

## KIIT Journal of Management

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## Editorial

### Indian Contribution to Statistics and Computations

**Rabi N. Subudhi**

Professor, School of Management, KIIT University Bhubaneswar, India  
rabisubudhi@gmail.com

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Statistics is now applied in almost every field and every subject, which includes Engineering, Medical & Physical Sciences, Agriculture & Fisheries Sciences, Social Sciences and Management. From theoretical Statistics to applied and official Statistics, each of its sub-fields has its own innovative and original research outputs. Many Indians have such famous contributions, for which we get global appreciation. It is really a great feel-good factor to note that many Indians have world famous contributions in Statistical theory and Applied Statistics. Like many historic, epoch-making contributions in the field of Mathematics (particularly in Geometry, Trigonometry, Algebra and other branches of Mathematics), Indian contributions to Statistical theories and their applications are noteworthy, and worth discussing even now. Though there are many notable contributions and contributors, among them, three legendary figures are worth remembering, for such Indian contributions. They are *P.C. Mahalanobis, C.R. Rao and Pathani Samanta Chandrasekhar*.

**P.C. Mahalanobis:** (1893-1972)

**Prasanta Chandra Mahalanobis**, who founded the famous Indian Statistical Institute (ISI) in 1932, and its reputed scholarly journal '*Sankhya*' (likes of *Biometrika*), had lots of original contributions, in the fields of Applied Statistics and Sampling. He had close academic interactions with the likes of Sir RA Fisher, H Hotelling, JBS Haldane and Djordge Kostic. Among many others, his pioneering work on (Mahalanobis') residual-distance statistic, better known as **Mahalanobis D<sup>2</sup> statistic** is notable. It measures the distance of a multi-variate variable (un-known sample set) from a known unit. It is slightly different from Euclidean distance.

Mahalanobis developed this in 1930, to study the 'racial likeness' (or similarity). This distance measure could be used to answer the questions like: "Are the Anglo-Indians more similar to the upper castes of Bengal than to the lower castes? Did the Jabel Moya people (of Sudan) arise from dynastic and pre-dynastic Egyptian and Nubian peoples or from people of

the negroid stock? How different are the metabolic characteristics of normal persons, chemical diabetics and overt diabetics as determined by a total glucose tolerance test and how to make a diagnosis? On the basis of remote sensing data from a satellite, how do you classify various tracts of land by vegetation type, rock type, etc.?" [G McLachlan, 1999].

Mahalanobis distance is widely used in cluster analysis and classification techniques.

He also contributed in many diverse fields like Anthropometry, Quantitative-Linguistics etc. He applied statistics in Anthropology, Meteorology, Agricultural Sciences etc. His contributions in the planning commission, in the early years of independent-India are note worthy. He suggested methodological reforms in Census methods, Crop and agricultural statistics and other issues, under Five-Year Plan coverage. He was an ardent follower of Rabindranath Tagore, and worked for/ under him in Viswabharati, Shantiniketan (in West Bengal).

Indian Government now celebrates his birth day (on June 29) as the **National Statistical day**.

**C. Radhakrishna Rao (CR Rao):** Born on September 10, 1920.

Calyampudi Radhakrishna Rao (popularly known as CR Rao), the other legendary contributor, is an Indian-American Mathematician and Statistician. He was one among the first few persons of the world to get MA in Statistics (which was

preceded by an M.Sc. in Mathematics from Andhra University). He later on did his PhD (under the guidance of Sir RA Fisher) and D.Sc. from Cambridge University. He has served many leading Universities like, University of Pittsburg, Pennsylvania State University, ISI, University at Buffalo etc. He has received many prestigious awards from USA, UK and India which includes United States' Medal of Science (highest award of USA for lifetime achievement in the field of scientific research) and 37 honorary doctoral degrees. (The 37<sup>th</sup> degree came from New York State University). He was instrumental in the establishment of Statistical Institute for Asia & Pacific, Tokyo.

Cramer-Rao bound and Rao-Blackwell theorem are some of his best known discoveries, in the field of Statistics (particularly related to Theory of Estimation). These are for checking the quality of 'estimators'. An unbiased estimator which achieves this (Cramer-Rao) lower bound is said to be (fully) efficient. This bound, popularly known as CRB, states that the variance of any unbiased estimator is at least as high as the inverse of the Fisher information.

A road, near IIIT Hyderabad (India), has been named in his honour (as Prof. CR Rao Road) and a research Institute is in operation in India, C.R. Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS) [visit web at: <http://www.crraoaimscs.org/>].

Both the legendary figures have been awarded with 'Padma-vibhusan' award by Govt. of India.

Initiatives should be taken by the scholars and teachers of Statistics-fraternity, to see if their great works can be cited/ used in the research of their fields. Attempts should also be made to compile other notable contributions in one such conference or other academic events. There are many other legendary local talents, not very much known to outside world, who have contributed in their own way, to similar scientific thinking, even without much formal education. One such wonder-talent is Samanta Chandra Sekhar, narrated below.

**Samanta Chandra Sekhar Harichandan (Pathaani samamta): 1834 – 1904 (Odisha)**

Pandit Samanta Chandra Sekhar Harichandan Mohapatra, popularly known as **Pathani Samanta**, was an illustrious son of Odisha of pre-independence period. Without any formal education, this 'miracle' personality had immense interest in astronomy, in line with **vedic** philosophy and Mathematics. He was

gifted with in-born engineering skill. He is the author of **Siddhanta Darpan**-record of his life-long relentless work in metrical Sanskrit verses. This book (written during 1869 – 1892, with about 2500 verses, 24 chapters) is really a mirror of India's astronomical knowledge.

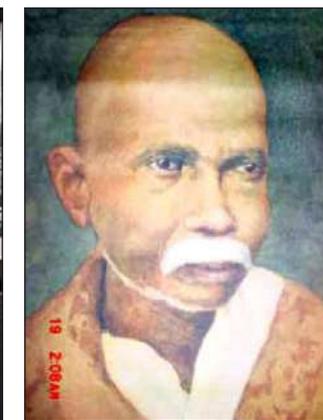
He had prepared of **Mana-yantra** (measuring instrument), **Gol-yantra** (spherical instrument) and **Surya-Ghadi** (Sun dial to measure the time), like a skillful 'engineer' without formal education. As moon changes its position more frequently than any other planet, it is very difficult to ascertain the exact longitude of moon. Hence, Chandra Sekhar innovated three principles, i.e. Tungatanra, Pakshika and Digamsa to know the exact longitude of moon. These three formulas are verified to be correct and they hold good in every respect. He had devised many formulas for ascertaining the exact longitude of other planets. His formulas regarding the solar and lunar eclipse are still considered to be invaluable.



PC Mahalanobis



CR Rao



Pathani Samanta Chandrasekhar

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## Chaos, Complexity and Resilience: A Review and Research Agenda

**Brajaballav Kar**

Associate Professor, Production and Operations Management

KIIT School of Management, KIIT University

ORCID: 0000-0002-2127-1147

[braja.kar@ksom.ac.in](mailto:braja.kar@ksom.ac.in), [brajkar@gmail.com](mailto:brajkar@gmail.com)

DoI: 10.23862/kiit-parikalpana/2021/v17/i2/210537

**Abstract**

The objectives of this paper are (a) to purposively review recent literature based on chaos, complexity and resilience theories and (b) to indicate the applicability of these theories to wider business and social contexts.

We believe that the pandemic of Covid-19 has introduced an additional dimension to various decision making process in different forms of social and business organisations. At the least, the concepts of social distancing and its practice is the delta change of the theory of chaos with wider and meaningful repercussions. Secondly, as postulated by the theory of chaos and complexity, the path traversed from one state to another is not exactly reversible. The pandemic related changes may not be reversible in future. There is a need for discussion on various possibilities of outcomes, finding patterns in chaos and complexity. During the Covid-19 pandemic many individuals have undergone the trauma of personal suffering, loss of near and dear ones. The delay in access to medical supervision due to capacity mismatch, inadequate knowledge, confusion regarding the policy response, and public response to rules are some of the additional dimensions of complexities experienced. At the same time, individuals and organisations have demonstrated resilience to overcome adversities. There is a contextual necessity and opportunity to extend our knowledge base.

This review discusses illustrative but non-exhaustive researches conducted so far in different social science and business organisations to help conceptualisation of future researches. The structure of the paper includes a brief introduction, the theories, application and conclusion.

**Keywords:** Theory, Chaos, Complexity, Resilience, Pandemic, Covid-19

## 1. Introduction

The onset of Covid-19 pandemic has presented a unique social context for individuals, business and social organisations. The pandemic has impacted healthcare, family systems, business organisation, and social organisations. Similarly, the impact on international relations, research, and supply chain have been debated in different media. The pandemic presented a context where individuals and organisations tried to respond to unknown challenges and uncertainty among myriad others. The simple prescription of sanitization and social distancing introduced far reaching consequences individual behaviour, organisational practices and processes. With the persistency of the pandemic, the behaviour may likely to introduce some persistent changes as well. Along with the severity of socio-economic impact, the complex adaptive behaviours to bounce back from adversities could be observed from individuals, families, businesses, and other social institutions. A few have predicted life will go back to pre-pandemic normal whereas, others opine it would be a new normal. At this juncture the theories of chaos, complexity and resilience assume significance to understand and predict behaviour of individuals and organisation. The pandemic context raises several interesting questions worth investigation. For example, how the additional social distancing, isolation, and sanitising practices have influenced our behaviour in

general? To what extent these changes are fundamental or persistent. Is the planning for business any different now? How the pandemic plan or response is going to get integrated? Given that the World Health Organisation (WHO) predicts of an increase in pandemic attacks, what should be done? These changes due to pandemic are changes in paradigm or a just point in the continuum. This purposive review article tries to identify extant research based on the theories of chaos, complexity and resilience and call upon researchers to extend our knowledge of these in the pandemic context.

## 2. Review methodology

Articles for this review was curated from different databases such as the Web of science, Scopus and Google scholar. The search text specified theory, complexity, chaos, resilience, business, and management as the keywords. The first level of selection process considered the article title and information in the abstract. At the second level, the articles were read in detail for its inclusion. A descriptive approach was adopted to discuss the results.

## 3. Literature Review

### 3.1. Theory of chaos

Unlike the general understanding, chaos does not indicate randomness. In the chaotic system, the states or outcomes of the system is actually governed by deterministic laws which are sensitive to initial conditions. Thus, with a minor change in initial

conditions, the outcomes are likely to be significantly different, even with deterministic laws. The chaos theory is applied to complex dynamic systems (for example: turbulence, weather, the stock market, brain states). This theory has interdisciplinary applications. The basic principles of chaos includes deterministic laws, patterns and repetition of behaviour, interconnectedness, feedback loops, self-similarity (fractals) and self-organisation.

Given that the operating world is complex, open, in a state of flux, emergent, prone to induction error, limitations of human ability to make sense, and human inconsistencies of decision making, Lauder and Marynissen (2018), introduced "normal chaos" to emphasize the difference between sense making and understanding. They proposed that the normal chaos links the chaos and complexity theories. Further, the normal chaos is used to explain where events generally work but not under control. Thus the authors suggested that the managers need to understand the instability associated with the task, organisation and operations. Instead of trying to truly understand the cause and effect, managers need to consider sense-making in a complex and chaotic environment (Lauder & Marynissen, 2018).

Initial contributors to the chaos theory included Edward Lorenz (Weather Prediction), Henri Poincaré (Chaotic deterministic system), and Norbert Wiener (Mathematical noise, cybernetics).

### 3.2. Theory of Complexity

Theory of complexity is related to the theory of chaos. Terms like "sophisticated," "diverse," "big," "mega," "multi," "poly," or "fuzzy" are used to express complexity (Reiss, 2020) management of mission critical systems, and complexity management rely on a triangular support connection. Knowledge management provides ways of creating, corroborating, collecting, combining, storing, transferring, and sharing the know-why and know-how for reactively and proactively handling the challenges of mission critical systems. Complexity management, operating on "complexity" as an umbrella term for size, mass, diversity, ambiguity, fuzziness, randomness, risk, change, chaos, instability, and disruption, delivers support to both knowledge and systems management: on the one hand, support for dealing with the complexity of managing knowledge, i.e., furnishing criteria for a common and operationalized terminology, for dealing with mediating and moderating concepts, paradoxes, and controversial validity, and, on the other hand, support for systems managers coping with risks, lack of transparency, ambiguity, fuzziness, pooled and reciprocal interdependencies (e.g., for attaining interoperability. Complexity is displayed in complex systems, which have specific characteristics. Complex systems can consist of a large number of simple sub-systems or elements. The elements interact non-linearly among themselves dynamically by exchanging information. The effects of such interaction among few

subsystems or elements propagate throughout the system. The interaction and propagation have multiple, direct, and indirect feedback loops. Complex systems are open; they exchange information with their environment and have multiple feedback loops. Few other characteristics of complex systems are that these systems operate at conditions far from equilibrium, they have distributed memory (not located at any particular place, but distributed throughout), the memory and the resulting history determines behavior of the system. The behavior of the system further depends on the nature of interactions that are rich, dynamic, nonlinear, and not contained within the components. Hence, the behavior of the system as a whole, cannot be predicted from its components. The behavior is “emergent,” complies with causality, and primarily stochastic. Complex systems are adaptive in the sense that they can re/organize their internal structure without the intervention of an external agent (Blignaut, 2019; Cilliers, 2010; Turner & Baker, 2019). In addition the Complex adaptive systems (CAS) have space of possibilities, co-evolve, and display self-similarity (fractals).

Interestingly, Simon (1962) proposed that the complexity takes the form of hierarchy. Complex system evolves over time and hierarchic systems evolves faster than non-hierarchic systems of similar size. He argued that, hierarchy is one of the central structural schemes for complexity. He further proposed that the social hierarchies are not identifiable by proximity, rather by

observing the interaction between members and its intensity, which defines the hierarchy (Simon, 1962).

### 3.3. Theory of Resilience

Logically, some outcomes proposed in the theory of chaos and complexity can have adverse bearing. The systems need to reorganise as a response to such adversity. This process can be explained by the theory of resilience. There is not a single, fixed and agreed definition of resilience and the theory of resilience is not a fixed set of hypotheses. Resilience is defined as “the ability to bounce back from adversity, frustration, and misfortune” (Ledesma, 2014). A second definition proposes resilience as “the developable capacity to rebound or bounce back from adversity, conflict, and failure or even positive events, progress, and increased responsibility” (Luthans, 2002). Another defines resilience as “a stable trajectory of healthy functioning after a highly adverse event” (Bonanno et al., 2001); and yet another defines it as “the capacity of a dynamic system to adapt successfully to disturbances (Masten, 2014) political violence, disease, malnutrition, maltreatment, and other threats to human development and well-being have sparked a surge of international interest in resilience science. This article highlights progress and issues in research that aims to understand variations in human adaptation to adverse experiences. Two key questions are considered: Why is a new wave of global research on resilience important for developmental science? and Why is developmental

science important for global resilience? The conclusion calls for developmental scientists to engage in international efforts to promote resilience. © 2013 Society for Research in The initial applicability of this focused on individuals. However, subsequently the resilience classification led it to the static traits vs dynamic process. The resource for resilience was grouped to extraordinary asset vs ordinary resources. A third conceptualisation was that the resilience can be variable vs fixed, which can vary over time and across different domains.

Seven common principles of resilience found across systems are (1) resilience is a response to adversity; (2) it is a process; (3) resilience indicate trade-offs; a resilient system (4) is open, dynamic, and complex; (5) promotes connectivity; (6) demonstrates experimentation and learning; and (7) includes diversity, redundancy, and participation (Ungar, 2018).

Organisational resilience has subsequently led to the concept of employee resilience as “the capacity of employees to utilise resources to positively cope, adapt and thrive in response to changing work circumstances (Näswall et al., 2013).” Authors proposed that employee resilience is enabled by the organisation and developed a scale to measure it (Näswall et al., 2013).

Resilience theory has grown and subsequently branches into further set of theories. Some examples include shame resilience theory, family

resilience theory, organisational resilience, and community resilience among others.

### 4. Measuring Complexity

Complexity measurement is based on how difficult it is to describe, or create or the degree of organisation (Lloyd, 2001) (Further insight on complexity measurements is available at (Lloyd, 1996) Some of the measures such as information, algorithmic entropy, hierarchical complexity; tree subgraph diversity, and complex adaptive systems can be more suitable compared to others in the context of social sciences. A system can have complexity because of its depth or breadth. Similarly, emerging complexity indicate uncertainty associated with disruptive change. The level of interaction among various stake holders is also considered as a complexity measure.

Some researchers proposed a complexity index based on (a) diversity (number and categories of system elements) (b) flexibility (variations in the elements), and (c) combinability (patterns of connection between elements) using Shannon’s uncertainty formula (Rebout et al., 2021). The random graph theory is also applied on networks to understand organisation complexity (Morel & Ramanujam, 1999).

In a business system, complexity impacts operational performance which is of concern to managers. Thus, the complexity needs to be quantified and be measured. The Generalized Complexity Index (GCI),

measures complexity by employing a product structure diagram to create a geometric structure from which different levels complexity dimensions such as multiplicity, diversity, and interconnectedness can be calculated (Jacobs, 2013) or if managed well could be used to strategic advantage. However, the quantification of complexity is requisite to managing and exploiting it. To date, an easily employable quantitative measure has not been introduced. This has hampered the ability of researchers to conduct large empirical studies and to gain a fuller understanding of the impacts of complexity on organizations. This has in turn impeded the ability of researchers to inform managers about how to manage complexity. This article presents one such measure, the Generalized Complexity Index (GCI). The GCI is proposed to be applicable to product, portfolio, and supply chain related issues for multiple levels of analysis.

Measurement of complexity is debatable. The complexity measure has to be inter-subjectively valid-indicating that two observers have to agree on the level of complexity. Both the observers have different prior schema, model or theories. Thus, in general, the complexity must be objective. Other important aspect of complexity is the (a) Informational depth (the minimum level of information needed to competently simulate a phenomenon) and (b) computational load (the number of input variables, their relationships, and the number of operations required for

representation. An organization can be thought of as nexi of contracts and there is competitive, and cooperative/ coordinative equilibria among rational or bounded rational agents. However, the complexity of contract is not a true index of organisational complexity. It can be examined through agency-theoretic lens. There are other complexities related to the problem of performance measurement, specification of the observable states, and gaming by parties to the contracts. The game-theoretic models are also used to understand complexity which considers the participants as computational devices striving for equilibrium. Interestingly there are phenomenological, teleological, structural ways of representing an organization which creates disparity in understanding. The complexity can be used as an independent variable inherent to the organization structure. Organisations complexity can also be considered from informational depth and the ability to make such information available to decision makers. The structuralist view of complexity indicates the number of parts that are multiply interconnected (Moldoveanu, 2004).

## 5. Application of theories in social science research

### 5.1. Social sciences

The complexity theory has been proposed to be applied to wicked problems and applicable to social science issues such as globalisation, markets, and sociocultural changes among others (Turner & Baker, 2019).

The complexity theory is applied to organisational change, communities of practice, emergency situations, entrepreneurship, industry clusters, information technology, mentoring, organisational learning, strategy, project management, public management, supply chain management and risk management.

**Family systems:** Authors have argued striking similarities between family system and chaos theories. Family systems are non-linear and knowledge about their past cannot predict future behaviour. Changes in family system can be discontinuous. The choice of a member depends on the history. Similarly, family change processes have been further explained by the crisis theory (Ward, 1995) nonlinear causation and discontinuous change, patterns in apparent chaos, and self-organization--in relation to family systems theory. Although there are several parallels, chaos theory is better able to address change, inequity, and the occurrence of order and disorder in family relationships. The article concludes by suggesting fruitful areas for investigation. (Ward, 1995).

**Social issues:** Researchers have used seven dynamics of complexity from complex adaptive systems to develop a framework that describes what occurs in an issue life cycle. These seven dynamics help in understanding complexities of social issues during various periods. The CAS framework extends and compliments the issue life cycle models (Dawkins & Barker, 2018) turbulence..." Dawkins & Barker, 2018.

**Education:** A chaos theory of careers was proposed to explain career decision-making under complexity, change, constructivism and chance environment (J. Bright et al., 2019; J. E. H. Bright & Pryor, 2011; Pryor & Bright, 2003). Similarly, authors have conceptualized a resilient leadership model to respond to the chaos and complexity in the school education system (Özmuşul, 2017)

**Leadership:** It is believed that organisations are operating under the environment of volatility, uncertainty, complexity, and ambiguity (VUCA). Such an environment presents a combination of chaos and complexity, with direct bearing on leadership. The organisational resilience subsequently influences the sustainability, firm success, and improved well-being of employees among others (Rimita et al., 2020) intensity, and rapidity of these changes create volatility, uncertainty, complexity, and ambiguity (VUCA). A new dimension of "complexity leadership" has been coined for leadership of complex systems. Organisations are conceptualised as a "complex systems of social networks of interactive employees are connected through a collaborative and dynamic ties of shared goals, perspectives, and needs". Such a complex system should foster continuous learning, and creativity. The leadership function can be classified as as complexity leadership combining the elements of administrative leadership, adaptive leadership, and action-centered leadership which focuses on immediate decision-making in crisis situation (Baltaci & Balci, 2017).

## 5.2. Industry environments

Industry environments are characterised by the increasing pace and unpredictability of change. However, an overdependence of linear methods has not been able to explain its characteristics and evolution adequately. The application of nonlinear dynamical system to characterize industry environments indicate that the industry environments evolve as chaotic systems, displays variation in the degree of complexity, and sensitivity to initial conditions. However, there was no evidence of increase in the level of unpredictability of industry environments with time (Ndofor et al., 2018).

At the level of organisations, authors have proposed that the long-lasting companies necessarily position themselves at the edge of chaos and evolve their business models. Such companies move “between order and disorder, predictability and unpredictability, standardization, and innovation ensures evolution (Battistella & De Toni, 2018) always swaying between order and disorder. Two opposite cycles (“sharing cycle” oriented toward efficiency and “creative cycle” oriented toward innovation”.

**Corporate identity** is helpful to the organisation to build culture, distinguish it from others, helps in investments, builds brand, and can set strategy among others. The corporate identity evolves over a period and can display orientation and disorientation. Researchers have argued the use of

chaos theory to understand the process related to it (Devereux et al., 2020).

**Enterprise Architecture (EA):** While arguing that the measurement of complexity at the implementation stage constrains product changes and becomes costly, researchers have proposed complexity measurement at the EA stage. Such an approach, they propose, improves enterprise modelling and integration. Further, this approach predicts of EA reliability, helps in controlling project scope, time and budget (González-Rojas et al., 2017).

**Business Cycles:** Recessions and expansions constitute business cycles in an economy driven by capital, consumption, and investment. Authors argued that chaos and non-linear dynamics simulate the reality even though the existing stochastic model represents it fairly well. However, in stochastic model the randomness is exogenous whereas, a chaotic behavior implicate the reality to be deterministic, non-linear, and endogenous. Authors compared stochastic process with deterministic chaotic model to find that the chaotic model represents reality as well. Additionally, the chaotic model can reproduce a black swan event (Orlando & Zimatore, 2018, 2020).

**Agro-business:** The chaos theory has significant contribution in the study of marine systems and preservation of fish stocks (Ferreira et al., 2017). The agricultural food demand and e-commerce initiatives have been

studied from complexity theory perspective. E-commerce capability enables agility of market capitalization and operations. The environmental complexity was found to moderate the effects of e-commerce capability on the market capitalizing agility and operational adjustment agility (Lin et al., 2020).

**Manufacturing systems:** Operational issues and increase in production costs are attributed to the complexity in manufacturing systems. Consistent research effort to classify complexity assessment methods indicate that such an effort controls complexity but a lack of practical tools hampers the effort (Alkan et al., 2018)

## 5.3. Financial systems

Finance and economics systems are complex and nonlinear. They are affected by external factors, including human action, bilateral relations, conflicts, and policy measures. Time delay between the trigger and its effect is an integral part of a model of these systems. Also since the fractional-order calculus precisely express some systems, authors have used it to observe transitions of financial systems to deterministic chaos, as well as high levels of complexity (S. Wang et al., 2020).

**Equity Market:** Researchers have proposed a nonlinear temporal complexity approach to model the evolution of randomness, self-similarity, and information transmission for different stock markets, across geographies. They

examined the causality between each type of time-dependent measures to assess the state system flows across geographic segments. The result indicated that the self-similarity is transmitted between financial markets. The spatial dimension of spillovers of stochasticity, self-similarity and system state informational content can influence portfolio management practices. Importantly, researcher claim that the specific results would not have emerged from a standard econometric method of causality investigation in financial returns (Lahmiri et al., 2018) self-similarity and information transmission for thirty-four international stock markets, grouped into four major geographical segments: America, Europe, Asia and Oceania. The causality between each type of time-dependent measures is investigated to assess the state system flows across all geographic segments. The empirical results show that self-similarity is vastly transmitted between financial markets. Moreover, significant emissions of entropy and self-similarity are found between America and Europe. Informational flows are observed only between Europe and Asia, and Europe and Oceania. Our findings may have important implications for portfolio management based on the spatial dimension of spillovers of stochasticity, self-similarity and system state informational content for world stock markets. These results would not have emerged by means of standard econometric approaches of causality investigation in financial returns. Lahmiri et al., 2018.

**Pricing:** Researchers have investigated the recycling price as a game model between manufacturers and retailers. They applied nonlinear theory, analysed the local stability of the Nash equilibrium point to identify stable region. Findings indicated that the factors such as the speed of adjustment in the recycling price, the proportion of recycled products by channels, the sensitivity of consumers for the recycling price, and the price cross-elasticity between two channels influence the system stability. The change of parameters, bifurcation, and chaos cause the complexity of the recycling price. A chaotic system reduced the profit and operational efficiency of whole system (T. Li et al., 2019) this paper makes study on the long-term competition in a recycling price game model by manufacturers and retailers. The paper makes analysis on the local stability of the Nash equilibrium point and gives the corresponding stable region. It has been found that the stability of the whole system would be significantly impacted by the following factors which include adjustment speed of the recycling price, the proportion of recycled products by channels, the sensitivity of consumers for the recycling price, and the price cross-elasticity between two channels. By means of the simulation technology, the complexity of the recycling price in the system in the long-term competition has been demonstrated. Owing to the change of parameters, bifurcation, chaos, and other phenomena would appear in the system. When the system is becoming chaotic, the profit of the

whole system decreased. All these show that the operational efficiency for the whole system will be impaired by the chaos. Effective chaotic control of the system will be realized by the use of the parameter adaptation method. T. Li et al., 2019.

**Gold Prices:** The volatility of gold prices depend on multiple reasons. Researchers studied if gold prices data has chaotic behaviour and have proposed the application of chaos theory to reduce volatility (Çağlar, 2018)

**Cryptocurrencies:** The informational measure of complexity (Kolmogorov) is used along with Lempel-Ziv algorithm (LZC) to calculate the logarithmic returns of daily Bitcoin values (Soloviev et al., 2020) LZC is sensitive to noticeable fluctuations in the Bitcoin price that occur as a result of critical events in the cryptocurrency market. In equilibrium, stable state, having a relatively low value, LZC rapidly increases immediately before the crisis, which proves the dominance of the chaotic component of the time series. The classification and periodization of crisis phenomena in the cryptocurrency market for the period 2010-2020 has been carried out. The results demonstrate the possibility of using the LZC measure as an indicator-precursor of crisis phenomena in the cryptocurrency market. Soloviev et al., 2020.

**Forecasting:** Researchers have proposed changes in forecasting tools with increase in market complexity to address the relationship between

complexity and optimization of forecasting models (Tartaglione et al., 2018).

**ERP implementation:** The complexity theory principles have been observed in various projects such as ERP implementation. The relationship between critical challenges, human behaviour, system behaviour, and ambiguity evidences the principles of complexity theory (Menon, 2019).

**Research and Development: The R&D** environment displays the characteristics of nonlinearity, dynamic behaviour, chaos, and disorderly patterns, with substantial time delay and multiple feedback loops. The question if the firm growth driven by R&D indicates chaotic behaviour has been investigated. R&D can induce demand and resulting revenue as well as increases cost. In a revenue-based R&D investment strategy the firm's growth can be a dynamic system of cost-plus or profit-maximizing pricing policies. The study showed that growth can indicate a stable, periodic, and even chaotic behaviours demonstrating a complex impact of R&D on growth than previously identified. The R&D investment decisions can cause variations and show an erratic growth patterns in nonlinear and complex business environments (Yuan & Nishant, 2021).

**Retail services:** The speed of service inputs influences the market performance, system complexity and stability of equilibrium in a dual channel game model. The chaos control

can be done by variable feedback method. The research finding proposes that the demand and cross-service coefficients impact the stability and their feasible basin of attraction (Ma et al., 2017) and explore the stability of the equilibrium points by parameter basin diagrams. And chaos control is realized by variable feedback method. The numerical simulation shows that complex behavior would trigger the system to become unstable, such as double period bifurcation and chaos. We measure the performances of the model in different periods by analyzing the variation of average profit index. The theoretical results show that the percentage share of the demand and cross-service coefficients have important influence on the stability of the system and its feasible basin of attraction. Ma et al., 2017.

#### 5.4. Supply Chain Management

**Measure of complexity in supply chain:** Multiple supply chain partners due to SCM context (globalization, shorter product life cycle, and technology) and faster information exchange makes SCM complex to manage. Therefore, the SCM network is characterized by its complexity. Researchers have identified the drivers of complexity and proposed methods to manage (Piya et al., 2017) shorter product life cycle and rapid technological advancement in the manufacturing as well as service industry necessitates the company to have multiple supply chain partners. The partnership may be physical or virtual, thus making the chain more challenging and complex

to manage. Therefore, the present supply chain network is characterized by its complexity, which requires proper management and strategy for its mitigation. In addition, the dynamic world in this complex supply chain system demands the manager to make faster and efficient decision. To manage the overall supply chain complexity and to make an efficient decision it is important that the manager understand the associated complex interactions within a supply chain, as well as, proper solution method to mitigate them. In this paper, generic supply chain complexity drivers are identified through literature survey and expert opinion. These drivers are then classified according to their origin. Finally, solutions methods are proposed to manage complexity in supply chain. Piya et al., 2017. While prior studies broadly indicated supply chain complexity to be detrimental to the firm performance; a study narrowed down the influence of supply chain complexity to cause adverse effect on operational performance, but a beneficial effect on innovation and financial performance (Ateş et al., 2021) varying customer requirements, extended product lines, uncertainty regarding supplier performance, and myriad related factors make supply chains utterly complex. While previous research indicates that supply chain complexity plays an important role in explaining performance outcomes, the accumulating evidence is ambiguous. Thus, a finer-grained analysis is required. By meta-analyzing 27,668 observations across 102 independent

samples from 123 empirical studies, we examine the link between supply chain complexity and firm performance. While the preponderance of evidence from previous studies identifies supply chain complexity as detrimental to firm performance, our results illustrate that although supply chain complexity has a negative effect on operational performance, it has a positive effect on innovation performance and financial performance. Furthermore, we also distinguish among different levels of supply chain (i.e., upstream, downstream, and internal).

Supply chain complexity is contingent upon the information sharing, collaboration, supply chain flexibility, tractability, and efficiency. Authors have proposed the supply chain complexity to include upstream, internal and downstream complexity (Mohamed & Hassan, 2019).

By using a Stackelberg game model in a dual-channel supply chain (manufacturer and retailer), researchers tried to understand the entropy, complexity and dynamic characteristic. The result indicated that with the increase of price adjustment speed, the dual-channel supply chain is more complex and falls into a chaotic state. The retailer gains more profit in the chaotic state than the stable state (Q. Li et al., 2020). A similar study showed that an excessive price adjustment speed, however, hurts the stability of the system as well as the profit of the supply chain (Qiu-Xiang et al., 2018).

**Supply chain disruption:** The supply chain network faces the risk of disruption and requires measurement of the complexity of SCM network. The structure of supply chain network with disruption risks is also designed based on these theoretical bases by using various techniques such as digital surface model, Erdős-Rényi random network, small-world networks, and Barabási-Albert (BA) random scale-free networks (H. Wang et al., 2018).

### 5.5. Entrepreneurship

Entrepreneurs try to reduce uncertainty by building reputation. Such reputation influences performance during environmental shocks. Researchers have found that during high volatility the performance is lower but in general the reputation enhances performance (Downing & Ma, 2017).

The existing entrepreneurial ecosystem theories have not included complexity. Thus, researchers have proposed the entrepreneurial ecosystem as a complex adaptive system. The emergence of the ecosystem emergence is influenced by factors such as the entrepreneurial intention, consistency of entrepreneurial activities, and infusion of resources. The use of interpretivist methods, agent-based modeling, and qualitative comparative analysis are proposed to study the complexity in the entrepreneurial ecosystems (Roundy et al., 2018).

SME growth models have also used complexity theory as a basis. The environment, firm resources, and entrepreneurial orientation influence

SME growth. The use of fuzzy set qualitative comparative analysis (fsQCA) finds that a particular end-state can have various combinations (equifinality) and the growth of SME is asymmetric in nature. Further, a single factor is not the key. The causal conditions of combinations for growth and non-growth are different (Ibrahim & Ajlouni, 2018) the study takes a configurational approach towards small business growth and contributes to literature by demonstrating how three sets of causal conditions, that is, entrepreneurial orientation, firm resources, and the environment, combine to form configurations that affect small business growth. The study was conducted in the Middle East (Saudi Arabia). Such observations indicate potential challenges involved in understanding a complex phenomenon.

**Blockchain loan system:** The lack of finance to SMEs is a persistent problem. On the other hand, SME's reservation to use debt funding, even after policy incentives, is also well recognised. Arguably, the entrepreneur, financial institution, and the government are the agents of the system. Research has tried to use block-chain system to reduce the cost of finance and to understand the information exchange between these agents. It is found that the actual loan usage is dynamic. Further, the complexity, perceived risk, perceived fairness, and the reward sensitivity have significant effects on the intention to use loan. The complexity moderates other relationships (Sun et al., 2021) this research extends complexity

theory to discover the factors that affect the use of Blockchain loan systems by SMEs. Complexity, perceived risk, perceived fairness and reward sensitivity prove to have significant effects on usage intention. Complexity proves to have moderating effects on other relationships. This research may contribute to the system performance improvement and provide opportunities for SMEs to share information with financial institutions or individuals around the world, thereby providing investors with equal opportunities for competition. Sun et al., 2021.

Similarly, the information seeking behaviour of SME owners is an important aspect of entrepreneurship. Researchers hypothesized that perceived uncertainty positively influence information seeking however, organisational complexity reduces information seeking under certain conditions. The organizational complexity has an important role as a critical moderator for information seeking behaviour (Joshi & Anand, 2018) and, organizational complexity, in the form of different organizational identities, complicates this relationship and reduces the information seeking in certain conditions while increases in others. The results extend evidence to prior established relationships between perceived uncertainty and information seeking and also suggest that organizational complexity plays an equally important role as a critical moderator. Additionally, we propose a different classification scheme for the external sources and use this to test our hypotheses. Joshi & Anand, 2018.

### 5.6. Travel and Tourism

Various decision making processes in the hospitality sector (travel and tourism) are often complex. A paper examines the complexity science approach to the tourism research (Baggio, 2019). Researches have used the chaos and complexity theories to model their investigation on various aspects such as holiday Intention (Pappas, 2021), hotel decision (Pappas, 2018), International travel (Pappas, 2019), and tourism network (Baggio, 2020), specifically during the pandemic crisis. A research on tourism entrepreneurship examined trust, enterprising negotiation, tourism decision-making considerations and crisis effects through fuzzy-set Qualitative Comparative Analysis (fsQCA) and reported three different pathways of decision making such as (1) crisis conditions, (2) enterprising operations and focus, and (3) enterprising capabilities (Pappas & Brown, 2020)

### 5.7. Information systems and technology

The complexity of an information system in any organisation stems from diversity, ambiguity, interdependence, security among various other aspects (Alamoudi & Kumar, 2017). The ecosystem of IT and systems increases complexity due to the hyper connection, mutual dependencies, and process. Such complexities helps in development of new theories to broaden our understanding as well. For a detailed discussion on theories and methods please refer Benbya et al.

(2020) (Benbya et al., 2020) social media, Internet of Things, robotic process automation, digital business platforms, algorithmic decision making, and other digitally enabled networks and ecosystems fuel complexity by fostering hyper-connections and mutual dependencies among human actors, technical artifacts, processes, organizations, and institutions. Complexity affects human agencies and experiences in all dimensions. Individuals and organizations turn to digitally enabled solutions to cope with the wicked problems arising out of digitalization. In the digital world, complexity and digital solutions present new opportunities and challenges for information systems (IS).

### 6. Discussion and conclusion

The purposive literature review indicates that the theories related to complexity, chaos, non-linearity, dissipative structures, and complex adaptive systems are closely interrelated (Devereux et al., 2020). These theories have been applied to various business and social contexts to gain deeper understanding of the behaviours of agents or elements in the system. Secondly, different results have been obtained compared to prior researches after the application of these theoretical principles. Human beings as autonomous systems are less likely to behave as physical elements conforming to deterministic laws. The logical extension is that the social or business systems as collection of individuals are more likely to be complex, and chaotic in nature. Responses to dynamic events

and decision-making under similar contexts are likely to be different, conforming to chaos theory. Various end-states and multiplicity of paths to such end states can give rise to numerous possibilities of variations, indicating stochasticity. Though, these theories and its applications are predominant in physical sciences, the applicability in social sciences and business applications are relevant as well. The assumption of linearity in social and business processes limits our clarity of understanding thus the conventional findings need a relook from these theoretical lenses.

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## Psychological Empowerment and Place Attachment influencing Organizational Citizenship Behaviour

Anita Pradhan

Research Scholar School of Management, KIIT University Bhubaneswar, India  
pinko28@gmail.com

Sasmita Mishra

Associate Professor (OB & HR), School of Management, KIIT University  
Bhubaneswar-7510024 Orissa, India  
sasmita.mishra@ksom.ac.in

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### Abstract

Organizational Citizenship behaviour (OCB) has been found to be largely influenced by individual characteristics. However, how an individual's emotional bonding with the place (organization) influences OCB has not been studied. There has also been growing interest in the impact of Psychological Empowerment on display of OCB. Hence, this research aims to explore the impact of Place Attachment (PA) and Psychological Empowerment (PE) on OCB among the employees of a private University in the Eastern Region. Data were collected with the help of a questionnaire from the employees who were willing to participate and after checking for completeness of the responses and outliers, finally, 323 data were analyzed. Correlation analysis and structural equation modelling revealed that both PA and PE influenced all the dimensions of OCB. The findings of this study will contribute towards understanding the importance of variables such as PE and PA in an academic setting and its impact on the display of extra role voluntary behaviours.

