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Jaya Bhasin, Shahid Mushtaq and Konika Singh Chib	Exploring the Associations among Intellectual Capital,Organizational Learning Capabilities and Effectiveness
SandeepTandon and Pooja Gupta	Workplace Ostracism and Organization Citizenship Behaviour: Role of Need Threat as a Mediator
Yasmeen Shamsi Rizvi and Ratika Sikand	Impact of Learned Helplessness on Job Satisfaction: An Analysis of Banking Sector
M. Selvakumar, R. Mohammed Abubakkar Siddique, V. Sathyalakshmi and M. Ganeshpandian	Developing the Model for Retention of Customers in Indian Banking Industry
Shaunak Roy and Shivaji Banerjee	Ascertaining Consumers' Perceptual Divergences towards the Construct of Brand Personality: Indian Corroborations
Rinky. A. Menon, Kamini Shah, Sandip Bhatt & Hitesh Parmar	Determinants of Adoption of Mobile Banking: A Structural Equation Modeling Approach
G.K. Deshmukh, Arijit Goswami and Asha Sahu	Social Media Influence Towards Digital India Initiatives
RuchitaVerma and Dhanraj Sharma	Do Announcements of Frauds Affect Movement of Stock Price? Evidence from Indian Banking Sector
Tagar Lal Khan and Kalpataru Bandopadhyay	Efficiency Assessment of Indian Commercial Banks: A Meta-Frontier Approach
Jignesh B Togadiya and Vigna Oza	GST a Game Changer for Indian Auto Companies Share Return?
Dharen Kumar Pandey and Vineeta Kumari	Impact of Demonetization on Indian Banking Sector Stocks
Hamendra Kumar Dangi	Information Search Behaviour for Health Care Services
Ramakrishna Bandaru	The Role of APEDA on Agri-Exports in India A Structural Equation Model for Global Exports Development
Amandeep Kaur and Rajinder Kaur	Climate Change Disclosure: A Study of BSE 100 Companies In India

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Contents

Exploring the Associations among Intellectual Capital,Organizational Learning Capabilities and Effectiveness 1
Jaya Bhasin, Shahid Mushtaq and Konika Singh Chib

Workplace Ostracism and Organization Citizenship Behaviour: Role of Need Threat as a Mediator 32
SandeepTandon and Pooja Gupta

Impact of Learned Helplessness on Job Satisfaction: An Analysis of Banking Sector 49
Yasmeen Shamsi Rizvi and Ratika Sikand

Developing the Model for Retention of Customers in Indian Banking Industry 61
M. Selvakumar, R. Mohammed Abubakkar Siddique, V. Sathyalakshmi and M. Ganeshpandian

Ascertaining Consumers' Perceptual Divergences towards the Construct of Brand Personality: Indian Corroborations 76
Shaunak Roy and Shivaji Banerjee

Determinants of Adoption of Mobile Banking: A Structural Equation Modeling Approach 95
Rinky. A. Menon, Kamini Shah, Sandip Bhatt and Hitesh Parmar

Social Media Influence Towards Digital India Initiatives 111
G. K. Deshmukh, Arijit Goswami and Asha Sahu

Do Announcements of Frauds Affect Movement of Stock Price? Evidence from Indian Banking Sector 125
RuchitaVerma and Dhanraj Sharma

Efficiency Assessment of Indian Commercial Banks: A Meta-Frontier Approach 141
Tagar Lal Khan and Kalpataru Bandopadhyay

GST a Game Changer for Indian Auto Companies Share Return? 158
Jignesh B Togadiya and Vigna Oza

Impact of Demonetization on Indian Banking Sector Stocks 178
Dharen Kumar Pandey and Vineeta Kumari

Information Search Behaviour for Health Care Services 194
Hamendra Kumar Dangi

The Role of APEDA on Agri-Exports in India A Structural Equation Model for Global Exports Development 214
Ramakrishna Bandaru

Climate Change Disclosure: A Study of BSE 100 Companies In India 227
Amandeep Kaur and Rajinder Kaur

Notes for Contributors

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Exploring the Associations among Intellectual Capital, Organizational Learning Capabilities and Effectiveness

JAYA BHASIN, SHAHID MUSHTAQ AND KONIKA SINGH CHIB

Abstract: *The present study aims to explore and investigate linkage between intellectual capital (IC) and organizational effectiveness (OE) through organizational learning capabilities (OLC). The study further aims to propose a conceptual framework to provide insights in relation to linkage among intellectual capital, organizational learning capabilities and effectiveness. Sample was taken from employees (n=405) working at different levels in three top Indian pharmaceutical firms through structured measuring instrument. Confirmatory factor analysis along with structural equation modeling was employed to investigate relationship among selected constructs. OLC were examined as a mediator among IC and OE. This study supports resource-based-view of management theory. First three hypotheses formulated to assess the links between IC, OLC and OE were proved significantly. Further, fourth hypothesis resulted that OLC partially mediated the relationship of IC and OE among Indian pharmaceutical firms. The results of the research recommended that managers should focus and make efforts to establish intangible resources like intellectual capital and also enhance learning capabilities within the organization which will facilitate enhancement in performance as well as effectiveness.*

Keywords: Intellectual capital (IC), Organizational learning capabilities (OLC), Organizational effectiveness (OE), Pharmaceutical firms.

Introduction

In present knowledge economy, modern business organisation's value creation process is predominantly depend upon development, deployment, and utilization of knowledge or intangible resources of the firm like intellectual capital (IC) (Inkinen, 2015; Dženopoljac*et al.*, 2016).Recently, a US-based research on "Intangible Asset Market Value (IAMV)" by Ocean Tomo (2019) has identified that "approximately 84% of the market value of a company is in 'intangibles'

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assets and only 16% of the market value of a company to be 'tangible' assets". Such knowledge assets are considered as most crucial strategic factors that help an association to improve its performance/outcomes (Gogan *et al.*, 2016; Leal *et al.,* 2016). Further, Farsani*et al.* (2012) stated that capacity of an organization to manage its IC is indispensably connected to its learning capabilities. Moreover, organizational learning capabilities (OLC) are basically recognized as imperative factor that majorly emphasizes on creating, acquiring and utilizing the integrated organizational knowledge. Such capabilities help an organization to gain competitive advantage as well as enhance its performance (Khandekar and Sharma, 2006; Kassim*et al.*, 2016).However, in a report by McKinsey & Company titled, "The essential components of a successful L&D strategy" by Brassey *et al.* (2019) decleared that present knowledge-based-era is the era of intangible assets like "skilled employees, exceptional leaders, and knowledge" which promote the significance of learning-and-development function in knowledge-intensive industries.

Numerous academicians and practitioners have identified that intangible assets are those strategic tools that provide an imperative route to a firm to attain success. Further, a plethora of studies in management literature disclose the importance of intellectual capital to gain competitive advantage (Erickson and Rothberg, 2000; McLennan, 2000; Camuffo and Comacchio, 2005; Kong and Prior, 2008; Kamukama*et al.*, 2011; Jardon and Susana Martos, 2012; Chahal and Bakshi, 2015; Irawati and Sadalia, 2018; Li and Liu, 2018; Mubarik*et al.*, 2019) and also to improve organizational performance in different culture and environment (Wang and Chang, 2005; Peng *et al.*, 2007; Mention and Bontis, 2013; Lu *et al.*, 2014; Dženopoljac*et al.*, 2016; Asiaei*et al.*, 2018; Khalique and Isa, 2019). On the other hand, the studies that specifically provide concentration towards the association of IC and OE are relatively few (Kamaluddin and Rahman, 2009; Verma and Dhar, 2016; Zlatkoviæ, 2018). Further, Verma and Dhar (2016) stated that "exploiting every bit engaged in the organization to maximize organizational effectiveness has always been a priority among the top management." They also mentioned that the research studies which investigate the influence of IC on effectiveness beyond financial performance are still in the stage of exploration and area of curiosity for the researchers as well as academicians globally.

In addition, interrelationship among IC, OLC and OE is also not investigated so far in pharmaceutical sector of India. However, "Indian pharmaceutical sector was valued at US$ 33 billion in 2017. The country's pharmaceutical industry is expected to expand at a 'compound annual growth rate' (CAGR) of 22.4 per cent over 2015–20 to reach US$ 55 billion" (IBEF, 2019). Many researchers are of view that pharmaceutical industry mainly rely on its intangible resources (Boekestein, 2006; Gleason and Klock, 2006; Makris, 2008; Chander and Mehra, 2010; Baranes, 2016; Septian*et al.*, 2019). This industry is associated with some key features like

innovation (Horrobin, 2000; Cardinal, 2001; Kale and Little, 2007; DiMasi*et al.*, 2016) research-orientation (Becker and Lillemark, 2006; Ganuza*et al.*, 2009; Liu *et al.*, 2019) and proper human-technology involvement (Xu, 2015). However, this knowledge-based industry of India helps to enhance economy of country and also provide competition to other developing countries.

Furthermore, OLC is considered as a crucial factor for increasing the value of anyfirm (Moghadam *et al.*, 2013), especially in knowledge-intensive industry like pharmaceutical industry (García Morales *et al.*, 2008). Numerous studies concentrated on OLC (DiBella *et al.*, 1996; Styhre*et al.*, 2004; Lin, 2008; Bahadori *et al.*, 2012; Basheer *et al.*, 2018), still factors affecting OE remain incomplete. Kamaluddin and Rahman (2009), Verma and Dhar (2016), Zlatkoviæ (2018) have discussed the association among IC and OE, however these studies do not focus on how IC and OLC concurrently affect organizational effectiveness. Additionally, researchers usually ignore OLC as mediating factor in a firm and there are no relevant studies that investigate the mediating role of OLC among IC and OE. Due to increasing focus of intangibles and learning prosperity in this particular industry, this study majorly focuses on Indian pharmaceutical firms to explore the associations among IC, OLC and OE. Apart from this, a comprehensive review of studies on intangible assets recommends that management literature is still experiencing an absence of research in exploring the linkages among IC, OLC and OE. Consequently, the primary endeavour of this research paper is to investigate, "whether intellectual capital influences organizational effectiveness through organizational learning capability" in context to Indian pharmaceutical industry.

Conceptual Framework

Numerous researchers have identified different factors or antecedents that can enhance performance of an organization. However, a pertinent literature in the field of management reveals that unique and intangible resources of a firm can facilitate enhancement in its performance (Ali and Ali, 2011; Andreeva and Garanina, 2016; Obeidat*et al.*, 2017; Asiaei*et al.*, 2018; Attar *et al.*, 2019). Subsequently, resource-based-view presented VRIO resources (Valuable, rare, imperfectly imitable and non-substitutable) as unique assets of an organization which help to attain its goals and eventually boost up its performance. Researchers like Lin (2014) and Radjenoviæ *et al.* (2017) investigated that intellectual capital has identified as VRIO resources that inimitably assist in organizational performance as well as in its success. According to Kamaluddin and Rahman (2009), intellectual capital is recognized as a strategic tool that helps to increase organizational wealth and attain competitive advantage that ultimately impacts its effectiveness. Further, a framework based on resource-based-view and organizational learning proposed by Smith *et al.* (1996) disclosed that organizational

learning practices are those capabilities of a firm that importantly act as aid to attain competitive edge over competitors in the market place. This research paper presented the framework as a support to conceptualize the organizational effectiveness as consequences of implementing intellectual capital and learning practices within an organization (Figure 1).

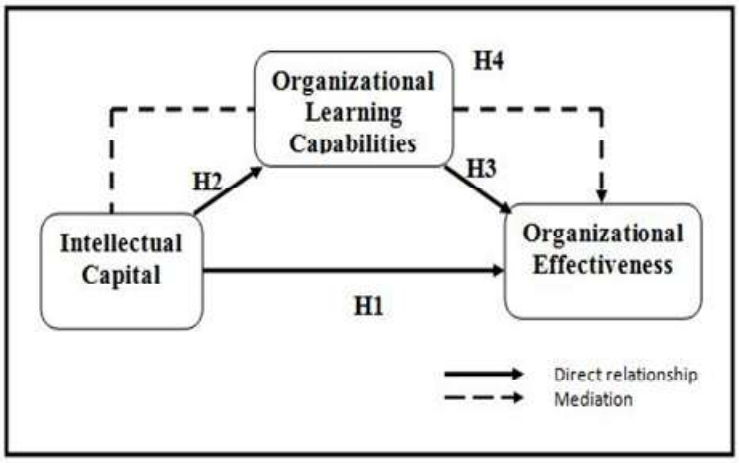

Fig. 1: Conceptual Model

Source: Compiled by the Researchers

Intellectual Capital (IC)

Initially, the term 'Intellectual capital' was used by an eminent economist John Kenneth Galbraith in 1969 in a letter written to economist Michael Kalecki. In letter, he mentioned the significance of intellectual capital by saying "I wonder if you realize how much those of us in the world around have owed to the intellectual capital you have provided over these past decades" (Bontis, 2001; Serenko and Bontis, 2004; Latas and Walasek, 2016). Since the last few decades, practitioners and academicians have been studied the concept of intellectual capital in different disciplines. Researchers like Trequattrini *et al.* (2018) along with Suciu and Nãsulea (2019) have identified IC as a vital indicator of national economic development. However, contemporary economies are based on the foundation of three imperative factors which are knowledge, knowledge assets and management of organizational integrated knowledge (Stewart, 2002). In this knowledge based era, industries should focus upon their core competencies such as intangible assets to survive in current fierce competition (Cuozzo *et al.,* 2017). Accordingly, modern business organizations promote intellectual capital practices to support value creation process and gain competitive advantage in the market place (Sullivan and Sullivan, 2000). However, a comprehensive literature reveals that IC acts as a driver to enhance performance and effectiveness

of an organization (Lu *et al.,* 2014; Dženopoljac *et al.,* 2016; Verma and Dhar, 2016; Orugun and Aduku, 2017; Khalique *et al.,* 2018; Asiaei *et al.,* 2018; Khalique and Isa, 2019). Further, different authors have explained the term 'intellectual capital' and made significant contributions in the field of organizational theory. Research like Low and Kalafut (2002) explained that 'Intellectual capital' is a curial variable which consists of several key organizational factors like invention of technology, corporate culture and customer information that endorse the competitiveness of the organization. Moreover, Ozkan *et al.* (2017) described 'Intellectual Capital' as intangibles assets of an association that have significant and positive impact on its performance and success.

Further, intellectual capital has linked with diverse type of resources, consequently it becomes necessary to split different intangibles according to their nature into different components autonomously (Molodchik *et al.,* 2012). A plethora of studies have revealed that IC is mainly the combination of three elements: 'Human Capital' (HC), 'Structural Capital' (SC) and 'Relational Capital' (RC) (Johnson, 1999; do Rosário Cabrita and Vaz, 2005; Cabritaand Bontis, 2008; Khalique *et al.,* 2011; Mosavi *et al.,* 2012; Barpanda and Mukhopadhyay, 2016; Cuozzo *et al.,* 2017; Miloševiæ *et al.,* 2018).

- Human capital consists of tacit knowledge, explicit knowledge, competencies, skills, and capabilities of workforce of an organization.
- Structural capital comprises of all non-human-resources like organizational culture, strategies, techniques, policies, procedures, innovation capital, structure and networks.
- Relational capital which includes relationships of the company with external channels like investors, creditors, intermediaries or partners, customers, suppliers marketing channels, governmental as well as industrial networking.

Organizational Learning Capabilities (OLC)

Cyert and March (1963) used the concept of 'Organizational Learning' initially in their research work of 'behavioural theory of the firm' (Greve, 2017). They explained that learning is a phenomenon that is basically occurs in response to a stimulus in form of change in behaviour. In current unpredictable era, business organizations need to enhance their ability to manage assets as well as capabilities to attain organizational goals (Zoogah*et al.,* 2015). Moreover, organizational learning capabilities is identified as ability of a firm to encourage learning practices through organizational policies, practices and procedures (Nwankpa and Roumani, 2014; Gomes and Wojahn, 2017). According to Erçetin (2001), organizational learning is linked with enlargement and enrichment in firm's knowledge assets. Organizational learning is an incessant process within whole organization that

assists individuals and groups to learn persistently (Namada, 2018). Under learning practices an organization is basically connected to adopt innovative ideas as well as learn from precedent incident. Implementation of such practices in organization can provide competitive edge over opponents in the market place (Hailekiros and Renyong, 2016). Shoid *et al.* (2011) recommended that the practice of propensity to learn with a regular custom will endow positively outcomes to an organization. According to Argote and Hora (2017), adoption of learning practices by personnel of an organization will enhance their potential and capabilities to take effective action/decision.

Organizational Effectiveness (OE)

'Organizational Effectiveness' (OE) is an indicator of performance and a most important dependent variable of any organization(Amah, 2012; Lee, 2018). They also explained that organizational effectiveness is directly associated with organizational survival as it is linked with "how effective a firm is in attaining its goals and objectives with minimum expenditure on available resources". However, Price (1972) argued that 'degree of goal achievement' measures effectiveness of an organization. Further, Vinitwatanakhun (1998) suggested that skilled personnel can enhance effectiveness in any business association. Lusthaus*et al.* (2002) are of view that effectiveness is advanced and extensive side of performance of a firm to attain organizational goals appropriately. However, better results and quality products can be attained through effective organization through a proper approach (Kataria *et al.,* 2013). Chidambaranathan and Swarooprani (2015) explained that in today's competitive era eventual endeavour of a business establishment is to attain effectiveness and efficiency of an organization. Furthermore, Kanwal *et al.* (2017) discussed that OE is basically capacity of an organization to attain its long as well as short term goals by absorbing business activities in excellent and proper way. Thus, organizational effectiveness can be described as fulfilling organization's objectives without exhausting its resources.

Review of Literature

Intellectual Capital (IC) and Organizational Effectiveness (OE)

In current competitive era, business associations encompassed with diverse resources and competences but all resources don't have potential to give competitive advantage to firm. However, some researchers stated that IC with its elements are valuable intangible assets that provide competitive advantage and enhance performance of the firm (Erickson and Rothberg, 2000; McLennan, 2000; Camuffo and Comacchio, 2005; Peng *et al.,* 2007; Kamukama *et al.,* 2011; Jardon and Susana Martos, 2012; Mention and Bontis, 2013; Lu *et al.,* 2014; Dženopoljac *et al.,* 2016; Asiaei *et al.,* 2018; Li and Liu, 2018; Mubarik *et al.,* 2019;

Khalique and Isa, 2019). Further, researchers like Kamaluddin and Rahman (2009), Verma and Dhar (2016), Zlatkoviæ (2018) investigated the connection between intellectual capital, its components ('Human capital', 'Structural capital' and 'Relational capital') with organizational effectiveness. First, human capital is fundamentally liked with high performance of organizations' personnel that facilitates effectiveness in the organizational functioning and attains desire results (Delaney and Huselid, 1996; Singh and Gupta, 2016). Few studies in management literature directly studied the relationship among human capital and organizational effectiveness. Such studies resulted that appropriately managed human resource can lead to success by achieving effectiveness in a firm (Josan, 2013; Verma and Dhar, 2016). Second, structural capital should be implemented properly to conquer the organizational value (Barkat and Beh, 2018). However, researchers like Wang *et al.* (2014) and Obeidat *et al.* (2017) investigated that 'organizational culture' is one of the essential factors of structural capital that promotes knowledge assets of a firm. Gochhayat *et al.* (2017) mentioned that appropriate functioning of organizational culture facilitate effectiveness to any business organization. Further, among all three components of intellectual capital that have major impact on effectiveness of a firm is 'structural capital' (Kamaluddin and Rahman, 2009; Verma and Dhar, 2016). Third, relational capital is identified as constructive factor that helps to create, acquire and maintain knowledge assets of an organization. Such a capital enhances productivity as well as innovativeness within the firm (Santos Rodrigues and Figueroa Dorrego, 2010). Furthermore, researchers stated that relational capital is linked with performance of an business establishment (Thuy and Quang, 2005; De Clercq and Sapienza, 2006; Carmeli and Azeroual, 2009; Tumwine *et al.,* 2012; Muniady *et al.,* 2015; Bianchi Martini *et al.,* 2016; Khalique *et al.,* 2018). Thus, hypothesis can be postulated:

Hypothesis-1 (H_1): Intellectual capital influences organizational effectiveness positively.

Intellectual Capital (IC) and Organizational Learning Capabilities (OLC)

In contemporary knowledge-intensive era, IC has been identified as 'knowledge assets' of contemporary industrialized economies. Tabaghdehi *et al.* (2018) and Bontis (1998) explained that knowledge assets facilitate value creation in a firm through establishing an interrelation among IC and OLC. However, in a study by Hsu and Fang (2009) results disclosed that there is an association among IC and knowledge management (KM) that promotes OLC in the firm. Some researchers investigated the connection between IC and OLC (Farsani *et al.,* 2012; Nokohan and Bohlooli, 2015; Tabaghdehi *et al.*, 2018). Further, literature reveals that components of intellectual capital have significant influence on learning capabilities of an organization. First, human capital is fundamentally linked with improving the quality of personnel in a firm (Allameh *et al.,* 2010). However, learning practices can help to increase quantity of knowledge workers by

enhancing the knowledge of employees through training and development programmes. Accordingly, better learning capabilities can be developed by better quality of personnel(Erickson and Rothberg, 2009; Allameh*et al.,* 2010). Additionally, literature reveals the association among human capital and organizational learning capabilities (Hsu and Fang, 2009; López-Cabrales*et al.,* 2011; Kelly *et al.,* 2011; Farsani *et al.,* 2012; Moghadam *et al.,* 2013; Pasamar *et al.,* 2019). Second, structural capital encourages efficiencies in functioning of a firm (Erickson and Rothberg, 2009). Appropriate implementation of structural capital eventually develops the environment of the learning that will enhance capabilities of an organization. Furthermore, some studies declared that structural capital is associated with OLC (Hsu & Fang, 2009; Farsani *et al.,* 2012; Moghadam *et al.,* 2013; Yaghoubi and Bahadori, 2014; Bhatti and Zaheer, 2014; Nokohan and Bohlooli, 2015; Lev *et al.,* 2016). Third, under relational capital researchers mentioned that employee with high capabilities and competences will have better ability to maintain strong relationships with external channels of the firm (Ahmadi *et al.*, 2013). Such ability can be developing in personnel of organization by enhancing OLC (Hsu and Fang, 2009). Moreover, the relationship between relational capital and OLC have been examined by numerous researchers (Chang and Gotcher, 2007; Hsu and Fang, 2009; Kong and Farrell, 2010; XUE *et al.,* 2010; Farsani *et al.,* 2012; Moghadam *et al.,* 2013; Nokohan and Bohlooli, 2015; Martelo-Landroguez *et al.,* 2018). Therefore, the following hypothesis can be postulated:

Hypothesis-2 (H_2): Intellectual capital influences organizational learning capabilities positively.

Organizational Learning Capabilities (OLC) and Organizational Effectiveness (OE)

In contemporary environment, organizations need to pay attention towards creating and sustaining core competencies to gain competitive edge over rivalry (Kanwal *et al.,* 2017). Subsequently, modern business organizations have to introducing advanced business strategies in its processes and operation such as 'organizational learning' that will ultimately boost effectiveness in the firm (Khandekar and Sharma, 2006; Abdullah *et al.,* 2014). However, an organization can achieve effectiveness in its functioning with the improvement or enhancement in skills and competencies of its employees through executing learning practices (Phyu and Vinitwatanakhun, 2015). Aydin and Ceylan (2009) suggested some key practices that a firm should execute in its functional activities to enhance its effectiveness. These key practices are: 1) promote learning practices in the organization; 2) create a corporate culture that encourage learning practices; 3) enhance knowledge acquisition skills in personnel and provide training to utilize that acquired knowledge in work activities; and 4) endorse knowledge management system within the organization. Additionally, different researches investigate the linkage between organizational learning capabilities on

performance and also effectiveness of an organization (Rose *et al.*, 2009; Aydin and Ceylan, 2009; Ologbo and Chukwuekezie, 2013; Kanwal *et al.*, 2017; Hussain *et al.*, 2018). Therefore, the subsequent hypothesis can be hypothesized:

Hypothesis-3 (H_3): Organizational learning capabilities influence organizational effectiveness positively.

