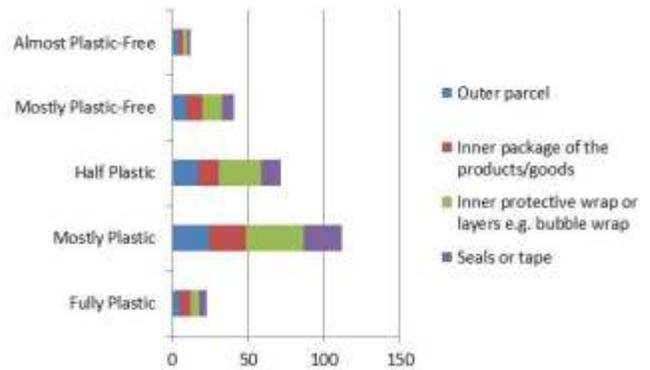


Figure 4: Component of Plastic Packaging vs. Frequency of receiving plastic packaging

Consumables are the popular products packaged in sustainable packaging, followed by electronics and apparels, though electronics require safer packaging. One of the reasons of this category showing up more than apparels is due to the reason that consumers buy more Electronics from Amazon than apparels probably. Paper/cardboard is the most preferred sustainable alternative, followed by cloth. Some items like Consumables and Apparel come with shreds as part of inner packaging.

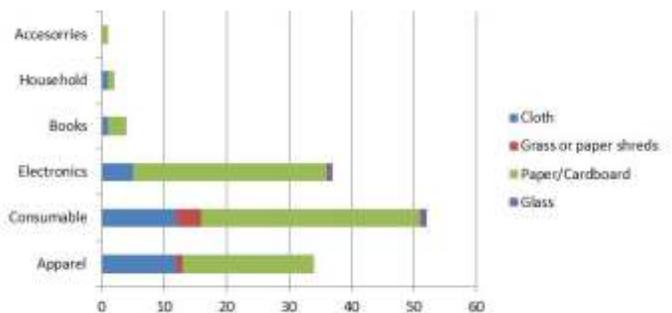


Figure 5: Product Types received in Plastic-free packaging vs. sustainable packaging used

Ratio of outer package to inner layers is mostly paper/cardboard to grass/paper shreds. Cloth is the next preferred choice. Some respondents have received a few food items from Amazon Fresh, where the product was carried in a cloth bag with many other items. The item was taken out from the bag and delivered without any additional packaging. However, Glass and seals or tapes are rarely used as sustainable packaging.

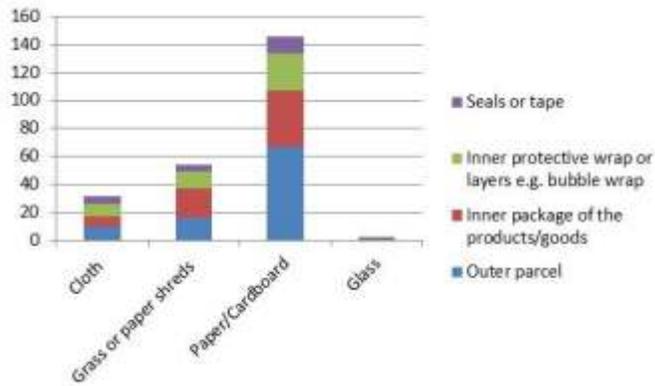


Figure 6: Sustainable packaging material vs. packaging component in a parcel

Most consumers with preference to sustainable packaging received consumables, apparels and electronics in sustainable packaging. These cover almost all three major classes. Apparently, the consumers are aware and willing to shift to sustainable packaging for almost all product types.

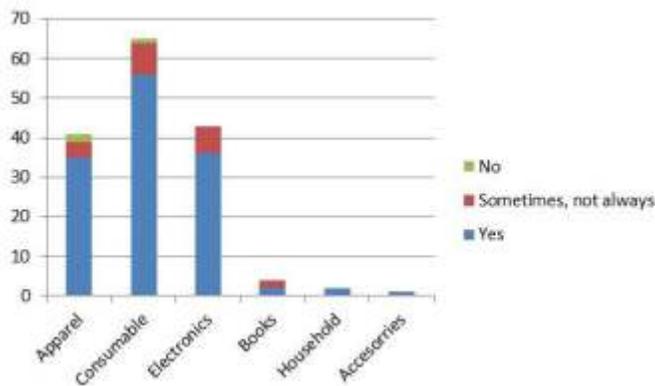


Figure 7: Consumer preference to sustainable packaging in future who received certain product type in sustainable packaging

Consumer Preferences for future: Most of the respondents surveyed answered that they would prefer their orders in plastic-free or sustainable packaging. Apparently, these respondents did not find their items damaged or negatively affected by plastic-free or sustainable packaging. It also appears that the respondents, as consumers are aware of plastic-free packaging to be better or almost similar to plastic based packaging.