**Keywords:** *Organizational Citizenship Behaviour, Psychological Empowerment, Place Attachment, Academics*

### Introduction

In an era of cut-throat competition, many organizations are working rigorously to increase their competency and service quality. The service quality of any industry can improve through its committed and hard-working personnel and their attitude towards their job and

work assignments. Human Resource Capital forms the most valuable asset of any organization and has a competitive edge in any knowledge-based economy. In any organization addition to their regular job roles, the employees need to focus on innovative work behaviours so as to provide quality service favourably

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to organizations thus increasing its effectiveness. The employee motivation to exhibit such behaviours voluntarily has been conceptualized as Organizational Citizenship Behaviours (OCB). For such behaviours to be exhibited by the employees, one must explore the factors that contribute to such behaviours. Despite many such antecedents that have been studied from an organizational perspective to understand OCB, an individual perspective also needs to be explored.

OCB is not only a discretionary behaviour beyond one's job description but is performed out of one's personal choice. Organ (1988) defines OCB as "Individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization". In view of the definition cited by Organ, OCBs are voluntary behaviours beyond the formally described job roles and is performed out of individual choice. Moreover, OCBs have a positive contribution to an organization's overall effectiveness and functioning.

What are the conditions that influence individuals to exercise choice and display such discretionary behavior have been of interest for organizational behaviour researchers. Studies confirm that individual-level variables such as Job Satisfaction (Kasemap, 2012; Sesen & Basim, 2012; Sharma, Bajpai, & Holani, 2011), Organizational Commitment (Hasani, Boroujerdi, & Sheikhesmaeili, 2013; Kasemap, 2012) and psychological empowerment (Islam, Khan & Bukhari,

2016; Naderi & Hoveida, 2013) influences display of OCB. Apart from this, certain organisation level variables such as Organizational Justice (Kasemap, 2012; Ince & Gul, 2011; Lee, Kim & Kim, 2013), Organizational Culture (Kar & Tewari, 1999), and Leadership styles (Hashemzahi & Zabihi, 2012) have also been found to be positively related to OCB.

OCB includes those behaviours that are not part of the prescribed job roles but contributes to organizational effectiveness (Organ, 1988). In academic organizations OCB includes behaviours displayed towards students in helping them collecting materials, assignments, supporting colleagues and getting involved in organizational activities such as defending and promoting the organization (Bogler & Somech, 2004). We assume that such behaviours can be facilitated by an individual's sense of belongingness to the organization or place attachment. Also we assume that a sense of responsibility and ownership to take charge that comes from psychological empowerment may facilitate OCB. Psychological empowerment, being a multifaceted construct, includes different dimensions that have differential impact on OCB. For example, empowerment dimensions such as self-efficacy and participation in decision making have been found to be related to OCB of school teachers (Porter, Lawler, & Hackman, 1996; Somech & Drach-Zahavy, 2000).

Although the conceptual and operational definitions of psychological empowerment are many, Spreitzer's

(1995) four dimension taxonomy was deemed fit for this study. The four dimensions include: *Meaning, Competence, Self-Determination, and Impact*. These dimensions refer to four cognitions of individual employees that shape their active orientation towards work. This conceptualization of empowerment is not generic rather is related to the work domain. Moreover, the display of OCB by school teachers may be comparatively different from the employees of a technical private university that are operating in a volatile competitive market and hence require a different set of behaviours from employees. Hence, we propose to study the link between psychological empowerment and OCB in an Indian university context

Another construct proposed to study here is place attachment. Although employees' emotional aspects such as affective commitment (Allen, Evans & White, 2011), positive affect (Ramdhani, Ancok, & Adrianson, 2017; Williams & Shiaw, 2010) and emotional labour (Ramachandran, Jordan, Troth, & Lawrence, 2011) has been studied in the context of OCB, impact of place attachment (emotional bonding with place) on OCB has got scant attention. Whereas, there could be a possible link between these two constructs given the shreds of evidence observed in environmental and social psychology that place / neighborhood attachment enhances pro-social behavior (Lenzi, Vieno, Perkins, Pastore, Santinello & Mazzardis, 2012) and pro-environmental behavior (Ramkissoon, Weiler, & Smith, 2011).

## Psychological Empowerment and OCB

Empowerment as a significant construct not only focuses on individual qualities such as self-confidence, innovation, and optimism, but also act as a motivation in an ever-changing work set-up thus influencing their work behaviours. Empowered Employees have a tendency to experience self-control, feel how important one is and experience a sense of having freedom (Gorji & Ranjbar, 2013). Studies on empowerment can be understood from two research perspectives: Structural Aspect of Empowerment and Psychological & Cognitive dimensions of Empowerment (Maynard, Gilson & Mathieu, 2012). According to Maynard, Gilson and Mathieu (2012) PE is "a cognitive condition measured by a sense of perceived control, perceptions of competence and internalization of the organizational goals". PE includes interactional, intrapersonal and behavioral components (Zimmerman, Israel, Schulz, & Checkoway, 1992). The behavioral component, in specific, focuses on one's control towards socio-political setting through involvement in community activities such as helping others (Zimmerman, 1995). PE, thus, is the psychological state that is basic for employees' sense of control in relation to their work and work outcomes.

Spreitzer (1995) in his theoretical study of PE has identified four cognitive dimensions of empowerment: (a) Meaning- It is the importance the individual attaches to his work and goals in congruence to his own

standards; (b) Competence- is an individual's trust in his capabilities to perform a task with precision ; (c) Self-determination- refers to the person's sense of autonomy in initiating and regulating actions; (d) Impact- It is the person's ability to influence important, activities in the organization.

PE can take different forms depending on the context and population under study. Empowered employees feel motivated to showcase work behaviors thus influencing the work environment. Most of the previous studies on PE has focused on the construct as a motivational concept that forms the crux of job-related attitudes and work effectiveness in the workplace. For instance, Jomah (2017) and Joo & Shim (2010) studied its impact on organisational commitment; Saif & Saleh (2013) on job satisfaction. Similarly, Nawrin's (2016) study focused on Work Engagement and Organization Engagement; Durrah, Khdour, Al-Abadi & Saif (2014) studied its impact on Job performance.

PE, to a great extent, impacts the motivation among the employees and stimulates their organizational citizenship behaviour thus leading to greater efficiency (Park, Moon, & Jung, 2017). This construct has drawn the attention of researchers and practitioners equally as its significance was realized in organisations from various researches. PE as an antecedent of OCB has been reflected in various organisational behaviour literature of different cultural and organizational context (Islam, Khan & Bukhari, 2016;

Park, Moon, & Jung, 2017; Bhatnagar & Sandhu, 2005; Islam, Khan & Bukhari, 2016; Jiang & Fu, 2011; Goksoy, 2017; Gorji & Ranjbar, 2013; Naderi & Hoveida, 2013; Sargolzaei & Keshtegar, 2015). However, this construct has received scant attention in academic context (Bogler & Somech, 2005; Gorji & Ranjbar, 2013; Naderi & Hoveida, 2013; Kasekende, Munene, Otengi & Ntayi, 2014). Given the unique nature of academic institutions, OCB literature voices exclusive attention of researchers towards it. Hence, we find a scope to study PE as an antecedent of OCB in Indian academic context.

Indian academic organizations especially the higher education set up include behaviours most of which may not always fit into formal job roles. Employees have to be extra sincere in their performance of duty as it directly impacts the psyche of the students who are the torch bearers of the society and budding professionals. Hence, employees' sense of civic virtues, conscientiousness, work involvement and loyalty to the organization constitutes the crux of OCB. We hypothesize that a psychologically empowered employee who has competence, finds meaning in his/her job, has self-determination and impact (Spreitzer, 1995), would display more of citizenship behaviour.

**H1:** PE would positively influence OCB among employees in Academics.

### Place Attachment and OCB

PA is an important concept in the field of environmental psychology

influencing an individual's decision to act in pro-environmental ways. Though PA is more prominent in environmental literature, it is favourably progressing towards social dimension. PA can be understood through a three-dimensional framework which involves the person, one's psychological state and place (Scannel & Gifford, 2010). An individual's feelings and emotions towards places is getting increased attention and forms the crux of the concept of place attachment. In addition to the feelings, the attachment that people have towards places influence the individual's behaviour to act in certain ways.

Though there is evidence from environmental psychology that PA predicts pro-environmental behaviour and disaster preparedness (Mishra, Mazumdar & Suar, 2009; Ramkissoon, Weiler, & Smith, 2012), it would be interesting to learn the impact of PA on individual's exhibition of citizenship behaviours in an organization. In organisation context, studies have demonstrated certain antecedents and consequences of *organisational attachment*, a construct analogous to PA (Tsui, Egan, & O'Really, 1992). According to these researchers, *organisational attachment* refers to "an individual's psychological and behavioural involvement in a social group or unit where the individual is a member". While lack of organisational attachment leads to individual's decision to leave the organisation (Whithey & Cooper, 1989), low commitment level (Mowday, Porter, & Steers, 1982) and high absenteeism

(Rhodes & Steers, 1990); strong attachment may be reflected in positive behaviour and attitude such as OCB.

In this study, PA has been defined the way environmental psychologists have defined it as "positive emotional bond between individual, group and environment" (Altman & Low, 1992) or "a sense of belongingness and affective and behavioural dimension of attachment which contributes to community or more so organizational development" (Raymond, Brown & Weber, 2010). This conceptual definition of workplace attachment is different from the studies mentioned in the previous paragraph. Moreover, we could find only one study using similar conceptualization of workplace attachment as ours to find its impact on French employee's request for transfer (Rioux, 2011). However, we borrowed the logical explanation of the previous studies and the following research literature to hypothesize a relationship between our conceptualization of PA and OCB in Indian academic context.

It is previously known that pleasurable engagement with the work makes individuals feel pleasant about the interpersonal relationship and they become more proactive and confident to perform at work (Watson, 1988, p.128). Studies focusing on human emotion/feeling and OCB report that emotional intelligence, and emotional labour, facilitate display of OCB (Ramachandran, Jordan, Troth, & Lawrence, 2011). Similarly, organizational commitment was found out to be positively associated with

OCB in Meyer, Stanley, Herscovitch, & Topolnysky's (2002) meta analytic study. In the same vein, it can be hypothesized that with the increase in the attachment of the employees towards the organization, their OCB would also increase.

**H<sub>2</sub>:** PA would influence the display of OCB among university employees.

## Method

### Sample and Data collection

This study was conducted in a private university of the eastern region of India which has the capacity of 50,000 students and 15,000 teaching and non-teaching staff. The university adopts the best of the HR practices and has an enabling environment for employee empowerment. Empowering employees is a desirable managerial practice particularly in higher education where both academic and non-academic employees directly interact with different stakeholders to deliver services and thus influence organizational functioning and effectiveness. The University under study was taken as an organizational unit stressing on employees' PE, PA and OCB as a whole.

The respondents for the study were selected conveniently from teaching (73%) and non-teaching (27%) category. Those who were willing to participate were surveyed. The researcher

distributed 450 questionnaires in different departments of the university both personally and through Google docs via mail with a note explaining the general purpose of the study and method of filling up the questionnaire. After a fortnight or so, the researcher went to collect the filled in questionnaires. In certain cases, she had to do repeated follow-ups. Few responses were also auto collected through Google drive. After 6 months of the initiation of data collection, we received 356 completely filled in responses (response rate 79%). All responses were subjected to outlier elimination and scale standardization. Finally, 323 responses were used for further analysis. This sample size was adequate to run factor analysis and structural equation modelling as the variable to sample ratio was 1:7 which met the specification of Rummel (1970) and Schwab (1980).

Obtained sample of 323 was found to be a representative sample covering respondents from each category with adequate proportion. The sample characteristics presented in table 1 reveals that the percentage of males was more (male=63 %; female= 37%); the majority of the employees were belonging to the age group 23-46 years and very few were above 58 years and above age group (3%). Total years of working experience of the employees and their tenure in organisation ranged from < 1year to 40 years and <1years to 20 years respectively (Table 1).

**Table 1. Sample profile**

Demographic Variables	Frequency	Percentage (in %)
<b>Age</b>		
23-34 years	147	46
35-46 years	140	43
47-58 years	27	8
59-70 years	9	3
<b>Gender</b>		
Male	202	63
Female	120	37
<b>Professional Category</b>		
Academic Staff	236	73
Non-Academic Staff	87	27
<b>Total Work Experience</b>		
0-13 years	227	70
14-27 years	85	26
28-41 years	11	4
<b>Tenure in the current organization</b>		
0-7 years	249	77
8-15 years	61	19
16-23 years	13	4

### Measures

The questionnaire used in the study included demographic measures and scales to measure Organizational citizenship behaviour, Place attachment and Psychological empowerment.

**Psychological empowerment (PE) Scale:** PE was measured using a 12 item standardized scale by Spreitzer (1995) based on his four dimension –Meaning, Competence, Self-Determination, and Impact. The scale was modified slightly based on comments from a pilot study. After exploratory factor analysis on the sample, it extracted four dimensions conforming to the

original dimensions of the scale with a cumulative percentage of 70.37 %. The scale was found to be reliable scale with Cronbach alpha score of 0.77 (Table 2).

**Place attachment (PA) Scale:** PA refers to a positive emotional bond between individual, group and environment (Altman & Low, 1992). Based on this conceptual definition, a 6 item scale measured in 7 point likert scale was developed by the researcher to measure PA. The items and the factor loading are presented in table 2. It is seen that all items loaded significantly and the cumulative percentage and KMO are in appreciated range (Cronbach alpha= 0.88).

Table 2. Exploratory factor analysis and reliability test of independent variables

		F-1	F-2	F-3	F-4	F-5
<b>Place Attachment scale</b>						
B1	I feel this organization as my second home.	.783				
B2	I am very much attached to each part of this organization.	.805				
B3	I can easily relate to each activity of this organization.	.645				
B4	I feel proud of being an employee of this organization.	.777				
B5	This organization takes care of all my requirements.	.701				
B6	I consider myself as an integral part of this organization.	.845				
<b>Psychological empowerment scale dimensions</b>						
<b>Meaning</b>						
C1	The work I do is very important to me.			.718		
C2	My job activities are personally meaningful to me.			.852		
C3	The work I do is meaningful to me.			.832		
<b>Competence</b>						
C4	I am confident about my ability to do my job.				.778	
C5	I am self-assured about my capabilities to perform my work activities.				.807	
C6	I have mastered the skills necessary for my job.				.710	
<b>Self-Determination</b>						
C7	I have significant autonomy in determining how I do my job.		.788			
C8	I can decide on my own how to go about doing my work.		.841			
C9	I have considerable opportunity for independence and freedom in how I do my job.		.779			
<b>Impact</b>						
C10	I have a great deal of control over what happens in my department.					.847
C11	I have significant influence over what happens in my department.					.883
Eigen Values		5.72	2.07	1.76	1.38	1.01
Cumulative percentage		22.27	35.59	48.12	59.79	70.37
Cronbach Alpha		.88	.82	.77	.70	.81
KMO		.86				
Bartlett's test of Sphericity		2424.67*** (df=136)				

**Organizational Citizenship Behaviour (OCB) Scale:** OCB was measured by 41 statements using a seven-point Likert scale with 1 representing 'Strongly disagree' and 7 representing 'Strongly agree'. The OCB scale was designed and modified by adopting scale items of Pattanayak, Mishra, and Niranjana (2003) and Podsakoff, MacKenzie, Moorman & Fetter (1990). However, after normality check, few items were deleted from the 41 items. Exploratory factor analysis was again conducted on the remaining items and insignificant loadings were removed for further analysis. For

the final analysis, 14 items loaded significantly on four dimensions. The extracted dimensions were named as *Organizational Ambassador*, *Work Involvement*, *Civic Virtue*, and *Conscientiousness*. The scale was found to be a reliable scale measuring OCB with a Cronbach alpha score of 0.72. The Kaiser-Meyer-Olkin measure of sampling adequacy for the scale was 0.79 which was above Kaiser's recommendation of 0.50. Bartlett's Test of Sphericity showed that the correlation between questions is sufficiently large for factor analysis (Table 3).

Table 3. Exploratory factor analysis of OCB scale

Sl. No.	Items	F-1	F-2	F-3	F-4
<b>Organisational ambassador</b>					
A39	I actively promote organisation products or services to outsiders.	.70			
A34	I tell outsiders that this is a good place to work.	.79			
A33	I read and keep up with the organisation announcements, memos and so on.	.67			
<b>Work involvement/personal industry</b>					
A17R	I take long and extra breaks.		.73		
A21R	I waste organisational resources while working.		.64		
A20R	I do not meet all deadlines set by the organisation		.67		
A37R	I avoid taking extra duties and responsibilities at work.		.65		
<b>Civic Virtues/Loyal boosterism</b>					
A6	I defend the organisation when others criticize it.			.67	
A7	I represent the organisation favorably to outsiders.			.41	
A19	I am part of committees where participation would reflect favourably on the organisation.			.58	
A30	I take steps to prevent problems with other colleagues.			.67	
<b>Conscientiousness</b>					
A14	I produce as much as I am capable of producing at all times.				.64
A16	I do not abuse the right of others.				.72

A10	I do not spend a great deal of time in conversation with family and friends during work hours.				.65
Cumulative Percentage		15.26	29.40	41.45	51.62
Eigen values		3.30	1.63	1.23	1.06
KMO		.79			
Bartlett's Test of Sphericity		683.81***			
Cronbach alpha		.68	.64	.58	.44
Total scale reliability		.72			

**Results**

Descriptive statistics, Pearson's correlation and Structural Equation Modeling statistical tools were used to analyse the data. All analyses were done with the statistical packages SPSS 24.0 and AMOS 23.0 . Bi-variate Correlation results (Table 4) revealed that PE (Mean=66.32; SD=6.99) was significantly correlated with all four dimensions of OCB. This indicated that emotional bonding of individuals

with organizations instilling a sense of belongingness and enhances their obligation towards organizations thus boosting the 'extra role behaviours' such as obeying the rules, showing dedication to work and spreading positive word of mouth about the organization. PA (Mean = 36.79; SD=5.63) was also found to be positively correlated with OCB. This implied that more the individual had positive cognitive evaluation about the job and workplace, the more s/he displayed OCB.

Table 4. Descriptive statistics and Correlation among studied variables

Sl. No	Variables	Mean	SD	PA	PE	OCB F1	OCB F2	OCB F3	OCB F4
1	PA	36.79	5.63	1.00	0.54**	0.65**	0.20**	0.50**	0.13**
2	PE	66.32	6.99		1.00	0.48**	0.19**	0.40**	0.17**
3	OCB F1	18.73	2.61			1.00	.27**	.47**	.22**
4	OCB F2	23.33	4.95				1.00	.22**	.22**
5	OCB F3	24.85	2.89					1.00	.24**
6	OCB F4	18.30	2.70						1.00

N=323

\*P ≤ 0.05; \*\*P ≤ 0.01 (Co-relation is significant at 0.01 level(two-tailed))

To test the causal relationship between independent variables and four dimensions of the dependent variable, structural equation modelling was done using AMOS 23.0 (fig 1). As the

fourth dimension of PE scale had 2 items, we had deleted the dimension in the SEM model to get better results. Model fit summary of the SEM analysis (Table 5) of the studied model reveals

that all the fit indices such as CFI, GFI, CMIN/df and RMSEA were in the acceptable range to confirm the model as a fit model (Hair, Anderson, Tatham & Black, 1998).

It is also observed from the table 5 that PE positively influenced (CR= 4.49; p<.001) OCB. The path between PA and

OCB was also found to be significant (CR= 3.54; p<.001). Thus, both hypotheses of our study were proved. This implies that psychologically empowered employees display more of OCB (H1) and when the employee's attachment to the place (organization) increases, their OCB level also increases (H2).

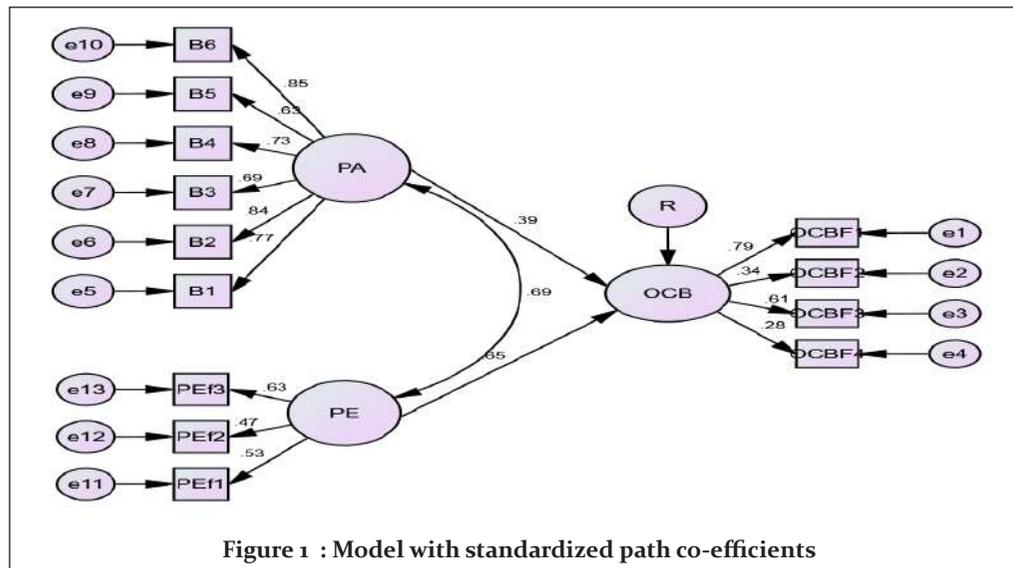
Table 5 . SEM results of the studied model

Hypothesized paths			Estimate	Standardized Estimates	S.E.	C.R.
OCB	<---	PA	.84	.39	.24	3.54***
OCB	<---	PE	.83	.65	.19	4.49***
OCBF1	<---	OCB	1.00	.79		
OCBF2	<---	OCB	.82	.34	.14	5.76***
OCBF3	<---	OCB	.84	.61	.08	10.40***
OCBF4	<---	OCB	.37	.28	.08	4.67***
B1	<---	PA	1.00	.77		
B2	<---	PA	1.02	.84	.07	15.72***
B3	<---	PA	.83	.69	.07	12.50***
B4	<---	PA	.78	.73	.06	13.49***
B5	<---	PA	.86	.63	.08	11.41***
B6	<---	PA	1.05	.85	.07	15.99***
PEf1	<---	PE	1.00	.53		
PEf2	<---	PE	.79	.47	.13	6.16***
PEf3	<---	PE	.68	.63	.09	7.30***
Model Summary						
X <sup>2</sup>	df	CMIN/df	NFI	GFI	CFI	RMSEA
170.59	62	2.75	.90	.93	.93	.07

**Discussion and Conclusion**

The study first investigated the role of PE on OCB of the employees, both academic and non-academic staffs in a private academic university in the Indian context and further how attachment to a place also

influences one's OCB behaviour. In today's competitive era, there has been a drastic change in the way educational institutions are operating in developing the teaching, research, administrative and infrastructural capabilities. Thus, in order to meet the



objectives of high performance and effectiveness in terms of ranking and visibility of educational institutions in the academic environment, there is a need for showcasing extra value added behaviours from employees in achieving the targeted goals. In addition to the existing job roles, innovative extra work behaviours such as OCB is also important to contribute towards efficient functioning of the organization under study (Kagaari & Munene, 2007; Kasekende, Munene, Otengei & Ntayi, 2014; Oplatka & Stundi, 2011). For the purpose, understanding factors contributing to such work behaviours is highly crucial.

PE was found to be a strong predictor of OCB. As explained by Sprietzer (1995) psychologically empowered employees influence their jobs and work environments in more meaningful ways. They can foresee and execute roles that are not usually included in formal job

roles. Such attributes of psychologically empowered individuals also helped them exhibit more voluntary extra-role behaviours. The relationship between PE and citizenship behaviour was found to be significant and consistent with many of the previous studies (Bogler & Somech, 2005; Islam, Khan & Bukhari, 2016; Park, Moon, & Jung, 2017).

The studied variable in the present study with PA is a new area of study contributing to the literature of OCB. In the data analysis, PA was found to be positively influencing all the dimensions of OCB. In other words, when employees develop positive affective bonding with the surrounding, their display of OCB enhances. Previous studies in academics have reported job satisfaction and commitment of teachers enhances their OCB (Sasen & Basim, 2012). For Sasen and Basim (2012) job satisfaction implies employee's reaction to specific aspects of the work

environment and commitment is the positive emotional reaction to the positive appraisal of the environment. It is needless to say that PA develops in individuals with positive emotional appraisal about the environment on the basis of their past memories of a series of events (Manzo, 2005). And people with high level of attachments to place have been found to be spreading positive word of mouth about a city (Chen, Dwyer & Firth, 2014); and showing pro-environmental behaviour and civic engagement (Buta, Holland, & Kaplanidou, 2014). Inconsistent with these studies we found that PA enhanced the display of OCB which also incorporated above dimensions of human behaviour at the workplace.

### Implications of the study

The findings in the present study have useful implications for all the stakeholders involved with the working of the educational institutions both in a direct and indirect manner. Since the display of citizenship behaviours is linked to organizational success, management must take the responsibility of increasing the OCB of both the academic and non-academic staffs at the university level. The findings reveal that PE and PA influence individuals' exhibition of OCB in universities. Keeping this in view, the competent authorities must create an environment where employees feel more psychologically empowered and develop an emotional attachment to the work environment so as to enable them to display such extra role voluntary behaviours. Exhibition

of OCBs at a university level will not only entrust faith but also increase demand among various stakeholders, mostly students and parents.

Previous studies in academic context, specifically in school context have offered suggestions on how to create a conducive environment so as to enhance the OCB of its teachers (Bogler & Somech, 2005; Kasekende, Munene, Otengei & Ntayi, 2014; Magdalena, 2014; Li, 2013; Oplatka & Stundi, 2011). Few other studies have also indicated other factors that contribute to OCB at the university level (Jiang & Fu, 2011; Kagaari & Munene, 2007). Since OCB has a significant impact on both individual and organizational performance; it is important for policymakers to formulate practices which would encourage employees to develop a positive outlook towards the organization and accept responsibilities so as to increase employees' PE and emotional bonding to the work environment which in turn will influence their OCB behaviours.

In this study, it is found that if employees have more PE and a high degree of PA, they are likely to exhibit OCBs thus showcasing valuable outcomes for all the internal and external stakeholders involved in the academic industry. However, despite all the impact OCB has on organizational and individual performance, management should take care while attaching importance to OCB which may overlap with existing job roles of the academic and non-academic employees.

Although the present study reflects on the important implications about the relationship between PE, PA & OCB at the university level, we shall acknowledge certain limitations of the study. The study was conducted in a particular university context in India, thus we cannot generalize the findings to larger work and cultural context. Second, the measurement was based on a self-report which might have

accounted for certain bias. Thirdly, the study was a cross-sectional study which may not be adequate to explain how attachment is formed over a period of time and that gradually enhances the OCB. Hence, in the future, longitudinal studies can be conducted on this. In spite of the limitations, the study provides significant findings and certain novelty that can be used in the similar university context and other contexts.

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## Technological Fitness for usage of Self-Service Technologies in Commercial Banks - A Study of District Amritsar

**Anoop Mohanty**

Assistant Professor, Mittal School for Business,  
Lovely Professional University, Phagwara,  
Dist. Kapurthala, Punjab. 144411  
Anoop.mohanty@gmail.com

**Rupesh Roshan Singh**

Associate Professor, Mittal School for Business,  
Lovely Professional University, Phagwara,  
Dist. Kapurthala, Punjab. 144411  
rupeshroshan1983@gmail.com

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### Abstract

The sustainability of automated banking is based on individual technology readiness to adopt technology products. Service delivery platforms are customized according to the end users capabilities. This study analyzes consumer's readiness level for e-lobby banking model to operate self service terminals. Primary data was collected using purposive sampling through e-lobby intercept method from service locations across Amritsar. Cluster analysis has been used to map consumer groups based on technology readiness. This study contributes for the development of future sustainable models of banking with lesser human intervention, operational cost, and risk empowering customers for decision making. The research study has certain limitation. First one is the research study have restricted to commercial banks catering customers using self service terminals only in district Amritsar, Punjab only due to the technical nature of study, secondly the research study has mainly used data from respondents of public sector banks like SBI, PNB, OBC and third is, the sample size taken for research study is two hundred low as compared to the population of Amritsar.

**Keywords** - Self Service Technologies, E-lobby, Technology readiness, Sustainability.

### Introduction:

#### Technological development in service industry

Technological has revolutionized the whole service industry and this change has led to the era of "e-service" (Rust, R. T., & Kannan, P. K. (Eds.). 2002). Transformation is eminent for saving time, money and efforts so as to maximise efficiency enabling sustainability in competitive era. In order to bring sustainability and to enable efficient operations, significant investments in the field of informational technology are being made by most of leading banks. Technology supports the institutional players to carry out transition from traditional models to dynamic delivery channels managing their key activities involving customer relationship, procurement and application of resources etc. Traditional models lacking dynamism, increased cost factor is unable to cope up with the change hence change management is leading factor for an institutional sustainability. Technology adoption is not a choice rather it's mandatory for a long term existence in competitive market. Technological support platform has brought in trust and confidence among its users. Willingness to adopt and use by people needs to be increased with advancement of user friendly technologies (Meuter et al., 2003). Millennial has witnessed technology outburst since birth, but for middle aged and senior citizens especially illiterate rural masses it's difficult to adjust to the latest technological revolutions.

#### Self-service technology as a concept

Self-service platforms were initiated in banking with the advent of automated teller machine. Traditionally cash transactions were only possible with teller intervention but with the introduction of automated teller machine gradually users has adopted the new interface and reliance on teller has come down drastically limited only to rural areas and branch premises. A customer driven interface used for fulfilment of requirement services without direct indulgence of banking staff is known as a Self-service Technology (Meuter et al., 2000). With the passage of time, financial institutions across India have started offering technology based self-service facilities to its users. The services accessible to customers through electronic channels, without any bank employees interaction is referred as Self Service Technologies. In given context, SST's includes e-lounges enabled points comprising of ATM, CDM, Passbook printer facility and Cheque deposit facility. E-Banking lounge services has created a win-win situation for banks and their customers as per unit transaction costs has been reduced with resulted lesser customer load on branches. From the point of view of customers, it has created value by providing 24 x 7 banking services from any place. Most of the banking organizations are using this SST technology for customers' satisfaction, retaining loyalty, increasing productivity, saving the costs and increasing revenue from attracting more customers. Measuring quality of

these services and studying its impact on users continued intention on self-service technologies has become a key area of interest of bank managers and researchers, as it has a cascading effect on institutional performance and profitability (Sahay, B. S., Seth, N., Deshmukh, S. G., & Vrat, P. 2006), Al-Hawari, M., Ward, T., & Newby, L. 2009)

Self service technology is successful only if the existing and potential users are willing to use it. Initial investment in advance technologies would be very costly, adoption of the same by users is must for its sustainability. The concept of individual technology readiness (Parasuraman, 2000) indicates individual's internal factors responsible for motivating and restricting the user from technology adoption. Various studies have highlighted the relevance of optimism, innovativeness, discomfort and insecurity as main dimensions of individual technology readiness.

### Customer expectations and service industry

A service incorporates wider perspective of banking, insurance, information services, transportation, education, legal assistance, bookkeeping and travel industry. Services are deeds, valuable actions or efforts that one performs in order to satisfy a need or to fulfil a demand. An act by an individual or an institution in order to improve and retain the level of well-being of people can be defined as a service (Hasenfeld, Y., & English, R. A. 1974). Thus, it's

evident on part of service industries to emphasize on customer centricity. A service institution may obtain great heights of success by exceeding the expectations of customers by delivering higher value than its competitors. Similarly the concept of service area is enormous and differed by variety of demographic factors like gender, age group, literacy rate, previous experience, income, occupation etc. Hence sustainability in competitive era is possible through customized offers taking care for diversity. Technology has penetrated in everyone's daily life. People are now more inclined to the use of technology at home and at work. Generally, there are four aspects of individual technology fitness i.e. optimism, innovativeness, discomfort and insecurity. Individuals differ in their propensity to adopt new technologies - and thus the paper integrates technology readiness index (TRI) with SERVQUAL model to study user technological fitness and continued usage of self-service technologies among users.

### Objectives

- i. To understand the usage pattern of e-banking lobby.
- ii. To group the users' based on individual competitiveness for using e-lobby service points and group users based on skill set.

### I. Research Methodology

**Area of study:** The study identifies the customer technological readiness and continued intention towards self-

service technology (E Lobby services) within the users of commercial banks in the district of Amritsar. As a tourist destination, all commercial banks in Amritsar offer a variety of services using self-service technologies to reduce delivery time and operational costs. According to 2011 census, Amritsar city's average literacy rate is 84.19 % followed by digital advancement which is better as compared to other districts in Punjab. Therefore, the focus is to discover appropriate demographic segments where the SST's has and has not been extensively adopted and where the services can be improved in order to make people technologically fit.

**Sample Size:** The data has been collected from 200 respondents from Amritsar district of Punjab. The respondents consist of university students, shopkeepers, retired individuals and other people who visited kiosks and ATM's for doing banking transactions. Sample trait is defined as user of self-service technology developed by the banks hence respondents were chosen accordingly.

**Sampling Technique:** Purposive sampling method has been used to collect the data. Respondents were identified using E-Lobby intercept method.

### II. Review of Literature

**Individual Technology Fitness:** Technology has penetrated in everyone's daily life. People are now more inclined to the use of technology at home and at work. Generally, there

are four dimensions of individual technological fitness i.e. optimism, innovativeness, discomfort and insecurity. Individuals differ in their propensity to adopt new technologies (Rogers, 1995) and thus the paper integrates technology readiness with service quality model to study user technological fitness and continued usage of self-service technologies among users. In order to examine the technology-related attitudes and behaviours of the customers of their client companies, Parasuraman and Rockbridge Associates with focus on two verticals of customer-centric and employee centric technology developed Technology Readiness Index (TRI). (Ramayah, et al. 2003). This was a multiple-construct scale used to measure people's competitiveness to adopt technology. Technology readiness tells about the individual's inclination to adopt and utilize updated technologies for achieving goals in life at home and at professional work (Parasuraman, 2000). Parasuraman finally developed a 36-items technology readiness index (TRI) scale consisting of four dimensions of Optimism, Innovativeness, Insecurity and Discomfort.

**Optimism** Optimism is considered a positive driver for embracing the technology. The standard definition used of optimism is given by Parasuraman (2000) in his TRI paper according to him Optimism is in context of updated technology and a positive sense of belief that it offers users increased control, flexibility, and efficiency in their decision making.

Optimism is also defined as the degree of beneficial outcome that users expect to gain from technological adoption (Yen, 2005; Bessadok, A., 2000; Kaur Sahi, 2013, Mohanty, A. 2019). It is a positive driver that encourages people to use technological products/services and hold positive attitudes toward technology (Lin, 2012). Optimism extends to increased flexibility, control and efficiency in the people's life (Taylor, 2002; Kaur Sahi 2013). Customers' empowerment feel is very important resulting in adoption of technologies due to the sense of enhanced control of services (Bateson, J. E. G., & Hoffman, K. D. 1999). Optimism is directly related to the clarity of institutional business strategy and can enhance the user's ability to accept the change (N. Dahlan, T. Ramayah, and L.L. Mei, 2002). However, highly optimistic users accept new technologies regardless of its perceived usefulness (Yi, Y., Tung, L. L., & Wu, Z, 2003, Tsikriktsis. N 2004). Owner/managers are optimistic and are trying to embrace newer technologies (Ramayah, T., Jantan, M., Roslin, & Siron, R 2003)

**Innovativeness:** It is also taken as a positive driver of technology. Innovativeness is a tendency to be a pioneer in technological adoption and thought leader definition given by Parasuraman (2000). Researchers expound innovativeness as the propensity to become a leader in using new technology (Yen, 2005; Taylor, 2002; Kaur Sahi 2013). It is a positive driver that encourages people to hold positive attitudes toward technology (Lin, 2012). It is the authority of using

technology (Bessadok, A., 2000). Innovativeness is directly related to user's skill set, understanding and experience suggesting that skills on latest technologies can enhance the users' ability to manage change. (N. Dahlan, T. Ramayah, and L. L. Mei, 2002; Mohanty, A. 2019). Innovativeness does not interact with perceived ease of use to influence behaviour and usefulness of a technology is not important for its acceptance by users. (Yi, Y., Tung, L. L., & Wu, Z, 2003, Dabholkar and Bagozzi 2002). Male owners/managers tend to be less innovative as compared to female owners/managers (Ramayah, T., Jantan, M., Roslin, R. M., & Siron, R., 2003) and is actually defies that accepted norm that males are more techno-savvy (Ramayah et al. 2002, Dahlan, T. Ramayah and Koay, 2002; Teo, T. S., & Pok, S. H., 2003; Ono and Zavody, 2002).

**Discomfort:** Discomfort act as a negative driver of technology (Mohanty, A. 2019). According to Parasuraman (2000) discomfort is denoted as a sense of lack of control over technology. People avoid adopting new technology because they may feel lack of control over the technology and they are overwhelmed by it (Yen, 2005; Taylor, 2002; Kaur Sahi 2013). Discomfort is the doubt and concerns about the ordinary people experience with technology (Lin, 2012). Discomfort is known as an inhibitor of technology which means that users who are highly uncomfortable with technologies. Individuals are unsatisfied due to the belief that they are controlled by technology which is not designed for

common people. Individuals with low comfort using new technologies are associated with relatively great complexities and uncertainties (Gefen et al. 2003). Pioneers' actual adoption of technology-based services is held back by their high discomfort. (Tsikriktsis N. 2004). Male managers experience more discomfort than female managers, also young and degree level education managers experience less discomfort than old and master level managers. (Ramayah, T., Jantan, M., Roslin, R. M., & Siron, R., 2003).

**Insecurity:** A negative driver which inhibits people's adoption of technology is insecurity, defined as scepticism and technological distrust about its ability to work properly (Parasuraman, 2000). Insecurity is distrusting technology and being sceptical of its performance (Yen, 2005; Taylor, 2002; Kaur Sahi 2013). It involves dander, risk and doubt (Parasuraman, Zeithaml, and Berry, 1985). Insecurity is the associated with the online-transactions or technology-based transactions (Yang, 2004; Lin, 2012). Insecurity does not interact with either perceived ease of use or perceived usefulness to determine behaviour intention (Yi, Y., Tung, L. L., & Wu, Z, 2003). Male managers feel more insecure than female managers, also young and degree level education managers experience less insecurity than old and master level managers. (Ramayah, T., Jantan, M., Roslin, R. M., & Siron, R., 2003). Pioneers' actual adoption of technology-based services is held back by their high insecurity towards self-service technologies. (Tsikriktsis N. 2004).