Intellectual Capital (IC), Organizational learning capabilities (OLC) and Organizational Effectiveness (OE)

Intellectual capital serves as a imperative business strategic tool along with components that cooperatively "share, promote and grow" firm's value and also increase its performance (Wang and Chang, 2005; Peng *et al.*, 2007; Hsu and Wang, 2012; Lu *et al.*, 2014; Dženopoljac *et al.*, 2016; Asiaei*et al.*, 2018; Khalique and Isa, 2019). Presently, different authors and practitioners are trying to examining the relationship between IC and performance/effectiveness by introducing some interceding apparatus which may provide better results to a firm (Wang *et al.*, 2014; Mahmood *et al.*, 2017). Moreover, Mahmood *et al.* (2017) have explored the significance of OLC in present knowledge era. Allameh *et al.* (2010) and Kanwal *et al.* (2017) stated that simultaneous development of intangible assets like intellectual capital as well as learning capabilities will ensure enhancement of performance and effectiveness in the firm. Additionally, Hsu and Fang, (2009) and Moghadam *et al.* (2013) investigated that IC and its components facilitate learning environment and increase organizational performance. Fulmer *et al*. (2003) declared that high-quality performance of employees helps an organization to attain effectiveness. Accordingly, firms should focus upon its personnel development to commence effectiveness within it (Argyris, 2017). Organizational learning acts as an imperative tool that increase skills and competences of employees and provides OE as well as gives competitive advantage (Amiri *et al.*, 2010). However, researchers like Taboli and Zaerizadeh (2016) have investigated linkages between IC, OLC and performance. Thus, hypothesis can be postulated:

Hypothesis-4 (H_4): Organizational Learning Capabilities mediates the relationship between Intellectual Capital and Organizational Effectiveness.

Research Design

Sample

Initially, 780 employees working at different levels in top three pharmaceutical firms in India were contacted for present research survey. 428 questionnaires were returned, and out them 23 responses were excluded as these were incomplete. Finally, 405 responses were used for final analysis. This sample is representative of the population and is considered to conduct structural equation

modeling (Shah and Goldstein, 2006). This study has used 'Stratified proportionate random sampling' for collecting data for survey. This technique of sampling includes three main steps: firstly, total population is divided in 3 non-intersecting strata, secondly, selection of sample from each group proportionately. For present study three non- intersecting groups are top three Indian Pharmaceutical firms. Thirdly, simple random method is applied to select respondents from each stratum of selected firms. Further, Indian pharmaceutical industry selected as sample because it mainly rely on its intangible resources (Boekestein, 2006; Gleason and Klock, 2006; Makris, 2008; Chander and Mehra, 2010; Baranes, 2016; Septian*et al.,* 2019). This selection was made due to some key features associated with this knowledge- intensive industry like innovation (Horrobin, 2000; Cardinal, 2001; Kale and Little, 2007; DiMasi *et al.,* 2016) research-orientation (Becker and Lillemark, 2006; Ganuza *et al.,* 2009; Liu *et al.,* 2019) and proper human-technology involvement (Xu, 2015). However, this knowledge-based industry of India helps to enhance economy of country and also provide competition to other developing countries.

Measurements

Present research used a measurement scale which consists of 116 items to explore and investigate relationship between "Intellectual Capital", "Organizational Learning Capabilities" and "Organizational Effectiveness".

Independent Variables

Literature reveals that earlier research studies have focused on different approaches and patterns to measure IC such as 'Value added intellectual capital coefficient' (Ozturk and Demirgunes, 2007; Ståhle*et al.,* 2011; Maji and Goswami, 2017; Bassetti *et al.,* 2019), 'Tobin's Q' (Hejazi *et al.,* 2016; Ghasemi*et al.,* 2019), 'Economic Value Added' (Mouritsen, 1998; Salehi *et al.,* 2014). However, for present research work a questionnaire was designed like to Abdullah and Sofian (2012), Zaei and Kapil (2016), Hesniati *et al.* (2019).

In the present study, the measuring instrument for 'Intellectual Capital' was adopted from scales developed by Sharabati *et al.* (2010) and Chahal and Bakshi (2016). Intellectual capital includes its three elements "Human Capital" (HC) (17 items), "Structural Capital" (SC) (16 items) and "Relational Capital" (RC) (7 items). To record responses five points Likert's scale was used (1 for 'strongly disagree' and 5 for 'strongly agree').

Mediating Variable

To measure "Organizational Learning Capabilities" measuring instrument presented by Chiva *et al.* (2007) and Onað *et al.* (2014) were used for study.

Organizational learning capabilities include seven factors which are "Knowledge Sharing" (KS) (8 items), "Dialogue" (D) (7 items), "Experimentation and Openness" (EO) (6 items), "Participative Decision Making" (PDM) (6 items), "Risk Taking" (RT) (3 items), "Interaction with the external environment" (IEE) (3 items) and "Knowledge Transfer" (KT) (3 items). To record responses five points Likert's scale was used (1 for 'strongly disagree' and 5 for 'strongly agree').

Dependent Variable

Organizational Effectiveness" measuring instrument developed by Nwanzu and Uhiara (2018) used with its four approaches, "Goal Attainment Model" (GA), "Systems Resources Model" (SR), "Internal Processes Model" (IP) and "Stakeholders Model" (SH) with 10 items each. To record responses five points Likert's scale was used (1 for 'strongly disagree' and 5 for 'strongly agree').

Results

The Respondents' Profiles

The respondents consist of 72.59% (294) males and 27.41% (111) females. Age wise distribution depicts that 44.19% (179) respondents arebelow 30 years, 34.07% (138) respondents are between 31-40 years, 15.06% (61) are between 41-50 years and rest 6.68 % (27) belong to above 50 age group. Further, out of 405 respondents, 8.64% (35) belong to top level managers (Human resource managers, Research managers, IT managers, Finance managers, Sales& Marketing managers), 42.71% (173) middle level managers(Assistant managers, Area business manager) while 48.64% (197) associated with lower level managers (Therapy managers, Business managers, Territory managers, Marketing assistants).

Table1: The respondents' profiles

Respondents' Profile		Numbers (n=405)	Percentage (%)
Gender	Male	294	72.59%
	Female	111	27.41%
Age	Under 30	179	44.19%
	31-40	138	34.07%
	41-50	61	15.06%
	50 Above	27	6.68%
Level of Employment (Managerial Levels)	Top Level Managers	35	8.64%
	Middle Level Managers	173	42.17%
	Lower Level Managers	197	48.64%

Descriptive Statistics, Reliability Analysis and Correlation

The mean, standard deviation, reliability and inter-correlation between the variables are presented in Table-2. Present study meets the requirement of threshold value of Cronbach's alpha for reliability test. The overall values of Cronbach's alpha coefficients of IC, OLC and OE are above 0.7 which indicating the internal reliability of the scale.

Table 2: Descriptive statistics and correlation

Variables	Mean	SD	1	2	3
Intellectual Capital (IC)	3.82	0.58	(0.975)		
Organizational Learning Capabilities (OLC)	4.11	0.53	0.510	(0.952)	
Organizational Effectiveness (OE)	3.81	0.55	0.522	0.390	(0.988)

*Notes: n=405;**p<0.01 level (2-tailed).Values given in the parenthesis are á reliability coefficients.

As shown in Table 2, the mean values are 3.82 of intellectual capital, 4.11 is of organizational learning capabilities which the highest one while 3.81 is of organizational effectiveness. This signifies that OLC is considered as most imperative factor by the managers of the pharmaceutical industry.Further, the results indicate that value of correlation is consistent with the hypothesized relationships i.e. intellectual capital, organizational learning capabilities and organizational effectiveness are positively related to each other.

Table 3: Confirmatory factor anaysis of intellectual capital, organizational learning capabilities and organizational effectiveness

Measurements	Threshold values	IC	OLC	OE
÷2 /df	d"3	1.822	2.838	2.696
RMR	< 0.1	0.017	0.040	0.120
TLI	e"0.9	0.976	0.941	0.955
RFI	e"0.9	0.947	0.949	0.961
CFI	e"0.9	0.978	0.949	0.960
NFI	e"0.9	0.953	0.924	0.939
IFI	e"0.9	0.978	0.949	0.961
RMSEA	d" 0.08	0.045	0.067	0.065

(*Note: $÷^2$ /df - CMIN/df or Normed Chi-square or Chi-square Fit Index divided by Degrees of Freedom, RMR- Root Mean Square Residual, NFI- Normed Fit Index, RFI- Relative Fit Index, IFI- Incremental Fit Index, TLI- Tucker-Lewis Index CFI- Comparative Fit Index and RMESA- Root Mean Square Error of Approximation)

Confirmatory Factor Analysis (CFA)

Before assessing the relationship between the constructs CFA was carried out to confirm the theoretical factor structure and test the psychometric properties of the scale. Confirmatory factor analysis was carried out independently for each of the factor i.e. IC, OLC and OE. The fit indices indicate that the factor load as theorized and all the factors show acceptable psychometric values (Table 3).

Direct and Mediating Effect

Structural equation modelling using AMOS was used to test the relationship between IC,OLC and OE. Standardized regression weights were used to assess the relationship between the variables. The results of SEM indicate that IC significantly effects OE (SRW=0.61, $p<0.01$). Thus, Hypothesis 1 is accepted. Further, IC is found to be positively associated OLC (SRW=0.58, $p<0.01$) as theorized in Hypothesis 2. Also, OLC is found to be directly and positively related with OE (SRW=0.43, $p<0.01$) as stated in Hypothesis 3.

Further, mediating was tested using causal approach as suggested by Baron and Kenny (1986). Mediator is the variable that reduces the association among the dependent and independent variable.The results of the mediating model indicate that OLC reduce the relationship between IC and OE as SRW between IC and OE has been reduced (SRW=0.61 to SRW=0.53). Further, as the path still remains significant this suggests partial mediation. Further, acceptable model fit (÷2 / df =1.760, RMR =.039, CFI =.942, TLI=.940, IFI=.942, RMSEA =.043) confirms the validity of the proposed theory. Thus, Hypothesis 4 is accepted (Figure-2).

Discussion

In this paper, taking into consideration the current "knowledge-intensive-era", a comprehensive conceptual model was developed and empirically tested to explorethe role of IC in enhancing effectiveness in Indian pharmaceutical industry. Additionally, in present research "organizational learning capabilities" was argued to play an imperative role as mediator among IC and OE, in that way it supports to "share, promote and grow" firm's value cooperatively. On the basis of this, the effect of IC and its elements as well as OLC were hypothesized and also investigated with OE. However, according to author's knowledge, management literature is still experiencing an absence of empirical research in exploring the linkages among IC, OLC and OE. Further, conceptual model is also not investigated so far in context of pharmaceutical sector in India. Therefore, the major objective of present study was to explore and investigate associations among IC, OLC and OE in Indian pharmaceutical industry.

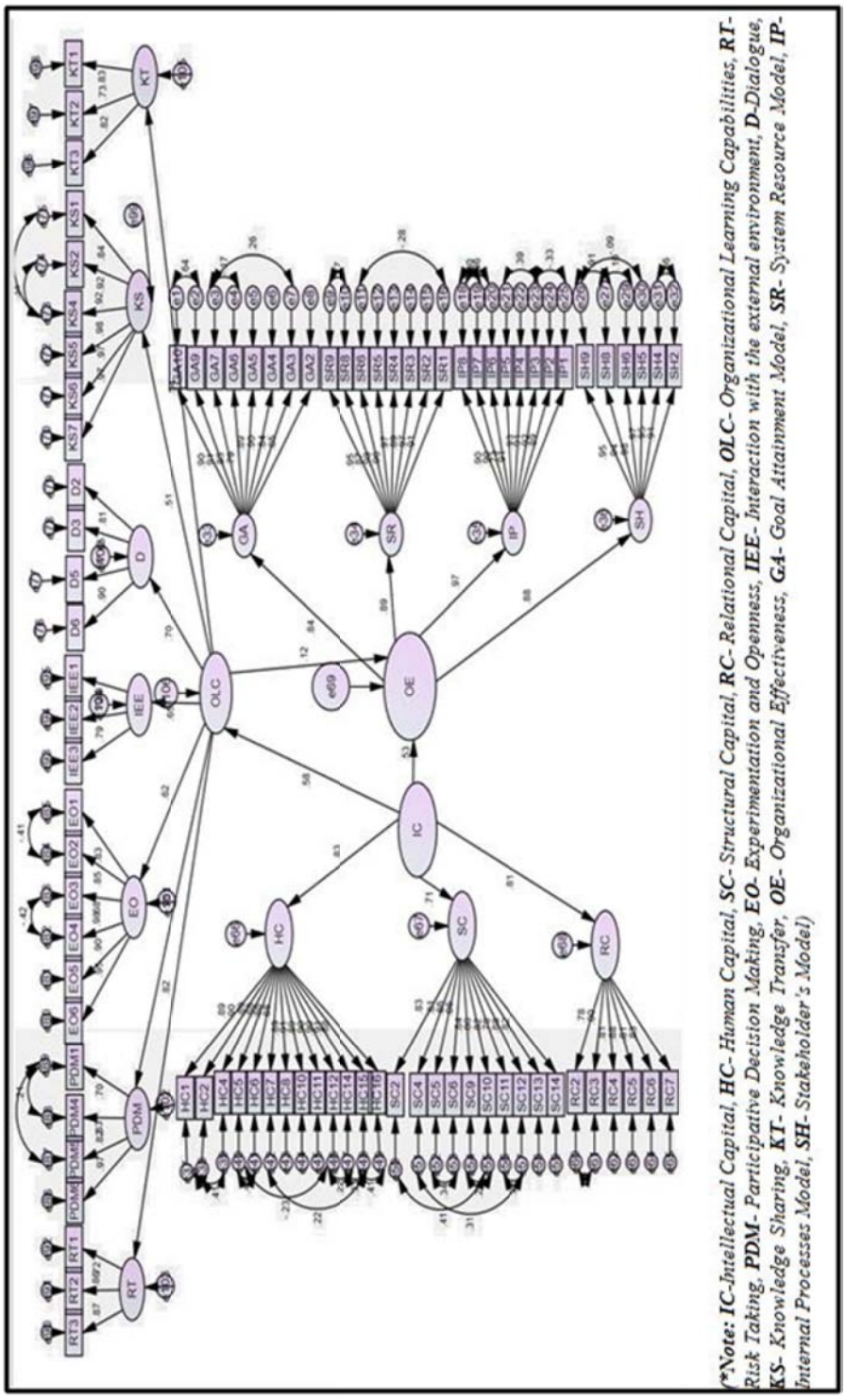

Fig. 2: Measurement model of intellectual capital, organizational learning capabilities and organizational effectiveness
Source: Structural equation modelling results generated by using AMOS

Overall, the findings have provided support to the contention of conceptual framework. As well as, our results presented imperative empirical evidences to confirm the idea of enhancing organizational effectiveness by implementing intellectual capital practices and promoting organizational learning capabilities as a mediator among IC and OE (Hsu and Fang, 2009; Allameh*et al.,* 2010; Moghadam *et al.,* 2013; Taboli and Zaerizadeh, 2016; Kanwal*et al.,* 2017). This study proves that IC influences effectiveness of an organization by implementation of organizational learning capabilities. However, OLC partially mediates the relationship of IC and OE. Findings of the study shows that pharmaceutical companies have been engaged in intangible assets and learning capabilities that promotes effectiveness in functioning and operational activities of the association.

Moreover, the results of the study provided considerable theoretical and empirical contribution that added to existing literature addressing the association among "intellectual capital" and "organizational effectiveness" (Kamaluddin and Rahman, 2009; Verma and Dhar, 2016; Zlatkoviæ, 2018), predominantly in the context of "Indian pharmaceutical industry". Results of the study demonstrated that business organizations which have focus upon their intangible resources like "Intellectual Capital" is able to manage effectiveness in an organization. In general, the results derived from above mentioned analyses disclosed that present research significantly established linkages among IC, OLC and OE and provide empirical support to conceptual framework.

Specifically, the results of the study interestingly confirmed that IC along with its three elements has positive and analytically significant effects OLC in pharmaceutical industry in India. However, the significance of IC on OLC practices has been highlighted in earlier related studies (Farsani *et al.,* 2012; Moghadam *et al*., 2013; Nokohan and Bohlooli, 2015; Tabaghdehi *et al*., 2018). Principally, the outcomes of the study has also verified that intangible assets like human, structural and relational capital help to develop an environment to implement learning practices in the business organization. This study also disclosed that there is a positive linkage between IC and OLC. Furthermore, the findings concerned with examining the linkage among OLC and OE provided a considerableaddition to the earlier extant studies (Rose *et al*., 2009; Ologbo and Chukwuekezie, 2013; Kanwal *et al.,* 2017; Hussain *et al.,* 2018). These studies have shown that OLC positively and significantly enhance effectiveness of an organization. This indicates that an organization can achieve effectiveness in its functioning with the improvement or enhancement in skills and competencies of its employees through executing learning practices. Thus, present study particularly presented the need to introduce learning and development practices along with intellectual capital and its different components so as to make an organization effective in knowledge-intensive-industries.

Conclusion

Indian Pharmaceutical industry is among one of those knowledge-intensive-industries which are spending in intangible assets like intellectual capital. This industry majorly invests in research & development, increasing knowledge workers through employee development and also in managing customer relations. A Harvard Business Review report by Baruch Lev (2004) titled, "Sharpening the Intangibles Edge" stated that"intangible assets—a skilled workforce, patents and know-how, software, strong customer relationships, brands, unique organizational designs and processes, and the like—generate most of corporate growth and shareholder value". In fact, such 'soft resources' work as crucial strategic tools for a firm that facilitate astonishing competitive advantages in the market. This study also reveals that managers in pharmaceutical firms are investing in intangible resources with a positive attitude and trying to build up higher position at international level. Consequently, to maintain strong market presence, this industry needs to "explore and adopt new technologies, upgrade quality systems, infrastructure and enhance capabilities to maintain India's image of a reliable, high-quality supplier". Thus, the present study recommends a way to enhance effectiveness of an organization through IC and OLC. This study proposed a model which gives an insight on association among IC, OLC and OE. The findings of this study indicate that effectiveness in Indian pharmaceutical firms can be achieved through implementation of IC and developing OLC.

Limitations and Practical Implications

Despite the fact that, present research enhances our knowledge related to connection among IC, OLC and OE, but along with this, the study has few limitations also. This research work focused only three main elements of intellectual capital which are human, relational and structural capital. However, literature reveals that intellectual capital is also mixture of some other components like "social capital", "technological capital" and "spiritual capital", which have been not consideration for this study. Further, demographic factors are not considered for under this study to understand proposed conceptual model. Moreover, this study covers only Indian pharmaceutical firms. However, proposed conceptual model might provide different results in other culture or environment. Even though the literature on intellectual capital is enough, and many antecedents have been acknowledged, however present research study is distinctive in its way. Firstly, this research work has inimitable set of constructs, and their linkages have been studied with intellectual capital. Secondly, this work is exclusive due to its sample. As previous studies have been studied the proposed constructs in different western cultures. Conversely, this study investigates effectiveness of Indian pharmaceuticals firms. This research work presented a significant outcome as it concentrates on the issue of enhancing

organizational effectiveness through intellectual capital by taking organizational learning capabilities as a mediator. The results of the research recommended that managers should focus and make efforts to establish intangible resources/ assets like intellectual capital along with enhance learning capabilities within the organization which facilitates improvement in performance as well as effectiveness. Further, future researchers can employ the conceptual framework in different culture and environment like in service sector. Apart from this, future studies can use other components of intellectual capital for research which may come up with new innovative results.

REFERENCES

Abdullah, D. F., & Sofian, S. (2012).The relationship between intellectual capital and corporate performance. *Procedia-Social and Behavioral Sciences*, *40*, 537-541. https://doi.org/10.1016/j.sbspro.2012.03.227

Abdullah, N. H., Shamsuddin, A., Wahab, E., & Hamid, N. A. A. (2014).The relationship between organizational culture and product innovativeness.*Procedia-Social and Behavioral Sciences, 129*, 140-147. http://eprints.uthm.edu.my/id/eprint/4633/1/ICIMTR_nor_2013_6_pages.pdf

Ahmadi, A. A., Ahmadi, F., &Shakeri, S. (2013).The survey of relationship between Intellectual capital (IC) and Organizational performance (OP) within the National Iranian South Oil Company. *European Journal of Business Management*, *1*(1), 12-28. https://pdfs.semanticscholar.org/681c/df3fcea314301ca998423597f036fdb8a832.pdf

Ali, I., & Ali, J. F. (2011).Intellectual Capital and Organizational Performance. In *3rd SAICON International Conference on Management, Business Ethics and Economics (ICMBEE) hosted by COMSATS Institute of Information Technology. 28th to 29th December*.https://lahore.comsats.edu.pk/saicon2011/3rdSAICONProgram&AbstractBook.pdf

Allameh, S. M., Abbasi, S., &Shokrani, S. A. R. (2010). The mediating role of organizational learning capability between intellectual capital and job satisfaction. *European Journal of Social Sciences*, *17*(1), 125-136. https://www.researchgate.net/publication/287851158_The_mediating_role_of_organizational_learning_capability_ between_intellectual_capital_and_job_satisfaction

Amah, E. (2012).Corporate culture and organizational effectiveness. A study of the nigerian banking industry. *European Journal of Business and Management*, *4*(8), 212-229. https://www.iiste.org/Journals/index.php/EJBM/article/view/1949

Amiri, A. N., Jandghi, G., Alvani, S. M., Hosnavi, R., &Ramezan, M. (2010).Increasing the intellectual capital in organization: Examining the role of organizational learning. *European Journal of Social Sciences*, *14*(1), 98-108.