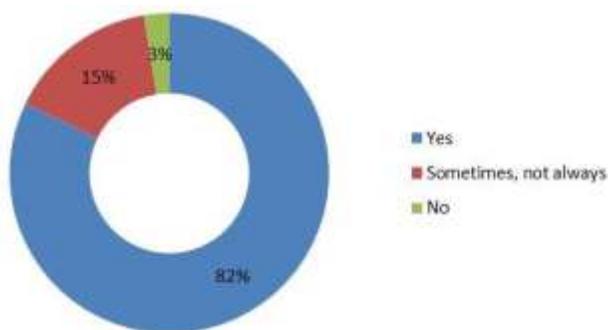


Figure 8: Consumer preference for sustainable packaging in future.

Most of the consumers who prefer sustainable packaging received their products in paper/cardboard or shreds. Apparently, they received products without damage. Hence, it appears that paper packaging is acceptable by most consumers.

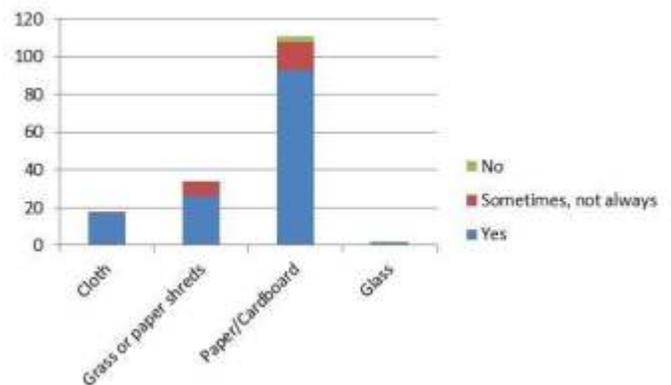


Figure 9: Consumer preference for sustainable packaging in future and the type of sustainable packaging material they received.

Interestingly, some of these respondents who prefer plastic-free or sustainable packaging do not wish to switch to any other ecommerce platform to get products delivered in sustainable packaging. The reason could be beyond the limitation of packaging, and more dependent on the variety, prices and convenience offered by Amazon. However, around 57% of respondents do not mind switching to other ecommerce platform if they ship items in sustainable packaging.

## Conclusion

The issue of increasing plastic waste being accumulating due to packaging is looming at large. Amazon India claims to have been working on reducing plastic packaging in their shipment and further claims to be 100% single-use plastic free. The retailer claims to collect, reuse or recycled rest of the plastic that falls beyond the scope of single use plastic. According to the survey, most people rarely receive plastic-free packaging from Amazon. This might include plastic which is not single-use. Maximum plastic-free packaging is observed in outer parcel or inner package, mostly made of paper/cardboard.

However, inner protective layers or wrap and seals or tape are among the most common type of plastic packaging received by respondents. Such packaging is often discarded and not reused – especially seals/tape. Also, bubble wrap or air pockets do not seem to be discarded in a manner that would render them easy to collect, or reuse. This observation is in contrast to 100% single-use plastic free claim by Amazon.

Kotler, P., & Lee, N. (2008). Corporate social responsibility: Doing the most good for your company and your cause. John Wiley & Sons.

## Limitations

The study is focused on limited objectives due to limitations of time. Further, a comprehensive study on the sustainable parameters adopted by a business such as Amazon requires access to data involving statistics and other factors involved. Due to restricted access to the company's public disclosure of their activities, the study was limited to credible secondary sources for research. However, consumer preferences were referred to, through survey.

## Recommendations

The survey sample size could be expanded to receive more responses. Amazon India could be approached for more specific details in their process and the contradiction observed between the survey result and the retailer's claim can be addressed by considering influencing factors.

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# An Investigation of Influences of Career Adaptability on Work Engagement of Indian Banking Professionals

Ajanta Giri \*  
Dr. Reena Singh \*\*

## Abstract

Researchers around the world have realized the career adaptability's potential for managing career and work-related demands, transitions, and traumas through the use of its four self-regulated adaptation resources- concern, control, curiosity, and confidence. Whereas, work engagement has become a central construct in positive occupational psychology from the perspectives of human resources development and well-being. A cross-sectional research study was designed to assess the influence of career adaptability and its four dimensions on work engagements. Data were collected through a self-report questionnaire from private sector banks in the northern part of India. The finding of the study revealed that career adaptability and work engagement positively and significantly related to each other. Step-wise regression analysis indicated that curiosity and confidence were the significant predictors of work engagements. Overall, the results of the present study support the theory behind the career construction and engagement that work engagements largely depend on individual characteristics and self-regulation strategies.