**Service Quality:** Along with the above given TRI constructs we have other constructs that form basis for measuring technology readiness. Service quality is one of the attributes for assessing service in general, because of technology-related feelings (especially apprehensions) imbricate with the criteria that customers use in judging service quality (Parasuraman, Zeithaml, and Berry, 1985). Service quality is operationalised via two distinct and well-known measures -SERVQUAL and Technical/Functional Quality. These two measures are compared to predict customer satisfaction (Lassar, W. M., Manolis, C., & Winsor, R. D, 2000). Service quality is measured using SERVQUAL model. This model includes:- Tangibles, Assurance, Empathy, Reliability, Responsiveness (Williams, C., 1998). Service quality is a winning strategy in tourism industry for the youth (Augustyn, M., & Ho, S. K, 1998). Electronic form of service quality is measured i.e. e- service quality and it positively and directly influences e-loyalty (Ribbink, D., Van Riel, A. C., Liljander, V., & Streukens, S., 2004).

**Customer Satisfaction:** Electronic form of Customer satisfaction is measured. Generally concluded whether customer is happy with the online services provided by the company, the web site of the company is pleasing, are the customers contented with the company's online services and are the customers happy with the online company. E-Satisfaction directly influences the e-loyalty (Ribbink, D., Van Riel, A. C., Liljander, V., & Streukens, S., 2004). The study was

to evaluate physician satisfaction. It measured whether user is satisfied with improved efficiency through CPOE system and whether they are totally satisfied with overall input (Yui, B. H., Jim, W. T., Chen, M., Hsu, J. M., Liu, C. Y., & Lee, T. T., 2012).

**III. Data analysis and Results**

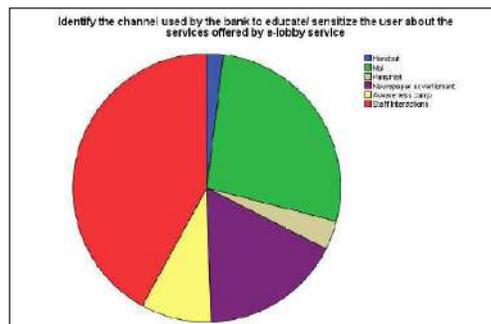
**Table I- Gender percentage**

	Fre- quency	Percent	Cumu- lative %
Male	102	51	51
Female	98	49	100
Total	200	100	

Source: Author's Calculation based on the questionnaire feedback.

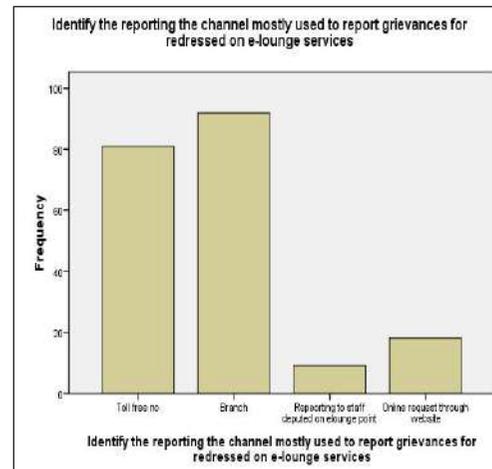
**Findings:**

Here, it is evident that majority of the respondents come to know about these services through staff interactions followed by mails. Out of 200, approximately 45% of the respondents have bachelor's degree followed by 30% of the respondents with post-graduation degree.



It shows that the person having a higher level of education involves themselves more in latest banking technologies.  
Source: Data Collected using Schedule.

**Table II: Grievance reporting channels**



The stated table represents the preferred mode of reporting complaints in case of grievances. Visit to branch has taken the lead followed by toll free mode as preferred platform to express one's grievances' schedule.

**Cluster Analysis: Technology fitness groupings**

A non hierarchical cluster analysis (k means clustering) was conducted on the four factors scores comprising the reduced item of technological readiness index scale.

**Table III No. of cases in each cluster with percentage**

	Fre- quency	Percent	Cumu- lative %
Cluster 1	130	65.0	65.0
Cluster 2	31	15.5	80.5
Cluster 3	39	19.5	100.0
Total	200	100	

Source: Author's Calculation based on the questionnaire feedback.

Mean values for traits, differences among the TRI comprised four factors have been calculated in order

**Table IV Average Mean- TRI Sub-Factors across clusters**

Cluster	65%	15.5%	19.5%
Optimism	2.34	3.08	3.27
Innovativeness	4.21	3.56	3.83
Discomfort	4.09	2.34	3.29
Insecurity	2.22	2.76	3.33

Source: Author's Calculation based on the questionnaire feedback.

Using the mean factor scores, identification has been processed for a total of three clusters with homogeneous groups displaying similar kind of traits. However, homogenous characteristics exist in inter groups and heterogeneous characteristics exists in intra groups. Primarily, grouping has been done based on factors affecting adoption of Self-service technologies (i.e. User satisfaction, Service quality and Trust dimension). The following three clusters are identified as:

**Cluster Classification.**

**Cluster 1: Pioneers - 65% of the sample:** This group of people have a very optimistic approach towards technology and believe that it is beneficial to their lives. They are aware about the latest banking technologies and feel safe regarding security issues. They are relatively early adopters of technology and have a low level of discomfort associated with self-service technologies. This cluster comprises the largest segment of the sample.

**Cluster 2: Sceptics - 15.5% of the sample:** After a thorough analysis of the variables falling under this cluster, it is analyzed that these people show resistance towards adopting new banking technologies. They tend to use traditional banking and are not convinced that technology can be an added advantage to their lives. With moderate level of discomfort and high level of insecurity, they tend to have a different attitude towards life.

**Cluster 3: Audacious - 19.5% of the sample:** After a thorough analysis of the variables falling under this cluster, it is analyzed that these people are also having an optimistic approach towards new banking technologies and believes it increases their efficiency. However, they lack self-belief in making the technology work efficiently and also are not assured of the reliability of technology. They also feel discomfort in using new technologies. Despite this, they keep on desiring for new technologies and are very adventurous in nature

**Table V- KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.807
Bartlett's Test of Approx. Chi-Square	6.536E3
Sphericity	Df: 2016
	Sig. .000

KMO value less than 0.6 indicates data inadequacy. The KMO value is 0.807 which is meritorious that states the data are suited and adequate for factor analysis. Bartlett's Test compares correlation matrix to the identity matrix. The significance value should

be less than 0.05. Here the significance value is 0.000 that means there is very less redundancy between the variables. Based on principal component analysis

extraction method a total of 11 factors have been extracted and the total variance that 12 factors are able to explain out of data is 68.852

**Table VI: Factors derived**

S No	Factor Name	Item Code	Loading factor	Traits / characteristics
1	Materiality	TA8	.803	Group highlighted with the concept of tangibility. The physical appearances of e-lobbies have significant impact on the service experience. Users think on facility maintenance and convenience to conduct transactions. Occasionally, providing irrelevant information.
		TA1	.767	
		TA7	.757	
		TA5	.707	
		TA2	.690	
		TA4	.579	
		TA6	.559	
2	Convenience seeker	EM5	.762	E-lobbies services offer better accessibility with clear demarcations having convenient operating hours. This group requires user specific organized information
		EM3	.746	
		EM6	.736	
		EM2	.703	
		EM4	.688	
		EM7	.685	
		EM1	.514	
3	Personalized service requirements	Res51	.785	E-lobby service users requiring users' specific customized offerings in regional languages.
		Res50	.713	
		Res49	.706	
		Res52	.659	
4	Efficient Users	Rel24	.768	E-lobby users opting for fast services, saving time, money and efforts with real time updates
		Rel23	.750	
		Rel25	.734	
		Rel26	.551	
5	Delighted Users	Sat54	.745	User group satisfied with e-lobby services with exceeding their level of expectation and belief that banks are experienced and require stringent regulations compliance for offering such services
		Sat55	.688	
		Sat56	.666	
		Tru60	.481	
		Tru62	.430	
6	Anchor Group	Tru65	.687	User group with strong trust on e lobby services as compared to branch banking provided by the banks. And holding a strong belief that such initiatives are equally beneficial for both service providers and users
		Tru63	.640	
		Tru64	.519	

7	Privacy Seekers	As30 As31 As32	.740 .691 .487	Usage behaviour related information of customers is not disclosed to third party increasing the credibility of E lobby model.
8	Annoyed Users	Tr15 Rel22	.737 .707	User group feeling distress due to slow processing of e-lobby machines. Service delivery inconsistency leads to embarrassment
9	Earnest Users	As29 As28 Res48	.652 .406 .400	User group with assurance of uniformity of services and standardized delivery by e-lounges.
10	Definitive	As27 Tru61	.603 .400	User group with precise information about the functionalities and privacy policies relating to E-lobbies.
11	Security Seekers	Tr17 Tr21	.795 .463	User group feel that offsite locations without security guards are secured. E-Lobby service points are temper proof.

## CONCLUSION

Self-service technology in India is expected to become much more important as the organisations strive to reduce their operational costs and are looking to enhance their services, otherwise they will be out of the competition. Thus, to remain competitive in this ever changing environment, organisations are becoming customer-centric. Organisations are required to continually assess how consumers tend to behave to a newly introduced self-service technology that they offer. This study has examined various factors of technology readiness that may affect the readiness/competitiveness of the various types of customer to use e-lounge service (a SST) to carry out their banking transactions. The levels of optimism, discomfort and insecurity towards using the services of e-lounges

(Self-service technology) appear to be either a support or an obstacle to the dispersal of innovative banking self-service technology for most of the consumers within the banking system. Thus, the banking organisations are required to take actions towards various types of consumers in order to enhance their usage of self-service technologies and this would be possible through taking advantage of the contributors of the technology to reduce or address the inhibitors of the technology. It can be concluded by saying that India is developing but people still prefer to do traditional banking. Only the youth generation understands the importance of these self service technologies. Thus, proper training should be there for the older generation to make them adopt to these technologies.

### PRACTICAL IMPLICATIONS:

This study contributes to the understanding of the aspects affecting the adoption of self-service technologies. The findings should be useful to the banks either entering or expanding their technology base in Amritsar or other similar regions in Punjab. In many cases, the biggest challenge for banks introducing the new technologies throughout is to make consumers use of the same. The individual readiness constructs seems to be capable enough tool for analyzing the probability of consumers using E-lounges in their daily transactions.

Banks need to take a number of measures to encourage people who visits branch regularly to use and adopt banking self-service technologies. Firstly, it should be make sure that people are aware of these services because many researches has shown that less awareness of new technologies is an obstacle to acquire many potential users.

People should also understand the advantages of using new technologies. Most customers of banks will not be using these new technologies unless they perceive a benefit out of the same. This is especially true in case of Sceptical consumers (15.5%). A sceptical consumer seems to be highly affected by the potential loss of his/her privacy. Thus, banks have to put stress on informing them that how safe the self-service technologies are with regards to protecting their individuality. Once the insecurity linked with these

self-service technologies is decreased, their adoption would go smoother. Banks are also need to reduce the level of discomfort of the consumers. This seems to be very insignificant for the largest segment i.e. responsive consumers (65%). These types of users are most likely to try new technology based self-service technologies in order to do a number of transactions, thereby reducing the operational cost of the banks. Delivering proper know-how regarding how these self-service technologies works would have an influence on the consumer decision making process and it will also lead to increase in trust among the users with regards to technology. In order to capture the audacious consumers (19.5%), banks should take necessary measures to make them aware of all the aspects.

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## Demographic Factors, Level of Awareness and Banking Service as Intervening Factor: A Study of SBI in Cuttack City, Odisha

Aditya Prasad Sahoo

PhD. Research Scholar, KSOM, KIIT University  
adityasahoo007@gmail.com

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### Abstract

The Indian banking industry has transformed into one of the promising industries that offer services through multiple channels with the help of information systems and technology. Banking is essentially a high contact service industry and there is close communication between service providers to customers. Customer awareness and satisfaction about financial products and services are very crucial for the success of any Bank. The current banking technology allows the customer to buy products or consumer services using their bank account and other services from any place. The study aims to trace the usage behaviour of various services by a different class of customers and their satisfaction towards the services rendered by Banks. The present study is completely Descriptive. Both primary, as well as secondary data, were used for the study. State bank of India (SBI) was selected based on the ground of concentration of public sector Banks in that area. It is found that all the demographic variables are strongly related to the level of awareness towards banking products and services.

**Keywords:** SBI, Awareness, Financial products, Correlation, Percentage Analysis

### Introduction

A bank is a type of monetary institution that takes deposits, offers loans, and engages in other financial operations. Banking is essentially a high contact service industry and there is close communication between service providers to customers. Customer awareness and satisfaction about financial products and services are

very crucial for the success of any Bank. Customers' attitude very small distinction in the financial services rendered by the banks and even new age banking service offering is very rapidly matched by national and international players. Indian Banks like any other service providers determined to increase customer preservation and

have considerable contact on profits exceeding customer expectations.

The services of banks is an implicit suggestion that is entirely reliant on and inextricably linked to the consumer. Indian banking is a typical and competitive market, where individual customers mostly prefer local and public sector commercial banks. It is an attractive banking market segment having age, income, occupation, family size, and territorial areas-based customers. It encompasses various financial products i.e., different types of deposit account, loan accounts, Demat, Mutual fund, Insurance services, credit & debit cards, ATMs, internet banking's, mobile banking, etc. "Banking services comprise a combined type of offering that consists of both tangible goods like loan schemes, the interest rate paid, kinds of accounts, and the intangible services: behaviour and employee's efficiency of the staff, speed of transactions, the ambience (Krupa ME, and Rajasekaran R., 2015)".

## 2. Review of Literature

**Krupa and Rajasekaran (2015)** studied "A Study on Customer Awareness Towards E-Banking Services in Coimbatore City". This research looked at the banking business, which has seen amazing changes as a result of the vast advancements in technology. In today's world, almost all banks provide services via an online platform known as E-banking from inception to delivery. The banking sector is undergoing significant changes as a result of e-banking. Even if all banks,

both public and private, provide e-banking, the primary concern is whether users are aware of all of their banks' e-banking offerings. As a result, research into customer understanding of e-banking services is required. The current study is a modest attempt to learn about consumer awareness of the banks' e-banking services in Coimbatore. The questionnaire has been the primary method for gathering data from customers. They combined primary and secondary data in their research. And To extract the data, a standard process was employed and numerous statistical tools were applied.

**Dutta Yajnya (2016)** studied "customers preferences retail banking services in Ganjam District". In today's competitive climate, services are becoming increasingly crucial in the strategic plan of both enterprises and governments, according to this study. This study also defined the business environment, the commercial banks which are facing increasing competition from new players. As a result, the primary goal of this research is to look at the customer's preferences in the Ganjam District of Odisha for retail banking services provided by commercial banks. For this study, the primary data were collected from 640 customers randomly and a questionnaire was constructed based on the Likert scaling technique. To study the perception of the customer's statistical tools have been employed. Additionally, the investigation must determine the primary characteristics that influence clients to choose retail

banking services from specified commercial banks in Odisha, particularly the Ganjam district.

Siddiq Abbokar (2017) studied "A Study on Customer Awareness towards Banking Service concerning Deposit and Loan in Mangalore City". This study presents that, Bank played an essential role in or financial cum economic development of a country. By delivering market-based diverse financial goods and customer services, the current era of LPG has made the banking business highly rational. Both the banking investor and the client must decide on each other. As a customer's degree of awareness rises, so does their desire for banking goods. This research has compared, analysed, and interpreted the customer awareness about different banking services at Mangalore City.

## Importance of the study

The study aims to trace the usage behaviour of various services by a different class of customers and their satisfaction towards the services rendered by Banks. The segment of customers such as age, gender, education, and occupation, is treated with the dependent variables such as awareness on the product, awareness on supplementary service, reasons for selecting a private bank, usage of internet banking, phone banking, ATM, Mobile banking, bill pay service, satisfaction towards third party insurance products, satisfaction towards the quality of service, satisfaction towards guidance and counselling banking services and so on.

## Objectives of the study

- To find the profile of Banking customers profile in the Cuttack district.
- To study the awareness of customers in Cuttack district towards different banking products and services offered by SBI.

## Methodology

The present study is completely descriptive. For the study, both primary and secondary data were employed. The State Bank of India (SBI) was chosen since the area has a high concentration of public sector banks. The information was obtained using the questionnaire approach from a random sample of 75 SBI respondents. Secondary data was gathered from publications, periodicals, newsletters, papers, SBI annual reports, and websites linked to the study. The study area is limited to the Cuttack district of Odisha. The data were analysed using percentage and Pearson correlation.

## Data Analysis & Interpretation

### A. Demographic Profile and Level of Awareness on the Product

There is no restriction to selling bank products in a regulated market. In general, it is believed that the level of awareness of the product is not associated with the age of respondents. The age group of the sample respondents is classified into 4 categories: Up to 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, and 51 years and above.

**Table-1: Demographic Profile and Awareness of the Product**

Gender	# of respondents	Percent
Male	58	77.33
female	17	22.67
total	75	
Age		
up to 20	7	9.33
21-30	19	25.33
31-40	24	32
40-50	14	18.67
51 and above	11	14.67
total	75	
Educational Qualification		
Up to metric	14	18.67
graduate	33	44
postgraduate	19	25.33
professional degree	9	12
total	75	
Occupation		
Salaried	35	46.67
Business	26	34.66
housewives	8	10.67
others	6	8
total	75	

It is highlighted from the table that level of awareness on the product among the respondents of SBI with the demographical profile. This table indicated that out of 75 respondent's majority 77.33 males and 22.67 percent of females are very much aware of the banking products. Like this, out of 75 respondents, the majority age group 31-40 (32.00 percent) years and 21-30 years (25.33 percent) were very much aware of the banking products due to regular transactions. But age group below 20 (9.33 percent) years and above 51 years (14.67 percent) were not aware perfectly of the banking products and different services due to irregular transactions and not applicable to their age.

In the case of educational qualification, the majority 44 % of graduates and 25.33 % of postgraduates are very much familiar with banking services which are provided by SBI. Yet 18.67 % of less qualified (up to metric) respondents are also aware of the different services provided by SBI as a public sector bank.

Similarly, the majority 46.67 % of the Salaried employed are aware of the different services provided by SBI, followed by businessmen i.e., 34.66. and only 10.66 % of housewives and 8 % of students are also well-known about the different products and services of SBI.

From this table, it is clear that the majority of male, youth mass, graduated and salaried respondents were aware perfectly of the different banking products and services provided by SBI.

#### **B. Awareness level of respondents towards banking services**

**Table-2: Level of awareness on the banking services**

Profile	Level of awareness on the product					
	Low	Percent	Medium	Percent	High	Percent
Gender						
Male	9	81.82	31	77.5	19	79.17
Female	2	18.18	9	22.5	5	20.83
total	11		40		24	
Age						
up to 20	1	9.10	4	10	2	8.33
21-30	2	18.18	10	25	7	29.17
31-40	2	18.18	14	35	8	33.33
41-50	3	27.27	7	17.5	4	16.67
51 and above	3	27.27	5	12.5	3	12.50
total	11		40		24	
Educational Qualification						
Up to metric	7	63.64	6	15	1	4.17
graduate	3	27.27	18	45	12	50
postgraduate	1	9.09	12	30	6	25
professional degree	0	0	4	10	5	20.83
total	11		40		24	
Occupation						
Salaried	0	0	22	55	13	54.17
Business	4	36.36	12	30	10	41.67
house wives	5	45.46	3	7.5	0	0
others	2	18.18	3	7.5	1	4.16
total	11		40		24	

It is identified from the table that the percentage of the higher and middle level of awareness on the product towards the product of the bank is highest with 79 % and 77.50 % among the male respondents and the same is lowest with 20 % and 22.5 % among the female respondents.

It is identified from the table that the percentage of the higher level of awareness on the product towards the product of the bank is highest with 33 % among the respondent's age between 31 to 40 years and the same is lowest with 8% among the respondents with age up to 20 years. The percentage

of medium level of awareness on the product is highest with 35 among the respondent with age 31.40 years, the same is lowest with 10% among the respondents with bellow 20 years. The percentage of low level of awareness on the product among the respondents is highest with 27.27 with 41-50 and 51 and above, the same is low with 9.10 among the respondents with up to 20 years.

This table also highlighted that the percentage of the higher level of awareness on the product towards the product of the bank is highest with 50 % among the respondents having qualification graduate and the same is lowest with matriculates i.e. 4.17 %. The percentage of medium level of awareness on the product is highest with 45 % respondent with graduate qualification followed by postgraduate, the same is lowest with 10% having professional qualification. The percentage of low level of awareness on the product among the respondents is highest with 63.64 with qualification to metric, followed by graduates and postgraduates in this study.

This table also indicated that the percentage of the higher level of awareness on the product towards the product of the bank is highest with 54.17 % among the salaried respondents followed by businessmen but the same, no one wives are not higher level of awareness in banking services.

The percentage of medium level of awareness on the product is highest with 55 % salaried employees, followed

by businessman, housewives, and students accordingly. The percentage of low level of awareness on the product among the respondents is highest with 45.46 % are housewives followed by businessmen and students in this study.

### C. Relationship between demographic variables and awareness level of respondents

**Table-3:** The Indian banking industry has transformed into one of the promising industries that offer services through multiple channels with the help of information systems and technology. Banking is essentially a high contact service industry and there is close communication between service providers to customers. Customer awareness and satisfaction about financial products and services are very crucial for the success of any Bank. The current banking technology allows the customer to buy products or consumer services using their bank account and other services from any place. The study aims to trace the usage behaviour of various services by a different class of customers and their satisfaction towards the services rendered by Banks. The present study is completely Descriptive. Both primary, as well as secondary data, were used for the study. State bank of India (SBI) was selected based on the ground of concentration of public sector Banks in that area. It is found that all the demographic variables are strongly related to the level of awareness towards banking products and services.

**Table-3: Covariance analysis of Demographic Factors and Level of awareness**

Demographical Factors	Low	Medium	High
<b>Age</b>			
Pearson Correlation	0.134	0.987	0.985
N	5	5	5
T-Value	7.250	15.109	13.713
P-Value	0.0286	0.0006	0.0008
<b>Educational Qualification</b>			
Pearson Correlation	0.1015	0.9786	0.9346
N	4	4	4
T-Value	8.152	9.472	5.170
P-Value	0.023	0.011	0.035
<b>Occupation</b>			
Pearson Correlation	0.983	0.978	0.989
N	3	3	3
T-Value	10.626	9.2744	13.97
P-Value	0.0087	0.0114	0.005
<b>Gender</b>			
Pearson Correlation	0.932	0.971	0.995
N	2	2	2
T-Value	11.50	9.0006	10.389
P-Value	0.0026	0.00389	0.00199

Source: Calculation of Compiled Data

The correlation coefficient analysis was performed to examine the relationship between demographical profile and customers' level of awareness about Banking products. The results indicated that Age is the main variable indicating that there is a positive strong significant relationship between the level of awareness. Here, Medium level of awareness ( $r = 0.987192413$ ,  $p$ -value is less than 0.05), followed by high level of awareness ( $r = 0.984$ ,  $p < 0.05$ ) and low level of awareness ( $r = 0.134$ ,  $p < 0.05$ ) respectively.

Educational qualification variable indicating that there is a positive strong significant relationship between customer's educational qualification and level of awareness about Banking products. Here, Low level of awareness ( $r = 0.102$ , the  $p$ -value is less than 0.05), followed by medium level of awareness ( $r = 0.9786$ ,  $p < 0.05$ ) and High level of awareness ( $r = 0.93$ ,  $p < 0.05$ ) respectively.

Similarly, the present occupation of customers variable indicates that there is a positive strong significant

relationship between occupation and level of awareness about Banking products. Here, low level of awareness ( $r = 0.989$ ,  $p$ -value is less than  $0.05$ ), followed by High level of awareness ( $r = 0.989$ ,  $p < 0.05$ ) and medium level of awareness ( $r = 0.977$ ,  $p < 0.05$ ) respectively.

Similarly, the gender of customers indicates that there is a positive strong significant relationship between gender and level of awareness about Banking products. Here, low level of awareness ( $r = 0.932$ ,  $p$ -value is less than  $0.05$ ), followed by high level of awareness ( $r = 0.971$ ,  $p < 0.05$ ) and medium level of awareness ( $r = 0.995$ ,  $p < 0.05$ ) respectively.

## 7. Conclusion

The banking sector reforms and liberalization process have presented numerous problems to Indian banks, and it is now vital to address these obstacles efficiently to achieve long-term success. Supporting the banking industry is a prestigious endeavour. Due to shifting banking sector trends, competitive pressures, and the effectiveness of India's regulatory framework and financial system, it has become extremely difficult. "The difficulty in banking services is also a matter of essential importance. This is the time SBI should offer new and innovative services frequently in the market (Aruna Dhade, Manish Mittal, 2008)". The substance of advertising mediums and approaches must assist customers in becoming more knowledgeable of services and

advantages, as well as in making the most important financial decisions. To advertise their services to remote and semi-urban regions, SBI must use a variety of digital platforms. "The promotional strategies that should be adopted by SBI are in the techniques of promoting and they are 'Personal Selling', 'Tele Calling' and 'Events and Programme' (Dutta Yajnya (2016))". And most of the SBI respondents are also aware of the different services provided by the bank.

The correlation coefficient analysis was performed to examine the relationship between demographical profile and customers' level of awareness about Banking products. The results indicated that Age is the main variable indicating that there is a positive strong significant relationship between the level of awareness. Here, Medium level of awareness ( $r = 0.987192413$ ,  $p$ -value is less than  $0.05$ ), followed by high level of awareness ( $r = 0.984$ ,  $p < 0.05$ ) and low level of awareness ( $r = 0.134$ ,  $p < 0.05$ ) respectively.

Educational qualification variable indicating that there is a positive strong significant relationship between customer's educational qualification and level of awareness about Banking products. Here, Low level of awareness ( $r = 0.101531864$ , the  $p$ -value is less than  $0.05$ ), followed by medium level of awareness ( $r = 0.9786$ ,  $p < 0.05$ ) and High level of awareness ( $r = 0.9346$ ,  $p < 0.05$ ) respectively.

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there is a positive strong significant relationship between occupation and level of awareness about Banking products. Here, low level of awareness ( $r = 0.989$ ,  $p$ -value is less than  $0.05$ ), followed by High level of awareness ( $r = 0.989$ ,  $p < 0.05$ ) and medium level of awareness ( $r = 0.977$ ,  $p < 0.05$ ) respectively.

Similarly, the gender of customers indicates that there is a positive strong significant relationship between gender and level of awareness about Banking products. Here, low level of awareness ( $r = 0.93$ ,  $p$ -value is less than  $0.05$ ), followed by high level of awareness ( $r = 0.971$ ,  $p < 0.05$ ) and medium level of awareness ( $r = 0.995$ ,  $p < 0.05$ ) respectively.

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## Investigating Online Purchase Intension Antecedents: A Study of e-tailing experiences

**Ankita Agarwal**

Asst. Professor, BIITM Bhubaneswar

ankita.agarwal7000@gmail.com

**Rabi N. Subudhi**

Professor, School of Management, KIIT University Bhubaneswar, India

rabisubudhi@gmail.com [ORCID: <https://orcid.org/0000-0002-9502-2098>]

**Smruti Malhar Mohapatro**

Research Scholar, School of Management, KIIT University Bhubaneswar, India

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### Abstract:

In today's era the internet and smartphone has changed the way of communication and doing the business. The rapid growth of online shopping facilitates new opportunities to do business. To grab the opportunities and develop strategies to deal with the possible challenges in the Indian e-commerce market, the e-tailers should have the understanding about the e-commerce market and the factors affecting the online shopping behaviour of consumers. In this context, this study aims at investigating the attributes affecting the online shopping behaviour in the state of Odisha. It also examines the perception towards the various online shopping attributes like website attributes and customer attributes. This study is based on empirical survey, with the help of structured questionnaire through both online and offline modes. Data analysis has been done using SPSS software. The findings of this study suggests "website attributes" (comprising interactivity/ connectivity, privacy and safety, website atmospherics, trust, website usability, order fulfilment and customer support) and "customer attributes" (including telepresence, perceived risks, online shopping attitude, website reputation, perceived control, perceived skills, perceived self-efficacy and ease of use) have a significant relationship with customer experience. Demographic variables like income, age and gender were found to have significant impact on the medium of online shopping used.

**Keywords:** *Online shopping, internet, shopping behaviour, website attributes, customer attributes, customer experience.*

### 1. INTRODUCTION

Retail, being one of the key aspects of marketing, has gained a lot of significance over the last few years. In simple terms, retail refers to all the activities involved in selling a product or a service to the final consumer for their personal, non-business use. (Kotler et al., 2009). Today, retail has evolved beyond just traditional brick-and-mortar retailing. Retailers are making their presence felt through both traditional brick-and-mortar stores as well as through online shopping websites through newer formats such as click-and-mortar retailing. According to the World Trade Organization (1998), e-commerce refers to the production, distribution, marketing, sales or delivery of goods by electronic means. One of the most popular forms of e-commerce is online shopping which involves allowing consumers to buy goods and services directly from a seller through the internet by using a web browser.

Online shopping today has drastically changed the way consumers shop. Consumers are able to browse through an online store's range of products and services, view detailed product and service information along with images and compare products and prices across multiple websites. Convenience is at the heart of online shopping today. A website that is convenient ensures a quick response time, makes sure that customer effort is minimized and facilitates fast completion of a transaction (Schaffer, 2000). Online shopping,

apart from being convenient, has many other advantages too such as providing variety to consumers, enabling easy comparisons, access to product/service reviews, provision of discounts and alerts, zero waiting time and opportunities for setting up new businesses. But, at the same time, online shopping does have certain drawbacks such as intangibility, no negotiations, shipping and convenience charges, privacy and security concerns, delivery delays, problems with returns/refunds and tendency to become a shopaholic.

Along with the growth of online shopping, a new category of shoppers called as e-shoppers has emerged. In traditional terms, e-shopper basically refers to a person who buys goods/services from online stores. Depending on the frequency of internet usage for online shopping, e-shoppers can be classified as experienced e-shoppers/inexperienced e-shoppers. Understanding the buying behaviour of such e-shoppers has become of paramount importance to online retailers today in order to enable them to provide value.

### 2. LITERATURE REVIEW

#### Online Shopping Experience:

Customer Experience is about adding value for customers buying products and services through customer participation and connection, by managing all aspects of the encounter. The encounter includes touchpoints (any way a consumer can interact with a business, whether it be person-to-

person, through a website, an app or any form of communication). When consumers come in contact with these touchpoints it gives them the opportunity to compare their prior perceptions of the business and form an opinion (Stein, & Ramaseshan, 2016). Pateli et al. (2014) came to the conclusion that more experienced online users were more satisfied with their online purchases. Another study by Janda and Ybarra (2005) highlights the relationship between online shopping experience and customer satisfaction. Janda and Ybarra (2005) emphasized through their findings that the relationship between online shopping experience and customer satisfaction was found to be stronger for females as compared to males. So, this study mainly explored the demographic aspect. Online shopping experience was also explored through other aspects such as online retail performance and online shopping convenience. The study by Amialchuk and Taylor (2011) puts forth five dimensions of online customer experience – sensory, cognitive, emotional, pragmatic and relational. Whereas the study by Jiang, Yang and Jun (2013) highlights the five key dimensions of online shopping convenience – access, search, evaluation, transaction and possession/post-purchase convenience. The studies by Rose et al. (2012) and Bilgihan et al. (2015) further explored other aspects of online shopping experience by studying the relationships between antecedents and outcomes of online customer experience (OCE).

### Website Attributes:

Many studies have also thrown light on another aspect of online shopping behaviour i.e. website attributes. The studies by Martin and Camarero (2008), Ganguly et al. (2009) and Joshi et al. (2016) have thrown light on “trust” as one of the important customer attributes when it comes to online shopping behaviour. While Martin et al. (2008) posited that trust in a website is determined by factors such as previous purchases, website security and privacy policies, and service quality; the study by Ganguly et al. (2009) was more from an Indian perspective and highlighted that Indians give more importance to privacy and security in order to generate trust as they find trust to be one of the obstacles in online shopping. Some of the studies have also thrown light on the importance of reviews and ratings as website attributes. The study by Dholakia & Zhao (2010) posit that positive ratings related to the overall look and design of the site are generated by attributes such as “ease of finding what you are looking for” and “clarity of product information”. Whereas the study by Tamimi et al. (2015) highlighted that star review rating of products had an influence on the likelihood of making a purchase.

### Customer Attribute:

Online shopping behaviour has been examined from the point of view of customer attributes. Perception as a customer attribute has been explored in detail by many researchers. A study by Hernandez et al. (2011) concluded

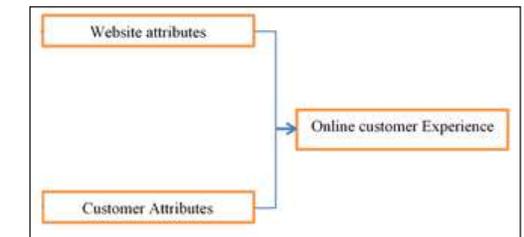
that e-commerce perceptions and experience in using the internet had no effects on online shopping behaviour. Akroush & Al-Debei (2015) posited that perceived website image was positively and directly affected by relative advantage and perceived website reputation. A study by Ranaweera et al. (2008) explored the impact of personality traits like trust disposition, risk aversion and technology readiness on online purchase intention. Examining trust and purchase intention, a study by Kaur & Quereshi (2015) found that trust during online buying was impacted by various factors such as security concerns, quality concerns, product return hassles, communication gaps and unrealistic display to name a few. One of the customer attributes namely self-efficacy was explored by Hernandez et al. (2011). They found that while making online purchases, greater self-efficacy was perceived by shoppers who are more accepting of the internet and use it to make frequent purchases

### Research Gaps

Most of the researches done on online shopping behaviour have been done in the western context and very few in the Indian context. Existing research has largely focused on studying the “purchase intention” of customers online, with a few other works examining aspects such as emotional effect of online shopping, online shopping motivations and website satisfaction. But, there has been no significant research which has gone beyond the understanding of “purchase intention” by examining the concept

of “customer experience” with respect to the perceptions of online shopping attributes.

### Conceptual Model



Here we have taken a conceptual model with support of available literatures, which indicates the online customer is being affected by the website attributes and the customer attributes. Here the criterion is online customer experience and the predictors are website attributes and customer attributes. In this study this is tested in the analysis part with data collected from primary study.

### 3. RESEARCH OBJECTIVES AND METHODOLOGY

For the purpose of our research, we narrowed down to two important attributes which have an influence on online shopping behaviour – website attributes and customer attributes. Website attributes comprises of various online shopping website related attributes such as privacy and safety, website atmospherics, website usability, trust, order fulfilment and customer support and interactivity/connectivity. Customer attributes include perceived self-efficacy, perceived ease-of-use, perceived skills, perceived control, perceived risks, website reputation and telepresence.

### 3.1 Research Objectives

Based on attributes identified above, as well the gaps from the literature review, the objectives of the study were formulated as under:

1. To examine the perceptions towards various online shopping attributes such as website attributes and consumer attributes.
2. To explore/verify the relationship of these attributes with customer experience.
3. To identify the major factors influencing online shopping behaviour. The above objectives served as a framework for the research.

### 3.3 Research Hypotheses

We formed the following hypotheses for the purpose of our research:

1.  $H_{07}$ : Website attributes have an impact on customer experience.
2.  $H_{08}$ : Customer attributes have an impact on customer experience.

Based on the above research hypotheses, the questionnaire was framed, data collection and analysis were done.

### 3.4 Research Methodology

The research broadly followed convenience sampling. The survey was conducted using both Google Forms as well as physical forms simultaneously. The survey period lasted from October 2018 to July 2019.

Keeping in mind the scope of the research, it was deemed fit to collect

at least 400 responses for the main research. But, by the end of the survey period, we had received 516 valid responses, which was then used for the data analysis.

The data analysis has been done in a structured manner comprising of primary. Primary data analysis was done using SPSS software. Various data analysis tools such as descriptive statistics, graphs, charts, bi-variate analysis and regression analysis were used.

### 4. DATA ANALYSIS

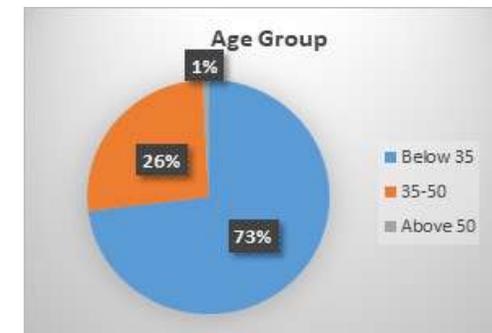
Post collection of data using a structured questionnaire, the data was compiled and sorted properly in order to ensure smooth and meaningful comparison, computation and analysis. The raw data was coded using Microsoft Excel and then taken into SPSS software for proper statistical analysis.

The first part of primary data analysis comprised interpretation of various demographic variables. Then certain basic aspects of online shopping were explored such as mode of online shopping, online shopping usage pattern, preferred e-retailers and category of products shopped online.

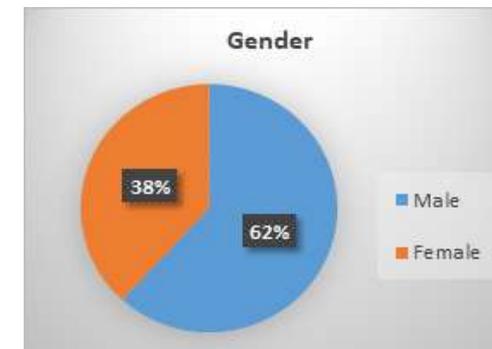
Subsequently, tests of significance of association were carried out to link explore the possible relationships between two variables. This was done using Pearson's Chi-square through the use of cross-tabulation. Further, for multi-variate analysis, use of multiple regression was made. The results helped in a thorough understanding

of various aspects related to online shopping behaviour.

As per the sequence of questions in the questionnaire, certain basic variables have been depicted in the form of pie charts and bar diagrams followed by a brief narration of each variable.



(Figure- 4.1)



(Figure- 4.2)

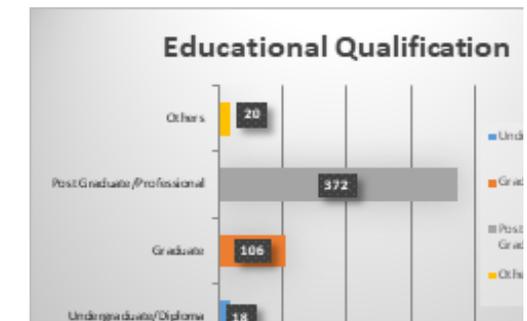
As seen in the figure -4.1, 73% of the respondents are in the age group of below 35, 26% of the respondents are aged between 35 and 50 years, and 1% of the respondents are aged above 50.

In the questionnaire, respondents were given the option of choosing either male, female, or others, as an option in order to enable them to be free in their responses. As observed from figure 4.2, 62% of the respondents are male and

38% of the respondents are female. Given that 73% of the respondents are aged below 35, this seems to be quite representative of the population surveyed.