Andreeva, T., &Garanina, T. (2016). Do all elements of intellectual capital matter for organizational performance? Evidence from Russian context. *Journal of Intellectual Capital*, *17*(2), 397-412. https://doi.org/10.1108/JIC-07-2015-0062

Argote, L., & Hora, M. (2017).Organizational learning and management of technology. *Production and Operations Management*, *26*(4), 579-590. https://doi.org/10.1111/poms.12667

Argyris, C. (2017). *Integrating the individual and the organization*.Routledge.https://doi.org/10.4324/9780203788417

Asiaei, K., Jusoh, R., &Bontis, N. (2018).Intellectual capital and performance measurement systems in Iran. *Journal of Intellectual Capital*, *19*(2), 294-320. https://www.emerald.com/insight/content/doi/10.1108/JIC-11-2016-0125/full/html

Attar, M., Kang, K., &Sohaib, O. (2019, January).Knowledge Sharing Practices, Intellectual Capital and Organizational Performance.In *Proceedings of the 52nd Hawaii International Conference on System Sciences*.https://pdfs.semanticscholar.org/a9e4/1970ce7ea93f7caac5f59f72876ed9aac731.pdf?_ga=2.74375057.265417410.1580467059-871437914.1538721733

Bahadori, M., Hamouzadeh, P., Qodoosinejad, J., &Yousefvand, M. (2012). Organizational learning capabilities of nurses in Iran. *Global Business and Management Research*, *4*(3/4), 248-254.https://www.researchgate.net/publication/267403913_Organizational_Learning_ Capabilities_ of_Nurses_ in_Iran

Baranes, A. I. (2016). *An original institutionalist approach to the structure, conduct, and performance of the pharmaceutical industry: the importance of intangible assets* (Doctoral dissertation). https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/49316/BaranesOriInsApp.pdf?sequence=1

Barkat, W., and Beh, L. S. (2018).Influence of Intellectual Capital Dimensions on Knowledge Process Capability and Organizational Performance. *Asian Journal of Scientific Research*, 11, pp. 308-318. https://scialert.net/fulltextmobile/?doi=ajsr.2018.308.318

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182. https://psycnet.apa.org/buy/1987-13085-001

Barpanda, S., & Mukhopadhyay, S. (2016). Intellectual capital components in Indian microfinance sector: scale development and an empirical study. *International Journal of Learning and Intellectual Capital*, *13*(4), 338-360. https://doi.org/10.1504/IJLIC.2016.079354

Basheer, M. F., Hafeez, M. H., Hassan, S. G., & Haroon, U. (2018).Exploring the role of TQM and supply chain practices for firm supply performance in the presence of organizational learning capabilities: a case of textile firms in Pakistan. *Paradigms*, *12*(2), 172-178. http://growingscience.com/uscm/Vol7/uscm_2018_18.pdf

Bassetti, T., Dal Maso, L., Liberatore, G., &Mazzi, F. (2019). A critical validation of the value added intellectual coefficient: use in empirical research and comparison with alternative measures of intellectual capital. *Journal of Management and Governance*, 1-31. https://link.springer.com/article/10.1007/s10997-019-09494-w

Becker, M. C., &Lillemark, M. (2006).Marketing/R&D integration in the pharmaceutical industry. *Research Policy*, *35*(1), 105-120. https://doi.org/10.1016/j.respol.2005.09.005

Bhatti, W., & Zaheer, A. (2014). The role of intellectual capital in creating and adding value to organizational performance: A conceptual analysis. *The Electronic Journal of Knowledge Management, 12*(3), 187-194. https://www.researchgate.net/publication/270505923_ The_Role_of_ Intellectual_Capital_in_Creating_ and_ Adding_Value_to_ Organizational_ Performance_A_conceptual_study

Bianchi Martini, S., Corvino, A., Doni, F., &Rigolini, A. (2016). Relational capital disclosure, corporate reporting and company performance: Evidence from Europe. *Journal of Intellectual Capital*, *17*(2), 186-217. https://doi.org/10.1108/JIC-07-2015-0065

Boekestein, B. (2006). The relation between intellectual capital and intangible assets of pharmaceutical companies. *Journal of Intellectual Capital*, *7*(2), 241-253. https://doi.org/10.1108/14691930610661881

Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, *36*(2), 63-76. https://doi.org/10.1108/00251749810204142

Bontis, N. (2001). Assessing knowledge assets: a review of the models used to measure intellectual capital. *International Journal of Management Reviews*, *3*(1), 41-60. https://doi.org/10.1111/1468-2370.00053

Brassey, a., Christensen, L., & Dam, N. v. (2019). *The essential components of a successful L&D strategy.* McKinsey & Company. https://www.mckinsey.com/business-functions/organization/our-insights/the-essential-components-of-a-successful-l-and-d-strategy

Cabrita, M. D. R., &Bontis, N. (2008).Intellectual capital and business performance in the Portuguese banking industry. *International Journal of Technology Management*, *43*(1-3), 212-237. http://icbsmonitor.net/Files/CabritaBontis IJTM43.pdf

Camuffo, A., &Comacchio, A. (2005).Linking intellectual capital and competitive advantage: a cross-firm competence model for North-East Italian SMEs in the manufacturing industry. *Human Resource Development International*, *8*(3), 361-377.https://doi.org/10.1080/13678860500149951

Cardinal, L. B. (2001). Technological innovation in the pharmaceutical industry: The use of organizational control in managing research and development. *Organization Science*, *12*(1), 19-36. https://doi.org/10.1287/orsc.12.1.19.10119

Carmeli, A., &Azeroual, B. (2009). How relational capital and knowledge combination capability enhance the performance of work units in a high technology industry. *Strategic Entrepreneurship Journal*, *3*(1), 85-103. https://doi.org/10.1002/sej.63

Chahal, H., &Bakshi, P. (2015).Examining intellectual capital and competitive advantage relationship: Role of innovation and organizational learning. *International Journal of Bank Marketing*, *33*(3), 376-399. https://doi.org/10.1108/IJBM-07-2013-0069

Chahal, H., &Bakshi, P. (2016).Measurement of intellectual capital in the Indian banking sector. *Vikalpa*, *41*(1), 61-73. https://journals.sagepub.com/doi/pdf/10.1177/0256090916629253

Chander, S., &Mehra, V. (2010).Disclosure of Intangible Assets in Indian Drugs and Pharmaceutical Industry. *IUP Journal Of Accounting Research & Audit Practices*, *9*(4), 7-23. https://econpapers.repec.org/article/icficfjar/v_3a09_3ay_3a2010_3ai_3a4_3ap_3a7-23.htm

Chang, K. H., &Gotcher, D. F. (2007).Safeguarding investments and creation of transaction value in asymmetric international subcontracting relationships: The role of relationship learning and relational capital. *Journal of World Business*, *42*(4), 477-488. https://doi.org/10.1016/j.jwb.2007.06.008

Chidambaranathan, K., &Swarooprani, B. S. (2015). Knowledge management as a predictor of organizational effectiveness: the role of demographic and employment factors. *The Journal of Academic Librarianship*, *41*(6), 758-763. https://doi.org/10.1016/j.acalib.2015.08.015

Chiva, R., Alegre, J., &Lapiedra, R. (2007).Measuring organisational learning capability among the workforce. *International Journal of Manpower*, *28*(3/4), 224-242. https://doi.org/10.1108/01437720710755227

Cuozzo, B., Dumay, J., Palmaccio, M., & Lombardi, R. (2017). Intellectual capital disclosure: a structured literature review. *Journal of Intellectual Capital*, *18*(1), 9-28. https://doi.org/10.1108/JIC-10-2016-0104

Cyert, R. M., & March, J. G. (1963). A behavioral theory of the firm. *Englewood Cliffs, NJ*, *2*.

De Clercq, D., & Sapienza, H. J. (2006). Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance. *Journal of Business Venturing*, *21*(3), 326-347. https://doi.org/10.1016/j.jbusvent.2005.04.007

Delaney, J. T., and Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management journal*, 39(4), pp. 949-969. https://pdfs.semanticscholar.org/de09/3ce00b1ba9950bf3542e7a2dbcd456f8c727.pdf

DiBella, A. J., Nevis, E. C., & Gould, J. M. (1996).Understanding organizational learning capability. *Journal of Management Studies*, *33*(3), 361-379.https://doi.org/10.1111/j.1467-6486.1996.tb00806.x

DiMasi, J. A., Grabowski, H. G., & Hansen, R. W. (2016). Innovation in the pharmaceutical industry: new estimates of R&D costs. *Journal of Health Economics*, *47*, 20-33. https://doi.org/10.1016/j.jhealeco.2016.01.012

doRosárioCabrita, M., &Vaz, J. L. (2005). Intellectual capital and value creation: Evidence from the por-tuguese banking industry. *Electronic Journal of Knowledge Management*, *4*(1), 11-20. https://pdfs.semanticscholar.org/8365/479fc25bd7239cfe8fc6663585fb7d01dbf0.pdf

Dženopoljac, V., Janoševic, S., &Bontis, N. (2016).Intellectual capital and financial performance in the Serbian ICT industry. *Journal of Intellectual Capital*, *17*(2), 373-396. https://doi.org/10.1108/JIC-07-2015-0068

Erçetin, [a].(2001) *ÖrgütselZeka,* Nobel YayýnDaðýtým, Ankara.

Erickson, G. S., & Rothberg, H. N. (2000).Intellecutal capital and competitiveness: Guidelines for policy. *Competitiveness Review: An International Business Journal*, *10*(2), 192-198. https://doi.org/10.1108/eb046412

Erickson, G. S., & Rothberg, H. N. (2009).Intellectual capital in business-to-business markets. *Industrial Marketing Management*, *38*(2), 159-165. https://doi.org/10.1016/j.indmarman.2008.12.001

Farsani, J. J., Bidmeshgipour, M., Habibi, M., & Rashidi, M. M. (2012).Intellectual capital and organizational learning capability in Iranian active companies of petrochemical industry. *Procedia-Social and Behavioral Sciences*, *62*, 1297-1302. https://doi.org/10.1016/j.sbspro.2012.09.222

Fulmer, I. S., Gerhart, B., & Scott, K. S. (2003). Are the 100 best better? An empirical investigation of the relationship between being a "great place to work" and firm performance. *Personnel Psychology*, *56*(4), 965-993. https://doi.org/10.1111/j.1744-6570.2003.tb00246.x

Ganuza, J. J., Llobet, G., & Domínguez, B. (2009). R&D in the pharmaceutical industry: a world of small innovations. *Management Science*, *55*(4), 539-551. https://doi.org/10.1287/mnsc.1080.0959

García Morales, V. J., Matías Reche, F., & Hurtado Torres, N. (2008). Influence of transformational leadership on organizational innovation and performance depending on the level of organizational learning in the pharmaceutical sector. *Journal of Organizational Change Management*.https://pdfs.semanticscholar.org/d7de/f5cc55839803e6239f6f9960efcc76fb3efc.pdf

Ghasemi, A., Rostami, V., Mahdavirad, M., &Karkhane, M. (2019).Intellectual Capital, Tobins Q Ratio and Stock Return. *Journal of Management And Accounting Studies*, *7*(01), 1-7. http://journals.researchub.org/index.php/JMAS/article/view/582

Gleason, K. I., &Klock, M. (2006).Intangible capital in the pharmaceutical and chemical industry. *The Quarterly Review of Economics and Finance*, *46*(2), 300-314. https://doi.org/10.1016/j.qref.2005.03.001

Gochhayat, J., Giri, V. N., and Suar, D. (2017). Influence of organizational culture on organizational effectiveness: The Mediating Role of Organizational Communication. *Global Business Review*, 18(3), pp.691-702.https://doi.org/10.1177/0972150917692185

Gogan, L. M., Artene, A., Sarca, I., &Draghici, A. (2016).The impact of intellectual capital on organizational performance. *Procedia-Social and Behavioral Sciences*, *221*, 194-202.https://core.ac.uk/download/pdf/82431605.pdf

Gomes, G., &Wojahn, R. M. (2017). Organizational learning capability, innovation and performance: study in small and medium-sized enterprises (SMES). *Revista de Administração (São Paulo)*, *52*(2), 163-175. http://www.scielo.br/pdf/rausp/v52n2/0080-2107-rausp-52-02-0163.pdf

Greve, H. R. (2017). Organizational learning and adaptation.*Oxford Research Encyclopedia of Business and Management*.https://oxfordre.com/business/view/10.1093/acrefore/9780190224851.001.0001/acrefore-9780190224851-e-138

Hailekiros, G. S., &Renyong, H. (2016).The effect of organizational learning capability on firm performance: Mediated by technological innovation capability. *European Journal of Business and Management*, *8*(30), 87-95. https://pdfs.semanticscholar.org/b86d/18f015ed46d6b3e41a431fcecf1ccd2d6d48.pdf

Hejazi, R., Ghanbari, M., &Alipour, M. (2016). Intellectual, human and structural capital effects on firm performance as measured by Tobin's Q. *Knowledge and Process Management*, *23*(4), 259-273. https://doi.org/10.1002/kpm.1529

Hesniati, H., Margaretha, F., &Kristaung, R. (2019).Intellectual capital, knowledge management, and firm performance in indonesia. *European Journal of Business and Management Research*, *4*(6), 1-4. https://doi.org/10.24018/ejbmr.2019.4.6.133

Horrobin, D. F. (2000).Innovation in the pharmaceutical industry. *Journal of the Royal Society of Medicine*, *93*(7), 341-345. https://journals.sagepub.com/doi/pdf/10.1177/014107680009300702

Hsu, L. C., & Wang, C. H. (2012).Clarifying the effect of intellectual capital on performance: the mediating role of dynamic capability. *British Journal of Management*, *23*(2), 179-205. https://doi.org/10.1111/j.1467-8551.2010.00718.x

Hsu, Y. H., & Fang, W. (2009). Intellectual capital and new product development performance: The mediating role of organizational learning capability. *Technological Forecasting and Social Change*, *76*(5), 664-677. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.465.688&rep=rep1&type=pdf

Hussain, K., Wahab, E., Zeb, A., Khan, M. A., Javaid, M., & Khan, M. A. (2018).Examining the relationship between learning capabilities and organizational performance: The mediating role of organizational innovativeness.In *MATEC Web of Conferences* (Vol. 150, p. 06027).EDP Sciences.https://www.matec-conferences.org/articles/matecconf/pdf/2018/09/matecconf_mucet2018_06027.pdf

Indian Pharmaceutical Industry. (2019, September). India Brand Equity Foundation (IBEF): https://www.ibef.org/industry/pharmaceutical-india.aspx

Inkinen, H. (2015). Review of empirical research on intellectual capital and firm performance. *Journal of Intellectual Capital*, *16*(3), 518-565. https://doi.org/10.1108/JIC-01-2015-0002

Intangible Asset Market Value Study. (2019). Retrieved from ocean tomo-intellectual capital equity®: https://www.oceantomo.com/intangible-asset-market-value-study/

Irawati, N., &Sadalia, I. (2018).The influence of intellectual capital on competitive advantage on universities in Medan city.*Advances in Economics, Business and Management Research (AEBMR), 46*, 599-602. https://doi.org/10.2991/ebic-17.2018.95

Jardon, C. M., & Susana Martos, M. (2012). Intellectual capital as competitive advantage in emerging clusters in Latin America. *Journal of Intellectual Capital*, *13*(4), 462-481. https://doi.org/10.1108/14691931211276098

Johnson, W. H. (1999). An integrative taxonomy of intellectual capital: measuring the stock and flow of intellectual capital components in the firm. *International journal of Technology Management*, *18*(5), 562-575. https://doi.org/10.1504/IJTM.1999.002788

Josan, I. J. (2013).Human capital & organizational effectiveness.*Change & Leadership*, 17, 39-45. https://www.ceeol.com/search/article-detail?id=539431

Kale, D., & Little, S. (2007). From imitation to innovation: The evolution of R&D capabilities and learning processes in the Indian pharmaceutical industry. *Technology Analysis & Strategic Management*, *19*(5), 589-609. https://doi.org/10.1080/09537320701521317

Kamaluddin, A., & Rahman, R. A. (2009).Enhancing organisation effectiveness through human, relational and structural capital: an empirical analysis. *Management & Accounting Review (MAR)*, *8*(1), 1-17. http://dx.doi.org/10.24191/mar.v8i1.260

Kamukama, N., Ahiauzu, A., & Ntayi, J. M. (2011). Competitive advantage: mediator of intellectual capital and performance. *Journal of Intellectual Capital*, *12*(1), 152-164. https://doi.org/10.1108/14691931111097953

Kanwal, E., Nawaz, W., Nisar, Q., & Azeem, M. (2017). Does organization learning capacity influence the organization effectiveness? Moderating role of absorptive Capacity. *International Journal of Engineering and Information Systems (IJEAIS)*, *1*, 28-35. https://hal.archives-ouvertes.fr/hal-01599097/document

Kassim, N. A., Khalib, L. H., &Shoid, M. S. M. (2016).Evaluating organizational culture and leadership as factors of organizational learning capabilities. *International Journal of Academic Research in Business and Social Sciences*, *6*(7), 39-48. http://hrmars.com/hrmars_papers/Evaluating_Organizational_Culture_and_Leadership_as_Factors_of_Organizational_Learning_Capabilities.pdf

Kataria, A., Rastogi, R., & Garg, P. (2013).Organizational effectiveness as a function of employee engagement. *South Asian Journal of Management*, *20*(4), 56-73. https://www.academia.edu/7931338/_Organizational_Effectiveness_as_a_Function_of_Employee_ Engagement_._South_Asian_Journal_Of_Management_Volume_20_57_No._4_pp.56-73-Kataria_A._Garg_P._and_Rastogi_R._2013_._

Kelly, G., Mastroeni, M., Conway, E., Monks, K., Truss, K., Flood, P., & Hannon, E. (2011).Combining diverse knowledge: knowledge workers' experience of specialist and generalist roles. *Personnel Review*, *40*(5), 607-624. http://doras.dcu.ie/16709/2/PersonnelReview.pdf

Khalique, M., & Isa, A. H. M. (2019).Impact of intellectual capital on the organizational performance of airline industry in Malaysia. In *Human Performance Technology: Concepts, Methodologies, Tools, and Applications* (pp. 1336-1349). IGI Global.https://pdfs.semanticscholar.org/1bca/f88b208633c2300520a5abca00414cbde0b8.pdf

Khalique, M., Bontis, N., Shaari, J. A. N. B., Yaacob, M. R., &Ngah, R. (2018).Intellectual capital and organisational performance in Malaysian knowledge-intensive SMEs. *International Journal of Learning and Intellectual Capital*, *15*(1), 20-36. https://pdfs.semanticscholar.org/c7fe/216fa7917065cda53c21d469672d9bd12c6d.pdf

Khalique, M., Shaari, N., Abdul, J., & Isa, A. H. B. M. (2011).Intellectual capital and its major components. *International Journal of Current Research*, *3*(6), 343.https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1892844

Khandekar, A., & Sharma, A. (2006). Organizational learning and performance: Understanding Indian scenario in present global context. *Education+ Training*, *48*(8/9), 682-692. https://pdfs.semanticscholar.org/9fab/b522db74ea6cab25a1b6c7c4b830bd9886c9.pdf

Kong, E., & Farrell, M. (2010). Knowledge and learning capabilities in non-profit organizations: a relational capital perspective. *The International Journal of Learning*, *17*(3), 97-116. https://eprints.usq.edu.au/8639/1/Kong_Farrell_IJL_v17n3_PV.pdf

Kong, E., & Prior, D. (2008).An intellectual capital perspective of competitive advantage in nonprofit organisations. *International Journal of Nonprofit and Voluntary Sector Marketing*, *13*(2), 119-128. https://doi.org/10.1002/nvsm.315

£ataœ, R., &Walasek, D. (2016).Intellectual capital within the project management. *Procedia Engineering*, *153*, 384-391. https://www.researchgate.net/publication/306926890_Intellectual_Capital_within_ the_Project_Management

Leal, C., Marques, C. P., Marques, C. S., &Ratten, V. (2016).The role of intellectual capital and corporate strategy on sustainable value creation. *International Journal of Foresight and Innovation Policy*, *11*(4), 215-224. https://doi.org/10.1504/IJFIP.2016.084528

Lee, C. S. (2018). Authentic leadership and organizational effectiveness: The roles of hope, grit, and growth mindset. *International Journal of Pure and Applied Mathematics*, *118*(19), 383-401. https://pdfs.semanticscholar.org/8f51/27bd212a0f5416032a3780ea3438c1a6f59e.pdf

Lev, B. (2004). Sharpening the intangibles edge. *Harvard Business Review*. https://hbr.org/2004/06/sharpening-the-intangibles-edge

Lev, B., Radhakrishnan, S., & Evans, P. C. (2016). Organizational capital: A CEO's guide to measuring and managing enterprise intangibles. *New York: The Center for Global Enterprise*. https://www.thecge.net/app/uploads/2016/02/WEB-Capital-Investment-Feb22.pdf

Li, Y. Q., & Liu, C. H. S. (2018).The role of problem identification and intellectual capital in the management of hotels' competitive advantage-an integrated framework. *International Journal of Hospitality Management*, *75*, 160-170. https://doi.org/10.1016/j.ijhm.2018.05.022

Lin, C. Y. Y. (2014). Intellectual capital explains a country's resilience to financial crisis: A resource-based view. In *Crisis Management: Concepts, Methodologies, Tools, and Applications* (pp. 1504-1526). IGI Global.https://www.igi-global.com/chapter/intellectual-capital-explains-a-countrys-resilience-to-financial-crisis/90791

Lin, H. F. (2008). Empirically testing innovation characteristics and organizational learning capabilities in e business implementation success. *Internet Research*, *18*(1), 60-78. https://doi.org/10.1108/10662240810849595

Liu, C., Guo, X., & Wang, Z. (2019, September).R&D expenses and operating performance in pharmaceutical industry.In *2019 Asia-Pacific Forum on Economic and Social Development* (Vol. 2, pp. 214-219).The Academy of Engineering and Education.https://aeescience.org/ppapers/2019092701/ESD92739

López-Cabrales, A., Real, J. C., & Valle, R. (2011). Relationships between human resource management practices and organizational learning capability: The mediating role of human capital. *Personnel Review*, *40*(3), 344-363. https://doi.org/10.1108/00483481111118658

Low, J., & Kalafut, P. C. (2002).Invisible advantage. How intangibles are driving business performance*, Perseus, Cambridge*. http://www.providersedge.com/docs/km_articles/the_invisible_advantage.pdf

Lu, W. M., Wang, W. K., &Kweh, Q. L. (2014).Intellectual capital and performance in the Chinese life insurance industry. *Omega*, *42*(1), 65-74. https://farafile.ir/content/freefiles/Intellectualcapitalandper formanceintheChineselife insuranceindustry-farafile.ir.pdf

Lusthaus, C. (Ed.). (2002). Organizational assessment: A framework for improving performance. *IDRC*.