**Keywords:** Career adaptability, Work engagement, Vigor, Dedication, Absorption.

## Introduction

In recent times, the Indian banking industry facing numerous challenges such as the demonetization of the Indian economy, a rising number of corporate frauds, mergers and acquisitions, increasing nonperforming assets, and bad loans (Kaur 2017; Lahiri,2020). Most specifically, the sudden downfall of Yes Bank, one of the leading and fastest-growing private sector banking institutions in the country has put uncertainty and instability in the market and dragged job insecurity and stress among working professionals (Akhtar et al.,2021). This has also forced the individuals to rethink their career development paths and subsequently impact their energy, dedication, and absorption level, (Johnston et al.,2013; Xie et al., 2016). This means one's ability to adapt to the changing working environment and successfully overcome occupational traumas is increasingly important for career progression. In addition, with the emergence of protean and borderless careers, individuals no longer depend on the organization for career success (Briscoe et al.,2006). Therefore, individuals must be equipped with essential skills and competencies to take the charge of their careers and become more protean (Volmer & Spurk 2011). In necessary literature, such capacity of individuals to cope with the adverse situation and navigate the complexity of unstable labor markets independently are termed as career adaptability (Savickas,1997; Bimrose & Brown2015).

Despite its importance to help individuals to overcome the ongoing labor market turbulence and work-related traumas, research regarding career adaptability in the Indian context is very scarce. Only two articles have been reported in the Indian context (Santra & Giri,2019; Gupta,2019). In addition, work engagement is recognized as a key metric construct for productivity, well-being, retention, and personal accomplishments (Shuck & Reio, 2014). Nevertheless, there are numerous studies available in the literature that helps us to guide how to engage the workforce in their work, but very little was known about relationships between occupational guidance variable such as career adaptability and work engagement (Rossier et al.,2012). Also, the turnover intention of Indian banking professionals has always been neglected as the focus was shifted to software professionals because of the high turnover rate (Lacity et al.,2008). The sudden rise in the demand for Indian banking professionals in the global market imposes a threat to human resources management (The Economic Times, April 2011). According to KPMG India, the average voluntary attrition in the year (2017-18) was 17.80 % in the Indian banking industry. In response to such, the focus of the human resources management has shifted to work engagement as an important retention-related strategy (Garg et al.,2017). Thus, concerning the above facts, career adaptability and its four resources seem to be relevant to help individuals to guide them to engage in the job. Therefore, the present study seeks to examine the

\* Research Scholar, School of Management, Doon University, Dehradun-248007, Uttarakhand, India

\*\*Associate Professor, School of Management, Doon University, Dehradun-248007, Uttarakhand, India

relationship between career adaptability and work engagement from an Indian perspective.

The finding of this study may provide new insight for understanding the role of career adaptability and its four resources for engaging human resources at work and also provides a valuable roadmap to support human resources professionals in developing well-being at work. The objective of the current paper is twofold: (1) assessing the measuring instruments of work engagement and career adaptability in the Indian context and (2) how career adaptability as a personal resource influence the work engagement of banking professionals?

## **Review of literature Career Adaptability**

Career adaptability is the key occupational guidance construct in occupational psychology ((Hartung & Cadaret, 2017; Savickas, 1997; Rossier et al., 2012). Emerged from Donald Super's career pattern study (Super & Knasel, 1981) as an alternative to career maturity construct and engrossed by Savickas (1997) in his theory of career construction with aim the of person-environment integration. Career adaptability is defined as 'readiness to cope with the predictable tasks of preparing for and participating in the work role and with the unpredictable adjustments promoted by changes in work and working conditions' (Savickas, 1997 p. 254). It is viewed as a psycho-social construct that assists individuals to make alignment between personal identity, self-concept, and work environment and amplifies the goodness of fit through self-regulation strategies (Savickas & Porfeli, 2012). In the first order of hierarchy, it is multidimensional with four dimensions: concern, control, curiosity, and confidence. These four resources together formed self-regulation strategies. Concern is denoted as planfulness, anticipations, preparedness, and responsiveness to meet job demands and future work roles (Johnston et al., 2013). Control refers to the responsibility of an individual to achieve desired work and career-related outcomes with conscientious and assertive decision-making (Bimrose & Brown, 2015). Career curiosity triggers exploring behaviors to explore the best possible alternative for themselves and their environment through openness, investigation, and explorative behavior. Career confidence describes the self-belief one has to overcome obstacles and solve problems efficiently and persistently during an adverse time. They are derived from specific attitudes, beliefs, and competencies that shape individual strategies for resolving work-related traumas and aligning their self-concept to their roles at work (Savickas & Porfeli, 2012).