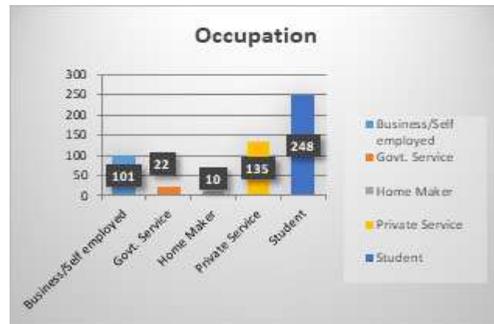
(Figure- 4.3)



(Figure- 4.4)

In our questionnaire, respondents were given three options to choose from- unmarried, married and separated. Here, we have used the word 'separated' to represent both divorced persons as well as widowed persons. From the above depiction (figure - 4.3), we can see that 74% of the respondents are unmarried, 24% of the respondents are married and 2% of the respondents are separated. This distribution seems quite normal given that 73% of our respondents are below 35 years of age.

As seen above in the figure - 4.4, 72% of the respondents are post-graduates/professionals, 21% of the respondents are graduates and 3% of the respondents are undergraduates.



(Figure- 4.5)



(Figure- 4.6)

As found from the responses (Figure-4.5), 48% of the respondents are students, 26% are into private service, 20% are into business/self-employed, 4% are into government service and 2% are home makers.

From the above figure - 4.6, it is seen that 46% of the respondents do not earn any income of their own as they are students/home makers. 26% of the respondents earn below Rs.50,000 per month, 16% of the respondents earn between Rs.50,000 and Rs.1,00,000 per

month and 12% of the respondents earn above Rs.1,00,000 per month.



(Figure- 4.7)

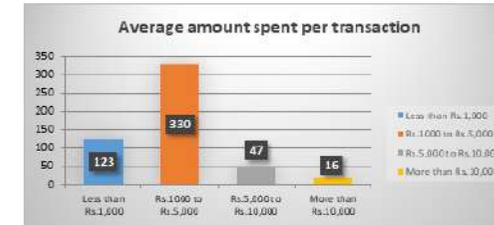


(Figure- 4.8)

Respondents were questioned as to whether they prefer shopping online through mobile phones, or through laptop/PC/Ipad, or through both the modes. As seen in figure - 4.7, 59% of the respondents prefer to shop online using their mobile phones. This is quite indicative of the changing trends in the way people shop online. Only 6% of the respondents prefer shopping online through their laptop/PC/Ipad. 35% of the respondents say they prefer to use both the modes to shop online.

From the above results (figure - 4.8), it can be seen that 63% of the respondents shop online on a monthly basis, 25%

shop online on a weekly basis and the remaining 12% of respondents shop online on a yearly basis.



(Figure- 4.9)

The amount spent per transaction online varies from person to person.

Here, we have taken the average of the amount spent per transaction online for each customer and presented it in a readable and understandable matter.

**Preferred medium of shopping online**

Taking ten popular online stores into consideration, respondents were asked about their preference for accessing those stores just to get a brief idea about their online shopping preferences and habits. The responses were recorded as follows:

**Table - 4.1**

Online shopping store	Through website only	Through app only	Through both website and app	Never shopped from this website
Amazon	11%	33.3%	45.2%	10.5%
Flipkart	12.8%	43.2%	39.9%	4.1%
Myntra	7.8%	44%	25.2%	23.1%
Snapdeal	16.3%	29.1%	22.7%	32%
eBay	12.6%	13.8%	9.7%	64%
Jabong	7.4%	21.7%	15.9%	55%
Paytm	5.6%	39.3%	23.1%	32%
Shopclues	10.5%	15.3%	13.2%	61%
Firstcry	6.4%	6.8%	6.8%	80%
Homeshop18	14.3%	8.5%	9.9%	67.2%

From the above table, following observations have been drawn:

- There is more preference for shopping through apps or from both website and app.
- There is hardly any preference for shopping through the website only.
- Considering the demographics surveyed, Amazon, Flipkart and Myntra seem to be the most popular online stores.

- 80% of the respondents said they have never shopped from Firstcry. This could be because 74% of the respondents are unmarried and are mostly below the age of 35. Firstcry is an online store selling baby and kids products. This store would be more visited by married persons and also those having children.
- There is also lesser preference for shopping from online stores such

as Homeshop18, Shopclues and eBay. This could also be due to the kind of products sold by these stores and their preference by the demographics surveyed.

**Category and frequency of products shopped online**

This captures the categories of products that respondents shop for online and also the frequency of purchase of each of the categories.

It was found that:

- Apparels are the most frequently shopped category of products online (38.8%), followed by electronics (37.4%), accessories (33.7%) and footwear (30.2%).
- The products rarely purchased online include furniture (83.1%), baby products (81.4%), jewellery (75.4%) and food products (66.3%).

**Output table: Multiple Regression**

Model Summary <sup>b</sup>						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.765 <sup>a</sup>	.585	.580	.41903		
a. Predictors: (Constant), Interactivity and connectivity, Privacy and safety, Website atmospherics, Trust, Website usability, Order fulfilment and customer support						
b. Dependent Variable: Customer_experience						
ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	126.032	6	21.005	119.627	.000 <sup>b</sup>
	Residual	89.375	509	.176		
	Total	215.407	515			
a. Dependent Variable: Customer_experience						
b. Predictors: (Constant), Interactivity and connectivity, Privacy and safety, Website atmospherics, Trust, Website usability, Order fulfilment and customer support						

**Tests of Significance of Association (Cross Tabulation)**

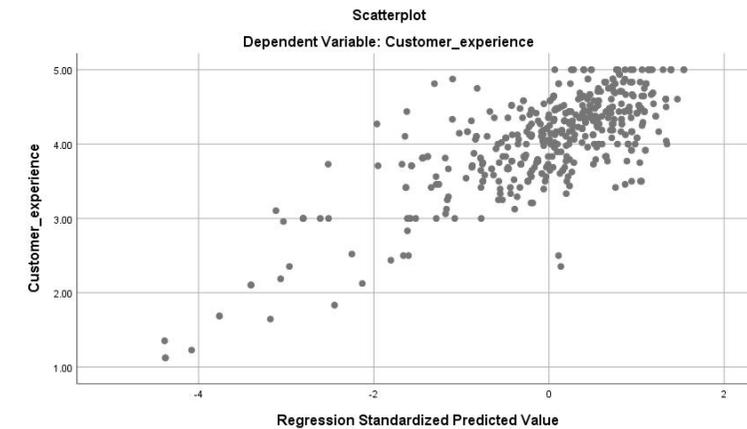
In order to gain some meaningful insights about online shopping behaviour, we used the Pearson’s Chi Square test to find out if there was any significant association between certain identified independent variables with a dependent variable.

Hypothesis to be tested:

H<sub>01</sub>: Website attributes have an impact on customer experience.

The influence of independent variable “website attributes” comprising of predictors namely interactivity/ connectivity, privacy and safety, website atmospherics, trust, website usability, order fulfilment and customer support, on the dependent variable “customer experience” was explored through regression analysis using SPSS. The output is presented in table no.

After being found to be significant, the regression model has been presented as a Scattered Plot Diagram. In this figure, the dependent variable (customer experience) is plotted against the predictive residual values.



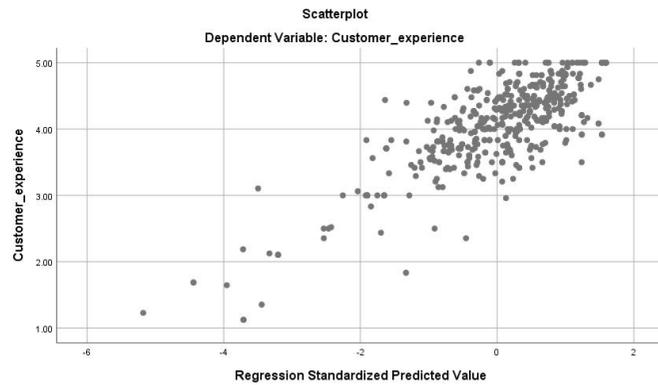
H<sub>02</sub>: Customer attributes have an impact on customer experience.

attitude, website reputation, perceived control, perceived skills, perceived self-efficacy and ease of use on the dependent variable “customer experience” was explored through regression analysis using SPSS. The output is presented in table no.

**Output Table: Multiple Regression**

Model Summary <sup>b</sup>						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.792 <sup>a</sup>	.626	.621	.39797		
a. Predictors: (Constant), Telepresence, Perceived risks, Online shopping attitude, Website reputation, Perceived control while shopping, Perceived skills while shopping, Perceived self-efficacy and ease of use						
b. Dependent Variable: Customer_experience						
ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.948	7	19.278	121.719	.000 <sup>b</sup>
	Residual	80.459	508	.158		
	Total	215.407	515			
a. Dependent Variable: Customer_experience						
b. Predictors: (Constant), Telepresence, Perceived risks, Online shopping attitude, Website reputation, Perceived control while shopping, Perceived skills while shopping, Perceived self-efficacy and ease of use						

After being found to be significant, the regression model has been presented as a Scattered Plot Diagram. In this figure, the dependent variable (customer experience) is plotted against the predictive residual values.



**Income vs. Preferred Medium of Online Shopping For Various Online Stores**

Taking ten popular online shopping stores into consideration, we wanted to explore whether any association exists between respondent’s income and

their preferred medium of shopping on these stores. Here, preferred medium of shopping refers to whether the respondent shops on a particular online store using only the website, or only the app or using both the mediums. Pearson’s Chi Square test was applied to understand the same.

**Table – 4.2**

<i>(To test the relation/association of “income” with “preferred medium of online shopping” for various online stores)</i>		
Name of online store	Pearson’s Chi Square value	Sig. (2 sided)
Amazon	17.664	.039
Flipkart	8.182	.516
Myntra	15.558	.077
Snapdeal	19.073	.025
eBay	15.341	.082
Jabong	9.132	.425
Paytm	25.568	.002
Shopclues	16.061	.066
Firstcry	12.548	.184
Homeshop18	28.076	.001

From the above table, it can be interpreted that

- Income has a significant association with the preferred medium of online shopping for Amazon, Snapdeal, Paytm and Homeshop18.
- This could possibly be due to the assumption that since majority of the respondents are either students or if employed, then earning below Rs.50,000/- per month. So their spending would be on cheaper products or on websites offering good discounts, deals and offers. Amazon, Snapdeal, Paytm and Homeshop18 are known to meet these criteria.

**Age vs Preferred Medium of Online Shopping for Various Online Stores**

In order to gain some deeper insights about online consumer behaviour, we wanted to find out whether age has a role to play in a customer’s choice when it comes to choosing the medium of online shopping (shopping through a website only/through app only/through both website and app). We took the same ten popular online shopping stores as in the previous section. Pearson’s Chi Square test was applied to test the significance of association. The test was applied individually for each portal and the results were compiled into a tabular form as given below.

**Table – 4.3**

<i>(To test the relation/association of “age group” with “preferred medium of online shopping” for various online stores)</i>		
Name of online store	Pearson’s Chi-square	Sig. (2-sided)
Amazon	20.758	.002
Flipkart	10.843	.055
Myntra	12.688	.048
Snapdeal	10.638	.100
eBay	11.704	.069
Jabong	14.845	.021
Paytm	6.794	.340
Shopclues	1.938	.925
Firstcry	16.047	.014
Homeshop18	12.110	.060

From the above table, it can be observed that

- Agegroup has a significant association with the preferred medium of online shopping for Amazon, Myntra, Jabong and Firstcry.

- Amazon being an online store that sells almost all types of products, Myntra and Jabong being fashion stores and Firstcry being a baby and kids products store, age would definitely have a role to

play while shopping online from these stores.

**Gender vs. Preferred Medium of Online Shopping for Various Online Stores**

To explore whether there is any relation/association between gender and the preferred medium of online

shopping (through the website only/through the app only/through both the website and the app) for an online store, we tested the same for ten popular online stores (as identified previously). Person’s Chi Square test was applied individually to each store and the results have been summarized and presented below

**Table - 4.4**

*(To test the relation/association of “gender” with “preferred medium of online shopping” for various online stores)*

Name of online store	Pearson’s Chi-square	Sig. (2-sided)
Amazon	16.343	.001
Flipkart	20.991	.000
Myntra	5.864	.118
Snapdeal	18.994	.000
eBay	4.428	.219
Jabong	4.011	.260
Paytm	25.490	.000
Shopclues	6.412	.093
Firstcry	0.346	.951
Homeshop18	5.002	.172

From the above table, the following interpretations can be drawn

Gender has a significant association with the preferred medium of online shopping for only four online stores - Amazon, Flipkart, Snapdeal and Paytm. For the rest of the online stores, gender does not seem to impact the preferred medium of online shopping.

**5. FINDINGS AND CONCLUSION**

**5.1. Demographics**

- 81% of respondents chose to disclose

their name when given a choice in the questionnaire.

- 73% of online shoppers from our study are aged below 35. This indicates the popularity and usage pattern of the internet for shopping amongst the youth.
- When it comes to gender, males form 73% of the respondents in our survey. This highlights the increasing acceptance and growth of online shoppers being male. The stereotype about women being the ones to shop is slowly breaking.

- 74% of respondents in our research being unmarried, it is in sync with our finding that a big chunk of our respondents are below 35 years of age.
- Out of the total participants in this study, 72% are well-qualified, being post-graduates/professionals.
- Around 50% of the participants in this research are wage earners and the rest are non-wage earners, thus helping us get a good understanding of the online shopping behaviour from both perspectives.
- With regard to monthly income, 26% of the participants in this research earn below fifty thousand rupees per month and 16% earn between fifty thousand rupees to one lakh rupees per month.

**5.2. Online shopping preferences**

- 59% of the respondents prefer shopping online through their **mobile phones**.
- 63% of respondents shop online on a **monthly basis**.
- 64% of the respondents spend on an average **Rs.1000/- to Rs.5000/- per transaction** while shopping online.
- There is least preference for shopping solely through websites. Using **multiple shopping mediums** such as apps and website both, has been found to gain popularity. This finding adds value to the results of the recently conducted survey by IBEF wherein it was found that one

out of every three Indians shopped via a smartphone in 2019.

- Apparels were found to be the **most frequently shopped category of products online** (38.8%), followed by electronics (37.4%), accessories (33.7%) and footwear (30.2%). This finding is in line with the findings of the Indian e-commerce industry analysis by IBEF (August, 2020) wherein they have predicted that fashion/apparels is likely to be the key drivers of incremental growth in Indian e-commerce in the coming years.
- The **products rarely purchased online** include furniture (83.1%), baby products (81.4%), jewellery (75.4%) and food products (66.3%).

**5.3. Findings from Regression Analysis**

Through the multiple regression analysis, a strong equation was found between the dependent variable “customer experience” and the independent variable “website attributes” comprising of predictors namely interactivity/ connectivity, privacy and safety, website atmospherics, trust, website usability, order fulfilment and customer support (R-square = 58%).

A significant relationship was also found between the dependent variable “customer experience” and independent variable “customer attributes” comprising of predictors namely telepresence, perceived risks, online shopping attitude, website reputation, perceived control, perceived skills,

perceived self-efficacy and ease of use (R-square = 62%).

#### 5.4. Findings from Chi-Square test

Pearson's Chi-Square test was applied to check for any possible associations between different groups of "income" with regard to "preferred medium of shopping online" taking into consideration ten popular online stores. It was found that "income" influences the "preferred medium of online shopping" for only four online stores i.e. Amazon, Snapdeal, Paytm and HomeShop18.

As per the application of Pearson's Chi Square test, it was found that age has a significant association with the preferred medium of online shopping for only four online stores – Amazon, Myntra, Jabong and Firstcry.

To test for any possible association among the "different gender groups" with regard to "preferred medium of online shopping", Pearson's Chi Square test was used, taking into consideration the earlier mentioned ten popular online stores in India. It was found that gender does have a role to play in the choice of medium for online shopping from Amazon, Flipkart, Snapdeal and Paytm.

#### 5.5. Conclusions

Taking into consideration all the details that have emerged from the research findings, a few conclusions can be drawn with respect to all the formulated hypotheses. The findings of the study indicate a strong equation between the dependent variable "customer

experience" and the independent variable "website attributes" comprising of predictors namely interactivity/ connectivity, privacy and safety, website atmospherics, trust, website usability, order fulfilment and customer support.

Further, it was also found that a significant relationship exists between the dependent variable "customer experience" and independent variable "customer attributes" comprising of predictors namely telepresence, perceived risks, online shopping attitude, website reputation, perceived control, perceived skills, perceived self-efficacy and ease of use.

A few conclusions were also drawn from the analysis of demographic variables like Income, age and gender were found to have an impact on the medium of online shopping used.

#### 5.6. Implications and Future Directions

This research, through its various findings, is expected to contribute useful inputs to academicians, researchers as well as other stakeholders. From the academic viewpoint, this research can act as a useful base for brainstorming on various aspects of online shopping behaviour and also pave the way for newer ideas that warrant further research.

This research can also be of immense use to business organizations who can utilize the findings to gain a better and deeper understanding of online buying behaviour. Specially, firms that are into exclusive online selling

or running on a click-and-mortar concept, can benefit from the insights thrown by this research as it provides greater depth with regard to the various website attributes and online customer attributes. Online stores can design their websites and apps using the findings related to website attributes as a base. It would help them understand which attributes of a website/app need more focus. Marketing strategies can also be planned keeping these findings in mind in order to ensure a better online shopping experience for customers.

Moreover, the results of the multiple regression analysis can prove useful for marketing firms and other businesses in general to design more effective online campaigns and selling strategies which can translate into better online presence. On the whole, this research is add to the existing knowledge base of online buying behaviour while also providing scope for more meaningful research in this direction.

#### 5.7. Limitations

- As online transactions have no geographical boundaries, the study has been limited to the state of Odisha, India. There is scope for expanding the research to other states across India.
- The study focuses on two aspects related to online shopping, i.e. website attributes and customer attributes. Other aspects such as vendor/seller attributes and product/service attributes can be explored.

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## Factors Affecting Buying Conversions: A Selective Literature Review In Case of Online and Offline Buying

**Abhilash Mishra**

Research Scholar, School of Management,  
KIIT University Bhubaneswar, Odisha  
abhilash.ritul1990@gmail.com

DoI: 10.23862/kiit-parikalpana/2021/v17/i2/210541

### Abstract

Multichannel retailing involves the use of both online as well as offline channels to sell merchandise or services to consumers. Nowadays with the easy access to internet every information about a product is available at just a click. It might be very easy for online or offline retailers to identify a prospective buyer but to convert them into purchasing a product is quite a difficult task. With time becoming such a constraint for today's consumer retailers have to be offer product/service as per the needs of the customer. It has become very important for retailers to convert a prospective buyer into a final buyer. With this background the present conceptual paper throws some light on the literatures related to the factors influencing online and offline buying behaviour, with a few other studies throwing light upon consumers' attitudes towards price discrimination, effect of product characteristics on time spent by customer on online or offline buying.

**Keywords:** Online buying, Offline buying, Consumer buying behaviour, Buying conversions

### 1. Introduction

Multichannel retailing involves the use of more than one channel to sell merchandise or services to consumers (Levy & Weitz, 2009). A person who shops online using internet can be termed as 'online consumer'. A person who shops by visiting physical stores and outlets can be termed as 'offline consumer'. However with the easy access to internet every information about a product is available at just a

click. It might be very easy for online or offline retailers to identify a prospective buyer but to convert them into purchasing a product is quite a difficult task. Moreover with the increase in competition retailers have to be totally aware of what consumer wants and deliver as per his needs. If a retailer fails to understand the requirements of the consumer or its offering doesn't match consumer needs than he would surely loose the consumer to some other brand.

The present study aims to review all literatures pertaining to factors affecting consumer's choice of online or offline shopping in India and other countries.

### 2. Buying conversions in case of online and offline medium

The section provides detailed description about the selected literatures related to factors influencing consumer behaviour regarding online and offline buying. The literature review can be further sub divided into:

- Factors influencing consumers choice of online or offline buying
- The multi channel pricing dilemma
- Effect of Product characteristics on time spent

There are various factors which affect consumer's decision to go for online or offline channel medium. Price plays a very important part in the decision making process. The nature of product plays a key role on the time spent by the consumers during buying.

#### 2.1 Factors influencing consumer's choice of online or offline medium

Various people may have different reasons for selecting an online or offline medium. Today's market being so competitive multichannel retailers is leaving no stones unturned in attracting consumers.

**Hofacker, (2009)** examined how offline brand trust moderates the relationship

between consumers general attitude towards the internet and his thinking about the quality of retailers website. They also evaluated if their exists any relationship between perceived website quality and consumers intention to shop from the website. The research was conducted among 200 women respondents who had prior experience. The respondents were also asked to browse the website. It was found out that offline brand trust had a significant effect in the relationship between efficiency factor of attitude towards the internet and usability and informatonal quality factor of the website. Moreover offline brand trust also had a moderate effect on relationship between interactive factor of website quality and online shopping intention.

**Jusoh and Ling (2012)** did the study with the purpose of finding out the factors that influences consumer's attitude towards e-commerce purchases. The study also investigate how socio-demographic (age, income and occupation) pattern of online buying (types of goods, e-commerce experience and hours use on internet) and purchase perception (product perception, customer's service and consumers' risk) affect consumers' attitude towards online shopping. The findings of the study were there was no significant difference in attitude of online shopping with respect to age group, occupation and type of goods. However there was significant difference in attitude towards online shopping with respect to income group and past ecommerce experience.

**Gong et al., (2013)** analyzed the factors influencing online shopping behaviour of Chinese consumers. The paper focused on the factors that influence Chinese consumers and explored the effect of user demographic characteristics and media characteristics on shopping intention. A survey was conducted taking into account 503 Chinese consumers across the country to test the proposed conceptual model of online shopping intention using hierarchical regression. The study came out with very important findings that age, income, education, marital status and the perceived usefulness of Chinese consumers are significant contributors of online shopping intention.

**Thamizhvanan and Xavier (2013)** evaluated online purchase intention among youth in India. They focused on customer online shopping orientation and various other factors which influence shopping orientation such as brand orientation, quality orientation, to what extent consumers trust online and consumers prior online purchase experience. The findings of the study were customer online purchase intention was significantly impacted by impulse purchase intention, prior online purchase experience, and consumers extent of trusting online shopping. The study also made a significant finding by predicting online shopping intention of males was much more as compared to females.

**Goyal, (2015)** made a study based upon earlier relevant studies related to various concepts of online shopping. The study provided a glimpse of theoretical

contribution in understanding the present status of online shopping and provides insights into consumer's online shopping behaviour and their preferences. The study contributed a lot towards various ways of improving retailers website and also various problems faced by retailers in Indian market.

**Gupta and Sethi (2016)** examined the factors that motivate consumers to go for online or offline shopping. The findings of the study were women are more into e-shopping. There has been an increasing demand for online shopping because consumers get to choose a variety of products at an affordable cost. Electronics items were less demanded in online shopping as compared to clothing.

**Dutta and Das (2017)** evaluated the search behaviour that a consumer undertakes while buying a mobile phone or a laptop. The findings of the study were consumers with high educational level and who are more tech savvy search for more information so as to gain more and more benefit. Moreover it was implied that researcher will have more alternatives to online sources as internet will very soon reach a saturation level

**Reilly and Macmillan (2018)** examined how the online word of mouth affects consumer decision making process. It specially focuses on the online product reviews. The study includes face to face interviews who had made any online purchases before and had gone through the online product reviews before

purchase. The findings of the study were there were two important factors that influenced to what extent consumers use online product reviews that were: "decision-making drive" and "decision-making drag". Decision-making drive is a mental momentum created when one or more factors that enhance decision-making readiness are present. Whereas decision-making drag is a mental resistance created when one or more factors that impede decision-making readiness are present

**Rajayogan and Muthumani (2018)** examined various online buyers in India and also tried to throw some light on their intention to purchase. Trust, price and convenience were taken as independent variable whereas purchase intention was taken as dependent variable. The study was conducted among respondents from India. It was found out that purchase intentions were significantly affected by price of the product. Moreover it was concluded that out of all the independent variables, purchase intention was most significantly affected by trust to purchase a product.

This section of literature review focuses on the various factors that influence consumers choice of online and offline channels. Hofacker, (2009) examined the effect of offline brand trust on the online website quality whereas Jusoh and Ling (2012) tried to predict consumer reactions to e-commerce purchases. While Gong et al., (2013) findings of shopping intention of Chinese consumers was demographic factors and perceived usefulness

of Chinese customers affected online shopping intention whereas Thamizhvanan and Xavier (2013) found out impulse purchase, trust to purchase online and consumer prior purchase experience affected shopping intention in Indian consumers. Rajayogan and Muthumani (2018) also made a relevant finding in their study as trust to purchase a product online was considered the most significant factor.

## 2.2 The Multi Channel Pricing Dilemma

Pricing is turning out to be a major factor in consumer decision making process. Both online and offline retailers are using various sales promotional tools to lure consumers. They offer discounts, cashbacks and various things. Consumers also have a lot of alternatives. But, online retailing has a clear edge (Agrawala & Subudhi, 2020).

**Fassnacht and Unterhuber (2016)** explored how consumer reactions were affected by channel based price differentiation. The findings were customers are not willing to accept a retailer charging higher prices in its online shop than in its conventional offline store for identical physical goods. Price differentiation with lower online prices on the other hand was rather well accepted by consumers. Consumers assume higher cost in case of offline channels.

**Urriza, Cebollada and Tarira (2017)** evaluated the differential effect of price promotions on brand choice across the offline and online channels of a grocery

retailer. It can be found out from the study that sales promotion have a higher impact on offline purchase than in online purchase. Frequent customers are more affected by online shopping as compared to infrequent customers. Consumers who shop frequently are more adverse to promotions as they want to save more and they are more serious into purchase process. The study also finds out that because of lack of time people go for online shopping of groceries and are not concerned of promotions whereas people who are not time conscious go for offline shopping and look for available promotions and discounts.

**Iva, Zilani and Attoma (2018)** examined the importance of online versus offline promotional communication. The researcher tried to find out what effect online and print communication had on customer response. The study involved a field experiment to predict the shopping behaviour of print and online store flyers. The study came out with the findings that print and online flyers occupied same results in terms of purchase behaviour and memory. The findings further suggested that retailers should plan for their investment in print or online communication depending on the expenses and reach.

This section of literature review mainly throws some light on price as a significant factor in opting for online or offline medium. While Fassnacht and Unterhuber (2016) found out consumers spend more in case of offline channels and they are not willing to pay in case

of offline channels. Urriza, Cebollada and Tarira (2017) was of the view that people who were time conscious opted for online shopping and for people who were not bothered by time went for offline shopping

### 2.3 Effect of product characteristics on time spent

**Kim and Jones (2009)** examined whether consumer having offline brand trust are able to establish any relationship between attitude towards the internet and their thinking about a website of retailer. The research further tried to establish the relationship between consumers perceived website quality and their intention to shop from it. The findings of the study were the trust on offline brand had a remarkable effect in the relationship between attitude towards the internet and information factor of website quality. Moreover it was also found that offline brand trust also had an significant role in establishing relationship between online shopping retention and interactivity factor of web site quality.

**Dr Sunil (2013)** examined the various trends and practises which a online or offline customer follow while purchasing a product. Further, the study elaborates on the various factors which motivates a consumer to opt for a online or offline medium. The findings of the study was pre-sales offer was one of the major factor that influenced consumer. Moreover it consists of variables like discounts, rebates, coupons, easy access to product information, look and feel of product, instant gratification of

product, choosing the right product, different types of payment and the role of sales people. The researcher further found out better assortment and post purchase policy as another important that influences consumer decision making process. This consists of variables like after sales service, brand variety, exchange refund policy, product availability and comparison. Product and its importance was also considered to be a significant factor influencing consumer behaviour. This includes shipping and handling charges, selection speed and purchase, efficient product search online.

**Voorveld et al., (2016)** examined how consumers differ in cross channel use throughout the purchase processes and also predict how it differs across the product variant. In this study 1000 consumers who had used 17 channels were taken into account. It was found out from the study that online buyers used online channels like websites, product reviews, search browsers. However both online and offline buyers used social media and emails during their purchase process. Further the study elaborated that consumers opt for offline shopping when they purchase any product for the first time and moreover consumers preferred more usage of online channels when they purchased a high involvement products. Moreover, the study also finds that product involvement is more in case of online purchase rather than offline

**Shen and Guo (2016)** made significant contributions to find out how online

customers react to offline channel extensions. The study focused on the impact of offline channel attributes and how it motivates consumer intentions in shifting to offline channels. It also tries to find out whether it leads to increase in demand for online channels. The findings of the study was consumers was encouraged to purchase highly complex useful products like detergents, microwaves, etc from offline stores whereas addition of offline stores resulted in consumers visiting more online channels for purchase of luxury goods such as flowers, designer clothes, sports-car, etc.

**Liu, Batra and Young (2017)** tried to focus on how product touch and feel affects consumers product related decision making process. They tried to compare whether product touch and consumers willingness to pay for a product was evident in case where consumer had a pictorial representation of a product or else when consumer had a non-realistic representation of a product. They further tried to find out whether mental representation of a product was influenced by perceived risk and perceived ownership.

**Singh and Srivastav (2018)** analyzed the factors that influence the existing online shoppers online shopping behaviour in India. It also focused on how to keep on using it continuously. The study also finds out how online consumers react to product specific purchase behaviour. The researcher conducted a multi-group moderation analysis with respect to electronic and fashion goods. The findings of the

study was perceived usefulness and perceived risk were considered to be a significant contributors in online purchase intention in case of online shoppers in India.

This section of literature review evaluates the characteristics of product on time spent in online or shopping. Offline brand trust had a significant factor in establishing relationship between consumer attitude towards internet and website quality Kim and Jones (2009). Dr Sunil (2013) assessed the various trends of online and offline buying. It was found out that pre sales offer, product assortment, product exchange policy was found to be significant factor for offline shopping while for online it was shipping charges. While Voorveld et al., (2016) concluded for high involvement products consumers opted for online shopping whereas Shen and Guo (2016) came out with findings that consumers preferred offline channels for highly complex useful products and for highly luxury products they opted for offline channels. Both Liu, Batra and Young (2017) and Singh and Srivastav (2018) found perceived risk to be a significant contributor in online purchase intention in case of online customers.

### 3. Discussion

It can be found out that with the cheap availability of internet online shopping is increasing rapidly. People choose product from their home and get it delivered at their doorstep. However in some products they try to get a look and feel of it by visiting offline stores.

Frequent buyers who are having serious purchase are more aware of all available price promotions, discounts and cashbacks as they want to save more. Some people also use cross channel medium while purchasing something. They check the price and features of a product online and compare it with offline stores and eventually make the purchase. However there are still concerns about the safety of online shopping which motivates some consumers to go for offline shopping. Nowadays even e-tailors are also coming up with offline store to gain more market share and thereby price competition has increased severely. This in turn will make consumers get products at a affordable price and good quality.

### 4. Conclusion

Retailors must be well aware of all the factors which influences buying conversions. It may vary from person to person depending upon age, income, occupation, product characteristics, etc. Than only it will be possible to attract more and more customers and gain a big slice of market share. Today the consumer is the king. Gone are those days where there used to be monopoly among retailers. Today's consumers are much more educated and they go for a thorough information search both online and offline before purchasing a product. The research paper was a study of work done by various researchers related to online and offline buying. It will surely help academicians, fellow researchers and retailers to gain an insight and build strategies accordingly.

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## Effectiveness of employee engagement during WFH in IT industry

**Shreya Simran**

Research Scholar, School of Management,  
KIIT University Bhubaneswar, India  
2081224@ksom.ac.in

**Ankita Nayak**

Research Scholar, School of Management,  
KIIT University Bhubaneswar, India  
2081208@ksom.ac.in

**Debi Prasad Das**

School of Management,  
KIIT University, Bhubaneswar, India  
debiprasad.das@ksom.ac.in

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### Abstract:

Many companies have established a remote work culture amid the new normal brought about by the COVID-19 pandemic. As a result of the pandemic, there is a larger movement from standard to virtual work environments. The goal of this study is to better understand the impact of the virtual workplace on employee engagement. The change demands the development of a new employee engagement approach that will be useful even in the post-pandemic period. The study investigates secondary data to identify several factors, following which thematic analysis of data collected through structured questionnaire was performed. Trends have been examined, and a plan has been developed.

**Keywords:** Virtual Workplace, Employee Engagement, Performance Level, Work from home

### 1. INTRODUCTION

Working from home during COVID-19 has become the new standard for IT businesses. However, working from home is not a novel idea. Instead, it has developed in tandem with technological advancements. This new work environment was initially

used during the 1970s oil crisis, when the availability of computers led to the introduction of “telecommuting” for white-collar employment. However, when computers advanced in the 1980s, high-level managers and executives began to use work-from-

home more often. Work-from-home opportunities developed as a result of rapid communications through fax and telephone. In addition, in the United States, the government gave incentives to businesses who provided work-from-home opportunities to physically handicapped workers. It is now widespread in the IT industry, and post COVID-19 situations have demonstrated a growing acceptance of the work-from-home culture. As a result, developing methods to promote employee engagement in the new work environment is critical.

### What Is Employee Engagement?

Employee engagement: The employee commitment is the employee’s work-oriented commitment to the organization’s job, workplace and work culture with a positive and happy attitude. It is a technique that attempts to improve the average productivity of the employee by means of different engaging activities and environments provided by the business to the employee. Work, workplace and work culture are the three major pillars which affect employee involvement. As the IT industry changes after COVID-19, it is important that current rules be transformed to improve the strategic involvement of employees.

Virtual workplace: It is not a real job simulation, but a workbench with all the essential work needs. It has no physical presence, but its workers have Internet or intranet connections. Its main objective was to let workers work on the same platform from different locations.

### Problem Statement

The creation of a successful remote employee engagement plan is a series of challenges:

- **Communication deficiency:** Although technology facilitates communication and makes communication faster, effective communication is one of the greatest difficulties encountered by remote teams. Because of a lack of effective communication, mistakes occur with team members scattered across geographies.
- **Lack of participation and motivation:** Remote workers may feel separated from the life of the business. The feeling of belonging to a working community focuses on collaboration, connections with colleagues and leaders, a dedication to a shared goal and loyalty to the business.
- **Managers prefer to relax their operations to prevent micro-management and to give workers greater freedom to work with.** This may be reversed when workers feel lack of leadership and lose sight of goals and objectives.
- **Onboarding:** It becomes essential in WFH to set the appropriate tone with new workers. A pleasant greeting, good training and practical training make it possible for workers to be firmly in the business. However, new workers may feel left out and demotivated, leading to poor production, if not done properly.

Today, therefore, employee engagement starts to appear different from the typical exercise. Companies must create a 'remote but real' culture of trust, incentives and communication in ways they have not before envisaged.

### COVID-19 pandemic and WFH

Many countries have some limitations on the IT industry in COVID-19 pandemic. In order to meet hour demand, most companies started working online and established a work-from-home (WFH) policy. The lockdown allows most businesses to work from home for their employees. However, it is difficult for employees to work from home since they do not encounter the general organizational environment at home as well as the loss of concentration due to frequent interruptions by family members. As the number of COVID-19 cases worldwide is rising, the majority of employees are concerned. They worry both about their safety at work and about their income. These problems prevented employees from focusing on their work, suggesting that they needed to be engaged. The main responsibility of the organization is to guarantee its employees' well-being and adequate participation.

### Objectives

The research's motive is to define the process of creating the environment and analyzing the aspects that can play major roles in keeping employees engaged in the virtual working environment. The paper deals with engagement in a particular industry.

The presence of a virtual environment is not a new thing; it was there in some of the big organizations, and employees were know the same. However, the need to create a virtual environment for employees has risen in every industry due to the CORONA pandemic, sudden lockdowns, and curfews. There are always pros and cons attached to some new implementations, so the workplace has no physical presence.

- To Study employee engagement practices during WFH
- To study employee engagement practices on work life.
- To align employee engagement practices on organization performance.
- To give effective employee engagement strategies.

### RESEARCH METHODOLOGY

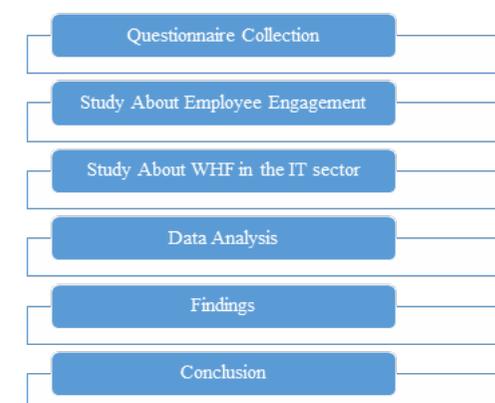
#### Research Design

This part provides the technique design for collecting the data and information needed for analysis in order to answer the study goals and questions. Document analysis and structured questionnaires are the methods used to gather data and information. Because the study is qualitative, it is critical to include feedback from industry specialists as well as document analysis. A structured interview is used to obtain data about the industry pertinent to the study for analysis from the specialists.

Thematic analysis is the technique designed for data and information analysis to evaluate and compare workers' productivity and degree of

involvement with the company in the IT industry while they work from home.

We shall undertake exploratory research in this article to better understand employee involvement in the virtual world. The study is adaptable, dynamic, and Interactive and helps us to grasp the underlying beliefs and motives of the covetous pandemic in the new normal. It also helps us discover potential parameters previously unexplored and providing a more perceptive exposure to issues in order to create suggestions. This qualitative study, which will include both primary and secondary data, will be critical in mapping the levels of involvement. Structured Questionnaire assists us in understanding an expert's perspectives on research issues and potential future advancements in this field of business.



#### Hypothesis

$H_0$ : Employee engagement do not have significant impact on work life.

$H_1$ : Employee engagement have a significant impact on work life.

### Data Collection

In this data is collected from the research area and is analyzed with the help of SPSS analysis.

### Methods

There are two sections Primary and secondary.

We have collected useful data by sending a questionnaire to the employees of IT industries asking them relevant questions. A research tool is a set of questions and answers written or taped into a form designed to gather specific information from respondents. Questionnaires are often delivered by google form to the people concerned with a request to respond to questions. Informants should be allowed to read and understand the questions before answering the questionnaire itself in the space provided.

### Sample Size

The sample size for this research is based on answers from the top 20 highest performing IT companies, and we have data from 9 of them. We decided that 200 respondents in total is acceptable and may support this pilot (Miniature) research on WFH based on the homogeneous character of the respondents.

### Scope

The primary goal of this research is to learn more about the "Effectiveness of employee involvement during WFH for the IT industry, the presence of WFH in each company, and the effectiveness of WFH in each organization. Previous academic and professional work on

work from home employee has been mainly focused on determining the efficiency and cost associated with this workplace alternative. Work from home research is more associated with employee and organization convenience of performing tasks. But in research, it will be focusing on factors affecting the employee's productivity working from home.