Mahmood, S., Sheeraz, M., Aslam, S., Tanweer, M., & Khan, K. I. (2017). Intellectual capital and market performance: Testing the mediating mechanism of organizational learning. *Journal of Managerial Sciences*, *11*(2), 303-322. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3148084

Maji, S. G., & Goswami, M. (2017). Intellectual capital and firm performance in India: a comparative study between original and modified value added intellectual coefficient model. *International Journal of Learning and Intellectual Capital*, *14*(1), 76-89. https://doi.org/10.1504/IJLIC.2017.080645

Makris, I. A. (2008). The factors affecting firms' growth: investment in tangible versus intangible assets in the Greek pharmaceutical industry. *International Journal of Behavioural and Healthcare Research*, *1*(1), 91-104. https://doi.org/10.1504/IJBHR.2008.018457

Martelo-Landroguez, S., Albort-Morant, G., Leal-Rodríguez, A., & Ribeiro-Soriano, B. (2018).The effect of absorptive capacity on green customer capital under an organizational unlearning context. *Sustainability*, *10*(1), 265-285. https://doi.org/10.3390/su10010265

McLennan, P. (2000). Intellectual capital: future competitive advantage for facility management. *Facilities*, *18*(3/4), 168-172. https://doi.org/10.1108/02632770010315742

Mention, A. L., &Bontis, N. (2013). Intellectual capital and performance within the banking sector of Luxembourg and Belgium. *Journal of Intellectual Capital*, *14*(2), 286-309. https://doi.org/10.1108/14691931311323896

Miloševiæ, N., Dobrota, M., &Rakoèeviæ, S. B. (2018).Exploring the impact of intellectual capital components on project performance. *European Project Management Journal*, *8*(2), 43-51. http://media.epmj.org/2018/12/6-Nela-Milosevic.pdf

Moghadam, S. K., Zabihi, M. R., Kargaran, M., &Hakimzadeh, A. (2013).Intellectual capital and organizational learning capability. *Journal of Soft Computing and Applications*, *2013*, 1-9. https://d-nb.info/1031708774/34

Molodchik, M., Shakina, E., &Bykova, A. (2012).Intellectual capital transformation evaluating model. *Journal of Intellectual Capital*, *13*(4), 444-461. https://doi.org/10.1108/14691931211276089

Mosavi, S. A., Nekoueizadeh, S., &Ghaedi, M. (2012). A study of relations between intellectual capital components, market value and finance performance. *African Journal of Business Management*, *6*(4), 1396-1403. https://pdfs.semanticscholar.org/8733/0669620c05d2ea188b19a02 a55cf1d880b76.pdf

Mouritsen, J. (1998). Driving growth: economic value added versus intellectual capital. *Management Accounting Research*, *9*(4), 461-482. https://www.researchgate.net/profile/Jan_Mouritsen/publication/223797261_

Driving_ Growth_Economic_ Value_Added_Versus_Intellectual_Capital/links/5c7cf1dfa6fdcc4715acbf54/Driving-Growth-Economic-Value-Added-Versus-Intellectual-Capital.pdf

Mubarik, M. S., Naghavi, N., & Mahmood, R. T. (2019).Intellectual capital, competitive advantage and the ambidexterity liaison. *Human Systems Management*, *38*(3), 267-277. https://content.iospress.com/articles/human-systems-management/hsm180409

Muniady, R. A. L., Mamun, A. A., Mohamad, M. R., Permarupan, P. Y., &Zainol, N. R. B. (2015). The effect of cognitive and relational social capital on structural social capital and micro-enterprise performance. *Sage Open*, *5*(4), 2158244015611187. https://journals.sagepub.com/doi/pdf/10.1177/2158244015611187

Namada, J. M. (2018). Organizational learning and competitive advantage.In *Handbook of Research on Knowledge Management for Contemporary Business Environments* (pp. 86-104).IGI Global.https://www.igi-global.com/chapter/organizational-learning-and-competitive-advantage/205071

Nokohan, M. &Bohlooli, N. (2015). Investigating the impact of intellectual capital on organizational learning capability from the perspective of employees in Bank Melli of Khuzestan. *Research Journal of Fisheries and Hydrobiology*, 10(13), 95-102. http://www.aensiweb.net/AENSIWEB/rjfh/rjfh/2015/Special/95-102.pdf

Nwankpa, J., &Roumani, Y. (2014).Understanding the link between organizational learning capability and ERP system usage: An empirical examination. *Computers in Human Behavior*, *33*, 224-234. http://faratarjome.ir/u/media/shopping_files/store-EN-1429168422-4101.pdf

Nwanzu, C. L., &Uhiara, A. C. (2018). Models-based organizational effectiveness scale: Development and validation. *International Journal of Science and Research*, *7(1),*21-29. https://doi.org/10.3390/su11123440

Obeidat, B. Y., Abdallah, A. B., Aqqad, N. O., Akhoershiedah, A. H. O. M., &Maqableh, M. (2017). The effect of intellectual capital on organizational performance: the mediating role of knowledge sharing. *Communications and Network*, *9*(1), 1-27. https://pdfs.semanticscholar.org/8c66/fca11eef1b6508fbbeb431af0bfbf0e95fae.pdf

Ologbo, A. C., &Chukwuekezie, C. S. (2013). Organizational learning capacity and organizational effectiveness: The moderating role of absorptive capacity. *Proceedings of the ISS & MLB. September,* 24-26. http://ibac-conference.org/ISS%20&%20MLB%202013/Papers/ISS%202013/B2402..docx.pdf

Onað, A. O., Tepeci, M., &Baþalp, A. A. (2014).Organizational learning capability and its impact on firm innovativeness. *Procedia-Social and Behavioral Sciences*, *150*, 708-717. https://doi.org/10.1016/j.sbspro.2014.09.029

Orugun, J. J., &Aduku, D. J. (2017). Intellectual capital and organizational performance in a competitive business environment: a Review. *Asian Research Journal of Arts & Social Sciences*, *4* (1), 1-9. https://doi.org/10.9734/ARJASS/2017/33080

Ozkan, N., Cakan, S., &Kayacan, M. (2017). Intellectual capital and financial performance: A study of the Turkish Banking Sector. *Borsa Istanbul Review*, *17*(3), 190-198. https://doi.org/10.1016/j.bir.2016.03.001

Ozturk, M. B., &Demirgunes, K. (2007). Determination of effect of intellectual capital on firm value via value added intellectual coefficient methodology: an empirical study on ISE-listed manufacturing firms. *Istanbul Stock Exchange Review*, *10*(37), 59-78. https://ideas.repec.org/a/bor/iserev/v10y2007i37p59-78.html

Pasamar, S., Diaz-Fernandez, M., & de la Rosa-Navarro, M. D. (2019). Human capital: the link between leadership and organizational learning. *European Journal of Management and Business Economics*, *28*(1), 25-51. https://www.emerald.com/insight/content/doi/10.1108/EJMBE-08-2017-0003/full/html

Peng, T. J. A., Pike, S., &Roos, G. (2007). Intellectual capital and performance indicators: Taiwanese healthcare sector. *Journal of Intellectual Capital*, *8*(3), 538-556. https://doi.org/10.1108/14691930710774902

Phyu, S. L., &Vinitwatanakhun, W. (2015).A comparative study of principals' leadershipbehaviors and school climates of two international elementary schools in Yangon, Myanmar. *Scholar: Human Sciences*, *7*(1), 1-22. http://www.assumptionjournal.au.edu/index.php/Scholar/article/view/996/903

Price, J. L. (1972). The study of organizational effectiveness. *The Sociological Quarterly*, *13*(1), 3-15. https://doi.org/10.1111/j.1533-8525.1972.tb02100.x

Radjenoviæ, T., &Krstiæ, B. (2017). Intellectual capital as the source of competitive advantage: The Resource-Based View. *FactaUniversitatis, Series: Economics and Organization*, 127-137. http://casopisi.junis.ni.ac.rs/index.php/FUEconOrg/article/view/2619/1810

Rose, R. C., Kumar, N., & Pak, O. G. (2009).The effect of organizational learning on organizational commitment, job satisfaction and work performance. *Journal of Applied Business Research (JABR)*, *25*(6), 55-66. https://doi.org/10.19030/jabr.v25i6.995

Salehi, M., Enayati, G., &Javadi, P. (2014). The relationship between intellectual capital with economic value added and financial performance. *Iranian Journal of Management Studies*, *7*(2), 259-283. https://ijms.ut.ac.ir/article_36618_1e9d1dd4fba9f2c55fab7885bba9f6f0.pdf

Santos Rodrigues, H., & Figueroa Dorrego, P. (2010, March).The relation between network of collaboration (as a relational capital dimension) and firm innovativeness.In *Proceedings of the 2nd European Conference on Intellectual Capital* (pp. 521-522).https://www.academia.edu/2685200/The_relation_between_ network_of_collaboration_as_a_relational_capital_ dimension_and_firm_ innovativeness

Septian, N., Chumaidiyah, E., &Zulbetti, R. (2019, March). Company strategy based on linier regression of stocks return to the eps and dollar exchange at pharmaceutical industry in Indonesia stock exchange 2010-2016.In *2018 International Conference on Industrial Enterprise and System Engineering (IcoIESE*

2018).Atlantis Press.https://www.atlantis-press.com/proceedings/icoiese-18/55914836

Serenko, A., &Bontis, N. (2004). Meta review of knowledge management and intellectual capital literature: Citation impact and research productivity rankings. *Knowledge and Process Management*, *11*(3), 185-198. https://doi.org/10.1002/kpm.203

Shah, R., & Goldstein, S. M. (2006). Use of structural equation modeling in operations management research: Looking back and forward. *Journal of Operations Management*, *24*(2), 148-169. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.472.2797&rep=rep1&type=pdf

Sharabati, A. A. A., NajiJawad, S., &Bontis, N. (2010). Intellectual capital and business performance in the pharmaceutical sector of Jordan. *Management Decision*, *48*(1), 105-131. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.154.336 &rep=rep1&type=pdf

Sharma, Y. (2010, December 16). *GLOBAL:* What is intellectual capital? Does it matter? University World News, Higher Education Web Publishing Ltd: https://www.universityworldnews.com/post.php?story=20101216202444580

Shoid, M. S. M., Kassim, N. A., & Salleh, M. I. M. (2011, June). Organisational learning capabilities and knowledge performance: A conceptual framework. In *International Proceedings of Economics Development & Research* (Vol. 10).https://pdfs.semanticscholar.org/29ec/a996fe8371425c9dce64af77988a01b202c3.pdf?_ga=2.75436817.265417410.1580467059-871437914.1538721733

Singh, S., and Gupta, V. (2016). Organizational performance research in India: A review and future research agenda. *The Sixth Indian Council for Social Science Research (ICSSR), Survey of Psychology in India.* New Delhi: Oxford Publishing. https://www.researchgate.net/publication/292975768_Organizational_Performance_ Research_in_India_A_Review_and_Future_Research_Agenda

Smith, K. A., Vasudevan, S. P., &Tanniru, M. R. (1996). Organizational learning and resource-based theory: an integrative model. *Journal of Organizational Change Management*, *9*(6), 41-53. https://doi.org/10.1108/09534819610150512

Ståhle, P., Ståhle, S., &Aho, S. (2011). Value added intellectual coefficient (VAIC): a critical analysis. *Journal of Intellectual Capital*, *12*(4), 531-551. https://doi.org/10.1108/14691931111181715

Stewart, T. A. (2002), *The Wealth of Knowledge. Intellectual capital and the 21st Century Organization*, Nicholas Brealey Publishing, London.

Styhre, A., Josephson, P. E., &Knauseder, I. (2004).Learning capabilities in organizational networks: case studies of six construction projects. *Construction Management and Economics*, *22*(9), 957-966. https://doi.org/10.1080/0144619042000241417

Suciu, M. C., &Nãsulea, D. F. (2019). Intellectual capital and creative economy as key drivers for competitiveness towards a smart and sustainable development:

challenges and opportunities for cultural and creative communities. In *Intellectual Capital Management as a Driver of Sustainability*(pp. 67-97). Springer, Cham.https://www.springer.com/gp/book/9783319790503#

Sullivan Jr, P. H., & Sullivan Sr, P. H. (2000).Valuing intangibles companies–An intellectual capital approach. *Journal of Intellectual Capital*, *1*(4), 328-340. http://home.bi.no/fgl99011/Bok2215/IK-artikkel-3.pdf

Tabaghdehi, S. K. H., Safariyan, S., &Enaayati, T. (2018). The effect of organizational on intellectual capital considering the meditating role of academic entrepreneurship in Mazandaran Islamic Azad University. *Revista Publicando*, *5*(16 (1)), 483-504. https://revistapublicando.org/revista/index.php/crv/article/view/1521

Taboli, H., &Zaerizadeh, M. (2016). Examine the Relationship between organizational learning and organizational performance with the mediating role of intellectual capital (case study: Social Security Organization). *IIOAB Journal*, *7*(4), 131-139. https://www.iioab.org/articles/IIOABJ_7.S4_131-139.pdf

Thuy, L. X., & Quang, T. (2005).Relational capital and performance of international joint ventures in Vietnam. *Asia Pacific Business Review*, *11*(3), 389-410.https://doi.org/10.1080/13602380500068532

Trequattrini, R., Lombardi, R., Lardo, A., &Cuozzo, B. (2018). The impact of entrepreneurial universities on regional growth: a local intellectual capital perspective. *Journal of the Knowledge Economy*, *9*(1), 199-211. https://ideas.repec.org/a/spr/jknowl/v9y2018i1d10.1007_s13132-015-0334-8.html

Tumwine, S., Kamukama, N., & Ntayi, J. M. (2012).Relational capital and performance of tea manufacturing firms. *African Journal of Business Management*, *6*(3), 799-810. http://ir.must.ac.ug/xmlui/bitstream/handle/123456789/398/kamukama.pdf?sequence=1&isAllowed=y

Verma, T., & Dhar, S. (2016). The impact of intellectual capital on organizational effectiveness: A comparative study of public and private sectors in India. *IUP Journal of Knowledge Management*, 14(3), 7-27. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2957477

Vinitwatanakhun, W. (1998).*Factors Affecting Organizational effectiveness of Nursing Institutes in Thailand (PH.D Dissertation)*.National Institute of Development Administration, Bangkok, Thailand.https://repository.nida.ac.th/bitstream/handle/662723737/799/nida-diss-b97134ab.pdf?sequence=2&isAllowed=y

Wang, W. Y., & Chang, C. (2005). Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital*, *6*(2), 222-236. https://pdfs.semanticscholar.org/eb3d/1b885bfa800badfd79c6921a07d01491aedb.pdf

Wang, Z., Wang, N., and Liang, H. (2014).Knowledge sharing, intellectual capital and firm performance. *Management Decision*, 52(2), pp.230-258. https://doi.org/10.1108/MD-02-2013-0064

Xu, S. (2015).Balancing the two knowledge dimensions in innovation efforts: an empirical examination among pharmaceutical firms. *Journal of Product Innovation Management*, *32*(4), 610-621. https://doi.org/10.1111/jpim.12234

XUE, W., LEI, J. S., & YI, N. (2010).Empirical Study over the Performance Relationship between Relational Capital, Organizational Learning and R&D Alliance [J]. *China Industrial Economics*, *4*.http://en.cnki.com.cn/Article_en/CJFDTotal-GGYY201004010.htm

Yaghoubi, M., &Bahadori, M. (2014).A study of relationship between the organization learning capacity and knowledge management among nurses in Medical University of Isfahan–Iran. *Journal of Health Policy and Sustainable Health*, *1*(3), 97-100. https://pdfs.semanticscholar.org/557d/77f8ec9f45e65e 13108994551 a8ad9fed95a.pdf

Zaei, M. E., & Kapil, P. (2016).The role of intellectual capital in promoting knowledge management initiatives. *Knowledge Management & E-Learning: An International Journal*, *8*(2), 317-333. https://doi.org/10.34105/j.kmel.2016.08.021

Zlatkoviæ, M. (2018). Intellectual capital and organizational effectiveness: PLS-SEM approach. *Industrija*, *46*(4), 145-169. https://scindeks-clanci.ceon.rs/data/pdf/0350-0373/2018/0350-03731804145Z.pdf

Zoogah, D. B., Peng, M. W., &Woldu, H. (2015). Institutions, resources, and organizational effectiveness in Africa. *Academy of Management Perspectives*, *29*(1), 7-31. http://citeseerx.ist.psu.edu/viewdoc/download?doi= 10.1.1.923. 1099&rep=rep1&type=pdf

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Workplace Ostracism and Organization Citizenship Behaviour: Role of Need Threat as a Mediator

SANDEEPTANDON AND POOJA GUPTA

Abstract: Since the construct workplace is a form of interpersonal mistreatment which is rampant in society especially at workplaces. The study tries to explain the relationship between workplace ostracism and organization citizenship behaviour and how is this relationship affected by a third variable named need threat. Data were collected through well-structured instrument, distributed to 947 employees of various departments of Higher Education. Confirmatory Factor Analysis and Structural Equation Modeling were used to analyse the data and to test the formulated hypotheses.The results of the study highlight that workplace ostracism negatively and significantly affect organization citizenship behaviour of an employee and need threat mediates the relationship. This paper identifies the relationship between workplace ostracism and organization citizenship behaviour. It also contributes to the mediating role in the above-said relationship. This paper makes a valuable contribution in context of Higher education, a highly social workplace where the phenomenon of workplace ostracism has been observed.

Keywords: Workplace ostracism, need threat, organization citizenship behaviour.

Introduction

Human beings are social mortals and reliant on trust which comes from a sense of widespread beliefs and values. They search for commonality because of which they love social networks in the natural environment (workplace) as well as in the artificial environment (Facebook, Twitter etc.). According to Simon Sinek, "When we trust, we are more willing to experiment. We have the confidence that if we fail or trip over, that those who trust us will look after us. Our very survival depends on this. We are not good at everything and we are not good by ourselves. The goal is to amplify your strength and surround yourself with people who can do what you can not do…."A strong association based on inference, affection, solidarity, regular interactions, or some other type of social commitment

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between employees working together in the same organization is called interpersonal relationship. Basically, humans form interpersonal relationships due to their needs for belonging (attachment and affiliation), need for self-esteem (respected and attended by others) collectively known as relational needs and the need for control (micromanagement and orchestration of actions) and the need for meaningful existence (self-actualisation and self-justification) collectively known as efficacy needs (Williams, 2007). The former focuses on societal relationships and these are needs that focus on the desire of individuals to build/ keep uppleasant,warm, and steady social associationsin which individuals aspire to look for social relationship and a sense of belonging. The latter focuses on ability and desire of an individual to build up/maintain an optimistic faith in self-ability. These needs include more innate and self-governing individual traits, such as actively pursuing autonomy, efficiencyand competitiveness. However, social ostracism can hinder this drive to remain in relationships by keeping individuals apart. According to Williams'need threat model, social exclusion threatens these four basic needs: belongingness, self-esteem, control, and meaningful existence (Williams, 2002; Zadro et al., 2004). Ostracism at the workplace is defined as "ignoring or excluding by individuals or groups" (Williams, 2009). It includes for example withholding needed information, giving the silent treatment, avoiding conversation or eye contact, giving the cold shoulder (Williams, 2001). Health problems may arise in addition to various psychological effects and behavioural consequences as a result of workplace ostracism. Experience of physical pain can be seen as an outcome of ostracism at the workplace (Eisenberger et al., 2003). When exposure of a person to ostracism continues for a longer period of time, individuals experience feelings of negative emotions like depression, worthlessness, alienation and helplessness and they pass into a resignation stage (Riva et al., 2016). Ostracism is evidenced as purely a very negative experience.But it is not a completely negative phenomenon however it canserve a few social functions also. The very first function is protection, most of the persons ostracise others as they want themselves or their group to be protected from them whom they ostracise. Correction is the second function of ostracism which means in order to make some employees follow group norms or to correct those group members, it is necessary to ostracise them. Lastly, if compliance to the group norms is failing all the time, ostracism serves its third function i.e. ejection which means eject out those members from the group (Hales et al., 2017). Continuing with the negative consequences, workplace ostracism is found to have a negative impact on organization citizenship behaviour (Robinson et al., 2012,; Wu et al., 2015; Hitlan et al., 2006). Organisation citizenship behaviour means various contributions which are made by the employees for the maintenance and enhancement of social and psychological context for the support of task performance and for that there is no expectation of any formal rewards on the part of the employees. Taking the statement in

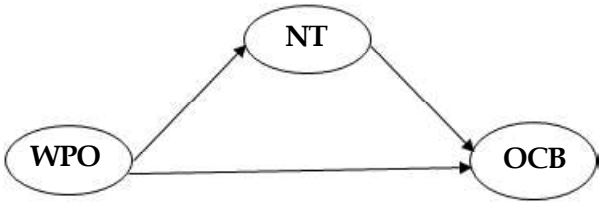
opposite direction, the behavioural response of an individual to workplace ostracism depends on the way they perceive the need threat (Williams, 2007; Williams &Zadro, 2005). The relational needs when threatened; thinking, feeling and behaving in a relatively pro social way can help in fortification of these needs. But provocative and anti social responses may occur as a result of fortification of the efficacy needs as these needs are most threatened. A handful of studies have been reviewed focussing on the consequences of workplace ostracism particularly work related attitudes and behaviours such as job performance, voice behaviour, commitment, citizenship behaviour, deviant behaviour, job satisfaction, stress, turnover intentions, social susceptibility, sleep quality, provocation, aggression, counterproductive behavior, prosocial reaction, antisocial reaction, information exchange, work engagement and career development (Ferris et al., 2015; Watson-Jones et al., 2014; Chengfeng et al., 2014; Anjum et al., 2018; Zheng et al., 2016; Jahanzeb& Fatima, 2018; Williams &Nida, 2014; Xu et al., 2015; Ferris et al., 2012; Kim et al., 2015; Yan et al., 2014; Gkorezis&Bellou, 2016; Bennett & Robinson, 2000; Chi & Liang, 2013; Hitlan et al., 2006; Haq, 2014; Robinson et al., 2012; Hawes et al., 2012; Lustenberger& Jagacinski, 2010; Khan et al., 2015; Wu et al., 2016; Wu et al., 2011; Hitlan et al., 2006; Chung, 2015; Liu & Xia, 2016; Mok& Cremer, 2015; Li &Tian, 2016; Chen & Li, 2019 ; Quade&Greenbaum, 2016; Jameison, 2010; Khan et al., 2015). The studies were also reviewed showing the aid mechanisms/coping mechanisms i.e. showing the role of third variables as mediators which strengthen the above relationships (Ferris et al., 2015; Ferris et al., 2012; Yan et al., 2014; Gkorezis&Bellou, 2016; Chi & Liang, 2013; Robinson et al., 2012; Svetieva et al., 2015, Wu et al., 2015; Wu et al., 2011; Chung, 2015; Chung & Yang, 2017; Fatima et al., 2017) except the relationship of workplace ostracism with organization citizenship behavior. On reviewing the extant literature, it was found that the relationship between workplace ostracism and organization citizenship behavior with the mediation of need threat was unexplored although psychological impact was found mediating the relationship between workplace ostracism and organization citizenship behavior (Robinson et al., 2012) which then forms the back support for our objective. Also, this construct was seen researches in countries outside India and only three studies (Khanna, 2016, Payal, 2016, Fatima et al., 2017) were found exploring the construct in India.

Objectives

The objectives of the present study are:

- to explore the relationship between workplace ostracism and organization citizenhip behavior and
- to explore with the intervention of a third variable namely need threat on the employees of Higher education sector in India.

Conceptual Framework & Hypotheses Development



Workplace Ostracism and Need Threat

There are four fundamental psychological needs- belonging (forming lasting social relationships), self-esteem (a feeling of self-satisfaction and one's abilities), control (belief in one's ability to change his/her situation), and meaningful existence (belief in the meaningfulness of one's life) and the literature shows that these needs are threatened by ostracism i.e. ostracised individuals report "need-threat"- lower satisfaction of all the above mentioned needs (Williams, 2009; Carter-sowell et al., 2008). According to Tobin et al., (2015), those persons who were facing hurdles to share information had lower levels of belonging and meaningful existence. The participants had lower levels of all the four needs (belonging, self-esteem, control, and meaningful existence) who were not paid any attention and did not obtain reaction to their updates and Cyber-ostracism contrarily toinfluenced the fundamental needs in the same manner like ostracism (Sultana &Chechi, 2019). Studies have consistently demonstrated that people who are ostracised for a short period of time report lower levels of fundamental psychological needs immediately following ostracism, such as belonging, self-esteem, control and meaningful existence (Williams et al., 2001,Zadro et al., 2006, Jamieson, 2010, Buelow et al., 2015, Hermann et al., 2014, Williams &Nida, 2014). Taking inclusion-exclusion criterion, it was found that the inclusion group felt significantly more needs satisfaction than ostracized participants and less needs threat (Gerber & wheeler, 2014; Haymann Jr. et al., 2015). In this regard, Self-esteem theory and research on ostracism also suggest that when an individual is ostracised by others, his or her sense of self-esteem will be threatened (Ferris et al., 2008; Williams, 1997, 2001). Persons, who were included in the groups, felt free to give ideas and got feedback on time for their updates; reported more need satisfaction than the excluded ones. So, workplace ostracism threatens human needs. On the whole, it can be said that there is a link between workplace ostracism and need threat.

H_1: Workplace Ostracism has a significant impact on Need Threat.