A consortium of researchers from thirteen different countries developed Career Adapt-ability Scale (CAAS) - International Form' to operationalize the concept (Savickas & Porfeli, 2012). The scale consists of 24 items, divided evenly into four subscales, which assess four psychological resources that facilitate

occupational adjustment: concern, control, curiosity, and confidence. Across 13 countries, the scale showed adequate measurement equivalence in the form of metric and configural invariance. This means the instrument measured the same constructs in the same manner across all countries. The Cronbach alpha value for the total scale was 0.92, while the subscales ranged from 0.74 to 0.85. In addition, measurement model fit statistics for each country were adequate and acceptable, however, fit statistics vary across countries from good to poor. Since then, scale is gaining widespread popularity and translated into different languages such as Persian (McKernan 2016); French (Rossier et al., 2012), and Spanish (Merino et al., 2016). Later, a short version (12 items form) of the scale was developed with equally acceptable psychometric properties by Maggiori et al. (2015).

Research studies on career adaptability revealed that career adaptability was positively related to various career and occupational outcomes and negatively to negative outcomes such as employability skills and capacities (de Guzman & Choi, 2013; Coetzee et al., 2015), academic engagement (Merino et al., 2016), job search self-efficacy (Guan et al., 2014), career success (Guan et al., 2015), career satisfaction (Santa & Giri 2019), academic satisfaction (Duffy et al., 2015), general and professional well-being (Maggiori et al., 2013), career engagement (Sou et al., 2022), work performance (Gupta 2019), work self-efficacy (Morici et al., 2022) and turnover intention (Chan et al., 2016). Hirschi (2009) conducted longitudinal research on Swiss students and found that increases in career adaptability resources over time boost life satisfaction and a sense of power. Another longitudinal study conducted by Fiori et al. (2015) found that career adaptability resources help individuals to view their challenges as an opportunity rather than threats thereby reducing work-related stress and increasing job satisfaction. Further, Johnston et al. (2013) also found that overall career adaptability was positively related to orientation to happiness and negatively to work stress. They further advocated that the ability to mobilize resources and positive job-related attitudes toward challenges helps them to reduce the negative effect and reduces their job stress. At the dimensional level, Konstantin et al. 2005 found that control was positively correlated with life satisfaction and negatively with negative affect whereas confidence was reported to increase life satisfaction. Santa and Giri (2019) found no significant association between career adaptability and turnover intention, although they found a significant and positive association between concern and turnover intention. This means those who are concerned about future work roles may likely change jobs in search of better career options. Few studies also found contradictory results such as Ito and Brotheridge (2005) in their study conducted in Canada among 600 full-time employees in federal civil service found that it enhanced commitment, but on the other hand it also triggers employees' intentions to leave. Further, Cotter and Fouad (2012) also posited that career adaptability skills make individuals more self-dependent and less engaged in their current positions.

Concerning work engagement, very little was known about the relationship between career adaptability and work engagement with mixed findings. A study conducted by Rossier et al. (2012) found that overall career adaptability and its four dimensions have a positive and significant effect on work engagement. Coetzee et al. (2017) also positive relationship between work engagement and career adaptability among South African people. On contrary, Cotter and Fouad (2012) found that the relationship between career adaptability and engagement was not significant among the layoff survivor in the United States during the 2007 recession. These inconsistent findings call for further investigation into the relationship between career adaptability and work engagement.

## **Work engagement**

Work engagement plays a pivotal role in positive occupational psychology. Work engagement can be defined as a positive psychological state that results from the inclusiveness of the dimensions of vigor, dedication, and absorption [Balducci et al., (2010) p.143]. The central theme of the vigor is a devotion of high levels of energy and mental resilience of an individual on his or her working style. Dedication refers to the strong involvement of an individual with his/her work and fulfilling a sense of pride, significance, inspiration, challenge, and enthusiasm. Absorption is characterized as a full concentration of mind in one's work, whereby time flies and one faces difficulty in untangling oneself from the work desk.

The most extensively used device to plant the conceptual definition of work engagement in practice is the Utrecht Work Engagement Scale (UWES). The scale was developed by Schaufeli and Bakker (2003). The original version comprised of total 17 items to measure the three-dimensional characteristics of work engagement: vigor, dedication, and absorption. Vigor was loaded with three observed items, the dedication was equipped with five observed items, and the rest of the six items were used to measure the absorption. Later, a short form of UWES was developed with 9 items equally divided into three dimensions with similar psychometric properties and became an alternative to the UWES-17 items (Schaufeli et al., 2006). Further, Seppala et al. (2008) conducted a longitudinal study and observed that the UWES-9 factor structure remained comparatively unchanged across the samples and time and exhibited sound construct validity over the UWES-17 items. Furthermore, according to the leading psychology publication depository, PsycINFO, the UWES-9 item scale was used in 83 percent of the research articles deposited in this database (Schaufeli & Salanova, 2011). Therefore, the primary goal of this paper is to demonstrate the factorial validity of the UWES-9 on an Indian sample.