The maximum of the nations is in lockdown due to the COVID-19 pandemic. In this difficult situation, work-from-home regime is implemented by most of the organizations. But work-from-home regime is challenging for employees as well as for organizations during this difficult situation. Due to this problem, companies need to engage their employees in refined ways with the help of various employee engagement practices. This paper is to determine the various creative and innovative ways of employee engagement, so that employees can easily do work from home and stay committed, satisfied, and motivated during this pandemic situation.

**Limitation**

As we are doing a survey about the effectiveness of employee engagement during work from home so our study will be limited only till those employees those who are working from

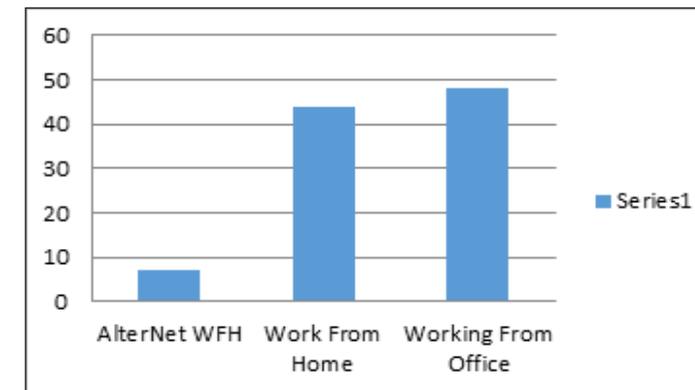
home of that organization instead of those who are going actually at the workplace. Also, we have our study focused only on IT sector but not on the organization apart from IT industries such as the manufacturing industries, pharmaceutical industries etc.

**DATA ANALYSIS**

The researchers spoke with industry professionals to get insights into virtually workplaces and the new trends that have emerged as a result of them. In this paper, we will conduct exploratory research for the understanding of employee engagement in the virtual environment. The research is flexible, versatile, interactive, and helps us understand the underlying opinions and motivation in the new normal created by the covid pandemic. It also helps us uncover the new potential parameters that are not been tapped and provide a more insightful exposure to problems to develop ideas. This qualitative research, by both working on primary data as well as exploring secondary data, will be a key to map the engagement levels. Delphi technique helps us understand the views of an expert on research problems and future developments that may develop in this area of business. This article tries to provide a response Based on approach for increasing employee engagement.

Table 3.1 Working type Before COVID pandemic

		Frequency	Percent	Cumulative Percent
Valid	AlterNet WFH	7	7.1	7.1
	Work From Home	44	44.4	55.6
	Working From Office	48	48.5	100.0

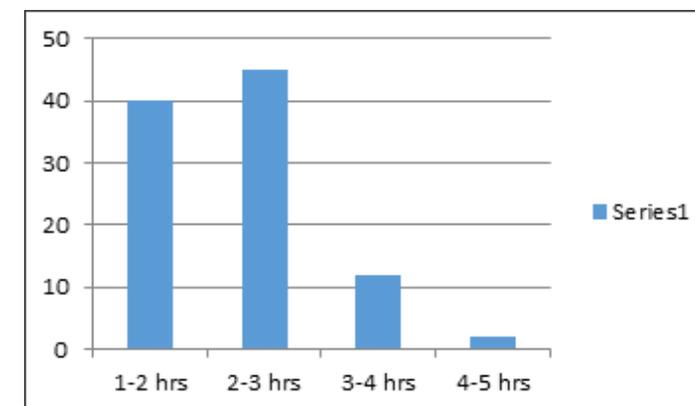


**Working From Office:** The traditional thinking before the epidemic was that agencies had been essential to productivity, culture and the battle for talent. Companies have intensively battled in major metropolitan areas worldwide for primary office space; several have focused on collaborative solutions.

As seen in the above table the 7.1% respondents answer that before covid their working type is "AlterNet WFH", 44.4% respondents answer that before covid their working type is "Work from Home" and 48.5% respondents answer that before covid their working type is "Working from Office"

Table 3.2 Time (in hours) communicate with organization member

		Frequency	Percent	Cumulative Percent
Valid	1-2 hrs	40	40.4	40.4
	2-3 hrs	45	45.5	85.9
	3-4 hrs	12	12.1	98.0
	4-5 hrs	2	2.0	100.0
	Total	99	100.0	



As seen in the above table the 40.4% respondents answer “1-2hrs” means in an average they communicate 1-2hrs with organization member, 45.5% respondents answer “2-3hrs” means in an average they communicate 2-3hrs with organization member, 12.1% respondents answer “3-4hrs” means in

an average they communicate 3-4hrs with organization member and 2% respondents answer “4-5hrs” means in an average they communicate 4-5hrs with organization member.

**Satisfaction with the current Employee Engagement:**

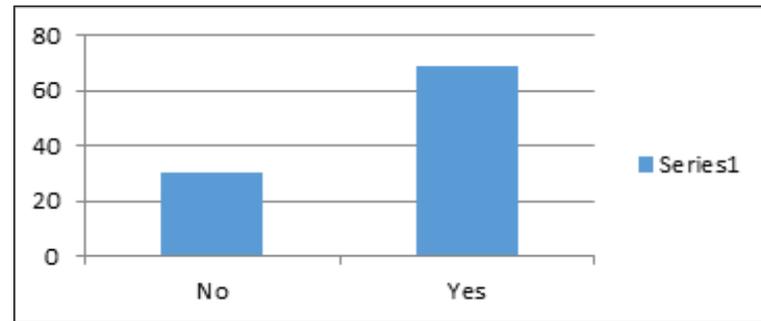


Table 3.3 Satisfaction with the current Employee Engagement

		Frequency	Percent	Cumulative Percent
Valid	No	30	30.3	30.3
	Yes	69	69.7	100.0
	Total	99	100.0	

As we can see in above graph there are 30.3% respondents who responded “No” i.e. They don’t Satisfied with the current Employee Engagement, 69.7% respondents who responded “Yes”

i.e. They Satisfied with the current Employee Engagement. There are more no of respondents who says “Yes” i.e. They Satisfied with the current Employee Engagement.

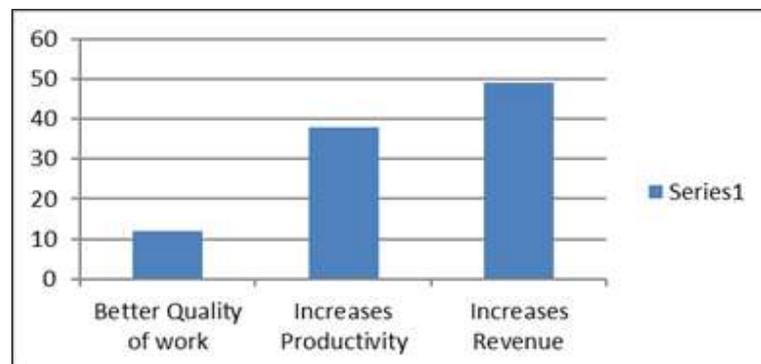


Table 3.4 Importance of Employee Engagement

	Frequency	Percent	Cumulative Percent
Better Quality of work	12	12.1	12.1
Increases Productivity	38	38.4	50.5
Increases Revenue	49	49.5	100.0
Total	99	100.0	

As seen in the above table the 12% respondents responded that employee engagement is important for better quality of work, 38% respondents responded that employee engagement

is important for increase productivity, 49% respondents responded that employee engagement is important for increase revenue.

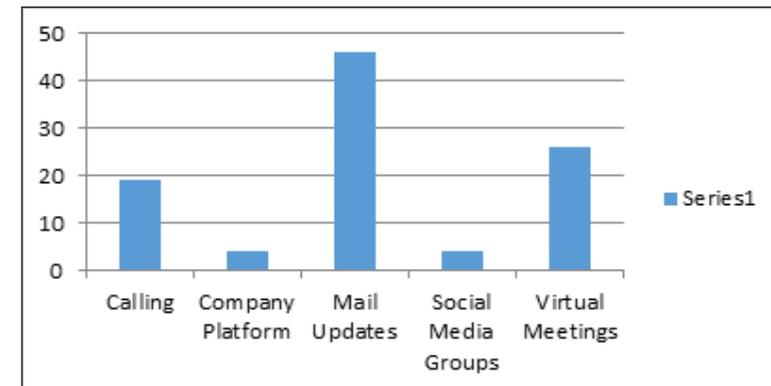


Table 3.9 Strategies Used by Organizations to Enhance Connections

Which Strategies Used by Organizations to Enhance Connections				
		Frequency	Percent	Cumulative Percent
Valid	Calling	19	19.2	19.2
	Company Platform	4	4.0	23.2
	Mail Updates	46	46.5	69.7
	Social Media Groups	4	4.0	73.7
	Virtual Meetings	26	26.3	100.0
Total		99	100.0	

As seen in the above table the 19.2% respondents answer that “Calling” means they think calling strategy used by Organizations to Enhance Connections, 4% respondents answer

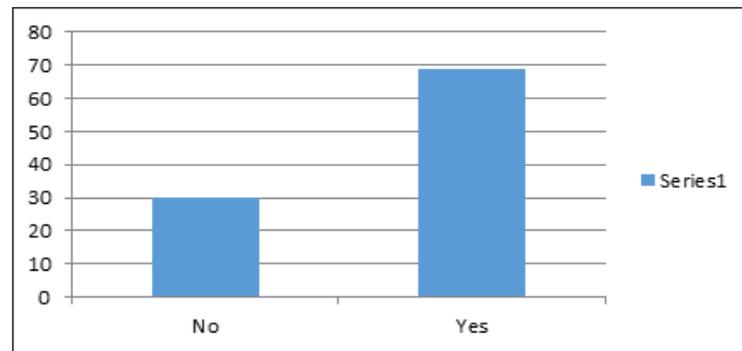
that “Company Platform” means they think Company Platform strategy used by Organizations to Enhance Connections, 46.5% respondents answer that “Mail Updates” means they

think Mail Updates strategy used by Organizations to Enhance Connections, 4% respondents answer that “Social Media Groups” means they think Social Media Groups strategy used by Organizations to Enhance Connections and 26.3% respondents answer that “Virtual Meetings” means they think

Virtual Meetings strategy used by Organizations to Enhance Connections. As discussed in the analysis there are more no of respondents answer that “Mail Updates” means they think Mail Updates strategy used by Organizations to Enhance Connections as compared to other.

Table 3.10 employee engagement impact on the organization’s performance

Does employee engagement impact on the organizations performance??					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	30.3	30.3	30.3
	Yes	69	69.7	69.7	100.0
	Total	99	100.0	100.0	



As we can see in above graph there are 30.3% respondents who responded “No” i.e. They don’t think that employee engagement impact on the organization’s performance, 69.7% respondents who responded “Yes” i.e. they think

that employee engagement impact on the organization’s performance. There are more no of respondents who says “Yes” i.e. They think that employee engagement impact on the organization’s performance.

Table 3.11 Stretching working hours for employee engagement

Is it right to stretch the working hours for employee engagement?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	21	21.2	21.2	21.2
	Yes	78	78.8	78.8	100.0
	Total	99	100.0	100.0	

As we can see in above graph there are 21.2% respondents who responded “No” i.e They don’t think that stretching hours for employee engagement is necessary, 78.8% respondents who responded “Yes” i.e They think that stretching hours for employee engagement is necessary. There are more no of respondents

who says “Yes” i.e. They think that stretching hours for employee engagement is necessary.

**Which Strategy will Effective for employee engagement strategies?**

Where 1- Very dissatisfied, 2 - Dissatisfied, 3 - Neutral, 4 - Satisfied, 5 - Very Satisfied

Which Strategy will Effective for employee engagement strategies?					
Strategies	1	2	3	4	5
Online Happy Hour	15.6	20.4	30.6	50.4	83
Virtual Game Show	16.6	19.4	31.6	50.3	82.9
Offering Online Training	17.4	19.6	29.4	51.6	82
Change Organizational Culture according to Employee	18.6	20.6	32.4	52.4	76

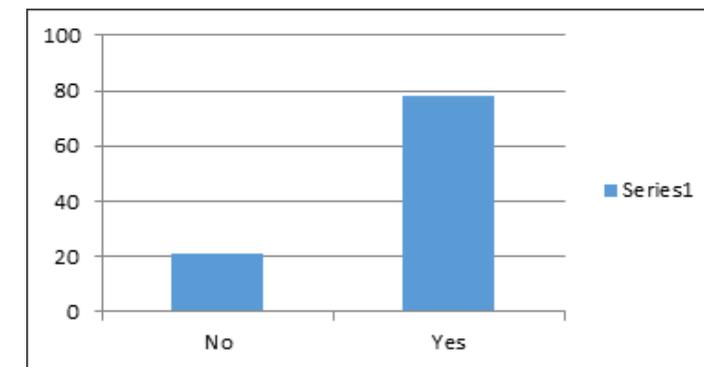
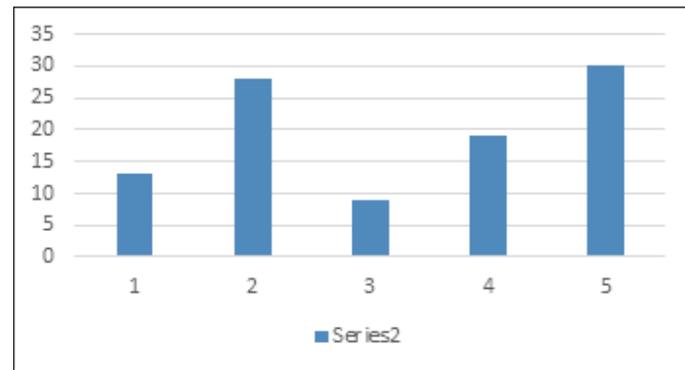


Table 3.5 Effective Employee Engagement Strategy (online happy hour)

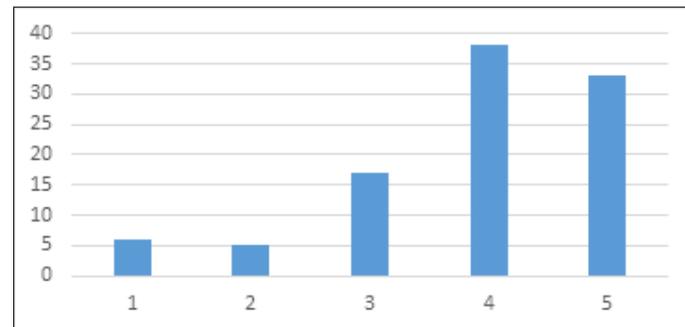
Which Strategy will Effective for employee engagement strategies? Give Rating [Online Happy Hour]				
		Frequency	Percent	Cumulative Percent
Valid	Very Dissatisfied(1)	15.6	13.1	13.1
	Dissatisfied	20.4	28.3	41.4
	OK	30.6	9.1	50.5
	Satisfied	50.4	19.2	69.7
	Very Satisfied	83	30.3	100.0
Total		200	100.0	



As we can see that above table shows rating for online happy hour which is a strategy which will effective for employee engagement strategies. Most of the respondents think that this strategy will be more effective for employee engagement. 19.2%

respondents gave rating satisfied to this strategy. Almost 28.3% respondents gave rating dissatisfied to this strategy. And only 13 respondents gave rating very dissatisfied to this strategy as they think it is not that effective strategy for employment engagement.

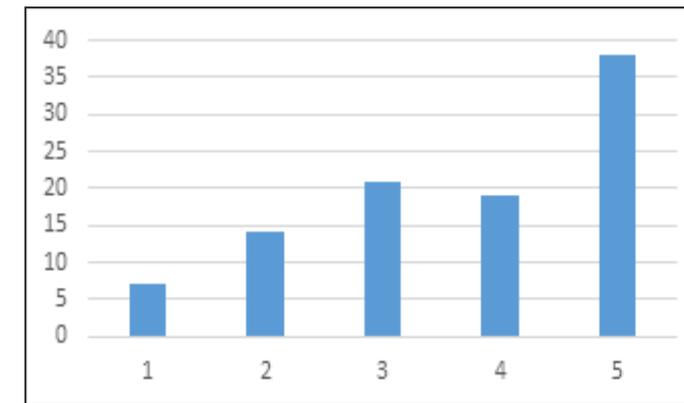
Pic:3.6



As we can see in the above table there is a strategy for effectiveness of employee engagement using virtual game show. more no of the respondents i.e., 38.4% gave rating to satisfied, then 33.3% respondents gave rating to very

satisfied, 17.2% respondents gave rating to OK and 6.1% respondents gave rating to very dissatisfied that means they think that employee engagement using virtual game show is not that effective.

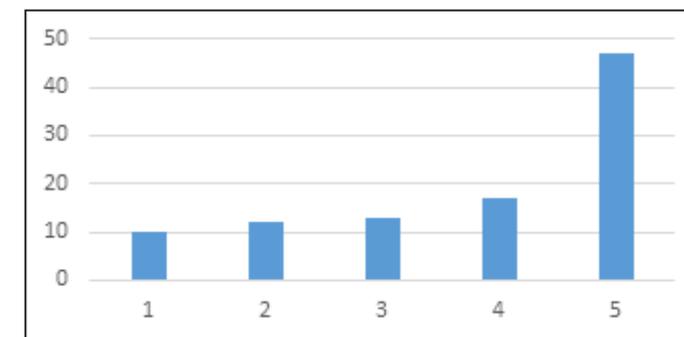
Pic-3.7 Effective Employee Engagement Strategy (Offering Online Training)



As seen in the above table it shows that rating for Offering Online Training which is a strategy which will effective for employee engagement strategies. most of the respondents i.e. 38% gave rating very satisfied to offering online training means they highly think

that this strategy is very useful, 19% respondents gave rating to satisfied, 21% respondents gave rating to OK and only 7% respondents gave rating very dissatisfied to this strategy as they think it is not that effective strategy for employment engagement

Pic 3.8 Effective Employee Engagement Strategy (Change Organizational Culture according to Employee)



As we can see in the above table there is a strategy for effectiveness of employee engagement by using Change Organizational Culture according to Employee. more no of the respondents i.e., 47% gave rating to very satisfied, then 17% respondents gave rating to

satisfied, 13% respondents gave rating to OK and only 10% respondents gave rating to very dissatisfied that means they think that employee engagement by using Change Organizational Culture according to Employee is not that effective.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.811	3	.270	3.641	.025 <sup>b</sup>
Residual	7.053	95	.074		
Total	7.864	98			
a. Dependent Variable: employee engagement					
b. Predictors: (Constant)					

In our case P, the value (sig. Value) is 0.025, which is <0.05 which means that our null hypothesis is rejected. Our null hypothesis H<sub>10</sub>: Employee engagement do not have significant impact on work life. H<sub>11</sub>: Employee engagement have significant impact on work life. So, we can conclude that Employee engagement have significant impact on work life.

## 2. FINDINGS

- The researchers spoke with industry professionals to get insights into virtually workplaces. Based on the answers, this paper attempts to develop an approach for increasing employee engagement.
- The traditional know-how before the epidemic was that offices were important to productivity, culture, and the battle for talent. Employee involvement might be stated most simply as what makes an employee work hard.
- When the pleasure of the employee is the satisfaction of an employee, employee involvement may be more important for increase productivity and revenue. As discussed in the analysis there are more no of respondents answer that employee

engagement is important for increase revenue.

- All the organizations should adopt innovative and creative employee engagement practices during this tough time of pandemic COVID-19 to keep employees motivated, stimulated, committed, satisfied, and blissful in this tough time.
- Work-from-home regime is nowadays very essential; it would be successful only with the help of online practices.
- Organizations should be implementing an online practice approach to stay in the competition during this difficult time. Virtual relations should be crucial for companies to enhance the engagement of employees.
- Engaged employees always achieve objectives very smoothly. Management also looks into how to engage employees in order to be able to encourage a positive organization culture.
- Organizations also need to be able to recognize the various facets that motivate and derive employee engagement in organizations.

## 3. CONCLUSION

In today's COVID-19 pandemic, the involvement of staff has become extremely important. It would certainly be a fantasy in this present lockdown scenario to consider capturing the top position without the backing of your workers. Companies realize that the key to success in that difficult period is committed workers. As the IT industry changes, it is important that current rules be transformed to improve the strategic involvement of employees. That is why companies must look ahead to ensuring workers' involvement under pandemic conditions are pleased and motivated. Many companies nowadays are developing numerous employee engagement practices like virtual team meet-ups, virtual learning and development, conducting weekly alignment online session.

Working from home during COVID-19 has become the new standard for IT businesses. Developing methods to promote employee engagement in the new work environment is critical. Employees who are engaged are more likely to be productive, perform well and show dedication to a company's beliefs and objectives. As a result of the CORONA epidemic, unexpected lockdowns, and curfews, the necessity to establish a virtual environment has increased in every sector.

A questionnaire is an instrument of study consisting of a number of questions and answers written or written in a given sequence on a form. This study's main objective is learn more about the "Effectiveness of employee involvement

during WFH for the IT industry". If employee balance and business level, adequate assistance to the workers as well as employee involvement can be properly carried out, most employees would be happy, virtual working environment may become comfortable. Employee morale is raised as a result of engagement initiatives, and workers feel more inspired and dedicated to the company. This paper tries to provide a response Based on approach for increasing employee engagement. There are more no of respondents who say that employee engagement is important for increase productivity.

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## Privatisation of Higher Education in India

**Annwsha Chanda**

Lecturer, Panihati Mahavidyalaya, Kolkata  
anne.swati.chanda@gmail.com

**Dilip Chanda**

Associate professor Department of commerce,  
Kalipada Ghosh Tari Mahavidyalaya, West Bengal  
dkc57@rediffmail.com

DoI: 10.23862/kiit-parikalpana/2021/v17/i2/210545

### Abstract

Privatization of higher education is not a new concept in India. While on one hand, expenditure for higher education is gradually increasing day by day, on the other government is gradually decreasing its financial support to the higher education in public sector. As a result, profit making higher education institution is growing rapidly in private sector. How far the rapid growth of higher education institutions in private sector affect various dimension of higher education in India more specifically equity and quality of higher education is the subject matter of discussion of this paper.

**Keywords:** Higher education, Privatisation, Professional course, Universities

### Introduction

Privatization is a matter of big discussion in the present day state of higher education in India. Obviously, question may arise, what is the meaning of privatization of higher education? To get answer of this question in Indian context it can be said that privatization of higher education means withdrawal of the government's support to the task of financing and managing higher education. The basic issues of privatization of higher education, however, would always be considered as the formation of commercial hubs under the head higher education in a brutally competitive market which

solely aiming at their survival through cost recovery system. In terms of economics, would it not be the regime of shifting from the free access to the fee access as in India money and morality are rarely compatible? Would it not be aimed at to hit our the best and the brightest poor students? To focus on these problems, the objective of this paper is to elaborate the issue why the government is gradually withdrawing its support to the higher education. To what extent private initiative in higher education would provide scientific and technical skills, values and social behaviours for a sustainable future development in India. All these are linked to quality.

### Historical Background of the Higher Education in India

In ancient India, Nalanda, Takshila, Vikramshila etc. were the reputed centers for higher education (Khemani, Tulika and Narayan, Jayaprakash - 2006). The scholars from different parts of the world used to come to these centers for the sake of knowledge. Some of these centers were residential in nature and may be to some extent compared with the universities of modern line. Later on, when Muslim rulers consolidated their rules in India, they converted most of these centers into madrasas.

The higher education in India in modern line started its journey with the establishment of Hindu College in 1817 by Raja Ram Mohan Roy. In 1824, East India Company established Sanskrit College in Kolkatta. This establishment was opposed by some social reformers on the ground that Indian masses should receive education of modern science through the medium of European languages. This controversy gave rise to the famous minutes of Macaulay in 1835. Macaulay suggested that medium of imparting higher education in India should be European Languages which encouraged the British Government in India to introduce English as the medium of imparting higher education (Naik & Nurullah - 1974).

However, the universities in India started their journey as a milestone of higher education, holding the model of London University (i.e.,

a university of affiliating type) since the beginning of nineteenth century. According to the "Magna Carta of English Education in India", three universities like Calcutta, Bombay, and Madras University were established in 1857 (Ved Prakash 2007). Mention may be made that 'Magna Carta of English Education in India' described the aim of Indian as the diffusion of arts, science, philosophy and literature of Europe and the study of Indian languages (Naik & Nurullah 1974). At the end of the nineteenth century, another two universities namely Lahore University (1882) and Allahabad University (1857) were founded. On the other hand, during the period of 25 years from 1857, there was an increase in the number of colleges from 27 to 75. This increasing trend of colleges raised demand for the establishment of more universities in India. As a result, the number of universities increased from 3 to 12.

To know the problems faced by the Calcutta University, Government of British India appointed the Calcutta University Commission (1917 - 1919). Mention may be made that the problems faced by the other universities in India at that time were as like as the Calcutta university. The report of the Calcutta University Commission had far-reaching effect on the development of the university education in India. Thus, on the eve of independence in 1947, there were 20 universities in the country and most of them were teaching universities.

### Present Day Scenario of Higher Education in India.

Since independence, the higher education in India has undergone a major transformation in spite of severe resource constraints. This expansion was because of the social demand as well as of the political compulsion. In 1947 the year of independence, total number of universities and colleges in India was 20 and 500 respectively with total enrolment of over 2 lakh students. During the first two decades of post independence there was a remarkable growth in higher education in India. This rapid growth was because of the implementation of the recommendation of the University Education Commission (1948) and the Education Commission (1964 - 66). This period was denoted as an "era of higher education in India". The growth rate in terms of the number of higher education institution and total enrolment, which was 13 - 14 percent in 1950 - 60, declined to 4-5 percent in 1980. Thereafter, the average annual growth rate of universities and the trend of enrolment saw an increase again from 1991 which was the result of private sector's participation in higher education.

As per the latest report published by the UGC, total number of universities as well as affiliated colleges are 1000 and 40000 respectively in India with total enrolment of over 20 million students, which is equivalent to the 10 percent of total enrolment in higher education in the world. Is it a remarkable growth in higher education in comparison to

the other developed and developing countries of the world? India is having 1000 universities to cater the needs of 125 crores of population while the United States of America is having 2400 universities to cater the need of only 28 crores of population. Similarly, Japan is having 690 universities for 12 crores population, Germany is possessing 330 universities to cater the need of 8 crores of population and The United Kingdom has 104 universities to cater the need of only 6 crores of population. It implies that India is lagging behind when the ratio between the number of universities and total population is compared with all other developed countries of the world. It is estimated that India needs at least 3000 more universities to meet the increasing demand for higher learning (Bhargava 2006).

A China based study (SJTU- 2005), ranked the Universities around the world using the several indicators like alumni and staff winning major scientific prizes, highly cited researches, articles published in prestigious journals and articles indexed in major citation indices. As per that analysis, the United States of America captures the top position in the world with 53 of the best 100 universities. In addition to this, it has pocketed 17 of the best 20 institutions. Within the range of 301 to 400 best universities in the world, India has one university i.e., Indian Institute of Science, Bangalore and within the range of 401-500 universities, India has two i.e., the University of Calcutta and the Indian Institute of Technology, Kharagpur. Even in the Asia Pacific

region, these three best Indian universities are laggards. China the neighbouring countries of India has 18 universities in the top 500 while India has only three. Very recently The Shanghai Ranking Consultancy published its 19<sup>th</sup> edition of the Academic Ranking of World Universities 2021 (ARWU). In that report it is revealed that Harvard University of USA stands top in the World wide ranking. It is followed by Stanford University of USA and the University of Cambridge of UK. So far as India is concerned, Indian Institute of Science (IISc), Bangalore became the only Indian institute to secure a place in the top 500 best universities all over the world while university of Calcutta secured its place within the range 601 to 700 best universities all over the world. Similarly, Benaras Hindu University, IIT Delhi, IIT Kharagpur, IIT Madras, Jawaharlal Nehru University and University of Delhi confirmed their position within the range 701 to 800 best universities all over the world.

One pertinent question may arise in this connection why United States of America captures the top position in higher education field in the world. What features are embodied in higher education sector in U.S.A. In that country, student assessment of teachers is must which serves two purposes. This issue demands some elucidation. One is to find out what students think about the instruction being imparted to them and the extent to which they profit from it and the other is to use this input not only for the academic promotion but also to determine how much salary is to be given to a particular teacher.

Unlike our country, there is no fixed pay scale for most of the academician in that country and no predetermined or annual rate of increment. Everything depends upon the performance of the teacher. Student's judgement is not only the yardstick to evaluate the performance of the teacher. Peer judgement is also given a certain degree of weightage.

In our situation, it is completely opposite. Teacher absenteeism particularly in the public sector educational institutions is wide spread in our country. Underperformance of a teacher is not considered as an offence. On the contrary, it is lived with, day after day and year after year. As a result students are the sufferer at the cost of the tax payer's money in the most of the public sector educational institutions in India.

Another lacklustre performance of the Indian academic institutions is due to the financial hardship that our universities in public sector are experiencing. In the one side universities dependence on the government for financial support is increasing day by day while on the other side government is encouraging them to generate financial resources for themselves by applying their own effort. According to the National Policy on Education 1986 it was suggested six percent of GDP is to be allotted as total expenditure on education, including a share of 1.5 percent for higher education. But reality is completely different. Currently investment in public sector education institution is roughly 4 percent of GDP, including a share of higher education at 0.4 percent. When

we go to see budgetary allotment in higher education it was 1.6 percent of total budget expenditure in 1990 - 91 declined to 1.3 percent in 2002 - 03 and 1.2 percent in 2015 - 16. In short, currently India is spending on higher education is less than what it was before 12 years. The argument as made by the government in favour of cutting subsidy on higher education is that the social benefit as derived from elementary education is maximum and from higher education is minimum. Therefore, government should support elementary education largely and to the higher education, it should be lesser. In this relation, it can be said that the argument as made in respect of higher education is not right. Elementary education undoubtedly is our fundamental right but it should not be at the cost of the higher education.

From the table 2 it is revealed that the number of student enrolled in higher education seems to be large in absolute term, but the gross enrolment ratio is not more than nine percent, which is low compared to other developed countries of the world (Anand Krishnan M 2004). In the United States of America and Canada 60 percent of their population are enrolled in the higher education institution. This percentage is 40 percent in several European countries and more than 20 percent in many developed countries. A NIEPA study reveals that no country in the world could become an economically advanced country, if its enrolment ratio in higher education is less than 20 percent of its population (Patel, I G -2003; Dutta P. K - 2007 and Chauhan - 2000). But high enrolment ratio in higher education always does

not ensure that it causes high economic growth. Latin American countries are the example to this end where enrolment ratio in higher education is high but they are economically underdeveloped. In this connection, another point should be remembered that high enrolment in higher education should not be compromised with high quality. In India there is a large gap between the demand of India's rapidly developing economy for educated quality manpower and the existence of educational institutions currently entitled to providing such manpower. This gap needs to be filling up through a remarkable increase in investment in higher education. While the public sector must take responsibility for increasing its level of current expenditure substantially, it is unreasonable to expect from them to meet the entire funds required for building centre for excellence, high-grade educational infrastructure, and research institutions. In addition to this, political interference and too much of bureaucratic control also imperils academic freedom in public sector. Thus, a weak higher education system not only causes distress to the student community but also fails to address our national problems, which is indispensable in the era of globalization.

### **Genesis of Privatization of Higher Education as an Alternative to the Public Sector Higher Education.**

The concept of privatization of higher education as mentioned earlier, emerges mainly because of the unwillingness of the government of India to support the higher education

according to its need. Everywhere it is advised to the universities to generate their own resources. The governments are finding it difficult to provide adequate funds for its sustenance. The central point of the Article 14, 15, 16 of the Indian constitution is equality. However, as far as higher education is concerned, it is irony to say that on the one hand, government of India accepted the principles that access and equity would be the two important points in the ninth five-year plan period but on the other hand, it has started to cut down subsidy on higher education. Government of India has made a resolution that it is the duty of the government to pay attention towards the education of the weaker section and socially disadvantaged group of the society. However, reality is completely different when government of India open up the doors for the private education institutions where free access of students is replaced by fee access. Inclusive higher education requires equitable access to higher education by all groups of students in order to ensure barriers free access to the poor students of socially disadvantaged groups. According to the review made by UGC the gross enrolment for the poor works out to be only 2.41 percent as against non – poor 12.8 percent and the national average is 10.10 percent. It shows that only 2.41 percent of economically disadvantaged students get admission in higher education in India. While international trend in the participation of the private sector in higher education throws up a mixed picture, in Indian context it is

a major concern. In India a couple of industrialists' houses prepared a report namely "A policy framework for reforms in higher education that is popularly known as Ambani-Birla report 2000. The essence of this report is that the responsibility of government should be maximum in the area of school level education only and minimum should be in the area of higher education. This report clearly advocated in favour of the establishment of private university. In India, however, there is an increasing trend of both the number of privately owned higher education institutions as well as enrolment in them in recent years. In 2014-15, private unaided higher education institutions constituted 42.6 percent of the total number of higher education institutions in India which increased to 63.21 percent in 2016-17. Similarly, the share of enrolment in private unaided higher education institutions has gone up from 32.9 percent in 2014-15 to 51.53 percent in 2016-17.

Rumki Basu (1995) pointed out why private involvement in higher education is necessary in India. She opined:

1. A stage has come now when it is very difficult on the part of the government to meet the democratic aspiration of the people due to paucity of fund. Therefore, it is the high time to invite the private participation in higher education to share the burden of state funding in higher education sector.
2. Education or knowledge industry is no longer treated as a social service.

It is considered as a necessary economic input in human resource development.

3. Private sector is considered as a major beneficiary of the knowledge industry. Higher education is now considered as a commercial product, which can be purchased and sold in the market like any other product as is dealt in the knowledge market, Therefore, Private investor obviously can take part in this industry.
4. Private sector can respond to the market demand for labor more promptly than the public sector.
5. Public sector provides education more or less as free service. This has devalued education in the eyes of the recipients. On the other hand, private sector provides education service by charging full cost or cost plus some profits, which generates greater responsibilities among the recipients of education.
6. Privatization generates more resource from the students in terms of fees, which ultimately reduce fiscal burden of the government.

Thus in India, the privatization of higher education is being found in different forms. We find that the existing public universities and colleges introduce self-financing courses in various subjects for which government funds are not required. There is an instance, where public universities and colleges offer 60 to 70 percent of their academic programmes under the self-financing

scheme. This hybrid system of private and public initiative is nothing but the indirect way of privatization of higher education (Ved Prakash 2007). In many colleges / universities in India the authorities charge exorbitant fees for self-financing courses which is not affordable for most of the students. The students those who have better access to resources may enjoy these opportunities. This creates inequalities in the system (Kaul - 1993). This widen the gap of haves and have not.

Since the beginning of the planning era, the government of India took decision to subscribe heavily the higher education. But reality was different when the situation started to be changed with the implementation of the education policy (1986) which keenly supported the establishment of higher education institutions in private sector. Thus the expansion of this type of institution was not only limited within the engineering and management discipline, rather expanded to all other areas of higher education. The private sector higher education institutions has become to larger and dominating in some states that the public sector has become diminutive in relative size. Statistics reveals that among the total number of colleges in the country, nearly one third are self-financing and most of them were established during the last 10 – 15 years. In Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra privately owned colleges are more in number than the public sector colleges.

Let us take the example of Andhra Pradesh to know the growth pattern

of privately owned higher education institutions, which may indicate the general growth trend of private higher education institution all over the country. In 1956, only 50 under graduate colleges were set up in Andhra Pradesh. This number increased to 801 in 1996–97 and 989 in 2000–2001. Out of these 989 colleges, the government directly funded 176, 172 were aided (95% support from the government) and the remaining 641 were purely private colleges. It indicates that numbers of privately owned colleges in that state are more than the number of government and aided colleges put together. Likewise, the growth pattern of professional institutions like engineering colleges shows the similar trend in that state. In 1991–92 total number of private engineering colleges in Andhra Pradesh were 27, which increased to 32 in 1995 – 96, 57 in 1996–97, 89 in 1997–98, 102 in 1998–99, 105 in 2000 - 2001 and 150 in 2014–15. Out of the 150 engineering colleges functioning in Andhra Pradesh, only 16 are government aided and the remaining 134 are privately owned.

Similarly, in Tamil Nadu, out of 463 general education colleges, 228 are government aided and the remaining 235 are privately owned. This pattern is equally applicable to other professional under graduate institutions of medicine, management, law, education etc. During the last five years period from 2011 to 2015, 15 universities were set up in West Bengal. Out of these 15 universities, 8 are in the private sector. In Karnataka out of 53 universities, the government directly funded are 15 while

16 are partially funded and remaining 15 are purely private universities. Naturally, question may arise why privatization of higher education attracts the entrepreneur as well as the other stakeholders.

It is generally believed that private involvement in higher education is more quality oriented than the public institutions do. In the present day world, quality is the *mantra* to indicate whether an education institution would survive in the market for a long time or not (Singh, K – 2003 & Stella, Anthony and Gnanam, A 2004). In this juncture, it needs to focus on the term quality (Subudhi & Paltasingh, 2013, In *Conference Proceeding, ASEM, USA-2013*). A clear conception on quality in higher education is required to navigate our efforts and thoughts to that end. Dr. Abdul Kalam, the former president of India rightly pointed out that “Sprit of inquiry, creativity, entrepreneurial and morale leadership are the capabilities central to nation building in a democracy. Educators should develop in our children these capabilities and make them autonomous learners who are self-directed and controlled”. Similarly, according to UNESCO, education should provide the skills for “learning to know, learning to live together, learning to do, and learning to be”. Thus, education is the main criterion that helps the people to attain sustainable development by increasing their capacity and in this way it helps the people to transform their vision of society into reality. Besides these, quality has some morale imperatives also which implies that the

students, teachers, parents, and the community deserve the best inputs. The professional imperative indicates that the teachers are bound to meet the demand of the students by giving them the most appropriate updated pedagogical practice. Economic imperative implies the reality of the world and to what extent the educator has to meet that reality by providing quality products like contents, courses and combinations and services like teaching and support services. It should be market friendly. Similarly, social imperative implies the total education system that to what extent is accountable to the stakeholders as a whole. Thus, quality is multifunctional, and multidimensional. Its scope is vast. Thus, question may arise how far private initiative in higher education can satisfy the quality as mentioned above.

Essentially privatization is that type of initiative where governments' involvement is about to be absent and the objective of this type of institutions is to generate their funds through higher fees, user's charges, and full use of recourses. They survive on the philosophy that they do not have to pay for those who cannot pay. They provide to the stakeholders that kind of opportunities what the government concern cannot. The privately owned concerns provide all kinds of courses, which are market driven and student friendly. Private universities frame curricula, which emphasizes on training on skills, improve employability and challenge the frontiers of knowledge. Otherwise, they will not be able to

survive in the market. They provide wider choice to their students than those offered by the conventional state run affiliated institutions in existence. It is so happened that most of the public institutions take many years before they can alter their design of their courses and combinations to suit emerging occupational patterns where conventional courses are dealt in a conventional manner. Thus in privately own higher educational institutions the stakeholders have a better chance to receive accountability and value for their money.