Need Threat and Organisation Citizenship Behaviour

Psychological happiness of a person at the workplace is directly linked to his/her behaviour at the workplace (specific to job and in addition to the normal

job). When the basic needs of a person (need to belong, need to control, need to exist and need to esteem) are hampered/threatened and not satisfied, behavior is expected to be adversely affected whether within the wage boundaries or outside the boundaries. But at the same time, it can be put into notice that ifthe excluded persons have high needs e.g. high self-esteem (global or organization based), high level of meaningful existence, high belonging need and high control need, OCB will be well exhibited by these employees. It means that need threat may decrease OCB in order to show negative impact or may increase the same so that negative impact may be overcome. So, there is a relationship between need threat and organization citizenship behavior and it can be hypothesized that

H_2: Need Threat significantly influenceorganization citizenship behavior.

Workplace ostracism and Organisation Citizenship Behaviour

Organisation citizenship behavior is defined as the extra-role behavior of an employee at the workplace which is beyond the normal course of duty and over and above the area of rules/regulations/legislations. Due to the social nature of human being, they love to be accepted in groups as it is one of their basic needs and when they feel that they are being ostracized or avoided, it will be very painful and unpleasant feeling for them. Now-a-days, spirit of team works is on its hike and for this purpose, communication with other colleagues is insisted upon in view of which workplace ostracism is getting prevalent at the workplaces.Organisation citizenship behavior is also likely to be undermined in addition to other work related attitudes and behaviour as a result of workplace ostracism. Workplace ostracism can shape the perception of an individual regarding his/her relationship with the organization and as a result of which the intrinsic force driving organization citizenship behavior within him/her (Wu et al., 2015). Organisation citizenship behavior gets adversely affected by workplace ostracism by undermining employees' identification with the organization (Fiset&Bhave, 2019). Chung, (2015) studied the relationship between workplace ostracism and organisation citizenship behaviour through organisation conflict. Ferris et al., (2015) argued that ostracised employees may reduce their engagement in citizenship behaviour that can have a direct benefit to others individually or the organisation collectively. The impact of workplace ostracism on organisation citizenship behaviour was studied and it was found that ostracised participants (participants who were excluded) reported lower levels of organisational citizenship behaviours than non-ostracised participants (participants who were included) (Ferris et al. 2008; Hitlan et al. 2006; Wu et al. 2011). On the other hand, Chung, (2015) presented a moderated mediation model of workplace ostracism in which perceived organisation support mediates and person-organisation fit moderates the relationship between workplace ostracism and

organization citizenship behavior. On the basis of above discussion, it is hypothesized that

H_3: Workplace ostracism significantly influencesorganisation citizenship behaviour.

Mediation Effect

Ostracism at the workplace impacts an employee psychologically and this psychological impact then motivates the employee to hold either positive behaviour (pro-social or engagement-oriented behaviour), or make him/her engage in negative behaviour (withdrawal or other anti-social behavioural responses). In line with this, Robinson et al., 2012 asserted that the psychological effects of ostracism can also mediate the relationship between ostracism and its negative behavioural consequences. Workplace ostracism significantly influences need threat (as seen in the contents of hypothesis 1) and need threat significantly influencesorganisation citizenship behaviour(as seen in the contents of hypothesis 2). This hints towards the mediating role of need threat in the relationship between workplace ostracism and organisation citizenship behaviour. So, it can be hypothesized that

H_4: Need Threat mediate between workplace Ostracism and organization citizenship behaviour.

Research Methodology

Participants & Procedures

Workplace ostracism is a phenomenon of exclusion of employees at the workplace intentionally or unintentionally and has its presence everywhere in the society. The present study chose teaching as well as non-teaching employees of Higher education sector having not less than 3 years of experience as the participants. A total of five universities of Jammu division namely, University of Jammu (JU), Central University of Jammu (CU), Shri Mata Vaishno Devi University, Kakryal (SMVDU), Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu (SKAUST) and Baba Gulam Shah Badshah University, Rajouri (BGSBU) were covered. After pretesting on 83 employees of JU and CU, some items were modified and deleted and a sample of 1000 was decided to contact.A total of 1230 questionnaires were issued and the final valid response rate was 76.50% (941 respondents) after removing some illegible responses, non-responses and incomplete responses during analysis.

To start with, normality of the data should be checked and it can be done by detecting and deleting the outliers first and thereafter, values of skewness and kurtosis should be within threshold limits (-1 to +1 or -3 to +3) and QQ plots needs to be examined. The validity and reliability of the models should be checked in terms of construct reliability (SRWs>0.60), composite reliability (CR>0.90),

cronbach alpha (>0.90), construct validity (AVE>0.50) and Discriminant validity (AVE>squared multiple correlations) by applying Confirmatory factor analysis (CFA). Finally, to test the validity of the hypothesized relationships, Structural Equation Modelling (SEM) was used.

Measures

A well structured questionnaire was designed with 20 items on workplace ostracism by employing the scales of Ferris et al., 2008 and Hitlan& Noel, 2009. Example items include: "My co-workers give me the silent treatment", "My co-workers dislike my company" and "My co-workers do not invite me for a coffee or lunch break", 20 items on need threat from the scales of Watson et al., (1988) and Zadro et al.,(2006) which includes items like: "I feel that the other co-workers interact with me a lot", "I feel that I have control over the sequence of the events" and "I feel associated with my department" and a 10 item scale byWilliams & Anderson, (1991) was adopted to measure the construct organization citizenship behavior which includes items like "I adequately complete assigned duties", "My attendance at work is above average" and "I adhere to casual rules devised to maintain order at the workplace"..

Analysis and Discussion

Initially, outliers have been checked, there are 8 outlier observations which are deleted from the data sheet. After that, Normality of the data have been checked graphically through QQ plot and values of Skewness and Kurtosis are .270 and -.241 respectively. This shows that data is normally distributed. Out of total 941 respondents, 290 respondents are from JU, 99 from CU, 280 from SMVDU, 177 from SKAUST and 95 from BSGBU. The maximum respondents are females (52.5%), having an age of 50 years & above (47%), highly qualified (48.5%), having a maximum of 15 years of working experience (31.5%), having an income of 50,000-75,000 per month (37.9%), assistant professors (23.4%) and domiciles of J&K.

Table 1: Model summary of confirmatory factor analysis

Scales		÷2/df	GFI	AGFI	NFI	CFI	RMR	RMSEA
Workplace Ostracism (WPO)	1st order model	3.467	.948	.918	.966	.973	.050	.068
	2nd order model	3.337	.927	.900	.966	.933	.051	.067
Need Threat (NT)	1st order model	2.234	.974	.953	.965	.901	.050	.040
	2nd order model	2.267	.960	.932	.943	.962	.041	.039
Organisation Citizenship Behaviour (OCB)	1st order model	4.020	.960	.933	.972	.980	.015	.064
	2nd order model	4.040	.970	.930	.933	.962	.015	.034

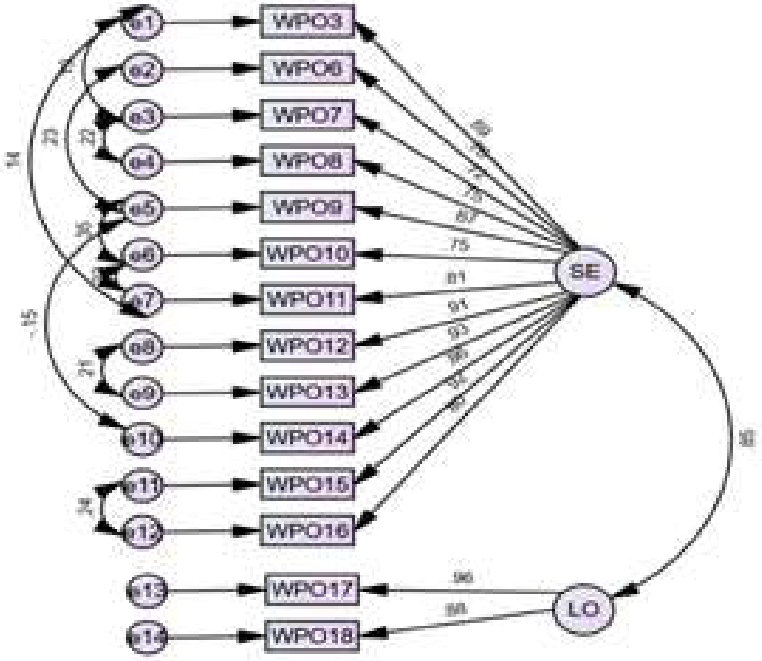
Table 2: Reliability and validity analysis

Scales	Standardised Regression Weight	Average Variance Extracted	Composite Reliability	Cronbach's Alpha
Workplace Ostracism		.67	.99	.96
1. Social Exclusion	.99			
2. Linguistic Ostracism	.85			
Need Threat		.65	.99	.94
1. Meaningful Existence	.97			
2. Belonging	.77			
3. Control	.84			
4. Self-esteem	.74			
Organisation Citizenship Behaviour		.61	.98	.86
1. Sportsmanship & Altruism	.71			
2. Civic Virtue	.67			

When the data was collected from the same respondents or from different respondents at the same time or in case of self-reported data, the problem of common method bias may come. The results Harman's 1 factor test revealed that the total variance explained by one factor is 20%which is less than 50% indicating that common method bias is not the problem in the study.

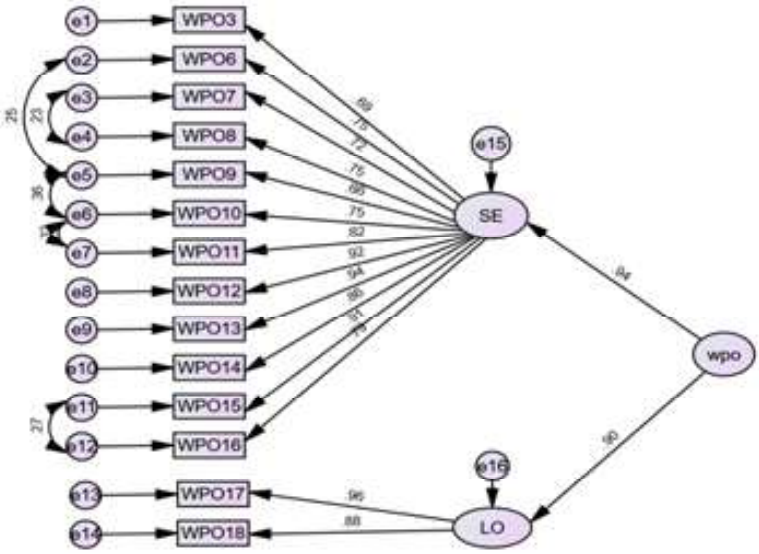
Independent sample t-test and ANOVA have been used to check group-wise perception of employees with regard to workplace ostracism and it was found that perception of employees varies insignificantly with respect to age ($f=1.128$, $p>.05$), gender ($t=0.568$, $p>.05$), qualification ($f=1.069$, $p>.05$), work experience ($f=1.221$, $p>.05$), income ($f=0.735$, $p>.05$), designation ($f=0.773$, $p>.05$), institution ($f=21.068$, $p>.05$) and nationality ($f=0.829$, $p>.05$).

For the refinement of scales, CFA 1st order and 2nd order models (fig 1,2,3,4,5,6) have been tested. The model fitness was attained after introducing certain modifications and to check the superiority of the two models, Delta chi-square test has been used. Chi square difference revealed that there is no difference in both the models but the SRW values of 2nd order models are better than correlation values in 1st order models. So, the 2nd order models have been accepted for further analysis. The reliability and validity of the various constructs along with its dimensions have been worked out and they are matching the threshold values as seen in Table 2 and Table 4. There is high consistency in the constructs (as depicted by construct reliability; CR>0.99) and no two constructs are alike (as depicted by discriminant validity; AVE>squarred multiple correlations of constructs).



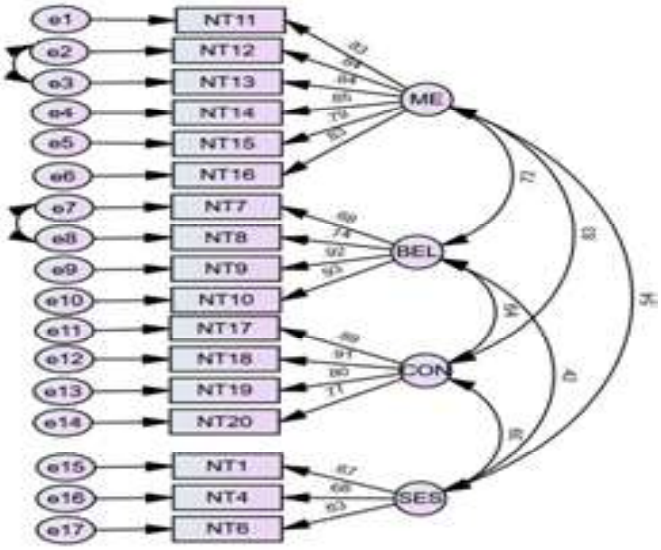
Keywords: SE-Social exclusion, LO-Linguistic ostracism, WPO3, WPO6-16 = Manifest Variables of SE, WPO17-WPO18 = Manifest Variables of LO and e1-e14 = Error term of Manifest Variables.

Fig. 1: First order factor model of workplace ostracism



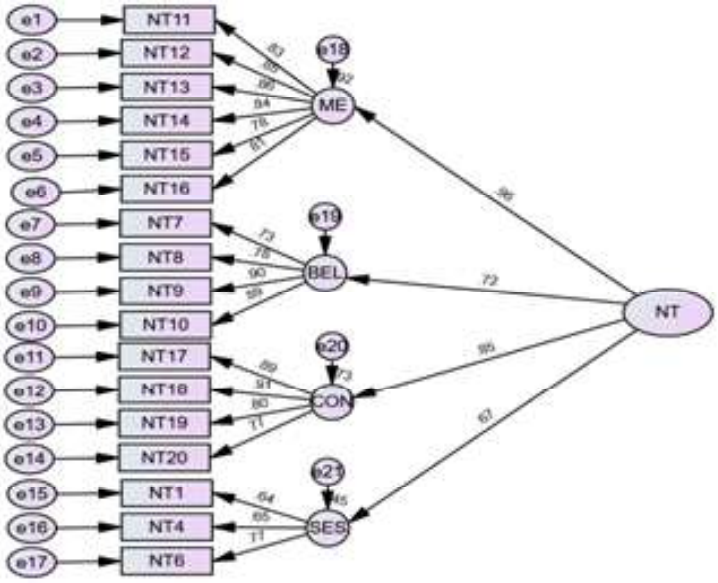
Keywords: WPO=Workplace ostracism, SE=Social exclusion, LO=Linguistic ostracism, WPO3, WPO6-16 = Manifest Variables of SE, WPO17-WPO18 = Manifest Variables of LO and e1-e14 = Error term of Manifest Variables., e15-e16= Error terms of first layer latent constructs.

Fig. 2: Second order factor model of workplace ostracism



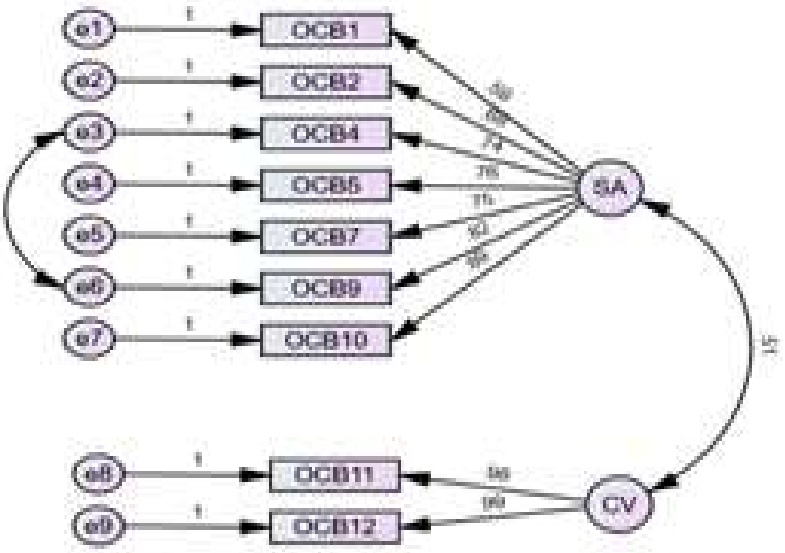
Keywords: ME = Meaninful existence, BEL = Belonging, CON = Control. SE = Self-esteem, NT1, NT4, NT6 = Manifest Variables of SE, NT17-20 = Manifest Variables of CON, NT7-10 = Manifest Variables of BEL, NT11-16 = Manifest variables of ME and e1-e17 = Error term of Manifest Variables.

Figure 3: First Order Factor Model of Need threat



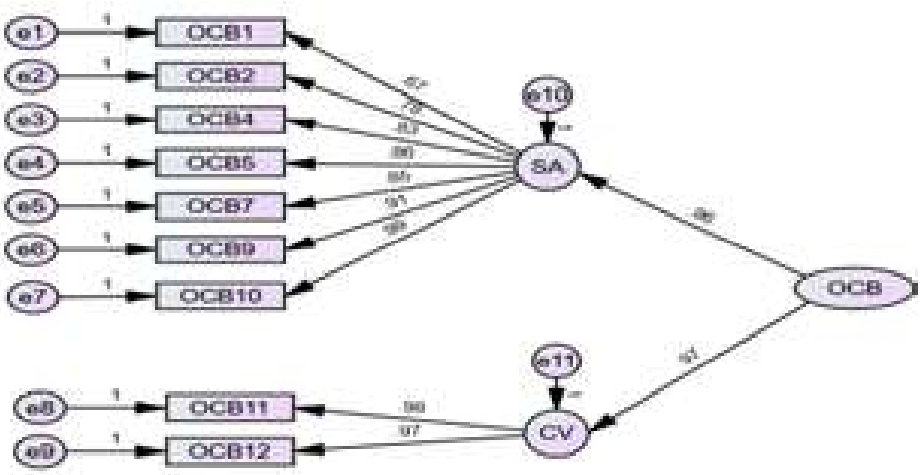
Keywords: NT=Need threat, ME = Meaningful existence, BEL = Belonging, CON = Control. SE = Self-esteem, NT1, NT4, NT6 = Manifest Variables of SE, NT17-20 = Manifest Variables of CON, NT7-10 = Manifest Variables of BEL, NT11-16 = Manifest variables of ME and e1-e17 = Error term of Manifest Variables, e18-e21 = Error terms of first layer latent constructs.

Fig. 4: Second order factor model of need threat



Keywords: SA = Sportsmanship & Altruism, CV = Civic virtue, OCB1,2,4,5,7,9,10 = Manifest Variables of SA, OCB 11,12 = Manifest Variables of CV, and e1-e9 = Error term of Manifest Variables.

Fig. 5: First order factor model of organisation citizenship behavior



Keywords: = OCB = Organisation citizenship behavior, SA = Sportsmanship & Altruism, CV = Civic virtue, OCB1,2,4,5,7,9,10 = Manifest Variables of SA, OCB11,12 = Manifest Variables of CV, and e1-e9 = Error term of Manifest Variables, e10,11 = Error terms of first layer latent constructs.

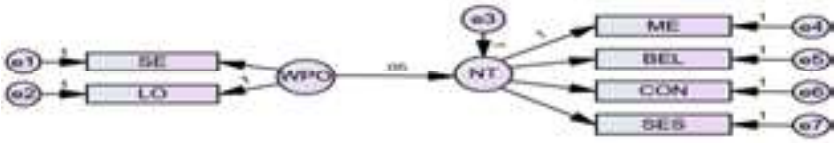
Fig. 6: Second order factor model of *organisation citizenship behavior*

Finally, the most developed and widely accepted technique of data analysis, Structural equation modeling (SEM) was used which is the combination of measurement theory as well as structural theory. The investigation of the existing

relationship (i.e. paths) between the observed (manifest) variables and the construct (i.e. latent variables) is depicted by measurement model and maximum likelihood estimation is most commonly and widely used approach for estimating the structural model (Marsh, Byrne &Yeung, 1999). SEM was conducted using AMOS (16.0) to assess fitness and to test the hypothesised relationships in the model.

H1: Workplace ostracism significantly impacts need threat.

The results revealed that WPO influence NT positively and significantly (SRW = 0.05, p<0.001, Figure 7). Further, the model yielded excellent fit (÷2/ df = 4.026, RMR = 0.068, GFI = 0.966, AGFI = 0.905, NFI = 0.957, CFI = 0.960, RFI = 0.909, IFI = 0.960, TLI = 0.916, RMSEA = 0.075 table 1). Hence, hypothesis 1 is supported.

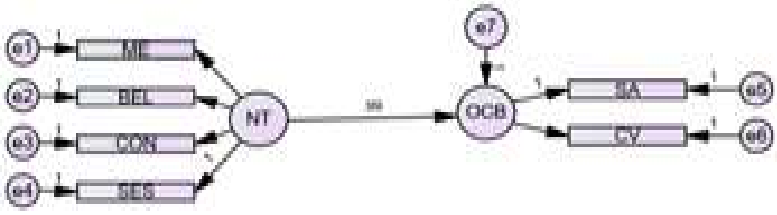


Keywords: WPO=Workplace ostracism, SE= Social exclusion, LO= Linguistic ostracism, NT=Need threat, ME=Meaningful existence, BEL=Belonging, CON=Control, SES=Self-esteem, e1-e7 = error terms.

Fig. 7: Impact of workplace ostracism on need threat

H_2: Need threat significantly impactOrganisation citizenship behavior.

The results revealed that need threat significantly influences organization citizenship behaviour (SRW = 0.99, p<0.001, Figure 8). Further, the model yielded excellent fit (÷2/ df = 4.026, RMR = 0.068, GFI = 0.966, AGFI = 0.905, NFI = 0.957, CFI = 0.960, RFI = 0.909, IFI = 0.960, TLI = 0.916, RMSEA = 0.075 table 1). Hence, hypothesis 2 is supported.



Keywords: NT=Need threat, ME=Meaningful existence, BEL=Belonging, CON=Control, SES=Self-esteem,OCB=Organisation citizenship behavior, SA=Sportsmanship & Altruism, CV=Civic virtue, e1-e7 = error terms.

Fig. 8 : Impact of need threat on organisation citizenship behavior

H_3 : Workplace ostracism significantly affects Organisation citizenship behavior.

WPO has a significant but negative impact on OCB (SRW = -0.01, p < 0.001, fig 9). Thus, the hypothesis is supported.

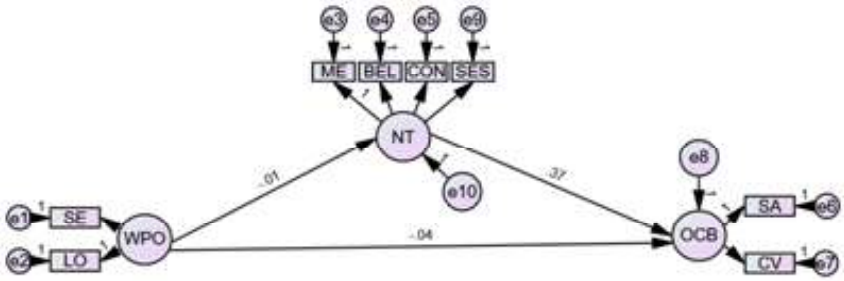
Keywords: WPO=Workplace ostracism, SE= Social exclusion, LO= Linguistic ostracism, OCB= Organisation citizenship behavior, SA=Sportsmanship & Altruism, CV=Civic virtue, e1-e5 = error terms.