Past studies on work engagement demonstrated that engaged workers perform extraordinarily in their jobs by attaching themselves emotionally, cognitively, and physically to their work

roles and providing value to the organization in the form of innovativeness and competitiveness (Albrecht et al., 2015). In the face of job demands, engaged workers are full of energy and enthusiastic about their work roles, and ready to devote extra time (Bakker, 2011). Engaged workers show citizenship behaviors at the workplace. They pass positive energy to their co-workers that enable them to perform in the same manner. They also feel less stress compare to disengaged workers thereby they can maintain a good work-life balance and good health. Engaged workers create their feedback, and feel proud and enthusiastic about what they performed. They delighted their customer with their positive energy, dedication, and involvement. Engagement is also a predictor of subjective well-being, quality of work, turnover, good health, productivity, and profitability (Harter et al., 2002). Moreover, work engagement is strongly associated with career success (Lee et al.,2016).

In the Indian context, studies on work engagement are rapidly increasing which could be evident from the presence of research articles in the Indian literature (Kataria et al., 2003; Choudhary et al., 2012; Alok 2013; Lathabhavan et al., 2017). Pattnaik and Nanda (2020) conducted a cross-sectional study among call center employees and found that work engagement was positive and significantly related to supervisor support and negatively to turnover intention while work engagement partially mediated the relationship between supervisor support and turnover intention. Shrama and Nambudiri (2019) found that engaged workers demonstrated a higher level of job-crafting behavior and innovativeness at work. In addition, Shaheen et al. (2017) found that engaged employees exhibited more energy and proactive work behaviors through which they delighted their customers.

## **Theoretical relationship between career adaptability and work engagement:**

The conceptual association between career adaptability and work engagement is guided by two underline theories: the career construction theory (CCT) of career adaptability poised by Savickas (1997) and the Job demand resources model (JDR model) of work engagement development by Bakker and Demerouti (2008). CCT argues that human existence and success in both personal and professional lives depend on continuous adaptation to changing environments with the goals of the person and environment integration (Savickas & Porfeli, 2012). Consequently, work engagement can be seen as an outcome of continuous adaptation to daily job demands and work environment (Xie et al., 2016 ). This adaptation to the working environment largely depends on personal resources such as career adaptability (Hartung, 2013; Savickas & Porfeli, 2012;). On the other hand, the JDR model believed that work engagement is the function of both job and personal resources. Job resources are provided by the organization concerning job demands for the successful completion of the job. Personal resources are positive

self-evaluations that are linked to resiliency and refer to individuals' sense of their ability to control and impact their environment successfully (Bakker & Demerouti 2008; Hobfoll et al., 2003;). This means employees' self-beliefs in their skills and competencies to perform the job at hand are crucial in explaining work-related performance such as work engagement. Adaptability resources enable individuals to withstand stressful situations and mitigate the adverse effect of working conditions successfully (Cotter & Fouad 2012; Johnston et al., 2013; Maggiori et al., 2015; Salanova et al., 2002). In addition, Xanthopoulou et al. (2008) provided evidence that job and personal resources were mutually related and can independently influence work engagement. This means those who are high on their resources such as career adaptability are better able to meet the job demands and subsequently experience less stress and are highly engaged. They further pointed out that involvement of the 'self' is a prerequisite for the experience of engagement at work. To cultivate self into work roles, individuals require specific attitudes, beliefs, and competencies which are considered a core element of career Adaptability in the first order of hierarchy that affects their vocational and occupational behaviors (Omar & Noordin 2013; Savickas 1997). Further, Caldwell and O'Reilly (1990) argued that a mismatch between individual competencies and job requirements also leads to poor work-related outcomes. Career adaptability may help the individual to increase their goodness of fit in the organization by gaining synergy between self, environment, and identity. Concern helps individuals to plan their personal goals in line with organizational goals. Curiosity may foster goodness of fit by gathering information about future work roles and skills required to achieve the goals, whereas control helps individuals to take control of their surroundings with help of available information and confidence enables individuals to perform the task efficiently and achieve the desired goals. Together, these four resources make individual more self-sufficient to meet today's work demands. Past studies also found that career adaptability is positively related to work engagement (Rossier et al., 2012; Tladinyane & Merwe 2016; Xie et al., 2016; Coetzee et al., 2017;). Based on the discussion, we anticipate that career adaptability will be positively related to work engagement. The proposed conceptual model were depicted in figure 1.