There is a common saying that university pass out students opine that they do not get job after the completion of their higher education while industrial houses say that they do not get competent manpower for their concern. It means there is a gap between two types of demand. To fill up this gap in many privately owned universities the authorities appoint corporate personnel as faculty member and the course curriculums are framed according to the requirement of the corporate house and the students are trained according to that line which help them to get job after the completion of their course. In public sector universities students do not get such type of facilities. There are many private universities in India where they have sector skill council. Industrial house of different sector are related to these council of the universities. They know what kind of expert hands they required for their concern. They take initiative to train the students in line of their requirement. As a result the

possibility of getting job on the part of the students become brighter after the completion of their higher education course.

Yet another factor that is heavily debated in the matter of privatization of higher education is the appointment of faculty member. There are some private institutions those are known to have their own tailor made rules and arbitrary procedures for the recruitment of their faculty members who are not paid at par with their counterparts in the government institutions. Such instances of professional exploitation cannot be justified at any cost. It must be remembered that a demotivated teacher is a bad human resource. He may not be in a position to deliver his best lecture to inspire his students. Such practices are repeatedly reported from different private colleges and universities in India. On the contrary, there are many examples of private higher education institutions where the faculty members are not only paid at par with their counterpart in public institutions but also allowed them to provide service to the institutions until the age of seventy years based on their remarkable past performance. KIIT in Odisha, Adamas University, Techno India University, in West Bengal are the example to this end where qualified retired professors as well as the qualified retired corporate personnel are appointed to impart quality education to the students. In West Bengal, superannuated teachers are officially allowed to provide service to the government aided colleges as a faculty member until the age of seventy

years. However, in some situation dirty politics inside the public colleges create barrier to appoint qualified retired teacher which ultimately effect the sound academic atmosphere as well as the student teacher ratio of the colleges when sufficient number of fresh faculty members are not appointed.

Enrolment of students in higher education institutions is increasing year after year but faculty size remaining stable which causing deterioration of student teacher ratio in the country. Out of 34 states and union territories in India more than half the number of states, i.e., 18, have student teacher ratio above 20. With states like Gujarat, Uttaranchal, Uttar Pradesh and Rajasthan 1 teacher is for 40 students and surprisingly in Sikkim, this number is 1 teacher for more than 90 students (Govt. of India 2003-04). The university authorities in many places overcome the shortage of faculty by engaging teachers on ad hoc, contractual or part time basis. However, that does not guarantee to the candidate and hence there is a lack of commitment on individual's part. Therefore, to do justice to quality it is necessary to appoint sufficient number of teachers especially at higher education level. There may be two reasons behind the shortage of faculty. One, not many students opt to join academics these days, and two, with the limited resources in UGC, and nominal pay packages offered by the central and state universities, are not being attract the academicians to join in the government aided universities rather they show their interest to join

in the privately owned universities / institutions from where high pay package is offered. The authority of the private universities considers that faculty member is the lifeblood of the higher education system. Therefore, they always try to recruit competent faculty having excellent credentials in academic world to remain in the field of competition. As a result they become successful in attracting students through the quality of their faculty, programs, training and placement.

It is said earlier that government do not have sufficient resources to provide fund to the higher education sector in India. In this situation, the government can adopt a policy of decentralization of higher education in which private institutions can play a remarkable role. In this way, competition will remain between Private and public educational institutions which would be good for the both. The argument is that the quality is varied between these two types of institutions. The private institutions are structurally much better suited to serve the postmodern world order than are the rigid, cash trapped government universities. Thus it cannot be denied that the career prospects of the academia at present are to some extent better in the private educational institutions in comparison to public educational institution in India (Galbraith - 2003).

#### **Suggestion and conclusion:**

1. As privatization has added a new dimension to our higher education set-up, it is posing

some grave challenges to the teaching profession, which may cause increasing devaluation of quality in higher education. This cannot be permitted. To check the devaluation of higher education in private sector, it is necessary to introduce academic audit system that enjoins upon such institutions to act in a socially responsible manner. The national apex nodal agencies like the UGC, AICTE, NCTE, MCI, DCI etc., must come forward to ensure that these privately owned higher education institutions subscribe to the nationally laid down requirements. They should come out with punitive action plans to ensure quality in private institutions with emphasis on counter checks against their undue expansion.

2. The universities must ensure that the private colleges are not merely replicating run of the mill courses with their grant of affiliation being there as a notional ritual. They should remember that their prime motive is to maintain quality in education, without which they cannot survive in the education field. It is only then that the privatization can yield its desired results. Otherwise, these will result in creating social divide, teachers' disrepute and students' exploitation, and will eventually be yet another patchwork of good and bad governance.
3. It is evident that the self- financing institutions in the private sector do

not depend upon the government grants rather they recover their costs from the students in the form of fees. Some covered this under the heading capitation fees but this has since been stopped through the intervention of the courts. However, has it really stopped? Has it not taken some other equally dubious shapes? This is where the role of national statutory agency would come if privatization were to be supported as a viable alternative. It is the case with NCTE and other such councils.

4. Similarly, the central government should come forward to lay down the guidelines on the subject of establishment of private colleges and universities. It is necessary to save the students, parents, and teachers from undue market exploitation. It is in the absence of such clear national guidelines that the caricature private universities are established and the highest court of the country had to strike down their creation much to the discomfiture of their students. The private players with dubious credentials who are becoming national and international security problems and play with the carriers of students should be held liable.
5. Ultimately it is also debatable at the national level that there could be healthy and homogeneous mix of public private enterprise model in higher education with active partnership and guidance of the government as well as of the

private sector. This kind of model could have the legal framework that could help them work jointly for preparing our youth to match the much-needed international quality, as it would be the product of the best in collaboration of the two sectors.

6. Thus, it can be seen that the virtues of the one could be combined with those of the other to get the best result. Greater collaboration with information and communication technology enabled resources can ensure greater reach and quality. The present challenges can be converted into opportunities through timely appraisal of the ground realities and positive inputs from the governments and private investors so that India may be seen as a quality destination both in teaching and research.
7. Privatization notwithstanding, to improve access to institutions of higher education only, the government should create a monitoring and support system for the economically backward students through the creation of quality review programmes, a learning fund, a hardship fund etc. This will restore faith of the common persons in the capacity of the government to check the misadventures of the private entrepreneurs in higher educations solely for the profits. For the poor students even such institutions have to be instructed to reserve seats.

**Table 1: Distribution of the World's Leading Universities in few Chosen Countries.**

Country	Top 100	Top 200	Top 300	Top 400	Top 500
USA	53	90	119	140	168
UK	11	19	30	36	40
Germany	5	16	23	33	40
Japan	5	19	13	24	34
China	0	2	6	15	18
India	0	0	0	1	3

Source: <http://ed.situ.edu.cn/ranking.html>{ collected from university news, 40 (17)}

**Table 2: Growth of Higher Education in India**

Year	College	Universities **	Enrolment (mn)
1950 - 51	578	28	0.2
1960 - 61	1819	45	0.6
1970 - 71	3277	93	2.0
1980 - 81	4577	123	2.8
1990 - 91	6627	184	4.4
2001 - 02	11146	272	8.8
2002 - 03	15343	300	9.3
2004 - 05	17662	342	10.5
2006 - 20	40000	1000	11.0

Source: UGC annual reports and other publications.

\*\* Including deemed universities, Institute of Public Importance like AIIMs, IITs, IIMs, IISCs, NITs.

Source: <http://ed.situ.edu.cn/ranking.html>

## CONCLUSION:

In a big country like India, it is not possible either on the part of only public sector or on the part of only private sector alone to bear the burden of managing the higher education. There is no country in the world where higher education is maintained completely either by the private sector or by the public sector alone. For example, in Japan, Korea, Philippine and in Latin America higher education is being maintained by the private sector in a large extent along with restricted public sector while in South Asia, Africa and Western Europe both the public and private funding maintain the higher education sector with the domination of public funding. In Netherlands and Belgium, both coexist under the public funding. In Sweden, UK, France, Spain and Thailand limited private funding exists for running the higher education sector. India is a developing country. According to our constitution, it is necessary to ensure the access and equity for masses in higher education. We cannot restrict the higher education only for the people belonging to the upper socioeconomic background. We should open up the avenue for the talented and creative but poor economic background boys and girls to enter into the arena of higher education. Considering the global trend, it would be wise decision on the part of the government of India to come forward to provide more budgetary allotment to the public sector higher education institutions so that they can compete with the private sector higher education institutions.

In other words, coexistence of both the public and private investment in higher education sector it is necessary for the wellbeing of the students in India. In this connection, it needs to be mentioned that government must keep its controlling hands not only on the public sector higher education institutions but also on the private sector higher education institutions.

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## A Study of Performance Indicators of Technology Business Incubators (TBIs) in India

**Vishal Gandhi**

Research Scholar, Department of Business Administration,  
FMS&R, AMU, Aligarh

**Asif Ali Syed**

Associate Professor, Department of Business Administration,  
FMS&R, AMU, Aligarh

**Sudhir Kumar Jain**

Former Vice Chancellor, SMVD University, Katra, J&K  
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**Abstract:** A business incubator is characterised as a point of contact between the market and the entrepreneurs' proposed business concepts. It includes provision of differential facilities like infrastructure, mentorship, capital and expertise so that there is effective utilization of creativity and ability. This research work assess the performance of technological business incubators (TBIs) based on no. of patent granted, support services offered by TBI, services offered in TBI, selection criteria for incubate, exit criteria for incubatee, academia linkage, corporate linkage, nature of functioning as a performance indicator. Partial least squares structural equation modelling (PLS-SEM) was employed for testing the significance of hypotheses. Findings show that no. of patent granted, selection criteria for incubatee, corporate linkage, and nature of functioning of TBI have a significant influence on TBI success.

**Keywords:** *Technology incubator; business incubator; exit criteria, academia linkage, corporate linkage.*

### 1. Introduction

The main aim of technological incubators is to foster creativity by providing social support with complementary skills and tools. "The technology incubator is an institution in which expertise is turned into new products and services (Yee, 2009)," according to Yee (2009). Such incubators can deliver good projects

thanks to a mix of information sharing and incubator management. Company incubator roles have a positive and significant effect on the economy of country (Cheng and Schaeffer, 2011). However, they discovered several issues with the approved exam standard. Global business trends represent that small businesses make up almost half of a country's overall economy

(both developed and developing). Throughout this environment, start-ups, business incubators, and technology business incubators (TBI) all contribute considerably to the country's economy, as does the knowledge and innovation-based economy. Different forms of incubators were studied (Peters et al., 2004). A company's knowledge base is a critical component of its success and ability to compete with other businesses (Gupta and Govindarajan, 2000). Among the most challenging tasks is developing projects that use incubators' products or integrating incubators into new projects. Needed Several sources to ensure the feasibility of new projects (Brush and Greene, 1996). Efficiency, project viability, and experience are all critical considerations.

Technology and creativity are an essential for success (Rooney et al., 2012). The capacity of organizations to innovate is critical to their ability to improve the business economy. The absence of this means they cannot complete and limit their businesses' growth and their potential to increase their income (Tayloret al., 1993). Innovation can help improve efficiency, competencies and generate revenue (Carlson and Wilmot, 2006).

Incubators have also grown in scale and variety all over the world. It has a long history of contributing to economic promotion and career production. The need to assess the efficiency of these incubators and examine the reasons that enhance organizational performance or failure have increased

proportionally over time, as has the desire to recognize the impact that these incubators have had on the companies they host but to be able to reproduce them. Unfortunately, some countries' successful models unfortunately, methodological, theoretical, and analytical limitations also hindered the assessment of incubator results (Yu & Nijkamp, 2009), subsequently, it is exceedingly difficult to draw concrete conclusions from current incubator research. Furthermore, it seems that the incubator's output is measured in a variety of ways. Geographical, industry, and a variety of other aspects all play a role in its success. A consensus about how to measure incubator performance is still to be found, also there is a lack of a consistent description of performance indicators of TBIs. Many performance indicators are witnessed in literature on business incubation but no. of patent granted to incubates and nature of functioning as a performance indicator is silent in published literature.

Therefore, this research examines the performance of TBIs by considering no. of patent granted, support services offered by TBI, services offered in TBI, selection criteria for incubate, exit criteria for incubatee, academia linkage, corporate linkage, nature of functioning as a performance indicator.

Hence, the scope of this study can be defined as under; examining the performance indicators and how they affect the success of TBIs, examining how TBI success affects the Social and Economic perspective to answer the persistent question.

## 2. Study Background and Conceptual Framework

This study assessed the performance indicators affecting the success of TBI and influence of TBI success on social and economic perspective.

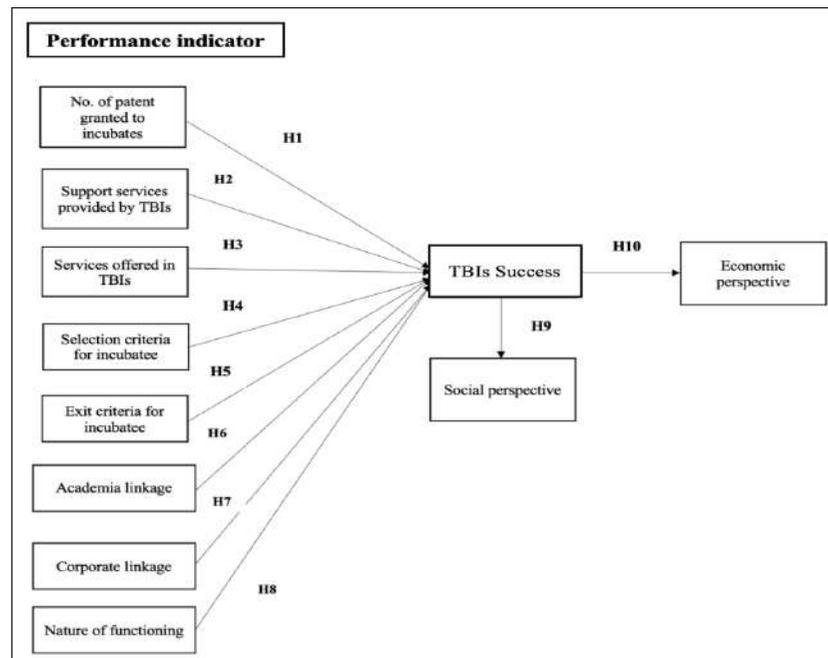


Figure 1: Proposed Research Model

Conceptual framework consists of performance indicators namely no. of patent granted, support services offered by TBI, services offered in TBI, selection criteria for incubate, exit criteria for incubatee, academia linkage, corporate linkage, nature of functioning as a performance indicators. Figure 1 shows the research model. Performance indicators which affect TBI success in the development of research model are discussed below:

**Number of patent granted to incubates:** Patents assist TBIs in improving their positioning, creating an innovation environment, incubating knowledge-

based start-ups, generating increased income, and tracking research activity. innovators Billions of dollars are raised as a result of certain systems, which benefits everybody involved. The inventor (mostly academics), the educational system, business, and the economy as a whole are the direct beneficiaries. That number of registered patents is a good measure of a country's creativity and technological ability.

**Support services provide by TBIs:** TBI's support services are designed to help local companies gain access to information and expertise that they'll

never be able to obtain on their own. The number of firms that graduate from such an incubator is positively influenced by the support service (Shrader and Siegel 2007). Access to financial services is amongst the most important considerations for most start-ups' survival and it is considered including some of the incubator effectiveness factors (Gozali et al. 2015).

**Services offered in TBIs:** Mentors or mentors are older men and women with unique backgrounds and valuable educational skills that really can impact others early through their careers and find a better role than peers or counsellors (Lichtenstein 1992).

**Selection criteria for incubatee:** That even a company incubator chooses the firms it wants to incubate is amongst the most crucial mechanisms also for incubator's performance, and these may differ depending upon this incubator's purpose and goals. The proposed market incubator model (Campbell, et al. 1985) indicated that one of the four fields whereby incubators / incubators generate value seems to be the collection and regulated application of business resources.

**Exit Criteria:** The better the technological infrastructure, more the likely an incubator climate would promote the formation of technology-based businesses, their early growth, an potential to innovate, including their readiness to graduate. The basic supporting factors what ultimately assess their performance, longevity, and growth after graduation through

incubators, as well as the mechanisms of survival or departure from businesses after graduation through incubators. The main objective of TBIs is to assist and support future entrepreneurs (Mas-Verdú et al., 2015). According to recent studies, incubated businesses may not get profit substantially from existing incubator relationships, and may be susceptible to failure after graduation (Lasrado and colleagues, 2016).

**Nature of functioning:** Accelerator and incubator programs often operate in cohorts, typically offering one or two per year, and span anywhere from a few weeks to a few months. Some expenses, like travel, may be covered by the incubator. When considering accelerator and incubator programs, it's a good idea for entrepreneurs to look at past program participants and look for companies at the same stage as their business.

**Corporate linkage:** Corporate linkage is regarded as the most important tools for business incubators in terms of identifying opportunities and improving entrepreneur efficacy, particularly in the face of limited resources. Company incubators and their customers benefit from social media because it shortens the path and saves time when it comes to making decisions and expediting operations. (Fernandez-Perez et al., 2013).

**Academia linkage:** A university based incubator (UBI) TBIs come in a variety of forms. In either regard, various typologies have also been given. Public incubators, proprietary incubators,

but university incubators are the three types of incubators. That current study reflects on Barbero et al. (2012). A UBI is characterized as university-based institutions providing tangible and intangible resources to young business start-ups, per the them.

**3. Methodology**

The survey tool was used to gather data for this study. Based on the observation of a subset of the population, the survey instrument offers an overview of numerical or quantitative patterns in the population's views and attitudes. Babbie (2013) states that "surveys are particularly useful for describing the characteristics of a large population because they make large samples feasible". The closed question technique used in the survey queries. A minimal number of participants provides accurate responses in this technique. Rather than answering questions or sharing their views, participants were asked to pick or rate answers. Some methods are used to achieve a high survey response rate. To begin, the survey project determined that the overall time needed to complete the survey was 14 minutes. Second, follow the protocols recommended by Sekaran (2003), such as keeping the survey as brief as possible, explaining the research objectives and the relevance of the survey to the report, and including this detail mostly on the cover page.

As a result, this research utilized the data collected through the survey conducted. The survey was designed from the ground up in order to provide

findings that met the study's goals. Participants was asked to complete a questionnaire based on Likert scale.

The selection of TBI from the more than 300 incubators present in India at the moment was done by selecting TBIs having more than 7 years of experience. It included TBIs that were incorporated before 2008 and facts were collected from them by using surveys and questionnaires. Final sample size for analysing the data was reduced to 57.

**4. Measurement Model Analysis**

According to Chin (1998), the reliability level above 0.7 ensures that the scale is reliable which is the case for all constructs in this study (Please see table 1). In this study, reliability was assessed using two ways: Cronbach alpha and Composite or construct reliability. It was found that all the dimensions depicted the Cronbach's alpha value greater than 0.6, thereby confirming that survey instrument is reliable. Apart from Cronbach Alpha, composite reliability (CR) was also measured in this study. After establishing that the scale is unidimensional an assessment of the statistical reliability is imperative before performing any further validation analysis (Anderson and Gerbing, 1991). In this study, C.R. for all the variables considered in the research model was found to be greater than 0.70 as illustrated in table 1. Thus, the research instrument developed for studying the performance indicators for TBI success was reliable. In this study, inter-item correlation values

Table 1: Validity and Reliability of construct

	CR	AL	CL	EP	EC	NOF	SC	SO	SP	SS	TBIs	NPG
AL	0.717	1										
CL	0.732	-0.093	1									
EP	0.764	0.145*	-0.166	1								
EC	0.753	0.148	-0.031	0.086	1							
NOF	0.719	0.1	0.335***	0.085	0.013	1						
SC	0.786	0.12	-0.135	0.122*	0.788	-0.228	1					
SO	0.727	0.361	0.093	0.013	0.221	0.045	0.133	1				
SP	0.714	0.005	0.02	0.433	-0.066	0.069	-0.034	-0.014	1			
SS	0.787	0.103	0.242***	0.407***	-0.102	-0.02	0.249***	0.579***	0.038	1		
TBIs	0.743	-0.054	0.369***	0.226***	0.276***	0.392***	0.395***	0.238***	0.234**	0.19	1	
NPG	0.776	0.099	0.387***	0.291***	-0.091	-0.016	0.352***	0.624***	0.356***	0.229***	0.204***	1

Notes: Significance of Correlations: † p < 0.100; \* p < 0.050, \*\* p < 0.010, \*\*\* p < 0.001  
The numeric values in bold letters indicate the square root of AVE values and imply discriminant validity CR value.0.7 indicates adequate convergence or internal consistency and strong construct reliability (Hair et al., 2006)

higher than 0.30 was found except for few inter-item correlation values which are satisfactory. Item-total correlation values of the indicators in each construct were above 0.3 as shown in table 1. The findings in table 1 depict that the square roots of AVEs was higher than the correlations between constructs / variables. These results confirmed discriminant validity possessed by scale. In present study the retained 39 items of the questionnaire were proved as a reliable and valid research instrument.

**5. Structural Model Testing**

Structural Equation Modelling (SEM) is a powerful technique to test and evaluate casual relationships between variables (measured variables and

latent constructs) (Hair, 2006). After assessing the reliability and validity of the variables PLS-SEM has been employed for testing the hypothesis. In the present study the proposed research model consists of eleven constructs viz. eight exogenous latent constructs (number of patents granted (NOPG), Support services provided by TBIs (SS), Services offered in TBIs (SO), Selection criteria for incubate (SC), Exit criteria for incubate (EC), Academia linkage (AL), Corporate linkage (CL), Nature of functioning (NOF)) and three endogenous latent constructs (Social perspective (SP), Economic perspective (EP) and TBIs). For the purpose of evaluating the research model on the basis of CFA and SEM, it was decided to report the following goodness of fit indices as shown in Table 2.

Table 2: Summary of the Model Fitness

Fit index	Observed levels	Threshold Levels	Model fit
Chi-Square $\chi^2$	981.528	Lower $\chi^2$ relative to df 2:1	Acceptable
Normed $\chi^2$ ( $\chi^2 / df$ ) (CMIN)	1.467	3:1	Acceptable
Goodness of Fit Index (GFI)	0.831	0.80	Acceptable
Adjusted Goodness of Fit Index (AGFI)	0.827	0.80	Acceptable
Root Mean Square Error of Approximation (RMSEA)	0.047	0.06	Acceptable
Standardised Root Mean Square Residual (SRMR)	0.067	0.08	Acceptable
Comparative Fit Index (CFI)	0.901	0.90	Acceptable
Non-Normed Fit Index (NNFI)	0.845	0.80	Acceptable
Parsimony Normed Fit Index (PNFI)	0.688	No threshold levels	Acceptable
Standardised Residuals	1.153	2.58	Acceptable
PClose	0.214	0.05	Acceptable

Thus, the research hypotheses framed in accordance with the proposed structural model were tested. Since the model fit was acceptable in this study, parameter estimates were examined. Following hypotheses were tested in this study:

- H1: No. of patent granted has a significant influence on TBI success
- H2: Support services offered by TBI has a significant influence on TBI success
- H3: Services offered in TBI has a significant influence on TBI success

- H4: Selection criteria for incubatee has a significant influence on TBI success
- H5: Exit criteria for incubatee has a significant influence on TBI success
- H6: Academia linkage has a significant influence on TBI success
- H7: Corporate linkage has a significant influence on TBI success
- H8: Nature of functioning of TBI has a significant influence on TBI success
- H9: TBI success has a significant influence on social perspective
- H10: TBI success has a significant influence on economic perspective

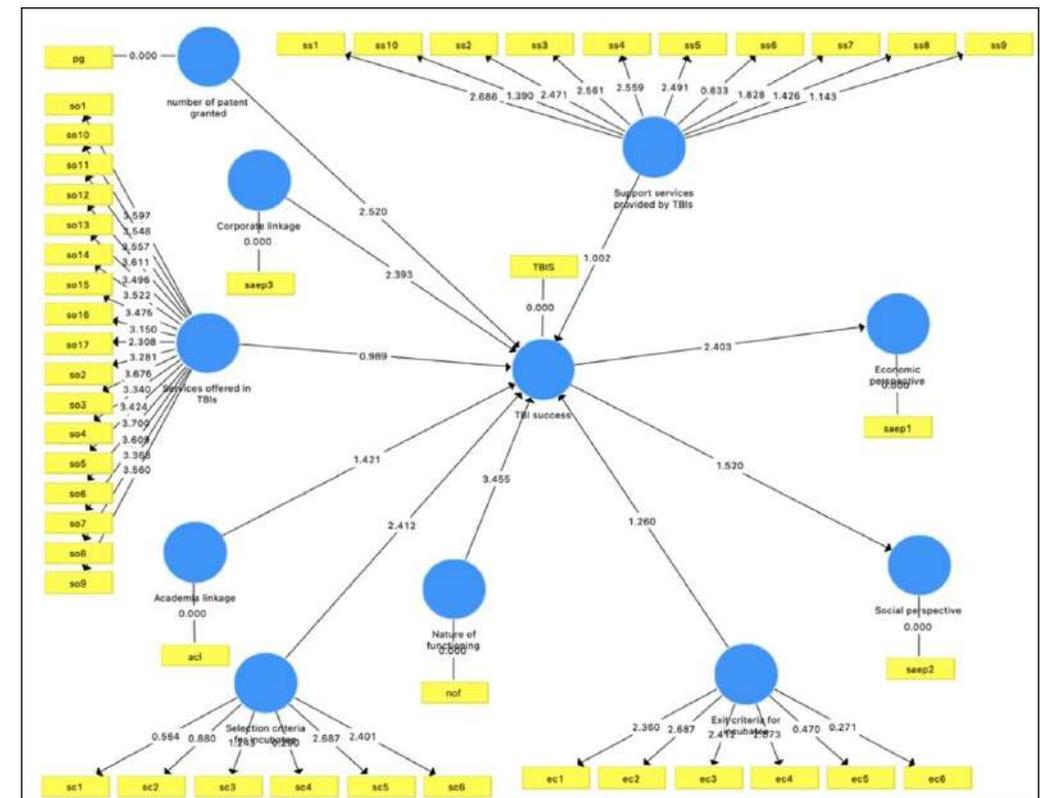


Figure 2: Standardised Path Estimates for the Model

Fig. 2 shows the standardized path estimates for the model. Based on  $p < 0.01$  and  $p < 0.05$ , the standardized path coefficients were found to be insignificant and positive, which indicates that there existed strong evidence in rejection of the hypotheses H<sub>2</sub>, H<sub>3</sub>, H<sub>5</sub>, H<sub>6</sub>, and H<sub>10</sub> except H<sub>1</sub>, H<sub>4</sub>, H<sub>7</sub>, H<sub>8</sub> and H<sub>9</sub>. The significant paths included (NPG TBI success;  $p = 0.016$ ), (SC TBI success;  $p = 0.029$ ), (CL TBI success;  $p = 0.003$ ), (NOF TBI success;  $p = 0.001$ ) and (TBIs EP;  $p = 0.017$ ). Critical ratios lied in the range of 0.412 to 3.455. The prescribed limit of CR is 1.96 (Hair et al., 2006). In this study, only a few paths possessed a critical ratio value above the prescribed limit.

## 6. Conclusion

The research model proposed in this research work provides a deep understanding into the relationships between the variables. It also attempts to explain the impact of performance indicators on TBI success and impact of TBI success on social and economic perspective. As discussed earlier in this study, the proposed model was conceptualized on the basis of extant literature. All the factors possessed construct reliability and validity and thus the research instrument was considered appropriate for the study. The proposed research model possessed that the required model fit into the data and thus, the conceptual research model was considered acceptable. All the factors (performance indicators) considered in the study had standardized factor loadings, thereby establishing that

the constructs are unidimensional. No. of patent granted would enhance technology incubator performance. Patents assist TBIs in improving their positioning, creating an innovation environment, incubating knowledge-based startups, generating increased income, and tracking research activity. Selection criteria for incubatee has a positive influence on TBI success. Patent grants have a huge impact on TBI success. In agreement with Khan et al. (2018), TBIs must increase their intellectual capital in order to achieve a competitive advantage. Corporate linkage has a significant influence on TBI success. This result is aligned with Binsawad (2018) which shows that sharing knowledge and corporate linking is essential for TBI success. Nature of functioning of TBI has a significant influence on TBI success. Smilor and Gill (1987) are in keeping with the conclusion. Support services offered by TBI and services offered in TBI, has insignificant influence on TBI success. The reason is that even the major objective of TBIs should be to assist elevate technological enterprises at such an "early stage to something like a level from which they can take advantage of business opportunities and enter the market without additional support. Exit criteria for incubatee has insignificant influence on TBI success. It is because they do not know whatever has occurred towards the graduating companies of TBIs from available data sources, but whether the long-term subsistence rate is different (Xiao and North, 2018). Academia linkage has insignificant influence on TBI success.

This is due to fact that funds made available by the government are not adequately channeled in the way it says on the fiscal policies. TBI success has a significant influence on economic perspective. This result is in line with Ozdemir and Sehitoglu (2013) which shows that TBI success is closely related to the economic development of the country.

## 7. Implications and recommendations

The framework proposed in this study is of relevance to TBIs, because it enables them to evaluate their performance based on performance indicators. It is of major importance to understand the performance indicators in order to be a successful incubator. This study will make a sound base and support, regarding the performance indicators associated with an incubator's success. Many studies have found strong relationship between performance indicators and TBI success.

The literature describes various performance indicators that measure TBI success. As mentioned earlier, number of patents granted, selection criteria, corporate linkage, and nature of functioning were found to directly and strongly influence TBIs success. Managers, practitioners, academicians and incubator managers can utilize the information generated findings of this research in order to identify the performance indicators affecting TBI success. Government must advise colleges to establish incubators or entrepreneurship cells on their campus

to promote grass roots innovators and facilitate their growth, sadly not many colleges in India can boast of one. Access to an innovation lab or entrepreneur cell is out of reach for many students for those pursuing technical and non-technical courses. They have yet to see the formation and expansion of university incubators of the same level in India, which is in desperate need of a vibrant start-up environment to stimulate student entrepreneurship. Proposes that the Ministry of Education or individual university administrations construct new university-based business incubators in order to boost entrepreneurial development.

## 8. Future research directions

Future research must try to do more than what this study was able to do. Our study was limited either by way the different TBI inputs were organized, despite the fact that it was based on even a primary source dataset including all TBIs in India. In order to deepen our knowledge of TBIs' significance in India's economic development, in-depth study on the performance of TBIs is required. Despite numerous efforts including government measures to promote company incubation, literature has documented the failure of so many business incubation centers throughout the world due to low service quality. As both a result, the numerous service criteria that incubation centers provide to respective clients or incubatee must still be assessed and measured.

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## Role of Diversity in Enhancing Cognitive Learning and Performance

**Priyanka Indoria**

Faculty member, IITM Janakpuri New Delhi  
drpriyankaindoria@gmail.com

**N. Ravichandran**

Faculty member, Jamia Hamdard, New Delhi  
drnrav@gmail.com

DoI: 10.23862/kiit-parikalpana/2021/v17/i2/210547

### ABSTRACT

**Purpose:** To view how cognitive learning effectively improves organization climate this subsequently enhances organization development through process management. The present study adds a new construct-cognitive learning to the existing dimensions of diversity.

**Methodology:** Desk research was undertaken to identify the gaps in the literature. The study used meta-analysis to assess the level of cognitive learning with relevance of organizational behavior in terms of diversity. The multi-stage stratified sampling technique is adopted to gather information from multi-specialty hospitals in NCR with the samples size of 200.

**Findings:** The study reveals that the organizations that have cognitive learning as a texture and structure are found to be more tolerant and show more patience. Moreover, they like to take more challenges and they easily adapt themselves to the changing environment. The organizations with diverse workforce develop a culture of non-discrimination, non-interference and flexibility.

**Conclusion:** The researchers would be able to construct empiric and theoretical evaluations in the framework of perspectives explored in the paper.

**Keywords:** *Diversity, cognitive learning, tolerance, adaptability, flexibility.*

### Introduction

With the simplification of migration policies, the world has become a global village and a single market. This result in an increase in "DIVERSITY", or in other words, the workplace has become much more diverse than ever before. The management of the organizations and education system

both are working towards improving its constituent. This includes making policies and programs that are essential to attain and retain the most competent human resources. Hence, managing a diverse workforce has become one of the biggest HRM challenges to survive in the neck to neck competition. The organizations that except new challenges and are ready with new plans and policies have more chances to get a competitive advantage (Eugene Chew Weiliang, 2011). With the retention of skilled workers, workplaces have become more diverse in terms of capabilities, knowledge, and behavior. The purpose of the study is to analyze the key factors with respect to the organizations' progress towards better sustainability. The study also attempts to study the association between diversity acceptance and cognitive learning. The paper contributes to the emerging literature linking diversity and cognitive learning.

It is observed that diversity has grown onestepaheadofitsprimarydimensions (gender, age, race, and ethnicity) and has a deeper impact on the learning of the individual. This study attempts to understand how an individual process and use information while working in a diversified workplace. In previous studies, diversity is seen as a source of competitive advantage but in this paper, diversity is studied with respect to cognitive learning so as to understand the process of learning with respect to diversity. Therefore, with the aim of understanding how diversity impacts cognitive learning and how

organizations are managing diversity by incorporating cognitive learning for improving performance, this paper was constructed.

### Literature review

#### Diversity

According to Cox (1993), "Diversity is the representation in one social system of people with distinctly different group affiliation of cultural significance". It is a shared blend of similarities and dissimilarities that can be leveraged to attain the goals in any organization(Thomas, 1999).O'Reilly (1998) postulated that diversity has both positive and negative effects on the performance of the organization. Bialostocka, (2010) proposed that as the workplaces are becoming more diversified, the adverse effects developed, are more important to handle. Presently, recognizing, valuing and managing diversity is the key component for effective and improved productivity. Therefore, it is seen that diversity act like a double-edged sword and to better understand this, it is necessary to understand the pros and cons of diversity in the workplace. Since diversity is a boon but on the other hand, it can also prove to be an 'Achilles Heel' if left unmanaged. The workforces have a wide range of diversity which brings into being certain issues like arguments, discrimination and ultimately conflicts.

#### Cognitive Learning

Human beings crave for knowledge. The process of acquiring and processing

knowledge is continuous in nature. Cognition is defined as the mental process of knowledge procurement and understanding thought, experience, and the senses. The process of utilizing acquired knowledge is called Cognitive Learning. Cognitive Learning includes categorization, generalization, and observation of the environment. "Derived from Cognition, Oxford Learning explains "Cognitive Learning" as the function based on how a person processes and reasons information. It revolves around many factors, including problem-solving skills, memory retention, thinking skills and the perception of learned material (Gupta, 2017)". This study defined cognitive learning on the basis of different dimensions: tolerance to ambiguity, non-interference, non-discrimination, flexibility, risk acceptance, and adaptability and workability. These are important variables that are considered important for learning. These variables not only help in enhancing diversity acceptance but also foster cognitive learning.

### Diversity and Cognitive Learning

According to Thomas (1996), every organization is willing to learn. The organizations that have a high level of flexibility, responsiveness, and creativity adopt an outlook, which is acceptable to everyone. Differences on the basis of flexibility, responsiveness, and creativity in an organization are considered as an opportunity rather than a barrier. Therefore, the management of diversity helps the organization to learn and improve their performance

(Kim, 2006). In the dynamic world, it is necessary to become adaptive, which is a proactive process, by mastering the process of deliberate change. Adaptability is disruptive in nature as it makes the organizations search for new opportunities, avenues, developments, technologies, philosophies, and methods that may improve or introduce completely new products and services or completely change the routines. They continuously and deliberately keep changing their routines so that they can improve standards, reduce costs, improve quality and beat the competition (Min Basadur, 2014).

Therefore, this study attempts to find out the association between diversity and cognitive learning. The study also attempts to find out the prime variables that increase diversity acceptance and improves cognitive learning. According to Rosener, there are two dimensions of diversity. First is the primary dimension which is god gifted like age, gender, race, and ethnicity. Secondary dimensions are those which are inherited from society like religion, nationality, language, etc. This study had used gender and religion (dimensions of diversity) because they both are much-debated topics all over the world.

### Objective

To assess the level of cognitive learning with respect to diversity.

To identify the important factors that contribute towards diversity acceptance and that improve cognitive learning.

### Methodology

A total of 200 employees working in the health care industry, in particular specialty hospitals, were interviewed. The study has focused on the healthcare industry. It considered hospitals as a unit of study. Two staged simple random sampling is used in which the first stage is 250 beds and the second stage is multispecialty hospitals that are located in Delhi. A semi-structured interview based on the schedule of the questionnaire is used as a research instrument for collecting

primary data and the Cronbach's Alpha was 0.85. Cross-tabulation analysis was conducted to find out the relation of diversity and cognitive learning. Additionally, *factor analysis, principle component analysis, and KMO test* were used to study and group correlated variables together, to remove duplication from the set of interrelated variables been identified.

### Data Analysis

Impact of Gender on Cognitive Learning

**Table 1 Crosstab between Cognitive learning and Gender**

Variables	Gender		Total	Chi Square	Sig.
	Male	Female			
<b>Tolerance</b>					
I am tolerant of ambiguous situations.	49.1	39.6	44.5	15.406	0.014
I like to surround myself with things that are familiar to me.	22.1	19.8	21		
I like parties where I know most of the people more than ones where all or most of the people are complete strangers.	28.8	40.6	34.5		
<b>Non-Interference</b>					
I tend to think that there is a right way and a wrong way to do almost everything.	23.1	17.7	20.5	16.442	0.002
I prefer the certainty of always being in control of myself	46.2	27.1	37		
I tend to be very frank with people	14.4	15.6	15		
It really disturbs me when I am unable to follow another person's train of thought	13.5	36.5	24.5		
I get disturbed if someone intervene in my work	2.9	3.1	3		
<b>Non Discrimination</b>					
I prefer telling people what I think of them even if it hurts them, rather than keeping it to myself.	45.2	16.7	27.5	32.455	0.000

It would bother me if different close friends of mine had conflicting opinions of me.	17.3	22.9	20		
It intensely disturbs me when I am uncertain of how my actions affect others.	17.3	47.9	36		
I function very poorly whenever there is a serious lack of communication in a job situation.	20.2	12.5	16.5		
<b>Risk</b>					
Once I start a task, I don't like to start another task until I finish the first one	51.9	30.2	36.5	17.120	0.001
In a problem-solving group, it is always best to systematically attack the problem.	31.7	28.1	20		
A problem has little attraction for me if I don't think it has a solution.	4.8	12.5	18		
In a decision-making situation in which there is not enough information to process the problem, I feel very uncomfortable.	11.5	29.2	16.5		
<b>Change Acceptance (Employee)</b>					
I accept the changes introduced in the organization	59.6	33.3	47	16.588	0.001
I work hard to make the changes successful	26.9	34.4	30.5		
I look forward in changing the program in which I work	7.7	14.6	11		
I resist any changes in the working style	5.8	17.7	11.5		
<b>Valuing diverse opinion of others</b>					
I avoid settings where people don't share my values.	30.8	16.7	24	22.882	0.000
I can enjoy being with people whose values are very different from mine.	43.3	24	34		
I can be comfortable with nearly all kinds of people.	26	59.4	42		
<b>Flexibility/ Workability</b>					
I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer.	18.3	14.6	16.5	5.287	0.152
Complex problems appeal to me only if I have a clear idea of the total scope of the problem.	32.7	38.5	35.5		

I do not like to get started in group projects unless I feel assured that the project will be successful.	2.9	9.4	6		
In a problem-solving group, it is always best to systematically attack the problem.	46.2	37.5	42		
<b>Adaptability</b>					
I adapt to any kind of change in environment	57.7	45.9	52	4.643	0.200
I adapt to work with like-minded people without any diversity	21.2	24	25.5		
I like to work with like-minded people with diversity.	21.2	30.2	25.5		

### Tolerance

The table above illustrate a cross tab between gender and cognitive learning. Majority of the total respondents (44.5%) said that they are tolerant to ambiguous situations. Out of these, about a half of male respondents (49.1%) stated that they are tolerant to ambiguous situation whereas two-fifths (40.6%) of their female counterparts mentioned that they would part with known people. The statistical analysis reveals that there is no significant association between tolerance and gender. This is because women are introvert in nature (Asha Rao, 2011) and like to stay in their own comfort zone. Hence, it is clear that males are more tolerant as compared to females. Those who are intolerant get stressed in ambiguous situations and hence suffer more (Mostul, 1977). In this case females are more intolerant for ambiguous situations as compared to men.