Fig. 9: Impact of workplace ostracism on organisation citizenship behavior

Mediation Testing

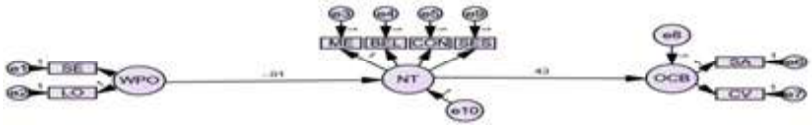
NT mediates between WPO and OCB

It is revealed that there is full mediation of NT between WPO and OCB as the direct relationship between WPO and OCB got reduced after entering NT as a mediator, the value of relationship moves from -.01 to -.04 and it is insignificant too. On the other hand, the indirect effect of WPO on employee's OCB is found to be significant through NT (Sobel statistic: WPO'!NT'!OCB = -.33, p < 0.01 Table 3). Thus, the hypothesis is supported.



Keywords: WPO=Workplace ostracism, SE=Social exclusion, LO=Linguistic ostracism, NT=Need threat, ME=Meaningful existence, BEL=Belonging, CON=Control, SES=Self-esteem, OCB=Organisation citizenship behaviour, SA=Sportsmanship & Altruism, CV=Civic virtue, e1-e10 = error terms.

Fig. 10 : Mediation of NT between WPO and OCB (Baron & Kenny method)



Keywords: WPO=Workplace ostracism, SE=Social exclusion, LO=Linguistic ostracism, NT=Need threat, ME=Meaningful existence, BEL=Belonging, CON=Control, SES=Self-esteem, OCB=Organisation citizenship behaviour, SA=Sportsmanship & Altruism, CV=Civic virtue, e1-e10 = error terms.

Fig. 11 : Mediation of NT between WPO and OCB (Sobel statistics method)

Table 3: Mediation effect (Mediation of NT between WPO and JP)

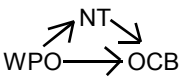
Baron & Kenny method			
Relationship	P value	SRW	Interpretation
WPO→OCB	Sig	-.01	SRW decrease
WPO→NT	Sig	.05	P value sig
NT→OCB	Sig	.99	FULL mediation
	Sig	-.04	
Sobel statistics (indirect effect)			
Relationships		Sobel statistics indirect effect	
Workplace ostracism → Need threat → organisation citizenship behaviour		-0.33 p<.05	

Table 4: Discriminant validity analysis (Construct-wise)

	WPO	NT	OCB
WPO	1		
NT	0.07 *(0.00)	1	
OCB	0.07* (0.00)	0.31** (0.10)	1

Note: Values on the diagonal axis represent average variance extracted and values in parenthesis represent squared correlation between the constructs. The values with an asterisk represent correlation values.

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Conclusion

Our findings are consistent with the literature reviewed and it is concluded that an experience of ostracism at the workplace discourages an employee to do extra-task performance which provides no rewards and need threat in addition to workplace ostracism strengthen this impact.

Implications

The study will propel the educational institutions to make every employee aware of the possible effects of workplace ostracism so that these institutions introduce some voluntary mechanisms to teach the employees about the possible effects of ostracism no matter how much these are deleterious and harmful. There are

two main factors, namely physical environment and employee relationships based on which excellent practices for employees should be managed and designed in order to create favourable work experiences. For this, Physical environment should be made such that the basic needs are satisfied and not threatened and also a considerable attention should be paid to improve the employee relationships. All this surely enhance the relational as well as efficacy needs which would in turn counteract the negative impact of workplace ostracism on organization citizenship behaviour.

The study may be replicated in other sectors like banking, insurance, telecom etc. where workplace ostracism may also be prevalent. Impact of moderators like personality traits can be examined in order to lessen the negative consequences of workplace ostracism.

REFERENCES

Anand, P. (2016). Impact and implications of workplace loneliness a two sample mixed method study.

Chen, Y., & Li, S. (2019). The relationship between workplace ostracism and sleep quality: A mediated moderation model. *Frontiers in Psychology*, *10*.

Chi, S. C. S., & Liang, S. G. (2013). When do subordinates' emotion-regulation strategies matter? Abusive supervision, subordinates' emotional exhaustion, and work withdrawal. *The Leadership Quarterly*, *24* (1), 125-137.

Chung, Y. W. (2015). The role of person–organization fit and perceived organizational support in the relationship between workplace ostracism and behavioral outcomes. *Australian Journal of Management*, *42* (2), 328-349.

Chung, Y. W., & Yang, J. Y. (2017). The mediating effects of organization-based self-esteem for the relationship between workplace ostracism and workplace behaviors. *Baltic Journal of Management*.

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An FMRI study of social exclusion. *Science*, *302* (5643), 290-292.

Ferris, D. L., Brown, D. J., Berry, J. W., &Lian, H. (2008). The development and validation of the workplace ostracism scale. *Journal of Applied Psychology*, *93* (6), 1348.

Ferris, D. L., Lian, H., Brown, D. J., & Morrison, R. (2015). Ostracism, self-esteem, and job performance: When do we self-verify and when do we self-enhance? *Academy of Management Journal*, *58* (1), 279-297.

Ferris, D. L., Spence, J. R., Brown, D. J., & Heller, D. (2012). Interpersonal injustice and workplace deviance: The role of esteem threat. *Journal of Management*, *38*(6), 1788-1811.

Fiset, J., &Bhave, D. P. (2019). Mind your language: The effects of linguistic ostracism on interpersonal work behaviors. *Journal of Management*, 0149206319833445.

Gerber, J. P., & Wheeler, L. (2014).Clarifying the relationship between ostracism and relational devaluation. *The Journal of Social Psychology*, *154*(1), 14-27.

Hayman Jr, L. W., McIntyre, R. B., & Abbey, A. (2015). The bad taste of social ostracism: The effects of exclusion on the eating behaviors of African-American women. *Psychology & Health*, *30*(5), 518-533.

Hermann, A. D., Skulborstad, H. M., & Wirth, J. H. (2014). Inoculating against the aversive effects of ostracism with acceptance: The role of attachment styles. *Social Influence*, *9*(4), 255-271.

Hitlan, R. T., & Noel, J. (2009). The influence of workplace exclusion and personality on counterproductive work behaviours: An interactionist perspective. *European Journal of Work and Organizational Psychology*, *18*(4), 477-502.

Hitlan, R. T., Cliffton, R. J., &DeSoto, M. C. (2006). Perceived exclusion in the workplace: The moderating effects of gender on work-related attitudes and psychological health. *North American Journal of Psychology*, 8(2), 217-236.

Hitlan, R. T., Kelly, K. M., Schepman, S., Schneider, K. T., &Zárate, M. A. (2006).Language exclusion and the consequences of perceived ostracism in the workplace. *Group Dynamics: Theory, Research, and Practice*, *10*(1), 56.

Jahanzeb, S., & Fatima, T. (2018). How workplace ostracism influences interpersonal deviance: The mediating role of defensive silence and emotional exhaustion. *Journal of Business and Psychology*, *33*(6), 779-791.

Khan, A. M., Sadiq, M. W., &Naqvi, S. M. I. H. (2015). Effect of Ostracism and General Education on Career Development under Mediation of Personality: A Study of Religious Schools in Pakistan. *European Online Journal of Natural and Social Sciences*, *4*(3), 582.

Khanna, V. (2016). Predictors of work engagement: the centrality of workplace ostracism (Doctoral dissertation, Indian Institute of Management Indore).

Li, C. F., &Tian, Y. Z. (2016). Influence of workplace ostracism on employee voice behavior. *American Journal of Mathematical and Management Sciences*, *35*(4), 281-296.

Riva, P. (2016). Emotion regulation following social exclusion: Psychological and behavioral strategies. In *Social Exclusion* (pp. 199-225).Springer, Cham.

Robinson, S. L., O'Reilly, J., & Wang, W. (2012). Invisible at work: An integrated model of workplace ostracism. *Journal of Management*, 39, 203-231.

Sinek, S. (2009). Start with why: How great leaders inspire everyone to take action. *Penguin.*

Sultana &Chechi (2019).Ostracism in virtual environment: A theoretical perspective. *International Journal of Recent Technology and Engineering, 7(6s5), 255-259.*

Svetieva, E., Zadro, L., Denson, T. F., Dale, E., O'Moore, K., &Zheng, W. Y. (2016). Anger mediates the effect of ostracism on risk-taking. *Journal of Risk Research*, *19*(5), 614-631.

Tobin, S. J., Vanman, E. J., Verreynne, M., &Saeri, A. K. (2015). Threats to belonging on Facebook: Lurking and ostracism. *Social Influence*, *10*(1), 31-42.

Watson, D., Clark, L. A., &Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063.

Williams, K. D. (1997). Social ostracism.In R. M. Kowalski (Ed.), *Aversive Interpersonal Behaviours*, 133–170. New York, NY: Plenum.

Williams, K. D. (2001). Ostracism: The power of silence. New York, NY: Guilford Press

Williams, K. D. (2002). *Ostracism: The power of silence*. Guilford Press.

Williams, K. D. (2007). Ostracism. *Psychology*, 58(1), 425.

Williams, K. D. (2009). Ostracism: A temporal need threat model. *Advances in Experimental Social Psychology*, 41, 275-314.

Williams, K. D., &Nida, S. A. (2014). Ostracism and public policy. *Policy Insights from the Behavioral and Brain Sciences*, *1*(1), 38-45.

Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organisational commitment as predictors of organisational citizenship and in-role behaviours.*Journal of Management*, 17(3), 601-617.

Wu, C. H., Liu, J., Kwan, H. K., & Lee, C. (2016). Why and when workplace ostracism inhibits organizational citizenship behaviors: An organizational identification perspective. *Journal of Applied Psychology*, *101*(3), 362.

Wu, L., Wei, L., &Hui, C. (2011). Dispositional antecedents and consequences of workplace ostracism: An empirical examination. *Frontiers of Business Research in China*, *5*(1), 23-44.

Yan, Y., Zhou, E., Long, L., &Ji, Y. (2014). The influence of workplace ostracism on counterproductive work behavior: The mediating effect of state self-control. *Social Behavior and Personality: An International Journal*, *42*(6), 881-890.

Zadro, L., Boland, C., & Richardson, R. (2006). How long does it last? The persistence of the effects of ostracism in the socially anxious. *Journal of Experimental Social Psychology*, *42*(5), 692-697.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, *40*(4), 560-567.

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Impact of Learned Helplessness on Job Satisfaction: An Analysis of Banking Sector

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Abstract: In today's modern world of globalization and privatization, the demand for skilled and competent employees is increasing. Employees are the main executing force of all plans that the management makes to attain organizational goals. The importance of human resource is increasing in today's competitive environment as they help to increase the profitability of the company by providing better services. With the changing scenario due to globalization, organization expectations from employees are also increasing. Employees, in order to meet high expectation of the organization, may face stress, work pressure, or failure. This may lead to the development of learned helplessness which further impacts the employee's level of satisfaction in their job. The purpose of the study is to analyze the impact of learned helplessness on job satisfaction of bank employees. Confirmatory factor analysis following path analysis was performed using Amos 24. Major finding is that learned helplessness dimensions impact job satisfaction of employees.

Key Words: Learned Helplessness, Job Satisfaction, Banks, Attribution.

Introduction

Modern organizations have adopted a humane approach to the management of human resources and aim at providing better services to its customers. The key resource for any service organization, like bank, insurance etc, is its employees. All the important decisions taken by the policy makers are executed through employees. To deliver good services to its customers, employees of the bank play an important role. Any kind of advancement, whether it is intellectual, creative or technological is possible only when the employees of the organizations are maintained properly, they perform well and are satisfied with their jobs. With the changing scenario due to globalization, banks are becoming high-stress zones. In the working environment, where employees are facing continuous stress, performance pressure or rejection in their performance, their willingness to work may decline. Thus, they may face the problem of learned helplessness. The

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problem of learned helplessness adversely influences employee productivity, creativity, willingness to work and job satisfaction.

Learned Helplessness (LH)

Learned Helplessness term was first introduced by psychologist Martin Seligman in 1965. Learned Helplessness can be defined as "the giving up reaction or quitting response that comes from the belief that whatever a person do does not matter because action and outcome are perceived as independent" (Seligman, 1991). Learned Helplessness is an individual phenomenon and thus varies from individual to individual. The way with which people attribute (assign) reasons to what happens to them leads to the development of Learned Helplessness. When encountered with the problem of learned helplessness, the individual believes that the outcome is independent of its response and even when environment is positive, employee do not even try to change the outcome. Employee with such a feeling show lack of motivation, avoid challenges, reduce initiatives etc.

Learned Helplessness in employees affects their attitude towards the job and organization. According to Martinko and Gardner (1982) learned helplessness leads to negative behaviors such as absenteeism, reduced job satisfaction and increase turnover intention. Wright and Cropanzano (1998) also highlighted that when employees feel more stressed, they reache to a point of burn out which further lead to helpless. This may make the employee to withdraw from work as a coping strategy.

Job Satisfaction

Job Satisfaction is defined as a favorable emotional state resulting from positive job experience (Locke, 1976). Satisfaction reflects the attitude of employee towards their job. Individuals with high job satisfaction show more interest in their job and feel contented from their job. Dissatisfaction in employees regarding their job deteriorates the effectiveness of the organization. Employee when not satisfied with their job show reduced organization commitment (Moser, 1997), burnout (Penn et al. 1988) and intention to leave the organization (Alexander, Litchtenstein and Hellmann, 1997).

Review of Literature

Many researchers like Martinko and Gardner (1982), Boichuk et el. (2014), Tayfur et al. (2013) had investigated the relation and impact of learned helplessness in the organization with various constructs such as turnover intension, absenteeism, job stress. Also, Job satisfaction is an important job attitude affecting organization

performance. Literature review on learned helplessness and job satisfaction is provided below:

Learned Helplessness

Pestonjee, Oza and Sayeed (2000) found moderate level of learned helplessness in pharmaceutical executives. External-Specific-Unstable, External-Specific-Stable, Internal-Global-Unstable learned helplessness dimensions significantly impacted role efficacy. Chung et al. (2017) studied the impact of employee's perception of innovation on learned helplessness and fatigue. Researchers identified intensity and failure as a cognitive appraisal dimensions that shapes employee's belief regarding innovation-targeted helplessness, which further leads to innovation fatigue. The study suggested that managers should focus on considering employee perception on two identified dimensions (intensity and failure) to implement the innovation successfully. Boichuk et al. (2014) pointed out that salesperson when not able to meet sales goal, develop the feeling of helplessness. When an employee faces such a situation, transformational leadership also is of limited use. Tayfur et al. (2013) did a study on banking sector employees. Researchers found that due to organization injustice, employee stress level increases which further leads to helplessness and exhaustion. Saxena and Shah (2008) investigated the relationship between organizational culture and learned helplessness R&D professionals. Researchers found that organizational culture is negatively related to the learned helplessness. Learned helplessness among R&D professionals was due to factors like lack of free time, demanding nature of research projects and performance pressures.

Job Satisfaction

Mohr and Puck (2007) studied the impact of role conflict due of international joint ventures on employee job satisfaction and job stress. General Managers of Indian and German joint ventures were surveyed. Major findings were that managers who had high role conflict displayed low job satisfaction and more job stress. Further high stress in job negatively related to managers performance. Sharma et al. (2010) studied the impact of burnout and stressors on layers job satisfaction. Factors that lead to job dissatisfaction were economic position, emotional exhaustion, jealousy, competition, conflict between values, high expectations, stress and poor interpersonal relationship. Out of the major factors identified, emotional exhaustion, client stress, economic position and work overload were the significant predictors of job satisfaction. Further, it is found that male showed high job satisfaction than female layers. Female layers showed high stress and burnout. Gill et al. (2010) investigated the impact of transformational leadership and empowerment on job satisfaction. It was found

that positive relationship exists between transformational leadership and job satisfaction. Further, employee job satisfaction is also positively related to empowerment. Chan (2019) studied the relationship between participative leadership, work engagement and job satisfaction. Also the moderating effect of fun experienced at work on the impact of participative leadership on job satisfaction was analyzed. Researchers used hierarchical multiple regression to analyze the relationship. It was found that positive relationship exists between participative leadership, job satisfaction and work engagement. Further, fun at work make the relationship between participative leadership and job satisfaction stronger. Dhamija et al. (2019) studied the relationship between job satisfaction and quality of work life of bank employees. Quality of work life is a significant predictor of job satisfaction. Further, inconducive work environment negatively impact employee job satisfaction. Learned Helplessness, when faced by the employees, creates a negative impact on organizational outcomes, such as reduced performance, increase turnover, etc. Learned helplessness adversely affects organization performance, thus it is important to study learned helplessness in relation to different job related concepts. Carlson and Kacmar (1994) in their study made the proposition that learned helplessness negatively impacted job satisfaction.

Objective of the Study

The objective of the study is to analyze the impact of learned helplessness dimension on job satisfaction of banks employees in Delhi.

Data and Methodology

To collect primary data, a structured questionnaire was used. Questionnaire was divided into three parts. First part contains information about the respondent; second part consisted of 24 items of learned helplessness, and part third consisted of 10 items to measure job satisfaction. Secondary data was collected with the help of the previous research studies, newspapers, books and articles.

To measure job satisfaction, a 5 point scale comprising of 10 items developed by Macdonald and Maclntyre (1997) was used. Scale developed by Pestonjee and Reddy (1988) was used to measure learned helplessness. It is a 6 point scale with 8 dimensions. The dimensions are described below:

According to Sekaran (2006) population is the entire group that the researchers wants to investigate. In this study target population are bank employees of Delhi. Non-Probability Judgemental Sampling was adopted by the researchers as a sampling method.

The sample is the representation of the population. It is important for researchers to determine the adequate sample size for the study. The questionnaire was distributed to 380 bank employees and 330 respondents returned the questionnaire. 305 responses were considered in the study for analysis after data cleaning. That is, responses that were having more missing values were not taken for analysis.

For confirming that items are actually measuring the construct, confirmatory factor analysis was performed. To perform CFA IBM Amos 24 is used for measurement modelling and structural modelling. Before conducting confirmatory factor analysis, data cleaning was done by deleting responses that were having more missing values, having unengaged responses and outliers. After the validity of the instrument and model fit was assessed, path analysis to test the hypothesis was conducted.

Hypotheses

H_1: External-Stable-Specific learned helplessness dimension impact job satisfaction.

H_2: Internal-Specific-Unstable learned helplessness dimension impact job satisfaction.

H_3: Internal-Global-Stable learned helplessness dimension impact job satisfaction.

H_4: External-Specific-Unstable learned helplessness dimension impact job satisfaction.

H_5: Internal-Global-Unstable learned helplessness dimension impact job satisfaction.

H_6: External-Global-Unstable learned helplessness dimension impact job satisfaction.

H_7: Internal-Stable-Specific learned helplessness dimension impact job satisfaction.

H_8: External-Global-Specific learned helplessness dimension impact job satisfaction.

Model Validity Measures

Validity helps to assess whether the items are capable of measuring the construct accurately. We have checked convergent and discriminant validity using Amos 24. Convergent Validity represents the degree of correlation between items of the latent construct. Higher the correlation more will be the convergent validity. According to Chin (1998) convergent validity exist when Composite Reliability>=

0.7 and Average Variance Extracted >= 0.5 (Hair et al., 2010). Discriminant Validity is established when latent constructs are distinguished from each other. For discriminant validity, Average Variance Extracted should be more than Maximum Shared Variance and Square root of Average Variance Extracted should be more than inter-construct correlations (Fornell and Larcker, 1981). For Job satisfaction scale, initially 10 items were taken but because authors were facing problem with convergent validity so 2 item (Item 2 and Item 7) having lower loadings were deleted. Table 1 show that all the criteria's are met and the scale used in this study establishes convergent and discriminant validity. Composite reliability was also more than 0.7 for the entire construct (Hair et al., 2010).

Model Fit Measures

Table 2 provide model fit indices values. To assess the model following fit indices were used:

Table 2: Model diagnostic

Measure	Estimate	Threshold	Interpretation	Source
CMIN	442.36	—	—	—
DF	432	—	—	—
CMIN/DF	1.03	Between 1 and 3	Acceptable	Hu and Bentler (1999)
CFI	0.98	>0.95	Acceptable	Hu and Bentler (1999)
SRMR	0.04	<0.08	Acceptable	Hu and Bentler (1999)
RMSEA	0.01	<0.06	Acceptable	Arbuckle (2005)
PClose	1	>0.05	Acceptable	Hu and Bentler (1999)

Source: Compiled by Author

(a) CMIN/DF value should be between 1-3. In this study value is 1.024, which is acceptable. (b) RMSEA (Root Mean Square Error of Approximation) value should be less than 0.05 (Arbuckle, 2005). Our results show 0.01 RMSEA value, which is acceptable. (c) CFI (Comparative Fit Index) is a widely used indices to measures goodness of fit. Results show that the value of CFI is 0.98, which is above the acceptable limit. (d) SRMR (Standardized Root Mean Square Residual) value should be less than 0.8. Our results show that the SRMR value is 0.04 (acceptable). (e) P close value should be more than 0.5. Our results show that the value is more than 0.5 (Table 2). All fit indices values are within the acceptable limit as suggested by Hu and Bentler (1999).

Table 1: Validity and reliability

	CR	AVE	MSV	MaxR(H)	ISU	IGS	ESU	IGU	EGU	ISS	EGS	ESS	JS
ISU	0.84	0.56	0.07	0.84	0.75								
IGS	0.77	0.62	0.06	0.77	0.134†	0.79							
ESU	0.83	0.62	0.12	0.84	0.10	0.05	0.79						
IGU	0.82	0.60	0.04	0.82	0.02	0.07	0.08	0.77					
EGU	0.72	0.56	0.07	0.72	0.11	0.03	0.08	0.02	0.75				
ISS	0.77	0.63	0.02	0.78	0.04	0.06	0.139†	-0.01	0.02	0.79			
EGS	0.71	0.55	0.01	0.71	0.04	0.11	0.10	0.05	-0.01	-0.08	0.74		
ESS	0.87	0.52	0.12	0.87	0.06	0.02	0.06	0.04	0.01	-0.03	0.04	0.72	
JS	0.89	0.50	0.12	0.89	-0.25***	-0.23**	-0.34***	-0.19**	-0.26***	-0.13†	-0.05	-0.35***	0.71

† p < 0.100 * p < 0.050 ** p < 0.010

Note: CR= Composite Reliability AVE=Average Variance Extracted MSV= Maximum Shared Variance

Source: Compiled by Author

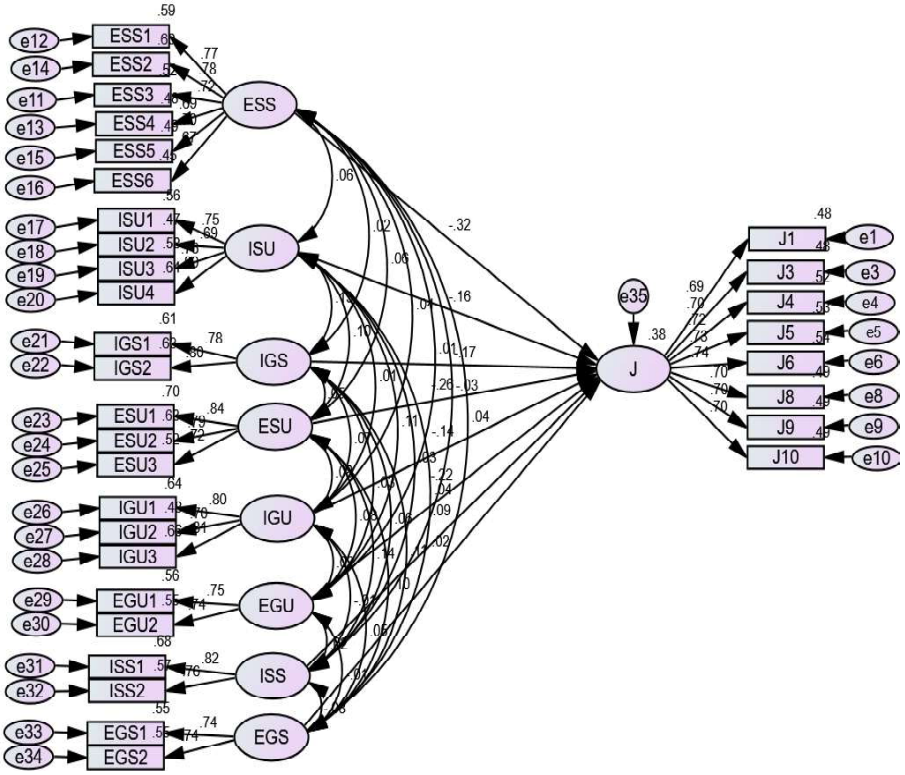

Fig. 1 (Path Analysis Model)

Table 3: Path analysis results

Measurement Path	Regression Estimate	S.E.	t-value (C.R.)	P	Hypothesis	Assessment
JS <—- ESS	-.295	.057	-5.136	***	H1	Supported
JS <—- ISU	-.115	.042	-2.696	.007***	H2	Supported
JS <—- IGS	-.133	.047	-2.827	.005***	H3	Supported
JS <—- ESU	-.220	.053	-4.155	***	H4	Supported
JS <—- IGU	-.111	.045	-2.472	.013**	H5	Supported
JS <—- EGU	-.175	.052	-3.394	***	H6	Supported
JS <—- ISS	-.068	.047	-1.444	.149	H7	Not Supported
JS <—- EGS	.017	.055	.321	.749	H8	Not Supported
* p < 0.050						** p < 0.010

Source: Compiled by Authors

Findings

Table 3 shows results of Path analysis. It is observed that ESS attribution is the strongest determinant (t value = - 5.13) that negatively impact job satisfaction of bank employees. Further, ISU attribution (t= - 2.69) negatively impact job satisfaction. IGS (t= -2.82); ESU (t= - 4.15); IGU (t= - 2.47); EGU (t= - 3.39) also have a negative impact on job satisfaction of bank employees.