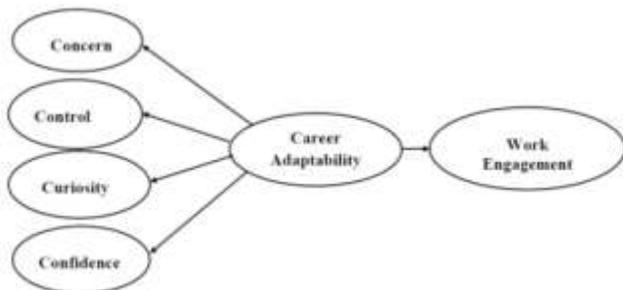


Figure 1: Conceptual model of career adaptability and work engagement

## Methods

### Respondents

The study's participants are private-sector banks having branches in the northern part of India. The respondent are consisting of assistant managers, deputy managers, relationship managers, sales managers, and branch operation managers. Data were collected voluntarily. For the study, 350 managers from various organizations were contacted. Responses were collected by visiting the branches. Complete confidentiality was maintained. There were 300 valid data points obtained in total. There were 202 men and 98 women among the respondents. 14 percent of the sample were graduates, 28.3 percent had finished post-graduation, and 57.7% of managers had completed professional courses such as a diploma in banking and finance, MBA, MCA, or B. Tech. The mean age of the participants is mean 32.46 years and SD 5.34.

### Instruments

The observed data were assessed with the help of statistical software called SPSS and AMOS. In the present study, we follow the six-stage process recommended by Hair et al. 2010 for testing structural equation modeling. At the beginning of the process, we defined each construct under consideration and identified the measurement model. Then, the measurement model was examined by performing the confirmatory factor analysis technique using the AMOS program.

The measurement model was assessed based on the fit indices. Hair et al. (2010) suggested that reporting one incremental index and one absolute index along with chi-square ( $\chi^2$ ) scores and degree of freedom (df) is provide adequate information to judge the model fit. Therefore, the following fit indices were applied to evaluate the models: (a) the  $\chi^2$  statistic ( $\chi^2$ /degrees of freedom ratio); (b) RMSEA (Root Mean Square Error of approximation); (c) CFI (Comparative Fit Index); and (d) TLI (Tucker-Lewis Index). The  $\chi^2$ /degrees of freedom ratio is one of the first goodness of fit statistics to overcome the problem of  $\chi^2$  that is associated with large samples (Byrne, 2010; Wheaton et al., 1977). As per the recommendation given by Hair et al. (2010), if the  $\chi^2$ /degrees of freedom ratio of the observed data concerning to the said model is less than 5.00 is considered to be a good model. For RMSEA, a value below 0.08 is a sign of adequate model fit (Hair et al., 2010). In the case of CFI and TLI, a value greater than 0.90 is suggested as a good model fit (Browne & Cudeck 1992; Hoyle, 1995; Hu & Bentler, 1998). However, Hu and Bentler (1999) revised the values of CFI and TLI and considered values above 0.95 to be a good match for the maximum likelihood approach. Further, internal consistency estimates of scale were computed using Cronbach's alpha coefficient value. The threshold value for Cronbach's alpha coefficient is .70 and above were taken into consideration (Nunnally, 1978). However, most recently Henson (2001) has

recommended strict criteria of Cronbach’s alpha coefficient score of 0.80 as a bottom-line for social science research. The normality of the data was assessed using the Skewness and Kurtosis values of the study variables. All the study variables were normally distributed.

### Confirmatory factor analysis

Figures 2 and 3, represent the measurement model of work engagement and career adaptability respectively. The work engagement was shown as a second-order model. The right fitting model was achieved after correlating the error term between items V1 and V2 and between D1 and D3 (chi-Square /df ratio ( $\chi^2/df$ ) of 4.299, TLI = 0.908, CFI = 0.944, and RMSEA= 0.105 ). However, the RMSEA value was above the threshold value. Hair et al. (2010) further mentioned that recommending a threshold value for RMSEA is inadvisable and debatable. The factor loading of second-order construct vigor, dedication, and absorption was 0.86, .88, and .86 respectively. The factor loadings of work engagement above .50 were observed (Kline 2005). Figure 2(b) demonstrated the second-order measurement model of career adaptability. In the first order, four dimensions of career adaptability: concern, control, curiosity, and confidence were shown. The goodness of fit was adequate with chi-Square /df ratio ( $\chi^2/df$ ) of 1.695, TLI = 0.961, CFI = 0.970, and RMSEA= 0.048 . The second-order loadings of career adaptability ranged from .76 to .90. All values for the factor loadings were significant at  $p < .001$ .