### Non-Interference

A majority (37%) of the total respondents said that they prefer the certainty of always being in control of themselves. Out of these, majority of the males (46.2%) support that they prefer the certainty of always being in their control. On the other hand, majority of the females (36.5%) said that they get easily irritated when they don't understand others viewpoint. The statistical analysis reveals that there is a significant association between non-interference and gender.

### Non-Discrimination

About 36% of the total respondents said that it disturbs them when they are uncertain of how their actions affect others. But on the contrary, majority of the males (45.2%) said that they prefer to tell others what they think of them even if it hurt them. But majority of the females (47.9%) said that they get disturbed when they are uncertain of how their actions affect others.

The statistical analysis reveals that there is a significant association between non-discrimination and gender. Discrimination leads to negative thinking, stereotypes and prejudiced (Sheila Simsaarian Webber, 2001). Therefore females sugar coat their harsh words so that they don't hurt others but males are more straightforward when it comes to sharing their thoughts and they don't care how their words will have an impact on others.

### Risk Acceptance

Approximately 36.5% of the total respondents said that they don't like to start any other task unless they finish the first one. In comparison with males and females majority of 51.9% males and 30.2% females has same opinion. The statistical analysis reveal that there is a significant association between risk and gender. This simply shows that both the genders does not like to take risk in their jobs.

### Change Acceptance

A majority of respondents (47%) said that they accept changes that are introduced in the organization. Here both genders, 59.6% males and 33.3% females, have same opinion that they accept the changes introduced by the organization and work hard for their implementation. The statistical analysis reveals that there is a significant association between change acceptance and gender.

### Valuing Others' Opinion

Nearly 42% of the total respondents said that they are comfortable with

all kind of people. In this case also females (59.4%) are more comfortable with all kind of people. On the other hand majority of the males (30.8%) said that they avoid settings where people don't have same values. The statistical analysis reveals that there is a significant difference between diverse opinion of others and gender.

### Workability

But 42% of the total respondents said that it is always best to systematically attack the problem. If we compare male and female, majority of the males (46.2%) have the same opinion while majority of the females (38.5%) said that they take up complex problems only when they have a clear idea of the scope of the problem. The statistical analysis reveals that there is no significant association between workability and gender.

### Adaptability

About half of the total respondents (52%) said that they can adapt to any kind of change in environment. In this case also both the genders i.e. 57.7% males and 45.9% females, have same opinion. The statistical analysis reveals that there is no significant association between adaptability and gender. Hence, it is found that people like to follow a schedule and do not like to get indulge in complex activities where there is a risk. Hence it is clear that people do not like to take any kind of risk and are less flexible but they well adapt themselves to the working environment.

**Table 2 Crosstab between Religion and Cognitive Learning**

Variables	Religion				Total	Chi Square	Sig.
	Hindu	Muslim	Christian	Sikh			
<b>Tolerance</b>							
I am tolerant of ambiguous situations.	50.5	46	50	13.8	44.5	16.973	0.049
I like to surround myself with things that are familiar to me.	18.9	16	26.9	31	21		
I like parties where I know most of the people more than ones where all or most of the people are complete strangers.	30.5	38	23.1	55.1	34.5		
<b>Non-Interference</b>							
I tend to think that there is a right way and a wrong way to do almost everything.	23.2	22	30.8	0	20.5	49.416	0.000
I prefer the certainty of always being in control of myself	35.8	38	50	27.6	37		
I tend to be very frank with people	14.7	26	7.7	3.4	15		
It really disturbs me when I am unable to follow another person's train of thought	21.1	12	11.5	69	24.5		
I get disturbed if someone intervene in my work	5.3	2	0	0	3		
<b>Non Discrimination</b>							
I prefer telling people what I think of them even if it hurts them, rather than keeping it to myself.	33.7	44	23.1	3.4	21.5	35.467	0.000
It would bother me if different close friends of mine had conflicting opinions of me.	16.8	10	42.3	34.5	20		
It intensely disturbs me when I am uncertain of how my actions affect others.	27.4	28	26.9	58.6	36		
I function very poorly whenever there is a serious lack of communication in a job situation.	22.1	18	7.7	3.4	16.5		

Risk							
Once I start a task, I don't like to start another task until I finish the first one	43.2	56	46.2	6.9	41	46.804	0.000
In a problem-solving group, it is always best to systematically attack the problem.	35.8	16	38.5	27.6	30		
A problem has little attraction for me if I don't think it has a solution.	3.2	8	0	34.5	8.5		
In a decision-making situation in which there is not enough information to process the problem, I feel very uncomfortable.	17.9	20	15.4	31	20		
Change Acceptance (Employee)							
I accept the changes introduced in the organization	55.8	56	46.2	3.4	47	34.586	0.000
I work hard to make the changes successful	20	34	34.6	55.2	30.5		
I look forward in changing the program in which I work	13.7	6	3.8	17.2	11		
I resist any changes in the working style	10.5	4	15.4	24.1	11.5		
Valuing diverse opinion of others							
I avoid settings where people don't share my values.	23.2	20	46.2	13.8	24	13.796	0.032
I can enjoy being with people whose values are very different from mine.	31.6	44	30.8	27.6	34		
I can be comfortable with nearly all kinds of people.	45.3	36	23.1	58.6	42		
Flexibility/ Workability							
I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer.	16.8	18	15.4	13.8	16.5	20.371	0.016
Complex problems appeal to me only if I have a clear idea of the total scope of the problem.	26.3	32	38.5	69	35.5		

I do not like to get started in group projects unless I feel assured that the project will be successful.	5.3	8	7.7	3.4	6		
In a problem-solving group, it is always best to systematically attack the problem.	51.6	42	38.5	13.8	42		
Adaptability							
I adapt to any kind of change in environment	50.5	50	50	52.1	51	17.780	0.038
I adapt to work with like-minded people without any diversity	20	30	23.1	17.2	22.5		
I like to work with like-minded people with diversity.	29.5	20	26.9	20.7	25.5		

According to census 2011, majority (79.80%) of the population is Hindu, 14.23% is Muslims, 2.30% is Christians and 1.72% is Sikh. The table above illustrate a cross tab between religion and cognitive learning.

### Tolerance

Majority of the total respondents (44.5%) comprising 50.5% Hindus, 46% Muslims, 50% Christians and 27.6% Sikhs said that they are tolerant to the ambiguous situation. On the other hand, 34.5% of the total respondents including 30.5% Hindus, 38% Muslims, 23.1% Christians and 55.1% Sikhs said that they like to go to the places where they know most of the people. The statistical analysis reveals that there is a significant association between tolerance and religion.

### Non-Interference

About 37% of the total respondents including 35.8% Hindus, 38% Muslims,

50% Christians and 27.6% Sikhs said that they prefer the certainty of always being in control of themselves. However, 24.5% of the total respondents includes 21.1% Hindus, 12% Muslims, 11.5% Christians and 69% Sikhs said that it really disturb them when they are unable to follow other person's thought. The statistical analysis reveals that there is a significant association between non-interference and religion.

### Non-Discrimination

About 36% of the total respondents including 27.4% Hindus, 28% Muslims, 26.9% Christians and 58.6% Sikhs said that it intensely disturbs them when they are uncertain of how their actions affect others. On the other hand, 21.5% of the total respondents comprising 33.7% Hindus, 44% Muslims, 23.1% Christians and 3.4% Sikhs said that they prefer telling people about what they think about others even if hurts them. The statistical analysis reveals

that there is a significant association between non-discrimination and religion.

### Risk Acceptance

About 41% of the total respondents 43.2% Hindus, 56% Muslims, 46.2% Christians and 6.9% Sikhs said that once they start a task, they don't like to start another task until they finish the first one. On the other hand 30% of the total respondents 35.8% Hindus, 16% Muslims, 38.5% Christians and 27.6% Sikhs said that it is always best to systematically attack a problem. The statistical analysis reveals that there is a significant association between risk and religion.

### Change Acceptance

However, majority of the respondents 47% said that they accept the changes introduced by the organization. While 30.5% of the total respondents said that they work hard to make the changes successful. The statistical analysis reveals that there is a significant difference between change acceptance and religion.

### Valuing others' opinion

About 42% of the total respondents including 45.3% Hindus, 36% Muslims, 23.1% Christians and 58.6% Sikhs said that they are comfortable with all kind of people. While 34% of the total respondents comprising 31.6% Hindus, 44% Muslims, 30.8% Christians and 27.6% Sikhs said that they enjoy the company of people who have different values than others. The

statistical analysis reveals that there is a significant association between valuing diverse opinion of others and religion.

### Adaptability

About 42% of the total respondents said that it is always best to systematically attack the problem. The statistical analysis reveals that there is a significant association between workability and religion and majority of the respondents (51%) said that they can adapt to any kind of change in environment. Whereas, 25.5% of the total respondents said that they like to work with like-minded people with diversity. The statistical analysis reveals that there is a significant association between adaptability and religion.

### Interpretation

From the data above this can be inferred that people have become more tolerant to various ambiguous situations and they need to be certain in every status quo. They like to adjust to various unknown circumstance. People like to be in self-control in order to work efficiently in the panic situations. They are also concerned about how their actions would have an impact on others. It is evident that once they start the task they like to finish it before starting a new task. They don't do any job in a rush. This makes the workplace hale and hearty to work. They accept the changes that they feel are important for their career and organizational growth.

On comparing male and females, females are found to be more intolerant for ambiguous situations as compared

to that of males. On the contrary males are more straightforward. However, irrespective of gender, people like to attack a problem systematically. They accept the changes and willing to take risk for their own betterment. It is evident that both the genders show different perspective of cognitive learning on the basis of tolerance to ambiguity and Risk acceptance. Hence it can be said that gender is playing a mediating role in enhancing cognitive learning in the organization.

With respect to religion, all the religions have different viewpoint. The minorities (Christians and Sikhs) are found to have different opinion. The minorities feel discomfort and like to be in their community. They have a myth that they are considered differently and given less priority. However, government of India is making various policies for the betterment of the minorities. This study exhibited that religion also plays a mediating role in cognitive learning.

### Dimension Reductions (Factor Analysis)

Table 3 shows Bartlett's test of Sphericity and KMO measure of sampling adequacy. The significance value is less than 0.05 indicate that a factor analysis is suitable for our data and the test statistic value is calculated as .705, which also means that factor analysis for the selected variable is appropriate.

**Table 3 KMO and Bartlett's Test**

KMO Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	214.958
	df	21
	Sig.	.000

**Table 4 Communalities**

	Initial	Extraction
Tolerance	1.000	.701
Non-Interference	1.000	.699
Non Discrimination	1.000	.800
RISK	1.000	.376
Employee change acceptance	1.000	.457
Valuing diverse opinion of other	1.000	.629
WORKABILITY	1.000	.741
ADAPTIBILITY	1.000	.416

Extraction Method: Principal Component Analysis.

Principle Component Analysis matrix (table 4) shows that three factors are extracted from 7 variables (items) each with a variance of 1 and the total variability that can potentially be extracted is equal to 12 times 1. As it can be seen that there are only four factor whose values are more than one. Therefore, three factors out of 7 variables (items) are retained.

**Table 5 Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.256	28.196	28.196	2.256	28.196	28.196	1.888	23.602	23.602
2	1.402	17.529	45.725	1.402	17.529	45.725	1.475	18.439	42.041
3	1.161	14.512	60.237	1.161	14.512	60.237	1.456	18.196	60.237
4	.881	11.009	71.246						
5	.768	9.594	80.840						
6	.740	9.247	90.086						
7	.435	5.437	95.524						
8	.358	4.476	100.000						

Extraction Method: Principal Component Analysis.

**Table 6 Component Matrix<sup>a</sup>**

	Component		
	1	2	3
Non-Interference	.767		
RISK	.608		
Employee change acceptance	.581		
ADAPTIBILITY	.535		
WORKABILITY		.841	
Non Discrimination		.577	.509
Valuing diverse opinion of other			.586
Tolerance			.556

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

**Table 7 Rotated Component Matrix<sup>a</sup>**

	Component		
	F1	F2	F3
Non-Interference	.803		
Valuing diverse opinion of other	.708		
Employee change acceptance	.618		
RISK	.534		
Tolerance		.828	
ADAPTIBILITY		.576	
WORKABILITY			.826
Non Discrimination			.810

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

a. Rotation converged in 5 iterations.

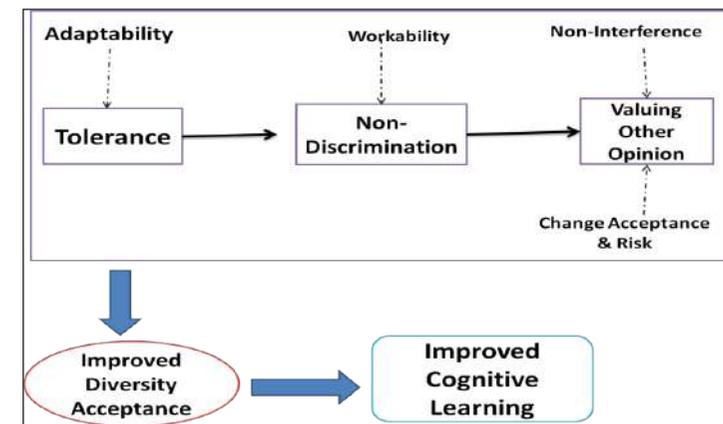
The rotated component matrix exhibited non-interference (.803), valuing others' opinion (.708), change acceptance (.618) and risk acceptance (.534) are highly correlated with F1 (Valuing others Opinion). Tolerance (.828) and adaptability (.576) are highly correlated with F2 (Tolerance). Similarly workability (.826) and non-discrimination (.810) are strongly correlated with risk with F3 (Workability)

**Conclusion**

The findings of this study validates the research by Ruth Mayhew (2016) according to which diversified workforce get exposed to new beliefs, cultures and background because they are encountered with different style, perspective, knowledge, attitude and background. By employing people from dissimilar environment the organizations generate a diversified pool of the skillful people. However, in diverse workplace, new ideas always face resistance. Hence, it is important to reframe the culture of the organization to make it acceptable by everyone working in that organization (Burns, 2012). Religion is an intruding variable between work attitude and performance. Bhardwaj (2016) and Kokemuller (2018), highlighted the need for policies that are non-discriminatory while hiring, training or any other organizational activity. Hence, irrespective of any form of diversity; gender or religion, people are giving more emphasis on moving ahead in life. They are tolerant to ambiguous situations, they are showing more

adaptability and flexibility and there are fair non-discriminatory policies in the organizations. This shows that people have positive attitude towards diversity but this is contradictory to the study of Judy P. Strauss (2003), which says authoritarian person (individuals holding high post or having good experience or highly educated) has a negative attitude towards diversity and there is no relationship between tolerance of ambiguity and attitude towards diversity. But as per this study, tolerance is one of the important factors that help in accepting diversity at workplace.

This study is contributing to the existing literature that cognitive learning has become an integral part of the day to day activity. In order to learn one must have a positive bend of mind. One might not enjoy working in diverse environment but one must be comfortable in working with diverse workforce. Along with this, people must have self-control in order to prevent themselves from being credulous. Below diagram will give an insight of the study.



**Figure 1**

It may be noted that flexibility in employees manifests as greater tolerance to risk, valuing diverse opinion and acceptance of change. By being more tolerant to risk, the employees develop the trait of non-interference and non-discrimination with others. This directly results in enhanced diversity acceptance. Similarly when employees learn valuing others' opinion, it makes them non-interfering and non-discriminatory, in turn enhancing their diversity acceptance. Any employee who learns to accept changes becomes more tolerant of diversity around him in the organization. Thus, cognitive learning with respect to tolerance, valuing diverse opinion of others and ability to work can result in enhanced diversity acceptance.

### Limitation

- The study is confined to Delhi/ NCR region.
- It is done only in one industry i.e. healthcare industry.
- People hesitate in discussing the organizational processes and procedures therefore the sample size is restricted to 200.

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## A Comparative Financial Performance of Selected Public And Private Sector Banks in India

**Sagarika Mohanty**

2081221@ksom.ac.in

Ph.D. Scholar, KIIT School of Management  
KIIT University, Bhubaneswar, India

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### Abstract:

Banks are played significant role in the development of economic condition of the country. The main of the research is to analyze the financial health of selected public and private sector banks in India. The financial performance of banks is analyzed by taking 5 years data from 2016-17 to 2020-21. The study is based on using key financial parameters, selected profitability ratios, Liquidity ratios and Asset's quality ratios of banks. For comparative analysis the T-test, mean value and Graphs are used. The descriptive statistics (T-Test) indicates that there is significance difference between overall performance of selected banks in India by analyzing key performance parameters from 2016-17 to 2020-21. Hence, from the study it is cleared that IOB has good liquidity position over the last 5 years as compare to liquidity ratio except CD% and CAR%. Thus, from the overall comparative analysis of performances of both the selected bank, it observed that ICICI Bank has better performance as compare to IOB over the research period.

**Keywords:** *Financial performance, public bank, Private Bank, Financial parameters, Profitability ratios, Liquidity ratios, Asset Quality ratios.*

### 1. INTRODUCTION:

Banking industry is one of the key financial players of the country. Banks are played significant role in the development of economic condition of the country. It generally performs various financial related roles. But the prime one is encourage saving habits of the people by deposited their surplus money into bank and it also provide good return in the form of interest

to their customers. Banks generally uses their deposits into different investment and gets handsome return on their investment. Or we can say that it channelizes the saving funds into investment. The second prime role is it also rendering facility to their customer to withdrawn their money when they required. Besides, these roles banks also provide numerous facilities to their customers for their growth and development. Thus, in this

sense, we can consider that BANK as the backbone of the country.

In India, both public sector banks and private sectors banks are key parameters for the economic development of the country. Here I am going to discuss two banks' performances by taking selected ratios. The two banks are ICICI Bank (Industrial and Credit Investment Corporation of India) and Indian Overseas Bank (IOB).

**ICICI Banks:** The second leading Private Sector Bank in India is ICICI Bank. It is a chief private sector bank in India. It was established in the year 1955. It offers no. of financial facilities

A brief Information about ICICI bank and IOB in India:

Sl No.	Basis	ICICI Bank	Indian Overseas Bank (IOB)
1.	Nature	Private Bank in India	Nationalized Public Bank in India
2.	Products	Banking, commodities, credit card, equities trading, insurance, investment banking, wealth management, assets management, risk management.	Banking, Loans, credit cards, saving, investment banking etc.
3.	No. of location	5,888	3557
4.	No. of employees	97,354 (2020)	23579 (2021)
5.	Subsidiaries	ICICI Prudential ICICI Lombard ICICI Securities ICICI Direct	IOB, Singapore Branch IOB, Hong Kong Branch IOB, Asset Management Arm IOB, Bangkok Branch

## 2. REVIEW OF LITERATURE:

Srinivas and Sarojia (2013) have done the study of Comparative financial performance of HDFC Bank and ICICI Bank. They used CAMEL Model with

to their customers. The main objective of this bank is to create development financial institutions for rendering both long term and medium-term project financing to their customers. The customers are both corporate and retail customers.

**Indian Overseas Bank (IOB):** It is the second most-valued listed Public Sector Bank in India. It is also a Nationalized bank of India. It has created numerous milestones in Indian Banking Sector. It was founded in 1937 with twin objectives of facilitating overseas banking and specializing in foreign exchange business.

t-test for comparative study. As per the study they concluded that there is no significance difference between the ICICI Bank and HDFC Bank's financial performance. But ICICI Bank has slightly less performance as

compare to HDFC Bank. Hence, the study concluded that according to the financial performance, HDFC Bank is first one followed by ICICI Bank.

Kapil K Dave (2016) the comparative study of NPA of public and private sector banks have concluded that each bank has its own independence credit rating agency which should evaluate the financial capacity of the borrower before given them credit facilities. NPA can be considered as a crucial rating factor for any bank; it should regularly evaluate the financial condition of their clients.

Jyothirmoy Koley (2019) has done the analysis of financial position and performance of public and private sector banks in India: A comparative study on SBI and HDFC Bank. She has used CAMEL Model with T-test. According to her study it found that HDFC Bank is quite better than SBI on the basis of profitability position, liquidity condition and management efficiency.

Al-Kaseasbah, (2018) Analyzed and compared SBI and ICICI bank's financial Performance. He took data from the year 2012 to 2016. Financial ratios analyzed and hypothesis testing were also conducted, and it was concluded that the SBI registered good financial results as compare to ICICI Bank in India.

Ch. Balaji and Dr.G. Praveen Kumar (2017) discussed about the financial performances of 5 selected public banks and 5 selected private banks in India. They analyzed the data from the period

2011-12 to 2015-16. They used T-test, mean as tools of analysis and compare the financial performance of selected commercial banks. After analysis the study demonstrated that the selected private banks' financial growth is more as compare to selected public sector banks.

Vijayalakshmi, Janani J.P. (2021) used CAMELS Model to assess the Profitability and Liquidity positions of BOB and HDFC Bank from 2015 to 2020. The comparative analysis of financial performance of both the selected banks shown that HDFC have better financial status as compare to BOB .

Puja Agarwal (2019) analyzed the public and private banks profitability condition. She has taken 4 major profitability ratios such as ROE, ROA, NIM, Operating Profits and also compare CGR of public and private sector banks. She used independent t-test for her study. According to her study, it concluded that Private banks has better profitability condition as compare to public banks.

Nimalathan (2008) has done a comparative study of financial performance of banking sector in Bangladesh. He used CAMELS model for his study. He took data from 1999-2006. According to his study it found that 3 banks were 01 rated Strong, 31 banks rated Satisfactory, Fair rated by 7 banks, 5 banks were rated Marginal and 2 banks got Unsatisfactory rating.

Anurag. B. Singh, Priyanka Tondon (2012,) discussed a Study of Financial Performance: A Comparative Analysis

Of SBI and ICICI Bank. They applied Ratio Analysis and CGR method for analyzed banking profitability. According to the comparison it deployed that SBI present sound financial performance but context of Deposits and Expenditures, ICICI banks has better managing efficiency than SBI.

### 3. RESEARCH DESIGN OF THE STUDY:

#### 3.1. SCOPE OF THE STUDY:

The scope of the study is comparative performance analysis of selected 1 Public Sector Bank and Private Sector Bank in India only from the duration of 2016-17 to 2020-21.

#### 3.2. OBJECTIVES OF THE STUDY:

- To generate idea on financial performance of selected banks in India.
- To study the selected financial ratios of banks.
- To study the comparative financial performance of selected banks.
- To study the significance financial performance of selected banks in the context of profitability, Liquidity and Asset Quality.

### 4. METHODOLOGY OF THE STUDY:

#### 4.1. SOURCES OF DATA:

The present study is based on secondary data. These data have been collected from different sources such as:

- Annual reports of ICICI Bank and Indian Overseas Bank.
- Press release report of ICICI Bank and Indian Overseas Bank.
- And related subject matter and related website of selected public and private sector bank in India.

#### 4.2. PERIOD OF STUDY:

The study covers the period of 5 years from 2016-17 to 2020-21.

#### 4.3. SAMPLE DESIGN:

The public and private sector bank for the study were selected based on convenience sampling method. 1 Public Sector and 1 Private Sector Banks in India were taken for the study on the basis of their performance. The following are the selected sample banks:

- Public sector bank: Indian Overseas Bank (IOB)
- Private sector bank: ICICI Bank (Industrial and Credit Investment Corporation of India)

#### 4.4. HYPOTHESIS:

From the above objectives, following hypothesis are formulated to test the financial performance of selected banks in India.

Ho-There is no significance difference between financial performance of ICICI Bank and IOB Bank

H1- There is significance difference between financial performance of ICICI Bank and IOB Bank.

#### 4.5. STATISTICAL TOOLS USED:

- Mean has been calculated to know the average financial performance and to know the stability in the performance of the selected banks.
- Comparison also done by Graphical presentation of all the selected key parameters of selected banks.
- T-test also used for analysis the significance performance of the selected banks in the basis of Profitability, Liquidity and Asset Quality Ratio.
- T-test used with the help of SPSS-26.

### 5. DATA ANALYSIS AND INTERPRETATION:

The following data is analyzed on the basis of:

**Table-1-** Contents Total deposits, Total Investment, Total Advances

**Table-2-** Contents Total Income, Total Expenses, Net Profit

**Table-3-** Contents Profitability Ratios. Such as Net Interest Margin%, Net Profit Margin %, ROE%, ROA%.

**Table-4-** Contents Liquidity Ratios. Such as CAR %, CASA%, Current Ratio%, Credit to Deposits Ratio%

**Table-5-** Contents Asset Quality Ratios. Such as Gross NPA% and Net NPA %

**Table-6-** Contents Descriptive Statistics of Profitability Ratios.

**Table-7-** Contents Descriptive Statistics of Liquidity Ratios.

**Table-8-** Contents Descriptive Statistics of Asset Quality Ratios.

YEAR	Total Deposits		Total Investments		Total Advances	
	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank
2016-17	490,039.06	211,342.63	161,506.55	71,549.19	464,232.08	140,458.62
2017-18	560,975.21	216,831.81	202,994.18	68,645.94	512,395.29	132,488.82
2018-19	652,919.67	222,534.08	207,732.68	66,932.27	586,646.58	132,597.63
2019-20	770,968.99	222,951.88	249,531.48	79,416.08	645,289.97	121,333.41
2020-21	932,522.16	240,288.30	281,286.54	95,494.22	733,729.09	127,720.65
MEAN	681,485.02	222,789.74	220,610.29	76,407.54	588,458.60	130,919.83

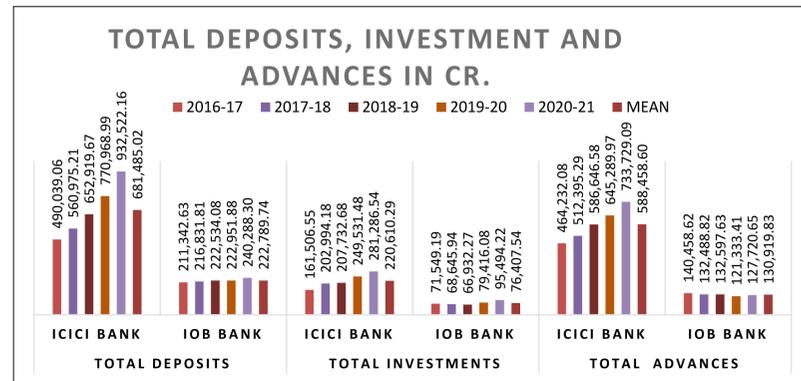
(Sources www.moneycontrol.com)

**INTERPRETATION:**

The above Table and Diagram showing the data related to Total Deposits, Total Investments and Total Advances of ICICI Bank and IOB Bank in India from the year 2016-17 to 2020 2021. The Total Deposit of Mean value of ICICI

Bank is Rs. 681,485.02 Cr. and Mean value of IOB Bank is Rs. 222,789.74 Cr. The Total Investment of Mean value of ICICI Bank is Rs. 220,610.29 Cr. and IOB Bank is Rs. 76,407.54 Cr. The Total Advances of Mean value of ICICI Bank is Rs. 588,458.60 Cr. And IOB Bank is Rs. 130,919.83 Cr.

**DIAGRAM 1:**



**INTERPRETATION:**

- From the above diagram, it states that the Total Deposits of ICICI Bank have increased over the year at increasing rate. But the Deposits of IOB have increased initially, then decreased in the year 2019-20 with the amount of Rs. 417.80 Cr. as compare to previous year. After that it has increased again in the year 2021 with the amount of Rs. 240,288.30 Cr. According to the study it found that Mean value is high in ICICI Bank with Rs. 681,485.02 Cr. followed by IOB Bank i.e., Rs. 222,789.74 Cr.
- As compare to the Total Investment of both the ICICI Bank and IOB Bank, the data pointed that the Total Investments of both the bank have

increased gradually over the 5 years. The total investment of ICICI Bank is high in the year 2019-20 with the amount Rs. 281286.54 Cr. The IOB has highest investment in the year 2020-21 i.e., Rs. 95494.22 Cr. The average investment is high in case of ICICI Bank as compare to IOB bank.

- According to the analysis, it also found that ICICI Bank increased their Advances every year around Rs. 1 Cr. But IOB have shown different scenario here. Firstly, IOB Advances have increased then decreased from the year 2017 to 2020. During the COVID period it again started rising with the amount of Rs.6387.24 Cr. The mean value showing more i.e., Rs. 457,538.77 Cr. in ICICI Bank as compare to IOB.

**Table -2 : Total Income, Total Expenses, Net Profit**

YEAR	Total Income		Total Expenses		Net Profit	
	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank
2016-17	73,660.76	23,091.23	63,859.67	26,507.97	9,801.09	-3,416.74
2017-18	72,385.52	21,661.65	65,608.10	27,961.15	6,777.42	-6,299.50
2018-19	77,913.36	21,837.58	74,550.05	25,575.46	3,363.30	-3,737.88
2019-20	91,246.94	20,765.79	83,316.13	29,293.19	7,930.81	-8,527.40
2020-21	98,086.80	22,524.55	81,894.11	21,693.08	16,192.68	831.47
MEAN	82658.68	21976.16	73845.61	26206.17	8813.06	-4230.01

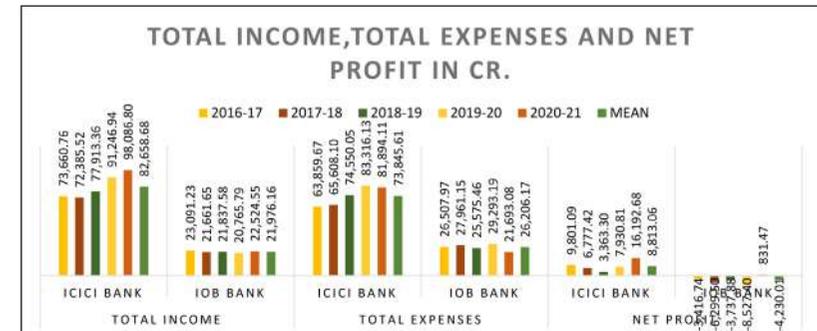
(Sources www.moneycontrol.com)

**INTERPRETATION:**

The above schedule showing the data of Total Income, Total Expenses and Net Profit of ICICI Bank and IOB bank in India from the year 2016 to 2021. According to the study Mean Income of ICICI is Rs. 82658.68 Cr. And IOB

having Rs. 21976.16 Cr. The Mean value of Total Expenses ad Net profit of ICICI Bank over the 5 years are Rs. 73845.61 Cr. And Rs. 8813.06 Cr. respectively. IOB having Mean value of Total Expenses Rs. 26206.17 Cr. and the Net Loss is Rs. 4230.01 Cr.

**DIAGRAM 2:**



**INTERPRETATION:**

- The above chart showing the Total income of ICICI Bank and IOB Bank in India. As we can see that initially Total Income of ICICI Bank have increased, then decreased in the year 2017-18. From the year 2018 to 2021 it showing increasing figures in

Cr. IOB also showing same scenario over the period. According to the data IOB has showing less mean value i.e., Rs.21976.16 Cr.as compare to ICICI Bank over the last 5 years.

- In ICICI Bank Total expenses was less in the year 2016-17 i.e., Rs. 63859.67 Cr. and more in the year

2019-20 during the 5 years period. As per the data total expenses increased during first 4 years and then decreased again in the year 2020-21 by Rs. 81894.11 Cr. But in case of IOB, total expenses have fluctuated during the last 5 years. Here IOB having less expenses in the year 2020-21 with the amount Rs.21693.08 Cr. and more expenses in the year 2019-20 with the amount of Rs.2929319. According to the data it found that the total expenses have lowest figures in IOB Bank followed by ICICI Bank.

- From the above diagram it specified that The Net Profit of both the private and public sector banks have fluctuated during the research

period. Net profit of ICICI Bank during the research period showing positive figures. In ICICI Bank highest net profit is showing in the year 2020-21 with Rs. 16192.68 Cr. and lowest one is in the year 2018-19 with the amount Rs. 3363.30 Cr. Whereas IOB is showing negative figures of Net Profit during the research period except previous financial year. During the year 2019-20, IOB having Net loss of Rs. 8527.40 Cr. and in the year 2020-21, it is showing Net profit with Rs.831.47 Cr. According to the study it found that ICICI Bank having positive Mean of Net profit with Rs. 8813.06 Cr. and IOB having Negative Mean of Net profit with Rs. 4230.04 Cr.

(Sources www.moneycontrol.com)

YEAR	1.Net Interest Margin%		Net profit margin %		Return On Equity (ROE)/ Net Worth %		Return On Assets (ROA) %	
	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank
2016-17	2.81	2.09	18.09	-17.32	10.11	-29.50	1.26	-1.38
2017-18	2.61	2.20	12.33	-35.16	6.63	-47.45	0.77	-2.54
2018-19	2.08	2.11	5.30	-21.20	3.19	-22.84	0.34	-1.49
2019-20	3.02	2.03	10.60	-48.99	6.99	-52.78	0.72	-3.27
2020-21	3.16	2.15	20.46	4.90	11.21	4.90	1.31	0.30
MEAN	2.7360	2.1160	13.356	-23.554	7.626	-29.534	0.88	-1.676

1. Net Interest Margin%:

It is a profitability Indicator which calculates the rate of net interest income on a Bank's interest earning assets.

$$NIM = \frac{\text{Interest Received} - \text{Interest Paid}}{\text{Average Invested Assets}}$$

2. NET PROFIT MARGIN %:

It is another profitability ratio of banking sector. The Net margin indicates how much Net Income a bank makes with Total Sales achieved. It can be calculated by following Formula:

$$\text{NET PROFIT MARGIN \%} = \frac{\text{Net Profit}}{\text{Total Revenue}} * 100$$

3. RETURN ON EQUITY (ROE) %:

It is another important measure of profitability of banking sectors. It is measured for creating profits for the banks by using its assets. Stakeholders generally used this ratio for taking their investing decisions i.e., whether to invest or not in Banks. It can be calculated by following Formula:

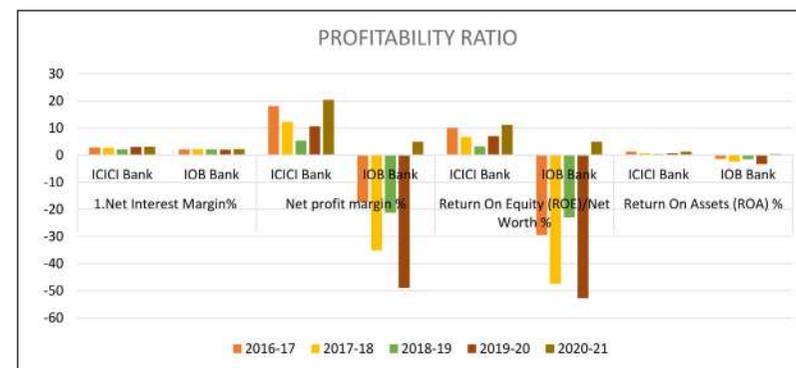
$$\text{ROE \%} = \frac{\text{Net Income}}{\text{Total Shareholder's Equity}}$$

4. RETURN ON ASSETS %:

It is another important ratio for banking sector which determines how profitable the bank is relative to its Total assets. It can be calculated by following Formula:

$$\text{Return on Assets} = \frac{\text{Net Income (after tax)}}{\text{Total Assets}}$$

DIAGRAM 3:



INTERPRETATION:

- From the above diagram, it is observed that both the banks i.e., ICICI Bank and IOB bank is showing positive Net Interest margin %

during the research period. Whereas IOB'S NIM have fluctuated during the study period. But in ICICI Bank, initially NIM has decreased from 2016-17 to 2018-19. After the period

2019-20 it started increasing. As per the study the Mean value of Net Interest Margin is high in case of ICICI Bank as compare to IOB.

- As per the study it found that in ICICI Bank Net Profit Margin initially decreased. From the period 2018-19, it started increasing with positive %. But in IOB, Net Profit Margin have fluctuated with negative figures except in the year 2020-21, it is showing positive figures with 4.9 % during the research period. According to the study it also observed that in Mean value comparison, ICICI Bank is showing highest % i.e., 13.356 % as compare to IOB, which is showing -23.554.
- The above diagram denoting the Return on Equity % of both the selected public and private sector bank in India. From the diagram it is observed that The ROE % of ICICI Bank initially decreased. From the period 2018-19, it started increasing

with positive %. But in IOB, ROE% have fluctuated with negative figures except in the year 2020-21, it is showing positive figures with 4.9 % during the research period. According to the study it observed that in Mean value comparison, ICICI Bank is showing highest positive % i.e., 7.626 % as compare to IOB, which is showing -29.534% of ROE.

- From the above diagram it also is observed that The ROA % of ICICI Bank initially decreased. From the period 2018-19, it started increasing with positive %. But in IOB, ROA% have fluctuated with negative figures except in the year 2020-21, it is showing positive figures with 0.3 % during the research period. According to the study it also observed that in Mean value comparison, ICICI Bank is showing highest positive % i.e., 0.88 % as compare to IOB, which is showing -1.676 of ROA.