ESS reduces job satisfaction. It indicates that when bank employees think that there are many unsatisfactory aspects related to their job, their job satisfaction will be less. ISU negatively impacts job satisfaction, indicating that bank employees attribute to factors that are specific in nature and remain for a short period of time such as poor effort. When employees do not put much effort to achieve job targets, their job satisfaction is negatively impacted. Also when the employees feel that they lack control over the outcome (IGS attribution), their job satisfaction is reduced. Further ESU attribution is the feeling that there are many unfavourable elements in the organization culture; such feeling reduces the job satisfaction of bank employee. IGU also negatively impact job satisfaction indicating that feeling of lack of skills to perform the job will reduce employee job satisfaction. Lastly, when employee compares efforts with reward and find imbalance between the two, his job satisfaction is reduced.

Conclusion

Learned helplessness, when experienced by the employees, has a negative impact on their performance. Learned helpless employees perform at a sub-optimal level, encounter stress, less motivated, contribute less and reduce productivity. Job satisfaction is an important work behavior that impact the effectiveness of the organization.

Our findings indicate that Bank employees perceive that their organizational culture is not supportive and because there are many undesirable aspects related to their job such as work overload, they at times do not put much effort at work. Furthermore, the feeling of lack of ability and skills and feeling of imbalance between the efforts put in and rewards received makes the situation adverse. These beliefs impact the level of satisfaction of employee in their job. HR manager and managers at all the level should put in effort to reduce such feelings and increase the job satisfaction of employees.

The limitations of the study are that this study focussed on two sample from Delhi-NCR only. The researchers may conduct similar studies in other regions also. For further research, sample size can be increased and comparative study can also be undertaken.

Implications for Practitioners and Researchers

Job satisfaction has been the focal area of study by researchers since it relates to quality of work life (Dhamija et al., 2019), role conflict (Mohr and Puck, 2007), stress (Sharma et al., 2010) etc. Researchers may investigate the relationship between learned helplessness and other organizational related aspects like employee performance, turnover intension, motivation etc. Moreover, studies may be carried out in different organizational settings.

Bank employees face a lot of stress in the working environment. Bank employees have to deal with constant work pressure, meeting customer expectations and adhering to banking laws. All these factors affect the perception of the employees about the organization and their job. Our findings indicate that bank employees are not happy with many elements related to their job thus ESS negatively impacts job satisfaction the most (t value = - 5.13). Bank employees found their bank culture unsupportive with further decreases their job satisfaction (ESU, t= - 4.15). Employees take less effort to perform their job indicating low job satisfaction (ISU, t= - 2.69). Employees job satisfaction is reduced because they feel that they lack skills in doing the job (IGU, t= - 2.47). In an organization employee compare their initatives with the reward they get. If employees feel that they are getting fewer rewards than the initiative taken, they develop a a negative attitude towards their job. In such a situation employee may not leave the organization because of fear of unemployment but would perform at a suboptimal level just to maintain membership in the organization but with reduced job satisfaction (EGU, t= - 3.39).

The outcome of the study will help HR practitioners to formulate programs so as to improve employee job satisfaction and deal with the problem of learned helplessness. Researchers suggest that proper training must be provided to employees so that they get the required skills to perform the job well. This will help to make the employee feel that they can acquire the skills required to perform their job. Achievable targets should be set for bank employees. Rewarding the employee for achieving the targets helps to reinforce positive behavior in employees. Open communication system, where the management is willing to listen to their employee point of view (Shah and Pethe , 2006) would lead to better job satisfaction. Learned helplessness is a behavioral response that can be molded by the manager so that its negative impact on job satisfaction can be reduced. Efforts can be taken to develop learned optimism is employees. An optimist employee is more resilient whereas a helpless employee is likely to get upset and give up (Gillham, Shatte, Reivich, & Seligman, 2002).

REFERENCES

Alexander, J.A; Liechtenstein, R.O, & Hellmann, E. (1998). A causal model of voluntary turnover among nursing personnel in long term psychiatric setting. *Research in Nursing and Health* 21 (5), 415-427.

Arbuckle JL. 2005. AMOS 6.0 User's Guide. Spring House, PA:AMOS Development Corp.

Boichuk, J. P., Bolander, W., Hall, Z. R., Ahearne, M., Zahn, W. J., and Nieves, M. (2014). Learned helplessness among newly hired salespeople and the influence of leadership. *Journal of Marketing*, 78(1), 95-111.

Carlson, D.S. and Kacmar, K.M. (1994).'Learned Helplessness as a Predictor of Employee Outcomes'. An Applied Model. *Human Resource Management Review*, 4, 235-256.

Chan, S. C. (2019). Participative leadership and job satisfaction. *Leadership & Organization Development Journal*.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern Methods for Business Research, 295(2), 295-336.

Chung, G. H., Choi, J. N., and Du, J. (2017). Tired of innovations? Learned helplessness and fatigue in the context of continuous streams of innovation implementation. *Journal of Organizational Behavior*, 38(7), 1130-1148.

Dhamija, P., Gupta, S., & Bag, S. (2019). Measuring of job satisfaction: the use of quality of work life factors. *Benchmarking: An International Journal*.

Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.

Gill, A., Flaschner, A. B., Shah, C., & Bhutani, I. (2010). The relations of transformational leadership and empowerment with employee job satisfaction: A study among Indian restaurant employees. *Business and Economics Journal*, 18, 1-10.

Gillham, J. E., Shatte, A. J., Reivich, K. J., & Seligman, M. E. P. (2002). Optimism, pessimism, and explanatory style. In E. C. Chang (Ed.), Optimism & pessimism: Implications for theory, research, and practice (pp. 53-75). Washington, DC: American Psychological Association.

Hair, J et al. (2010). Multivariate data analysis (7th ed.). Upper saddle River, New Jersey: Pearson Education International.

Hair, J., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Upper saddle River, New Jersey: Pearson Education International.

Hu, L., Bentler, P.M. (1999), Cutoff criteria for fit indexes in covariance structure analysis: Conventional Criteria Versus New Alternatives SEM, 6(1), 1-55.

LOCKE, E. The nature and causes of job satisfaction. In Dunnette, M. (Ed.) Handbook of industrial and organization al psychology . Chicago: Rand McNally, 1976, Chap. 30, pp. 1297-1349.

Macdonald, S., & Maclntyre, P. (1997). The generic job satisfaction scale: Scale development and its correlates. *Employee Assistance Quarterly*, 13(2), 1-16.

Martinko, M.J. and Gardner, W.L. (1982). Learned helplessness: An alternative explanation for performance deficits. *The Academy of Management Review*, 7(2), 105-204.

Mohr, A. T., & Puck, J. F. (2007). Role conflict, general manager job satisfaction and stress and the performance of IJVs. *European Management Journal*, 25(1), 25-35.

Moser, K. (1997). Commitment in organizations. Psychologies, 41 (4), 160-170.

Penn, M., Romano, J. L., & Foat, D. (1988). The relationship between job satisfaction and burnout: A study of human service professionals. Administration in Mental Health, 15(3), 157-165.

Pestonjee, D. M., Oza, S. and Sayeed, Z. (2000). A study of learned helplessness and perceived role efficacy among executives in pharmaceutical industry," IIMA Working Papers, Indian Institute of Management Ahmedabad, Research and Publication Department.

Pestonjee, D.M. and Reddy, P. (1988). Development of psychometric measure of learned helplessness. Working Paper No. 746. IIM Ahmedabad."

Saxena, S. and Shah, H. (2008). Effect of organizational culture on creating learned helplessness attributions in R&D Professionals. *Vikalpa*, 33(2), 25-45.

Sekaran, U. (2006). Research methods for business: A skill building approach. John Wiley and Sons.

Seligman, M.E.P. (1991). Helplessness: On depression, development. Second edition. New York: W.H. Freeman.

Shah, H. and Pethe, S. (2006). Impact of organizational role stress on learned helplessness in NGOs. *Delhi Business Review*, 7(1), 81-89.

Sharma, A., Verma, S., Verma, C., & Malhotra, D. (2010). Stress and burnout as predictors of job satisfaction amongst lawyers. *European Journal of Social Sciences*, 14(3), 348-359.

Tayfur, O., Bayhan Karapinar, P., and Metin Camgoz, S. (2013). The mediating effects of emotional exhaustion cynicism and learned helplessness on organizational justice-turnover intentions linkage. *International Journal of Stress Management*, 20(3), 193–221.

Wright, T. A. and Cropanzano, R. (1998). 'Emotional exhaustion as a predictor of job performance and voluntary turnover'. *Journal of Applied Psychology*, 83, 486–493.

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Developing the Model for Retention of Customers in Indian Banking Industry

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Abstract: Customer retention is the capability of a business to retain its customers. It is both appraise of customer loyalty and capacity of the business to maintain customers satisfied by excellent service and quality of the product. Successful customer retention engrosses more than giving the customer what they expect. This study aims to develop the model for customer retention strategies in Indian banking industry. This research adopts convenience sampling technique to select a sample of 200 bank customers. The five factor model variables has been filter by cronbach's alpha and exploratory factor analysis and it can be measured by confirmatory factor analysis and structured by pooled confirmatory factor analysis. The study concludes that the five factors model designed for the research significantly affects the customer retention.

Keywords: Customer retention, Banking, Exploratory Factor Analysis, Confirmatory Factor Analysis.

Introduction

The banking industry has drastically changed since the nationalization of the banking industry and the reforms in the banking sector. Banking industry is considered as the backbone of the financial system of every country. Banking products and services are inevitable in the life of every human being because banks support us to meet our financial needs. Banking industry worldwide is very competitive, and it is difficult for retail banks to provide unique banking services as required by clients (Rootman, et al., 2011). Banks are not only competing among each other but also competing with non-banks and other financial institutions (Ismail and Panni, 2009).

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Customer satisfaction and retention are potentially effective tool that banks can use to support their survival in the industry. One strategic focus that banks can implement to remain competitive would be to retain as many customers as possible (Doucouliagos and Stanley, 2013). The costs of acquiring customers to "replace" those who have been lost are high because the expenses of acquiring customers are incurred only in the beginning stages of the commercial relationship (Gautam, 2012).

In addition, long-term customers buy more and, if satisfied, may generate positive word-of-mouth promotion for the company and they also take less of the company's time and are less sensitive to price changes. In addition, customer retention is very important because it has a bearing on costs and profitability over time (Brennant and Ritch, 2010). Thus, customer retention is important for banks as it refers to the maintaining of profitable banking clients (Rootman, et al., 2011). Customer retention is about increasing the sales by endlessly satisfied and serves the customers so they will keep coming back (Farquhar, 2005). To ensure the customer retention to be successful, the quality of the service needs to be able to satisfy or go beyond the customers' expectations (Melam et al., 2014). A Bank's ability to attract and retain new customers, is not only related to its products or services, but strongly related to the way it serves its existing customers and the reputation it creates within and across the marketplace (Mutegi & Assumptah, 2015).

It has also been shown that customer retention can lead to various benefits for banks, including higher sales, higher profitability, lower costs of acquiring new clients and word-of-mouth recommendations. These benefits can all contribute to the survival of banks and ensure greater banking success (Rootman, et al., 2011). Most researchers agree on the importance of retention as a key driver of a firm's profitability since retaining cost is less than acquiring new customers, and it is repeatedly treated as a critical component in customer profitability models (Gupta et al., 2006). Organizations worldwide have various ways of enhancing their customer retention although the ways vary from one organization to another depending on the actual functions of each organization, (Gopaal, 2007). Therefore, it is necessary to develop a model for the retention of customers.

Literature Review and Model Development

According to Emmah et al., (2015), commercial banks applied product innovativeness to a very great extent for retaining the customers. Firms need to analyze their customers before coming up with retention strategies. Banks need to come up with ways of rewarding the sales force for retaining customers. In the increasing competitive environment, organizations are continually looking for innovative ways to not only acquire but also to retain their customers (Petzer, 2009). There is a need to expand, monitoring and include quality of the products

provided by banks to determine the sustainability of banking industry. Moreover, for the banks, there is an opportunity to customize their services as well as increase revenue and at the same time improve service quality by employing more Customer Relationship Managers to serve customers better and enhance their retention (Msoka et al. 2014).

Banking service delivery variables influence banks' relationship marketing and customer retention. Fee structures and the ethical behaviour of banks are regarded as the most important focus areas for banks (Rootman, et al. 2011). Customer retention is aimed at benefiting both relationship parties to facilitate exchanges, reduce transaction costs and maximize the relationship's economic and non-economic benefits in order to repeat the exchange processes in the future (Winston, 2013).

The quality of services offered by the bank has a great effect on customers' retention (Barrack, 2013). Customer satisfaction, corporate image, and switching barriers had significant impact on their loyalty decisions (David , 2007). Reduction in turnaround time of processing credit requests retains the customers better than competitors (Mutegi, et al., 2013). It is more economical to keep customers than to acquire new ones. The costs of acquiring customers to "replace" those who have been lost are high (Sundaresalingam & Charanya, 2012).

Customer retention is reflected on three crucial business attributes which include: increased revenue, lower customer acquisition costs and increased referrals. Relationship Marketing gives the banks way to develop mutually beneficial and valuable long term relationships. These long term relationships are further helping banks in reducing operating cost and attracting new customers. Self Service based Technologies like ATM, mobile banking and internet banking are important relationship marketing tools (Rupali, et al., 2015).

Mutual relationship between commercial banks and bank customers would minimize customer switch and defections. The enhanced marketing communication is the best customer retention strategy (Ng'ok & Erustus, 2015). It necessitate retails banks to follow a structured, data-driven approach to identify "at risk" customers and to launch proactive retention campaigns based on identified drivers of customer attrition (Nadia, 2012). Financial innovation and online services were found to reduce the tendency of the customers to leave the bank. Interest rate and bank charges were found to increase the tendency of the customers to leave the banks (Janet & Willy, 2016).

From the review of existing researches it can be known that the relationship management is very important for the retention of customers. For making a better relationship there are some factors which have to be concentrated more, these factors here decided as factors of retention. The factors Products and services, customer value, corporate image, competitive advantages and switching

barriers are taken from the literature as factors of retention for this study to develop the model for retention of customers. The factors of retention and its sources are shown below.

Factors	Sources
Products and services (Quality of Services)	Barrack, 2013Msoka et al. 2014
Customer Value (Ethical and equal treatment)	Rootman, et al. 2011
Corporate image	David, 2007
Competitive advantage	Emmah et al., (2015)
Switching barriers	David, 2007

Figure 1 shows the theoretical model for retention of customers.

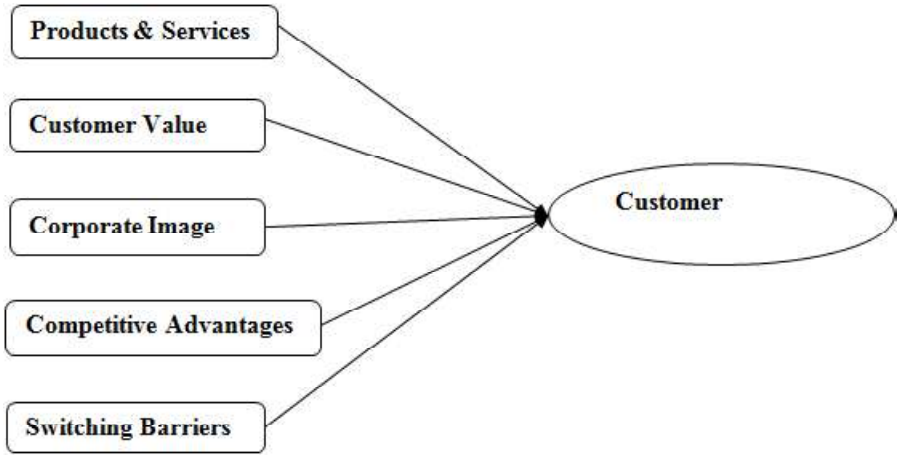

Fig. 1: Customer Retention Model

Methods

The study used banking customers as research participants to develop the model to customer retention of Indian banking industry. The banks identified for the study were located in Sivakasi, a industrial town of south Tamil Nadu, India.

Selection of Banks

There are 16 public sector banks and 12 private sector banks having branch at Sivakasi. The researcher decided to carry out this research with 10 bank branches, 5 from public sector and 5 from private sector. The sample bank branches are selected by using lottery method. The selected bank branches are:

Sector	Banks
Public Sector	1. Canara Bank
	2. Indian Overseas Bank
	3. UCO Bank
	4. State Bank of India
	5. Syndicate Bank
Private Sector	1. Tamilnad Mercantile Bank
	2. ICICI
	3. Lakshmi Vilas Bank
	4. Axis Bank
	5. South Indian Bank

A draft schedule for data collection was prepared on the basis of review of literature and the knowledge of the researchers. The schedule consists of the information relating to socio economic and banking profile of the sample respondents and the statements of factors of retention. There are 41 statements under 5 factors in schedule. Then the schedule was piloted with 25 different respondents to measure the content of the schedule. The schedule has been modified according to the suggestions drawn by the piloted respondents. Finally a full-fledged interview schedule was designed for data collection.

As the banks refused to provide the number and details of customers in the banks in Sivakasi, the study was carried out with samples. Sampling is the process of selecting respondents from the target population (Mugenda, 2008). As the population size is not known by the researchers, it is decided to make the study with appropriate sample size. The appropriateness of size of sample is decided as 200, it is based on the literatures. The sample respondents are identified by counter visit of the researchers giving equal proportion to all the sample branches of the banks in the study area i.e. 20 customers per bank branch.

Measurement of Variables

The measures for customer retention strategy in the present paper were adopted from various previous literatures. In the present paper customer retention consists of five dimensions like products and services, customer value, corporate image, competitive advantages, switching barriers. Each dimension has secured some number of statements viz., the first dimension consists 14 statements, second dimension consists 9 statements, third dimension consists 7 statements, fourth dimension consists 5 statements and the last dimension consists 6 statements totaling 41 statements. To secure the total score for the respondents five points are given for strongly agree, four points are agree, three points for no opinion, two points for disagree and one point for strongly disagree responses.

Reliability Analysis

Cronbach's Alpha is the most common measure of internal consistency. It is most commonly used when there are multiple Likert questions in a survey that from a scale can be tested through this test. A general rule for measuring reliability is that Alpha above 0.70 is considered as reliable. Alpha value between 0.60 and 0.70 is probably reliable and Alpha below 0.60 is considered not reliable (Nunnally, 1978).

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is a technique within factor analysis whose overarching goal is to identify the underlying relationships between measured variables (*Norris, et al 2009).* EFA assumes that any indicator/measured variable may be associated with any factor. When developing a scale, researchers should use EFA first before moving on to confirmatory factor analysis (*Worthington, et al, 2006).*

Confirmatory Factor Analysis

In confirmatory factor analysis, researchers can identify the number of factors required in the data and which measured variable is connected to which latent variable. Confirmatory Factor Analysis (CFA) is a tool that is used to confirm or reject the measurement theory (Kline, R. B. 2010).

Pooled Confirmatory Factor Analysis

This method (Pooled CFA) combines all latent constructs in one measurement model and performs the CFA at once. The item deletion practice and model re-specification are made as common. This method is more preferred since it could deal with the issue of identification predicament. Once the CFA procedure for each measurement model is completed, need to work out other remaining measures which are a sign of the validity and reliability of the measurement model and abridge them.

Table 1: Reliability statistics

Constructs	Cronbach's alpha
Products and Services (11 items)	0.846
Customer Value (9 items)	0.812
Corporate Image (7 items)	0.658
Competitive Advantage (5 items)	0.574
Switching Barriers (5 items)	0.795

Source: SPSS output

It is evident form Table 1 that the reliability statistics or an alpha for the five different constructs were computed using the reliability procedure in SPSS 19. The reliabilities of all the constructs used in this study are found as the above said standard set by Nunnally (1978), i.e. 0.60. Therefore the researchers came to the result that all the statements in constructs are reliable.

KMO and Bartlett's Test

Table 2 shows KMO measure and of sampling adequacy Bartlett's test of sphericity.

Table 2: KMO and bartlett's test for customer retention strategies in banks

Kaiser-Meyer-Olkin Measure of Sampling Adequacy				
Products and Services	Customer Value	Corporate Image	Competitive Advantage	Switching Barriers
0.803	0.782	0.642	0.587	0.795

Source: SPSS output

The KMO measures the sampling adequacy, which determines if the responses given with the sample are adequate or not and which should be close than 0.5 for a satisfactory factor analysis to proceed. Kaiser (1974) recommend 0.5 (value for KMO) as minimum, values between 0.7-0.8 acceptable, and values above 0.9 are highly acceptable. The KMO measure for products and services is 0.803, customer value is 0.782, corporate image is 0.642, competitive advantage is 0.587 and switching barriers KMO measure is 0.795. All the factors have acceptable range except fourth factor as minimum.

Exploratory Factor Analysis

The rotated factor matrixes for the variables relating to the factor which influence most in the customer retention strategies of the banks are given in Table 3. In the present study, the principal factor analysis method with Orthogonal Varimax Rotation is used to identify the significant set of factors for the customer retention strategies.

The rotated component matrix for the customer retention strategies is analyzed by using factor analysis, the 'products and services' factor has been extracted with 11 variables, the 'customer value' factor has been extracted with 8 variables, the third factor 'corporate image' has been extracted with 7 variables, the 'competitive advantage' factor has been extracted with 5 variables and the last factor 'switching barriers' has been extracted into 5 variables. Further, all the five factors of rotated component matrix statements have been used in

confirmatory factor analysis to measure the validity of the components of the model.