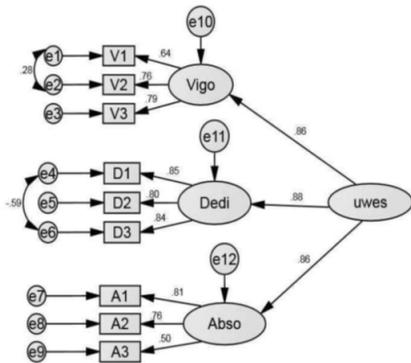


Figure 2: CFA model of work engagement (with standardized loading)  
Notes: Vigo=Vigor Dedi= dedication; Abso=absorption.

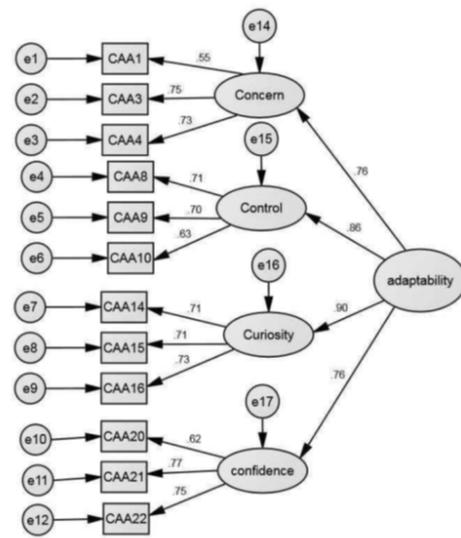


Figure 3: CFA model of career adaptability(with standardized loading)

### Descriptive statistics, correlation coefficients, and reliability estimates

Descriptive statistics (mean and standard deviation), correlation coefficients, and reliability estimates for all the study variables are presented in Table 1. All the study variables had adequate Cronbach’s alpha score for internal consistency (Nunnally,1978). There were significant bivariate correlations between adaptability dimensions ranging from 0.428 to 0.562. The correlation coefficients between total career adaptability with its dimensions varied from 0.761 to 0.831. Career adaptability showed a significant and positive relationship with work engagement ( $r=0.320, p<.01$ ). At the dimensional level, all the four dimensions of career adaptability were significantly and positively related to work engagement. The highest correlation exists between work engagement and confidence ( $r= 0.319, p<.01$ ).

**Table 1: Descriptive statistics, correlation, and Cronbach’s alpha value of the study variables.**

Sl. No	Variables	Descriptive statistics		Correlation Coefficient					Alpha value
		Mean	SD	1	2	3	4	5	
1	Career Adaptability	4.14	.532	1					.869
2	Concern	4.15	.699	.778	1				.704
3	Control	4.15	.667	.801	.472	1			.720
4	Curiosity	4.09	.795	.831	.542	.562	1		.752
5	Confidence	4.18	.624	.761	.516	.510	.516	1	.757
6	Work engagement	4.39	.964	.320	.128*	.270	.308	.319	.880

## **Influence of career adaptability on work engagement**

Based on the Hypothesis, table 2 indicated the results of the hypothesized model along with unstandardized and standardized parameter estimates in the model. The goodness of fit indices of hypothesized models was evaluated to assess the model adequacy. The hypothesized model indicated an adequate fit to the observed data with  $\chi^2/df$  ratio=2.043; TLI=.915, CFI=.927, RMSEA=.059. The finding of the study also revealed that career adaptability had a significantly and positively affect on work engagement ( $\beta$ =.416,  $p$ <.001)

## **Influence of career adaptability's dimension on work engagement**

To assess the impact of each dimension on overall engagement, an additional model was created. All four dimensions of career adaptability had taken as independent latent variables in the model. To address the issue of multicollinearity within the model, we applied variance inflation factor (VIF) tested in SPSS 20.0. The finding demonstrated that VIF scores ranged from 1.53 to 1.827, lower than the recommended limit of 5.0, providing evidence regarding the nonexistence of multicollinearity problem (Hair et al., 2010). The model showed a poor fit with lower TLI and CFI values and higher RMSEA values ( $\chi^2/df$  ratio=3.831; CFI=.802, TLI=.769, RMSEA=.097). As all the four dimensions have an acceptable level of internal consistency, we used composite scales for each dimension for further analyses (Sonnentag, 2003). We applied stepwise regression analysis using SPSS. The results showed that the regression model was significant ( $F = 33.680$ ;  $p = 0.000$ ;  $R^2 = 0.102$ ;  $\Delta R^2 = 0.028$ ;  $\Delta F = 9.582$ ;  $\Delta Fp = 0.002$ ). Only confidence ( $\beta = .218$ ,  $p = .001$ ) and curiosity ( $\beta = .196$ ,  $p = .002$ ) are significantly related to work engagement. Concern and control were not significant.