**Table -4 : Liquidity ratio in %**

YEAR	CAR %		Current Ratio (CR) %		CASA %		Credit to Deposit Ratio %	
	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank
2016-17	17.39	11.00	1.83	1.48	36.08	50.36	94.73	63.5
2017-18	18.42	9.00	2.38	2.01	36.74	51.68	91.34	61.1
2018-19	16.89	10.00	2.16	3.27	38.29	49.61	89.85	59.59
2019-20	16.11	11.00	1.58	2.02	40.25	45.11	83.7	54.42
2020-21	19.12	15.32	1.25	1.30	42.51	46.28	78.68	53.15
MEAN	17.5860	11.2640	1.84	2.016	38.774	48.608	87.66	58.352

(Sources www.moneycontrol.com)

**1. CAR RATIO:**

This ratio is used by banks to determine how much adequate capital maintained by each bank against its Risk Weighted Assets. It can be calculated by following formula:

$$\text{CAR Ratio} = \frac{\text{Total Capital}}{\text{Risk Weighted Assets}}$$

**2. CASA RATIO:**

Current Account and Saving Account (CASA) Ratio is determined the liquidity position of the banking sector. It is used to determined how much deposit is kept by the bank in the form of current account and saving account. It can be calculated by following Formula:

$$\text{CASA Ratio \%} = \frac{\text{CASA Deposits}}{\text{Total Deposits}}$$

**3. CURRENT RATIO:**

In banking sector, another liquidity ratio is Current Ratio. It measures the ability of banks to meet its short-term dues or obligation with respect to its current assets. It can be computed by the following Formula:

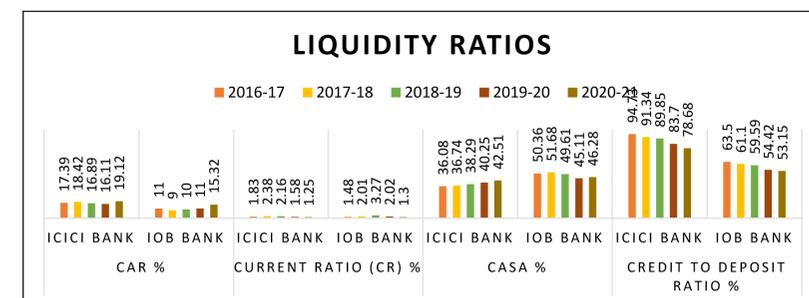
$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

**4. CREDIT TO DEPOSIT RATIO (CD) %:**

It is an indicator of banks that helpful to know how much a bank has borrowed with relation to its deposits. Higher CD Ratio is showing better earning capacities of bank and vice-versa. It can be calculated by following Formula:

$$\text{CD \%} = \frac{\text{Total Advances}}{\text{Total Deposits}}$$

**DIAGRAM 4:**



**INTERPRETATION:**

- From the above diagram, it found that CAR% of ICICI Bank initially decreased at decreasing rate from the period 2016-17 to 2019-20. Whereas IOB Bank have fluctuated over the last 5 years. Mean Value is showing high in ICICI Bank with 17.5860% as compare to IOB bank which showing 11.2640%.
- From the above diagram, it is found that CASA % of IOB Bank have fluctuated over the last 5 years. Whereas ICICI Bank have increased CASA% over the study period. According to the comparison of CASA% both the banks, it is found that IOB has highest Mean of CASA% with 48.608%, which is 9.834% more than Mean CASA% of ICICI Bank.
- The above diagram also presenting Current Ratio of both the banks. i.e., ICICI Bank and IOB Bank. From the chat it is observed that the CR % of IOB is varying but in case of ICICI Bank it was fluctuated initially from the period 2016-17 to 2018-19. From the period 2018-19, ICICI Bank started decreasing. According to the comparison, mean value is higher in IOB Bank with 2.016 % as compare to ICICI bank which is showing 1.84%.
- From the above diagram, it found that the CD% OF ICICI Bank have decreased over the study period. In the year 2016-17, the CD% is showing highest % in IOB bank. After this year in IOB, the CD% is also started declining. According to the Average comparison, it observed that ICICI bank having highest CD% i.e., 86.66% as compare to IOB i.e., 58.352% over the study period.

**IV. ASSET QUALITY RATIO:**

YEAR	Gross NPA %		Net NPA %	
	ICICI Bank	IOB Bank	ICICI Bank	IOB Bank
2016-17	7.89	11.69	4.89	13.99
2017-18	8.84	14.78	4.77	15.33
2018-19	6.70	21.97	2.06	10.81
2019-20	5.53	25.28	1.41	5.44
2020-21	4.96	22.39	1.14	3.58
MEAN	6.784	19.222	2.854	9.83

(Sources www.moneycontrol.com)

**I. Gross Non-Performing Assets (NPA) %:**

Gross NPAs are the sum total of all loan assets that are classified as NPAs as per RBI guidelines as on balance sheet date. It consists of all Non-Standard assets like as sub-standard, doubtful and loss assets. It can be calculated with the help of following Formula:

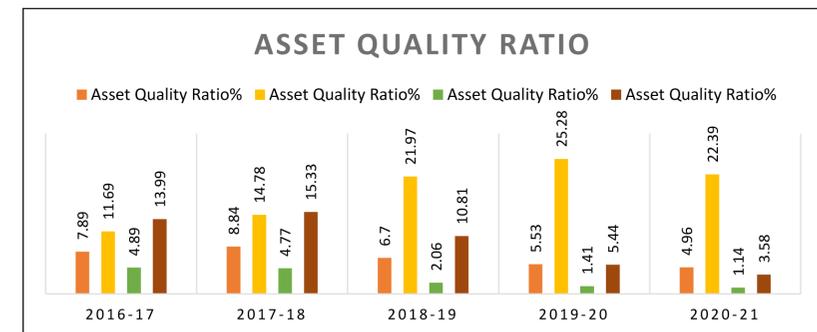
$$\text{Gross NPAs Ratio \%} = \frac{\text{Gross NPAs}}{\text{Gross Advances}} * 100$$

**II. Net Non-Performing Assets (NPA) %:**

Net NPAs are those type of NPAs in which the bank has deducted the provision for uncertain and unpaid debts. Net NPA is obtained by reducing the provision from gross NPAs and show the actual burden of banks. It can be calculated by following Formula:

$$\text{Net NPAs \%} = \frac{\text{Gross NPAs} - \text{Provision}}{\text{Gross Advances}}$$

**DIAGRAM 5:**



- The above diagram showing Gross NPAs% of both the banks. i.e., ICICI Bank and IOB Bank. From the chat it is observed that the Gross NPAs% of IOB Bank have fluctuated. But in case of ICICI Bank, it was fluctuated initially from the period 2016-17 to 2018-19. After this period, ICICI Bank started decreasing. According to the comparison, mean value is higher in IOB Bank which is 12.438% more as compare to ICICI bank
- The above diagram also presenting the Net NPA% of both the banks i.e., ICICI Bank and IOB Bank. From the chat it found that the Net NPA% of ICICI Bank have decreased over the study period. In the year 2017-18, the Net NPA% is showing highest % in IOB bank i.e., 15.33%. After this year in IOB, the Net NPA% is also started declining. According to the Average comparison of Net NPA%, it observed that IOB bank having highest % i.e., 9.83% as compare to ICICI Bank i.e., 2.845% over the study period.

### SIGNIFICANCE TEST OF FINANCIAL PERFORMANCE OF ICICI AND IOB BANK:

**TABLE-6 : Descriptive Statistics of Profitability Ratios:**

- Ho-There is no significant difference between profitability ratios of ICICI Bank and IOB Bank.
- H<sub>1</sub>- There is significant difference between profitability ratios of ICICI Bank and IOB Bank

Profitability Ratios	Banks	Mean	SD	Sig. Value	df	t-value
1. Net Interest Margin%	ICICI	2.7360	0.42194	0.029	4.183	3.249
	IOB	2.1160	0.06387			
2. Net Profit Margin%	ICICI	13.356	6.05031	0.013	4.1710	3.910
	IOB	-23.554	20.22204			
3. ROE%	ICICI	7.626	3.16583	0.021	4.153	3.599
	IOB	-29.534	22.86849			
4. ROA%	ICICI	0.88	0.40577	0.004	8	4.048
	IOB	-1.676	1.35223			

#### INTERPRETATION:

- **Net Interest Margin%:** From the table, it is evident that the  $t(4.183) = 3.249$ ,  $p = 0.029 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between Net Interest Margin of ICICI Bank and IOB Bank.
- **NET PROFIT MARGIN %:** From the table, it is evident that the  $t(4.1710) = 3.910$ ,  $p = 0.013 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between Net Profit Margin of ICICI Bank and IOB Bank.
- **ROE%:** From the table, it is evident that the  $t(4.153) = 3.599$ ,  $p = 0.021 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between ROE% of ICICI Bank and IOB Bank.
- **ROA%:** From the table, it is evident that the  $t(8) = 4.048$ ,  $p = 0.004 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between ROA% of ICICI Bank and IOB Bank.

**TABLE-7: Descriptive Statistics of Liquidity Ratios:**

- Ho-There is no significant difference between Liquidity ratios of ICICI Bank and IOB Bank.
- H<sub>1</sub>- There is significant difference between Liquidity ratios of ICICI Bank and IOB Bank.

Liquidity Ratios	Banks	Mean	SD	Sig. Value	df	t-value
1. CAR Ratio	ICICI	17.5860	1.19897	0.002	8	5.244
	IOB	11.2640	2.41422			
2. CASA Ratio	ICICI	38.7740	2.63464	0.000	8	-5.729
	IOB	48.6080	2.79134			
3. Current Ratio	ICICI	1.8400	0.44994	0.673	8	-0.441
	IOB	2.0160	0.77015			
4. Credit to Deposit Ratio	ICICI	87.6600	6.41571	0.000	8	8.412
	IOB	58.3520	4.41892			

#### INTERPRETATION:

- **CAR Ratio:** From the table, it is evident that the  $t(8) = 5.244$ ,  $p = 0.002 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between CAR% of ICICI Bank and IOB Bank.
- **CASA RATIO:** From the table, it is evident that the  $t(8) = -5.729$ ,  $p = 0.000 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Thus, there is a significant difference between CASA% of ICICI Bank and IOB Bank.
- **Current Ratio:** From the table, it is evident that the  $t(8) = -0.441$ ,  $p = 0.673 (> 0.05)$  which accept the  $H_0$ . Hence there is no significance difference between the selected two bank's Current Ratio %.
- **Credit to Deposit Ratio:** From the table, it is evident that the  $t(8) = 8.412$ ,  $p = 0.000 (< 0.05)$  which reject the  $H_0$  and accept  $H_1$ . Hence there is significance difference between the selected two bank's Credit to Deposits Ratio (CD)%.

**TABLE-8: Descriptive Statistics of Asset Quality Ratios:**

- Ho-There is no significant difference between Asset Quality ratios of ICICI Bank and IOB Bank.
- H1- There is significant difference between Asset Quality ratios of ICICI Bank and IOB Bank.

Asset Quality Ratios	Banks	Mean	SD	Sig. Value	df	t-value
1. Gross NPA%	ICICI	6.7840	1.60911	0.006	8	-4.683
	IOB	19.2220	5.71729			
2. Net NPA %	ICICI	2.8540	1.83506	0.021	8	-2.844
	IOB	9.8300	5.16843			

**INTERPRETATION:**

- **Gross NPA%:** From the table, it is evident that the  $t(8) = -4.683$ ,  $p=0.006 (<0.05)$  which reject the Ho and accept H1. Hence there is significance difference between the selected two bank's Gross NPA%.
- **Net NPA %:** From the table, it is evident that the  $t(8) = -2.844$ ,  $p=0.021 (<0.05)$  which reject the Ho and accept H1. Hence there is significance difference between the selected two bank's Gross NPA%.

**6. FINDINGS:**

- **Total Deposits:**

While comparing the total deposits of selected banks, it found that ICICI Bank has highest deposit as compare to IOB Bank.

- **Total Investment:**

According to the analysis, it found that total investment of ICICI Bank during the research period is high, which is around 3 times investment of IOB bank.

- **Total Advances:**

The total advances are also high in ICICI Bank during the study period.

- **Total Expenses:**

The analysis showing that ICICI Bank incurred more Expenses as compare to IOB Bank.

- **Total Income:**

The Total income is also high in ICICI Bank as compare to IOB Bank

- **Net Profit:**

According to Net profit, it observed that ICICI Bank showing high Net Profit. But IOB Bank showing Net Losses over the research period.

- **Net Interest Margin Ratio %:**

According to the analysis, it observed that both the selected banks showing

positive Margin. As per the comparison IOB having slightly less NIM Margin as compare to ICICI Bank during the study period. It indicates that IOB has slightly investment inefficiency.

- **Net Profit Margin Ratio %:**

The analysis showing that there is a opposite direction of Margin of selected bank during the research period. ICICI Bank showing positive Margin which demonstrates that it has more Revenue as compare to its overall expenses over the study period. But IOB showing negative Margin which indicates that there are more overall expenses which couldn't covered by insufficient revenue over the period.

- **Return on Equity (ROE) %:**

As per the comparison, it found that ICICI bank showing fluctuated positive % of ROE. But in IOB it has negative ROE% over the period due to negative Net profits.

- **Return on Assets (ROA) %:**

In ICICI Bank, ROA% showing Fluctuated % over the period. While compare to IOB, it found that it has negative ROA% over the study, which demonstrates that IOB is inefficient to utilize their assets over the period.

- **CAR Ratio%:**

As per the comparison of CAR% of the banks, it found that IOB has less capabilities to maintain their capital over risk weighted assets.

- **CASA Ratio %:**

According to the Mean comparison of CASA% both the selected banks,

it is found that IOB has highest Mean of CASA% with 48.608%, which is 9.834% more than Mean CASA% of ICICI Bank. It demonstrates that IOB has maintain their CASA deposits efficiently as compare to ICICI bank.

- **Current Ratio (CR)%:**

As per the Mean comparison of both the selected banks, it found that the CR% is also high in IOB. As compare to ICICI Bank, IOB has good capacity to meets its short-term obligations by using their current assets over the research period.

- **Credit to deposit Ratio (CD)%:**

According to the Average comparison, it observed that ICICI bank having highest CD% i.e., 86.66% as compare to IOB i.e., 58.352% over the study period. It indicates that IOB has less ability to create credits on their deposits as compare to ICICI Bank.

- **Gross Non-Performing Assets (NPA) %:**

According to the analysis it observed that Gross NPA% is high in ICICI Bank as compare to IOB bank over the study period.

- **Net Non-Performing Assets (NPA) %:**

According to the analysis it observed that Net NPA% is also high in ICICI Bank as compare to IOB Bank. It demonstrates that ICICI bank couldn't manage their bad loan effectively as compare to IOB Bank over the research period.

## 7. CONCLUSION:

- As per the comparison with ICICI Bank it concluded that the Total Deposits are less in IOB Bank. So IOB Bank has to increase their deposits for gaining long term benefits.
- The Total Investment is also high in ICICI Bank as compare to IOB Bank. So IOB should invest more in profitable projects and will get handsome return on it.
- The above study concluded that IOB has a smaller number of Total Advances as compare to ICICI Bank. Thus, IOB should give more advances to those customers which having good credit worthiness. It also simplifies the loans structures and facilitates good loan schemes at a reasonable interest rate.
- The above study says that ICICI Bank has incurred more expenses during the research period. Thus, it should reduce their overall operating expenses by using more green products and provide green services to their customers.
- As per the comparison with ICICI Bank it concluded that the Total Income are less in IOB Bank. So IOB Bank should focus more on those banking product and services and investment where it can generate more revenue. Hence, it is cleared that ICICI has good Income structure with respect to IOB.
- The above study concluded that IOB has negative Net profits

during the period. Thus, IOB have to concentrate on their Net Profits. It should increase their overall revenue and reduce their overall expenses. So that it can change their negative Net Profit to positive Net Profit. Hence, it concluded that ICICI has quite better overall profits as compare to IOB Bank.

- As per the comparison of both the Margin i.e., Net interest and Net Profit Margin, it concludes that both the banks have positive margin, but it also fluctuated over the period. Thus, it improves its revenue structure by reducing their overall expenses. Hence the margin of both the selected banks indicates that ICICI Bank has good Profitable position as compare to IOB bank.
- The both selected bank's ROE % and ROA % showing similar directions i.e., ICICI Bank showing positive % where IOB showing negative %. Hence, it concluded that ICICI have good financial position as compare to IOB Bank.
- On the basis of comparison of Capital Adequacy Ratio (CAR) % of selected banks, it concluded that ICICI has good Capital management as compare to IOB bank. Hence, IOB Bank should also focus on capital management for maintaining their risk weighted assets.
- On the basis of comparison of CASA % and Current Ratio % of selected banks, it concluded that IOB has

good liquidity position as compare to ICICI bank. Hence, ICICI Bank should more focus on their liquidity policy for better earnings.

- On the basis of comparison of Credit Deposit Ratio % of selected banks, it concluded that ICICI has good Credit Deposit systems as compare to IOB bank. Hence, IOB Bank should also focus on credit deposits norms for better liquidity.
- The above study concluded that the NPA % are high in IOB Bank as compare to ICICI Bank over the research period. ICICI Bank's NPA management is quite better than IOB bank. Hence, IOB Bank should more concentrate on bad loan and improved its management system for better assets quality.
- Thus, the overall descriptive statistics (T-Test) reject the null hypothesis and accept the alternative hypothesis. It indicates that there is significance difference between overall performance of selected banks in India by analyzing key performance parameters from 2016-21. Hence, from the study it is cleared that ICICI Bank have good profitability status, good liquidity position and better asset quality management. Thus, from the overall comparative analysis of performances of both the selected bank, it observed that ICICI Bank has better financial performance as compare to IOB over the research period.

## LIMITATION AND FUTURE SCOPE OF STUDY:

The present research is fully based on secondary data. I just made the conclusion on the basis of analyzing data collected from last 5 years from the period 2016-17 to 2020-21. The statistical concept used is limited. The researcher can further do the research on this topic by taking 10 years or more data and using different statistical tools and different parameters which measures banking performances like, market capitalization rate, CAR%, Interest coverage ratios and others.

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## Exploring the aspects of Social Entrepreneurship during Covid 19 pandemic in India

**Monalisha Chakraborty**

PhD scholar at School of Rural Management,  
KIIT University Bhubaneswar  
monalishachakr11@gmail.com

**Prasanta Parida**

Associate Professor at KIIT School of Rural Management,  
KIIT University Bhubaneswar  
prasanta.parida@ksrm.ac.in

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### Abstract

Social entrepreneurship has social, cultural, educational and environmental goals. The primary objective of social entrepreneurship is not to earn profits but to provide innovative solutions to solve a variety of urgent social problems for welfare of the society. Efforts are made to provide information about the challenges and opportunities of social entrepreneurship in India. This paper also attempts to shed light on different successful social entrepreneurs along with their initiatives and contribution towards society during Covid 19. A literature review of secondary data resources is undertaken to get a clear idea about the different exploratory aspects of three prominent social enterprises during pandemic such as SELCO, Goonj and Narayana Health. Social entrepreneurs experienced some critical issues during Covid 19 such as dearth of a viable business plan, Lack of funds, qualified manpower, limited to definite geographies etc. are few challenges before social entrepreneurs. There are opportunities of social entrepreneurship in terms of providing employment to rural people. So, they can explore, exploit and provide the products and services at affordable prices. Thus, generating employment opportunity which is significant for the overall development of the country.

Keywords: *Entrepreneurship, Social entrepreneurs, Covid 19 pandemic*

### 1. Introduction

In recent decades entrepreneurial activities are on the rise with exclusive social missions leading to the emergence of the term "social entrepreneurship". The term social

entrepreneurship was first quoted by Bill Drayton in 1980. Poverty alleviation and eradication of socio-economic disparities are the two important aims of social entrepreneurship. Social

entrepreneurship is an important process to identify potential resources and opportunities to create social values. Social entrepreneurs are innovative, resourceful, result oriented and are ready to tackle any kind of social and environmental issues.

Social entrepreneurship gives a momentum for businesses to find their own success in lieu of helping others especially during pandemic period. It is motivating for employees who wants to bring innovation in corporate work place. Uncertainty and risk associated in economic activities with present resources for future expectations. (Drucker 1985). Failure helps in making future business strategies, outcome and business growth. Risk plays a significant role and provides a platform for innovation. Social entrepreneurship helps to achieve a social change by incorporating entrepreneurial principles and operations with some kind of unpredictability. Social ventures are developed to look after the wellbeing of community, environment, child care, health, child protection, education etc.

Before going into detail about social entrepreneurship it is important to know who are actually social entrepreneurs. An entrepreneur is one with high level of motivation, innovative ideas and a critical thinker. A social entrepreneur is born when these attributes are used to mitigate social and environmental problems. Nobel Peace Prize in 2006 was awarded to Muhammad Yunus who is a modern social entrepreneur and

founder of Grameen Bank. He stressed the benefits when business principles are amalgamated with social projects and enterprises.

There are different types of social entrepreneurs with their own vision. In many cases, social entrepreneurs make money but utilise it for a social cause. Social entrepreneurs can be successful as a business owner. Their main motto is to bring positive social changes by combating the basic hurdles of society. Thus, social entrepreneurship is also a way of finding pioneering and innovative ways to resolve prevalent social issues and congregation of resources, ideas, skills and social structure required for attaining social transformations. The Community Social entrepreneur helps to fulfil the social needs of a community. The primary objective of Non-Profit Social Entrepreneurs is to focus on social issues rather than material gain. They prioritize social well-being over traditional business needs. The Transformational Social Entrepreneur create a business for the larger cause of society when government has delayed to intervene. The transformational category is about evolution of non-profitable ventures with adequate time and growth. The Global Social entrepreneurs aims to solve major social needs globally. Social entrepreneurial initiatives play a very significant role in any type of disaster mitigation. At present crisis due to Covid-19 pandemic has again given a scope to the social entrepreneurs to take up different activities and mark their place in the social welfare of the society.

## 2. Objectives:

The main objective of the paper is to study on the topic "Exploring the aspects of social entrepreneurship during Covid 19 pandemic in India." It is understood through the following objectives:

1. To understand social entrepreneurship and types of emerging fields of social entrepreneurs.
2. To study challenges and opportunities faced by social entrepreneurs during the Covid 19.

## 3. Literature review.

The developing economies of the world are common in their background in terms of socio-economic retardation and poverty. Enterprises and the communities reap the benefit of economic value. Liberation from a particular condition for economic mobilisation of communities by using some innovative strategies to earn income. (Roy and Karna 2015). Achieving economic sustainability is the way to successful social entrepreneurship without financial dependent on external sources. (Scheiber 2014). In the developing nations such perspective of social entrepreneurship is very much prevalent as identified in the past research of Asia Pacific context (Sengupta and Sahay 2017). They reached to a common observation about hybrid nature of social enterprises with double purpose to add social value and wealth.

Millions of people are devastated due to dangerous social and economic implications of Covid-19. (Kuckertz et al., 2020). Researchers of entrepreneurship has never seen a harmful virus like Coronavirus. But the welfare of the society is a significant aspect of social entrepreneurship. Roy and Karna (2015) stressed on the fact that to avoid any adversity it is important to create a social fund for the success of the social enterprises. Generation of rich social capital is one of the ingredients for the success of social enterprises (Goyal and Sergi 2015). For any type of enterprise social capital plays a vital role in implementation of ideas. (Lehtimaki and Karintaus 2012).

Choi and Majumdar (2014) mentioned about the need of further research on differences of various social entrepreneurs. In India, many welfare activities are initiated along with the participation of women to provide the basic services to the underserved people (Agarwal and Sahasranamam 2016). The concept of innovation for society is considered as an important tool for social welfare (Bhatt and Altinay 2013). It is crystal clear that social welfare is a vital entity for the process of social entrepreneurship.

## 4. Methodology:

The concept of social entrepreneurship is relatively new compared to conventional or commercial entrepreneurship. Suitable opportunities are identified

by social entrepreneurs to develop social values despite of the risks associated. A successful social entrepreneur tries to establish a relationship between the consumers and the social mission in association with the partners and stakeholders. Sole motto of social entrepreneurs is profit making and in turn utilising it for the welfare causes. Pro-social mission of social entrepreneurs has been holding the attention of scholars. Over the years of academic research, the concept of entrepreneurship has evolved into different forms that are still in nascent stages of research, like, social entrepreneurship, women entrepreneurship, academic entrepreneurship, political entrepreneurship, international entrepreneurship, and ethnic entrepreneurship. In social entrepreneurship opportunities are identified to distribute social value in collecting resources with some degree of risk. (Peredo and McLean, 2006)

The present study is based on exploratory aspects and has mainly focussed on three leading social enterprises of India in different fields and they are SELCO, Goonj and Narayana Health. The lockdowns of Covid 19 have had a severe impact around the globe. Many are still struggling in emotional, mental and physical stress due to financial instability especially on the livelihood front. So, the present study is mainly adhering to the Covid 19 relief work done by these enterprises.

## 5. Case study of successful Social Entrepreneurs

### 5.1 SELCO: Solar Lighting Company for the underprivileged

With the pragmatic efforts of Harish Hande it has become possible to provide solar power technology to the poor people. It is through a social enterprise known as SELCO (Solar Lighting Company). It is a pioneering rural enterprise based in Bengaluru, India since 1995. Eventually with the expansion founded the SELCO foundation and Incubation Centre for Energy Entrepreneurs in an effort to strengthen the energy access ecosystem. His extensive experience is widely recognized as a pragmatic voice in delivering sustainable energy solutions.

The Ramon Magsaysay Award in 2011 was given to Harsh Hande for delivering sustainable energy solutions to the poor through his social enterprise SELCO India. SELCO Foundation is a collaboration that inspires and supports sustainability across the world. To upgrade the capacity and vision of potential incubates, SELCO Incubation centre utilizes the valuable resources and intellectual skills. The concept of 'Sola shed or Kuteer' is started by SELCO Foundation which provides solar-powered livelihood solutions.

SELCO's innovation projects led to positive upliftment in the lives of the poor, while balancing social and environmental sustainability. Holistic approaches are needed

that simultaneously encompass social, financial, and environmental dimensions. Future work involves Global replication project, inventing green and Migrant Slum shelters. For any organization to thrive and deliver services to communities, particularly in the development sector, an enabling environment is critical.

**COVID RESPONSE PROGRAMME:** SELCO got a new platform during Covid 19 pandemic to work for welfare of the community. SELCO has been at the frontline with its urgent response to the Covid 19 pandemic. Covid 19 have been catastrophic for communities with the most urgent healthcare needs of serious patients who require access to oxygen and ventilators. SELCO has made specific plans to tackle and manage the Covid crisis. In the pandemic crisis SELCO has undertaken many actions which includes: 1) 60 Covid care hospitals, isolation centres, therapeutic care units and health staff quarters in partnership with public and civil society organizations like Doctors for You, Ashwani Gudalur, Seba Jagat etc. 2) Sustainable building material, solar powered solutions and efficient equipment and are being extensively used during the second phase of the crisis. 3) installed 500+ solar powered swab collections centres in remote areas. 4) Designed and, thus leading to decentralized testing process during critical periods of the 1st phase. 5) Provided basic rations and other essential supplies to numerous poor families, who were stranded during the country-wide lock down. 6) Infused capital in 30 last mile clean

energy and efficient technology social enterprises for meeting the salaries of technicians and administration staff. Also negotiated with local financial institutions on their behalf to restructure their respective working capital loans. SELCO also facilitated in increasing their credit periods from suppliers and provided crisis mentorship. 7) Deeply engaged with more than 200 grassroots-based enterprises, in the livelihoods and sustainable energy space, to create appropriate safety nets to prevent them from collapsing. 8) SELCO had internally restructured and created a Covid Task force to overlook all the operations. 9) The ongoing crisis is at a much larger level than the first one. On top of the existing core task force, it has created 3 more at regional levels, considering the amount of work that would have to be carried out in this phase. The learnings from the 1st phase will be critical, but the team is well-versed and aware of the magnitude and breadth of this catastrophe.

Now SELCO is focusing to inculcate three main areas to combat the pandemic which includes Partnerships and Crisis Management of Social Enterprises and Related Organizations. More efforts are given to improve the health sector and relief work.

### 5.2 Goonj: Famous for turning trashes into useful items

Goonj is a social enterprise which link the cities and villages with a purpose to help poor people. There is so much trash in the urban homes mainly clothes and other items which

are kept as waste material. So, those trashes are transported to rural areas for recycling into useful materials. Goonj, was founded by Anshu Gupta in 1999 with its headquarter in Delhi, India. Goonj undertakes Disaster relief, Humanitarian aid and Community development programmes in order to support the underprivileged people. Goonj works for socio-economic upliftment of poor communities by engaging them in work to make useful items. On account of such noble work Anshu Gupta, was given the 'Social Entrepreneur of the Year India 2012' award.

**Covid response work:** Goonj has always played a very important role in relief and rehabilitation work in various natural disasters like floods, earthquakes, cyclones, tsunami etc. In the Covid 19 pandemic as well, Goonj has adopted certain strategies to help the poor and needy. To tackle the present pandemic situation Goonj has started one programme known as 'Rahat' which provides PPE Kits, Oximeters, Thermometers, Oxygen concentrators and Medicines to the frontline workers, individuals and families. Goonj has a strong impact for mass awareness about health and hygiene related lessons which mainly includes use of sanitary pads, face masks etc. People were made aware about the importance of physical distancing for families those have limited space. Ration bags were supplied to the most interior and remote parts of the country. In an effort to revive the business of street eateries, an innovative concept of 'khichri dhabas' was launched. Some

ignored and missed out category of people like physically handicapped, HIV+, transgenders, patients, sex workers etc. were also reached out. To meet the food and nutritional demand excess fruits and vegetables from the farm were procured and transported to different communities. With the help of the Rahat Covid work, Goonj has tried to understand and respond to various needs of people through their innovative approach. Covid relief materials were transported to both urban and rural parts of the country in almost five thousand villages, twenty-seven states and union territories of India. Around five hundred fifty partner organisations have supported to reach the urban and rural areas. Almost twelve crore thirty lakh kilograms of ration and other essentials were provided to local communities through different networks. More than three lakhs ready to eat meals were supplied across urban and rural parts of the country. Nearly three lakh five thousand kilograms of vegetables and fruits were directly transported from farmer's field. Almost fifteen lakhs of people were reached out as part of Rahat Covid work. About twelve lakh Face masks and fifteen lakh sanitary pads were made and distributed which is a result of vocational training imparted to earn livelihood. Goonj follows certain strategies and principles to maintain their values and ethos. Active volunteers, partners and local vendors of Goonj acquaint regularly with the ground level happenings. So, Goonj works at their best of abilities to understand and fulfil the needs of the people.

### 5.3 Narayana Health: Health for all; All for health

Narayana health is very popularly known as the world's one of the best and low-cost hospital. It is commonly known as Narayana Hrudayalaya which means cardiac centre. People from different places and backgrounds across the world visit the Narayana hospital to avail cardiac surgeries at a very nominal rate. It is a humble effort of Dr Devi Shetty who founded Narayana Health in the year 2000 to provide quality health care services at an affordable rate. Narayana health with its headquarter in Bengaluru, Karnataka has a chain of hospitals including multi-speciality, cardiac centres and primary health care units in different parts of India including an international hospital. Narayana health serve with a strong mission to deliver affordable and quality health care services. In return of generosity, Narayana health have received many awards and accolades such as Corporate Social Responsibility award, Narayana Health Express Healthcare Award etc. They have undertaken many programs for the socio-economic upliftment of poor people like 'safe school', 'Suposhan' etc.

**COVID Response work:** Narayana Health have always come forward to lower the sufferings of underprivileged. People struggles to stay in good health because of medical emergency situation arisen due to outbreak of Covid 19 pandemic. Around hundred room quarantine facilities for Covid 19 patients are provided to economically weaker section of society at free of cost. Essential medications are supplied

free of cost and Covid 19 patients are constantly monitored by nurses and doctors. People are made aware about the significance of hand washing with soap, use of sanitizers, face mask and to undergo immediate Covid test in case of any symptoms arise. Regularly talks, lectures, seminars, camps are arranged to impart education on health, hygiene, nutrition etc. Covid positive patients with comorbidities are encouraged to come forward for treatment to avoid further risk. The patients in the isolation facility are monitored round the clock by the doctors and nurses. The underprivileged cannot afford proper treatment in case of any severity but it has become possible with the humble approach of Narayana Health. Underserved people of the society also get the facility of hygienic accommodation along with affordable treatment. Free Covid 19 vaccination drive has started by Narayana Healthcare with a mission to vaccinate maximum number of underprivileged people in order to revive the Covid 19 pandemic situation.

Good health is the key to happiness and prosperity. So, Narayana Health aims to provide affordable healthcare facilities to the economically weaker section of the society to keep them fit. To work and earn livelihood need sound mind and body so good health is of utmost priority not only for underprivileged but for everyone. Main objective of Narayana Health is accessibility and affordability of treatment, promotion of educational facilities to talented students and overall upliftment of the economically weaker section of the

society. Corporate Social Responsibility Focus Areas include affordable Healthcare facilities, enhancing livelihood of rural youth, imparting education etc. Some of the critical projects include Rajib Gandhi Arogya Yojana (RAY), railway Clinic, Mobile Mammography Screening, Udaan (a scholarship program) etc.

## 6. Analysis

In India social entrepreneurs are rapidly growing across sectors like financial inclusion, livelihood, education, affordable housing, sanitation and healthcare, renewable energy, education, affordable housing, waste management, water etc. In healthcare social impact gets revealed from the number of lives saved or quality of healthcare services. Globally India is considered as one of the most dynamic country for social entrepreneurship with higher no of enterprises. It shows vibrant start-up ventures as well as good support from the investors across the globe, which makes many projects to come with employment opportunities for millions of people.

The Covid 19 pandemic had a devastating socio-economic impact across the globe including India. Due to unequal wealth, employment, housing and access to healthcare, vulnerable people are not affected. Social entrepreneurs are helping and working in the front throughout the period, providing services to those are affected. They have also been hit hard during the

crisis financially and physically. Some of the social entrepreneurs are also failed miserably, and were in need of capital to support the vulnerable communities. There must be an approach to mobilise and support the social entrepreneurs.

Social entrepreneurship has good prospects in the developing countries than the developed countries as there are more disparities in terms of financial status, educational status and like in developing countries social entrepreneurs can exploit to have a sustainable business growth. They can uplift the society with creative solutions and unique service which solves the societal issues. This can lead to creation of social and economic values among the masses of the country. Since the social entrepreneurship has the basic objective to address the societal needs, which caters the low-income group of the population. So, the social entrepreneurs can get lucrative opportunity in this category. Social entrepreneurs can explore, exploit and provide the products and services at affordable prices. Thus, generating employment opportunity among the masses, which is significant for the overall development of the country.

The Covid 19 pandemic has spread in an alarming speed causing physical, psychological and economical problems globally. The economic loss experienced by entrepreneurs is quite evident through the largest economic shock across the world. Social entrepreneurs work for welfare of the

society so their hurdles matter a lot. This disrupts the entire process of their mission. Some of the important hurdles faced by social entrepreneurs are: supply chain was disrupted due to lockdowns, customers were

frightened of the situation, shortage of labour, changes were done in the Government regulations, work was limited to certain geographies, scarcity of skilled and qualified manpower etc.



**Fig. 1. Challenges during Covid 19 on Social Entrepreneurs**

There are also many other challenges faced by social entrepreneurs. Large no of social entrepreneurs thinks social entrepreneurship as a social work but not for making money. But social entrepreneurship contributes for both creating the social and economic values. The social entrepreneurs cater the poorest population in the remotest part of the country with primary objective of creating values. Some other challenges faced by social

entrepreneurs are dearth of talented, professional and dedicated workers. A qualified and a dedicated worker will demand a huge salary which is possible for the economic entrepreneurs rather than the social entrepreneurs. The primary objective of social entrepreneurs is to uplift the lower strata of the society. So, they could not attract the talented workforce to work with them. For example, a low-cost hospital for charity running

under social entrepreneurship has to employ specialized doctors. But they cannot afford to pay them high salaries which the doctors expect. So, affordability can be another challenge before social entrepreneurs in their overall employment scenario. Another biggest challenge before the social entrepreneurs is that the individuals are not ready to adapt the changes proposed by social entrepreneur for the benefit of the society. They would like to continue with the conventional ideas. So, it is very challenging for the social entrepreneurs to break the mind blocks of rural people.

There are many characteristics which social entrepreneurs generally possess. Social entrepreneurs are curious, inspiring, resourceful, open, persistent etc. An entrepreneur can turn into a social entrepreneur if they have foresightedness to turn a problem into opportunities, if they can strategically build their international network and also if they have learnt from the failure stories of other entrepreneurs. The impact of social entrepreneurship is vital especially for developing economy and social community. Social entrepreneurship is an emerging discipline that generates social impact through entrepreneurial approach and on its social fabric.

The success of a social enterprise reflects in its ability to create social impact with high-volume customers and achieve financial sustainability through some income streams. It is vital that social enterprises have strong planning and strategic processes to identify

diverse market opportunities that have multiple potential market advantages. It is imperative for them to appreciate that it would be products that would sell and generate economic benefits and not just the goodwill (Katz, 2014). An important social opportunity needs to be recognised by entering a sustainable market comprising of customers who have social need and seek value. While all of this philosophizing on the relevance of market orientation in social entrepreneurship is true, the literature review process did not reveal any research finding on what market orientation by social enterprises comprises of, in the context of developing or emerging economies. Social entrepreneurs produce eco- friendly products, serve the underserved community and focus on welfare activities.

## 7. Conclusion

There is a need for revolution among the people from different walks of life in creating and implementing sustainable and innovative solutions to some social issues. As a growing economy India needs numerous social entrepreneurs with innovative solutions to the society's most pressing problems in the areas of sanitation, education, water conservation, gender bias, primary health, female foeticide, carbon emissions and other environmental problems. There is need for more social entrepreneurship education in higher educational institutes. It will help to prepare and motivate the younger generation to incorporate

social entrepreneurship in their professional field. With the help of the cross-disciplinary learning they can be able to contribute in tackling various societal issues innovatively. Thus, it is seen that there are still many doors of opportunities to explore but those needs to be opened optimistically for the betterment and welfare of the society. Some Covid 19 variants like Delta, Omicron etc have elongated the pandemic period and need to follow strict precautionary measures to contain the spread of the disease. Hence, there is an urgent role of social entrepreneurs to work at the grass root level for the safety and welfare of the people. So, the purpose of the next article will be mainly to understand the strategies adopted by the social entrepreneurs during pandemic and the measures taken for economic recovery.

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Hacker, D. (1997). *Research and documentation in the electronic age*. Boston: Bedford Books. Retrieved October 6, 1998, from <http://www.bedfordbooks.com/index.html> Morse, S. S. (1995). Factors in the emergence of infectious diseases. *Emerging Infectious Diseases*, 1(1). Retrieved October 10, 1998, from <http://www.cdc.gov/ncidod/EID/eid.htm>

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