## **Discussion**

Researchers around the world have acknowledged the importance of career adaptability as a psychosocial construct for managing career and work-related demands, transition, and traumas through its four self-regulated adapt-abilities resources. On the other hand, work engagement has become a central construct in positive occupational psychology from the perspective of human resources development. Thus, the purpose of the present study was twofold: First, to validate the CAAS -12 and UWES-9 items scale in the Indian context. Second, to understand the relationship between career adaptability and work engagement. The finding of this study indicated that the CAAS-12 item and UWES-9 items scale are valid and reliable instruments for assessing both concepts in the Indian context. Our results further provide evidence that career adaptability boost work engagement. This elucidates that people with

higher level of adaptability resources increase their person-job fitness through proper planning, conscientious decision making, positive coping style, problem-solving skills, and self-confidence which allow them to engage in the present job. They viewed their job as a pleasant experience rather than an unpleased experience during an adverse time through proactive work behavior. At the dimensional level, curiosity and confidence explained 21.8 percent and 19.6 percent of the variance in work engagement. This is not surprising, as curiosity articulated as inquisitive to gather information about future work role possibilities and career perspectives in the present organization, and confidence in their skills and capacity to achieve that desired work roles for career advancement will most likely allow them to engage in the present job. The findings of this study also support past studies, that career adaptability and its four dimensions play an important role in various work-related outcomes such as engagement regardless of environmental pressure and working conditions (Johnston et al., 2013; Maggiori et al 2015 ). It was also extant the usage of career construction theory to guide occupational outcomes.

## **Practical Implication**

First, by providing the evidence regarding the applicability of the career adaptability scale in the Indian context, human resources professionals can use it as a tool to assess the readiness of the job seekers for changing working environments during the recruitment and selection process. Specifically, in the case of the Indian banking sector where labor markets are more volatile and unpredictable at present, career adaptability was proven to be an effective key driver of work engagement during an unexpected organizational situation. Human resources professionals can also develop an intervention to improve the adaptability resources through skillful training and by providing career guidance and counseling to existing professionals.

## **Limitation and future research scope**

The study had a few limitations. One of the limitations is that the data was gathered from a specific organization, that is private banks. As a result, the study's findings may not apply to other industries or occupational categories. In addition, the use of error terms to improve the model fit to the observed data is not an ethical practice because it reduces the applicability of the scale in different contexts and reduces the chance of concrete decisions being made on the concept ( Strom and Rothmann, 2003 ). Second, the study was based on a cross-sectional design, potential longitudinal studies could unearth the impact of career adaptability on work engagement in the long run. Further, longitudinal studies could also reveal whether adaptability resources and level of engagement changes over time. Further, in the present study, only one personal resource was considered, and other personal resources such as self-efficacy, self-esteem, and optimism might be of importance for

predicting employees' engagement levels. For this reason, future studies, about how these different personal resources individually and their combined interaction would also be of great importance.

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Block A, Gate No 2, Shaktikhand IV, Indirapuram,  
Ghaziabad - 201 012, Ph: 0120-4550100

[www.jaipuria.edu.in/jim](http://www.jaipuria.edu.in/jim)

### **Jaipuria Institute of Management:**

Jaipuria Institute of Management was set up by Seth Anandram Jaipuria Education Society in 2001. It has sprawling campus within Delhi-NCR. During this short span of 21 years, JIM has been acclaimed as a leading business school in Northern India. Jaipuria Institute of Management, Ghaziabad, was established by fulfilling all the norms regarding academic, financial and social aspects set by concerned statutory bodies.

The Institute offers full time 2 years MBA & MBA (Business Analytics) programme. Both the programmes are duly approved by AICTE, Ministry of HRD (Govt. of India) and affiliated to Dr. APJ Abdul Kalam University, Lucknow (U.P.). Moreover, Seth Anandram Jaipuria Trust and Seth Anandram Jaipuria Education Society run various reputed schools and colleges in the country. Jaipuria Institute of Management, Indirapuram, Ghaziabad, aims to provide quality management education to transform individuals into Business Leaders, Skilled Managers & Entrepreneurs.

Jaipuria Institute of Management intends to provide and develop the capabilities of the young managers by raising their level of competence and intellect to face various challenges in the global environment. In pursuit of excellence, the institute provides training and development programme, foster research and disseminates knowledge through publication of books, journals and magazines for the development of society at large. Jaipuria Institute of Management has established itself as a leading management institute in the Northern India.