Table 3: Rotated component matrix for customer retention strategies in banks

Factor Loadings									
Products and Services		Customer Value		Corporate Image		Competitive Advantage		Switching Barriers	
P&S 14	.800	CV 8	.864	CI 6	.830	CA 4	.794	SB 5	.862
P&S 12	.759	CV 9	.860	CI 5	.818	CA 3	.725	SB 4	.858
P&S 13	.747	CV 7	.791	CI 7	.772	CA 5	.688	SB 6	.637
P&S 10	.578	CV 6	.618	CI 4	.821	CA 1	.837	SB 2	.865
P&S 7	.852	CV 5	.527	CI 3	.797	CA 2	.834	SB 3	.732
P&S 6	.800	CV 3	.828	CI 1	.841				
P&S 5	.569	CV 2	.758	CI 2	.691				
P&S 9	.824	CV 1	.745						
P&S 11	.664								
P&S 4	.767								
P&S 8	.686								

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Confirmatory Factor Analysis

Confirmatory factor analysis has used to determine the data validity of the five components of customer retention strategy of commercial banks. The models have strong fit. The confirmatory factor analysis (CFA) results showed that all the 36 items were accepted and their factor loadings are more than 0.40. This suggests that the items correlated significantly to the factor itself with factor loadings ranging more than 0.30 (Hair et al, 2006). The first dimension Products and Services of customer retention CFA model is shown in Figure 2.

Table 4: Fit indices of products and services

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	TLI	RMSEA
67.192	32	2.100	.946	.890	.956	.924	.074

Source: AMOS Text output

Note: DF = Degree of Freedom, CMIN = chi-square fit statistics, GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, RMSEA = Root Mean Square Error Approximation, TLI = Tucker Lewis Index, CFI = Comparative Fit Index.

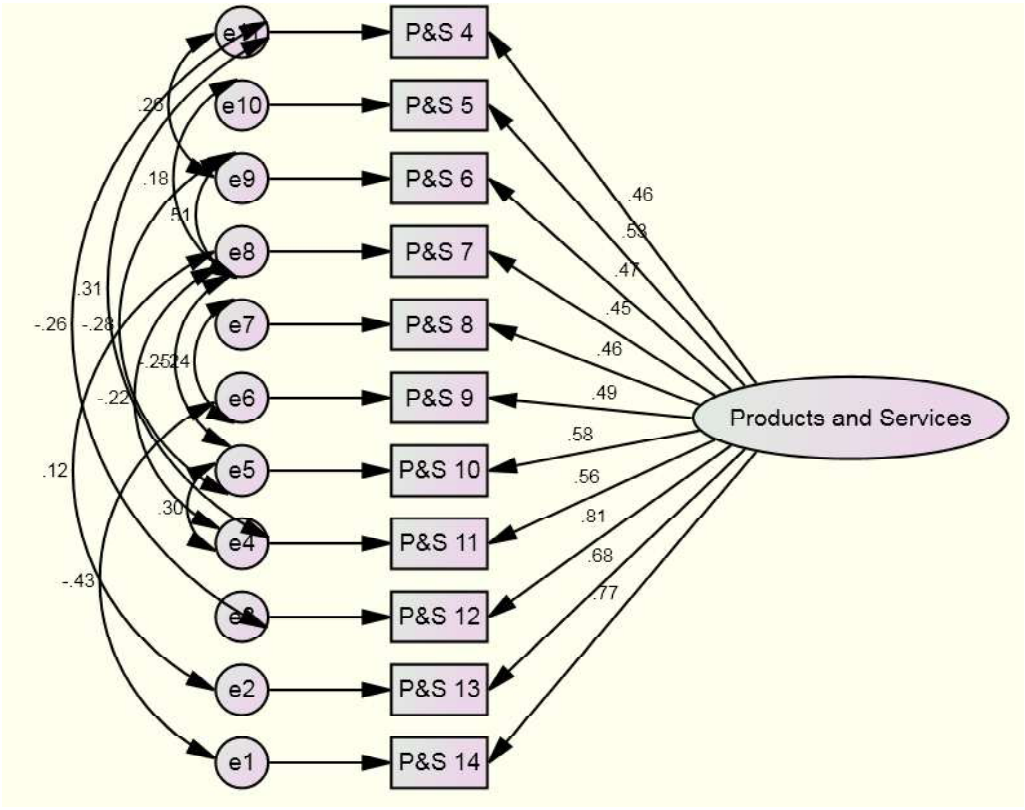

Fig. 2: CFA Model for Products and Services dimension

In Table 4, the first component results indicated by GFI=0.946, AGFI=0.890, TLI=0.924, CFI=0.956, CMIN=2.100 and RMSEA=0.074. The fit indices values are higher than the threshold values suggested by Hair et al (1998). Moreover, the most widely used CMIN/Df measure, with a value of 2.100 also suggests a very good fit (Saed Adnan Mustafa et al, 2012). The CFA model for customer value has shown in Figure 3.

Table 5: Fit indices of customer value

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	TLI	RMSEA
26.260	11	2.387	.968	.896	.973	.930	.080

Source: AMOS Text output

As it can be seen from Table 5, goodness of fit of the second dimension model of customer retention indicated reasonable fit of the fit indices. RMSEA value is 0.080 and CMIN/DF value is 2.387 which is less than 3. The GFI, AGFI, CFI and TLI fit indices are good fit as per suggested fit index. Figure 4 prove that the CFA model for corporate image.

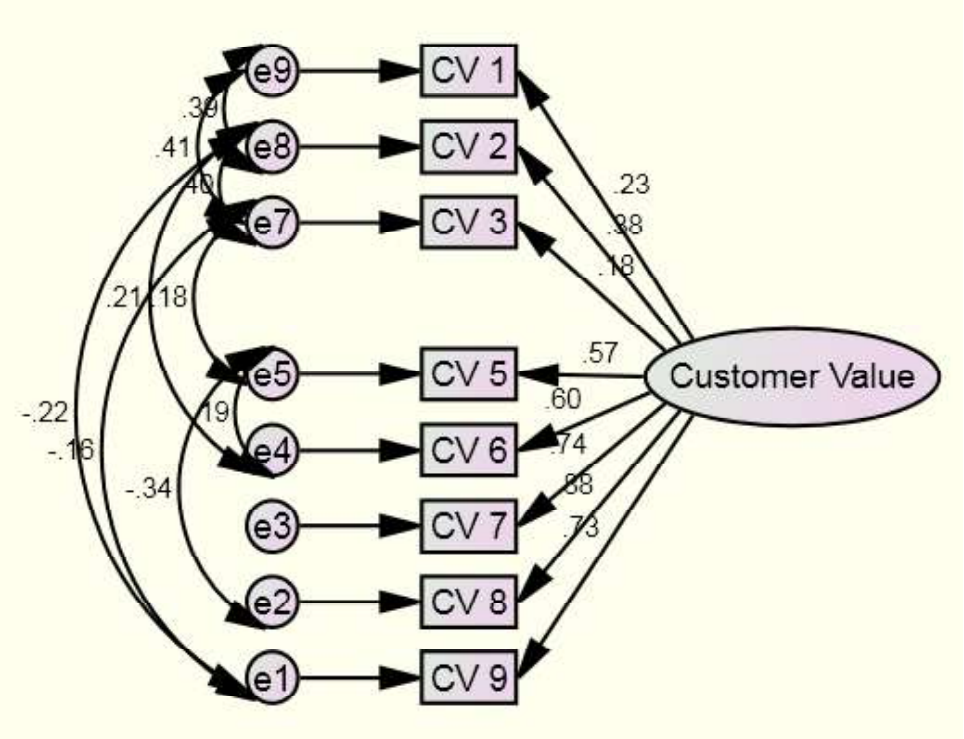

Fig. 3: CFA model for customer value dimension

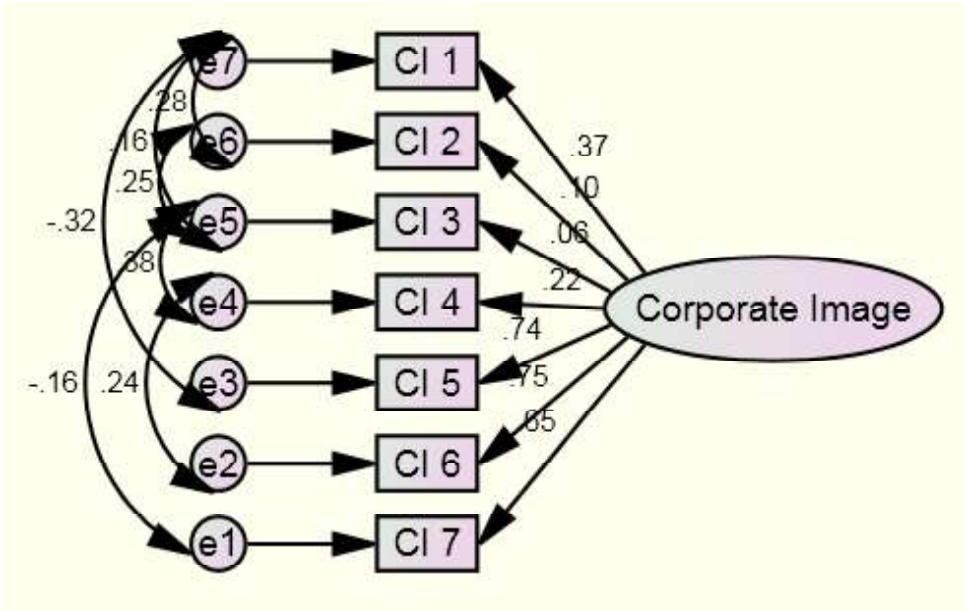

Fig. 4: CFA model for corporate image

Table 6: Fit indices of corporate image

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	TLI	RMSEA
14.873	7	2.125	.979	.915	.971	.913	.075

Source: AMOS Text output

Table 6 shows that the CFA value for corporate image is, GFI=0.979, AGFI=.915, CFI=.971, TLI=.913 which are greater than the required value of 0.9. The CMIN=2.125 and RMSEA=0.075 which are less than the threshold value of 3.0 and 0.08 respectively. The third model of the customer retention also has a good fit.

The fourth dimension competitive advantages CFA results are, GFI=0.999, AGFI=0.989, CFI=1.00, CMIN=0.368 and RMSEA=0.001. It can also be demonstrate in the format of figure 5 and Table 7. The Figure 5 represents the competitive advantages dimension of customer retention in banks.

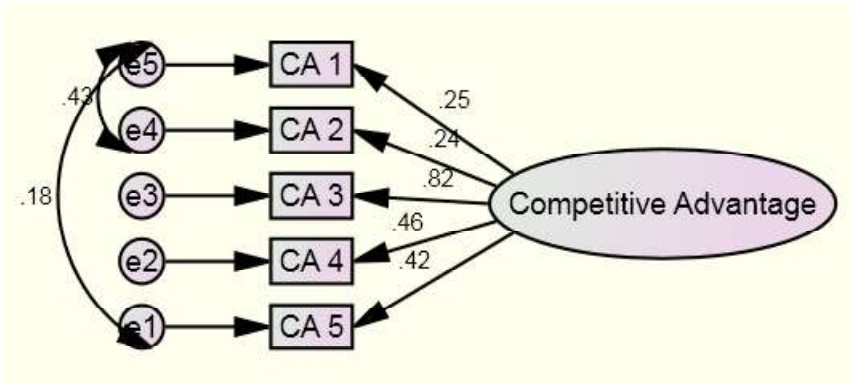

Fig. 5: CFA model for competitive advantage

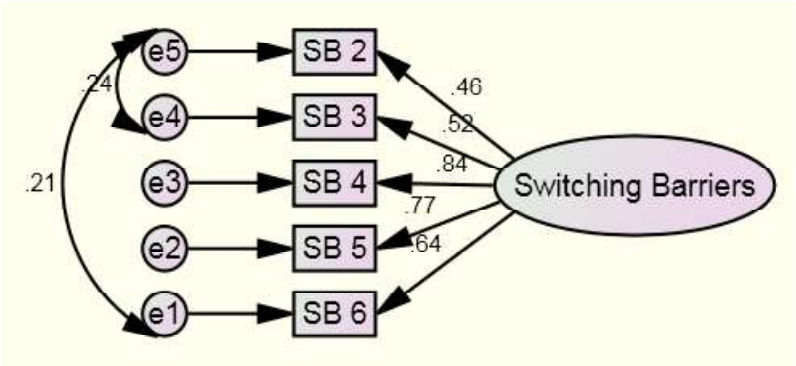

Fig. 6: CFA model for switching barriers

Table 7: Fit indices of competitive advantage

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	RMSEA
.735	2	.368	.999	.989	1.000	0.001

Source: AMOS Text output

The last individual dimension of the customer retention strategy is switching barriers. It could be seen in Figure 6.

Table 8: Fit indices of switching barriers

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	RMSEA
1.208	3	.403	.998	.988	1.000	0.001

Source: AMOS Text output

Table 8, indicates that the GFI=0.998, AGFI=0.988, CFI=1.000, CMIN=0.403 and RMSEA=0.001. This dimension also fit for the threshold value. After model measurement and proven, the last step of the analysis i.e. pooled confirmatory factor analysis has been applied. It shows the all the individual model as converted to a structural model. It can be seen in Figure 7 and its results are shown in Table 9.

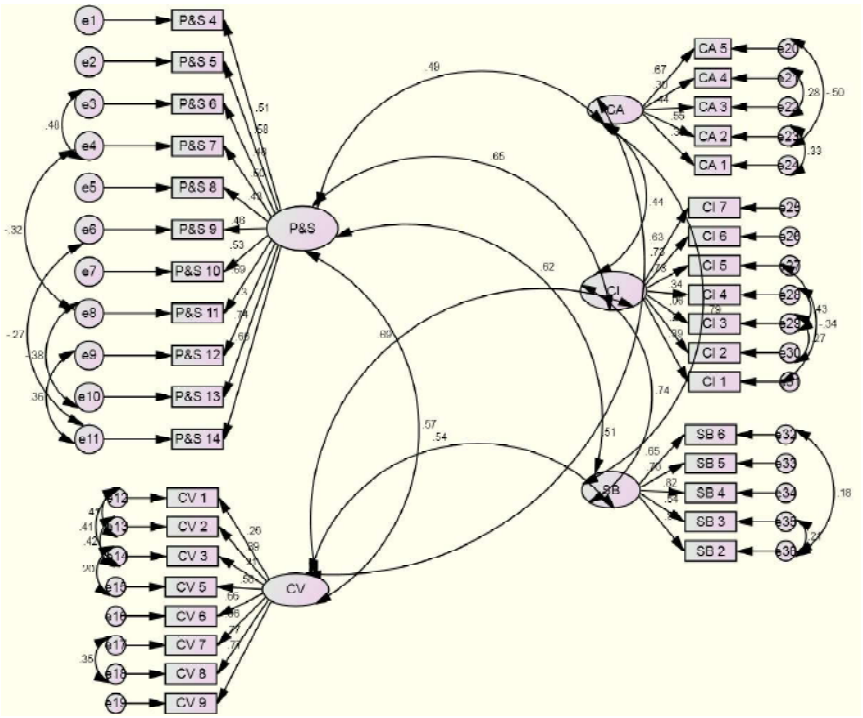

Fig. 7: Structural (pooled CFA) model for customer retention

Table 9: Fit indices of structural model

CMIN	Df	CMIN/Df	GFI	AGFI	CFI	TLI	RMSEA
2240.733	566	3.959	.954	.935	0.921	.966	.072

Source: AMOS Text output

As it can be seen from Table 9, Goodness of fit of the final structural model indicated "reasonable or good fit" or RMSEA=0.072. Hair et al., (2009) recommended 0.05<RMSEA<0.08 is for good fit. In this study, CFI (Comparative Fit Index) = 0.966 demonstrates reasonable fit of this study. Hu and Bentler (1999) suggested that a rule of thumb for the CFI and the incremental fit indexes is that values greater than roughly 0.90 may indicate reasonably good fit of the researcher's model. The GFI was the first standardized fit index (Joreakog and Sorbom, 1999). GFI=1.00 indicates faultless model fit. Therefore, a GFI=0.954 be a sign of reasonably good fit of the researcher's model in this study. The AGFI of 0.935 indicate reasonably good fit of the customer retention model. The NNFI (Non-normed fit index) or TLI (Tucker Lewis Index) has been recommended by Bentler and Bonett (1980). It is the value of 0.90 or better for good fit. Thus, a TLI=0.921 for this study implies fine fit. From the above goodness of fit index or evaluation, confirmatory factor analysis for the final measurement reasonably supported the customer retention model fit.

Conclusion

The study indicates that products and services, customer value, corporate image, competitive advantage and switching barriers are the important factors that can boost the customer retention in banks. This research can be simulated in the same manner with a large sample size. Although the pooled CFA provides a good fit to the model, future research could use a different design to examine the Structural Equation Modeling (SEM).

REFERENCES

Barrack Otieno Ouma (2013). Organizational customers' retention strategies on customer satisfaction: Case of equity bank Thika Branch, Kenya, *Research Journal of Finance and Accounting*, *4*(10), 8-16.

Bentler, P.M. and Bonnet, D.C. (1980). Significance tests and goodness of fit in the analysis of covariance structures, *Psychological Bulletin*, *88*(3), 588-606.

Brennant, C., and Ritch, E. (2010). Capturing the voice of older consumers in relation to financial products and services, *International Journal of Consumer Studies*, *34*(2), 212-218.

David Cohen, Christopher Gan, Hua Hwa Au Yong and Esther Choong (2006). Customer satisfaction: a study of bank customer retention in New Zealand, Discussion Paper No. 109.

Doucouliagos, C., and Stanley, T. (2013). Are all economic facts greatly exaggerated? theory competition and selectivity. *Journal of Economic Surveys*, *27*(2), 316-339.

Du Plessis, L. (2010). Customer relationship management and its influence on customer loyalty at Liberty Life in South Africa, University of Johannesburg.

Emmah Kemunto Mecha, Ogutu Martin and Sixtus Momanyi Ondieki (2015). Effectiveness of customer retention strategies: A case of commercial banks, Kenya, *International Journal of Business and Management*, *10*(10), 270 – 275.

Gautam, V. (2012). An empirical study on financial products offered by indian retail banks to assess the relationship between sale promotions, Time to Reward Receipt,and Customer Preference, *Journal of Relationship Marketing*, *11*(4), 233-247.

Gopaal, E.G. (2007). *Marketing and Business Management* (3rd ed.) England: Colleen publishers' ltd.

Gupta, S., Hanssens, D., Hardie, B., Kahn, W., Kumar, V., Lin, N., Sriram, S. (2006). Modeling customer lifetime value, *Journal of Service Research, 9*(2), 139-155.

Hair, J., Anderson, R., Tatham, R.L., & Black, W.C. (1998). *Multivariate data analysis* (5th ed.) NJ: Upper Saddle River, Prentice-Hall.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). *Multivariate Data Analysis* (6th ed.) Prentice Hall.

Hair, Joseph F., et al. (2009). *Multivariate Data Analysis: A Global Perspective* (7th ed.), Upper Saddle River: Prentice Hall.

Hu & Bentler (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives, *Structural Equation Modeling*, 6, 1-55.

Ismail, H. B., and Panni, M. K. (2009). Factors affecting customer retention toward internet banking in Malaysia. *Journal of Information and Knowledge Management*, *8*(1), 35-43.

Janet C. Siele & Willy Muturi, (2016), Financial factors affecting customer retention in commercial banks in Kenya: A case of commercial banks in thika town, Kenya, *2* (4), 459-474.

Joreskog, K. and Sorbom, D. (1996). AMOS 18: User's Reference Guide. Chicago, IL: Scientific Software International Inc.

Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.) New York: Guilford Press.

Melam Zangmo, Wasin Liampreecha and Sujinda Chemsripong (2014). The influencing factors of customer retention in airline industry: A case of drunkair royal Bhutan airlines, *Asia Business and Ecconomics Journal*, *2*(1), 84 – 92.

Msoka Caroline and Msoka Elizabeth. (2014). Determinants of customer retention in commercial banks in Tanzania, *Journal of Finance and Bank Management,* 2(1), 9-30.

Mugambi, M.N. and Kagiri, A.W. (2015). Effects of customer retention strategy on performance of commercial banks in Kenya, *International Journal of Science and Research (IJSR), 4*(6), 44-49.

Mutegi Nicholas Mugambi, Assumptah W. Kagiri (2013). Effects of customer retention strategy on performance of commercial banks in Kenya, *International Journal of Science and Research*, *4*(6), 44 – 49.

Nadia Gouws (2012). Identifying factors that influence customer retention in a South African retail banks, Dissertation, 1-86.

Ng'ok Michael Kiprotich, Erustus Thoronjo (2015). An evaluation of customer retention stratgies in enhancing market share growth listed commercial banks in Nakuru country, *International Journal of Innovative Research and Development*, *4*(5), 43-52.

Norris, Megan and Lecavalier, Luc (2009). Evaluating the use of exploratory factor analysis in developmental disability psychological research, *Journal of Autism and Developmental Disorders*, 40(1), 8–20.

Nunnally J.C. (1988). *Psychometric Theory*, McGraw-Hill: Englewood Cliffs, New Jersey.

Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Petzer D.J., Steyn T.F.J. and Mostert P.G. (2009). Customer retention practices of small, medium and large hotels in South Africa: An exploratory study, *African Journal of Marketing Management*, *1*(1), 32-42.

Ranjeet Chitale, (2009). *Statistical and Quantitative Methods* (10th ed.), Nirali Prakashan, Pune.

Rootman, C., Tait M and Sharp, G. (2011). Relationship marketing and customer retention lessons for South African Banks, *Southern Africa Business Review*, *15* (3), 184-206.

Rupali Madan, Rachna Agrawal and Mitu G Matta (2015). Relationship marketing strategies in banking sector: A Review, *International Journal of BRIC Business Research*, *4* (4), 1-10.

Saed Adnan Mustafa, Abdul Rahim Othman and Selvan Perumal (2012). Corporate social responsibility and company performance in the Malaysian Context, *International Congress on Interdisciplinary Business and Social Science, Procedia - Social and Behavioral Sciences*, 897 – 905.

Sundaresalingam P and Charanya M (2012). A study on customer retention at canara bank, *IJEMR*, *2*(1), 1-7.

Winston A.I. (2013). Factors that impacted customer retention of banks, a study of recently acquired banks in the UPSA area of madina, Accra (specially access bank), *Journal of Marketing and Consumer Research,* 1, 88-103.

Worthington, Roger L. Whittaker, Tiffany A J. (2006). Scale development research: A content analysis and recommendations for best practices. The Counseling Psychologist, *34(6), 806–838.*

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Ascertaining Consumers' Perceptual Divergences towards the Construct of Brand Personality: Indian Corroborations

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Abstract: The study aims to ascertain the brand personality of OnePlus by adopting the Brand Personality Scale (BPS) put forward by Geuens et al. (2009). The scale encompasses a penta-dimensional framework of brand personality, namely, "responsibility", "activity", "aggressiveness", "simplicity" and "emotionality", which are measured in the Indian milieu. Results highlighted that two items were not applicable for the brand personality construct of OnePlus smartphones among urban upper middle-class respondents in India. They were 'down-to-earth' and 'ordinary'. This implies that customers or users of OnePlus smartphones do not perceive their handsets to be ordinary or down-to-earth. The items were subjected to CFA, which was run thrice until the ideal values of the model fit indices were achieved. In each model of CFA that was executed, the discrepancies between the purported and estimated models of brand personality (standardized residual covariances) was verified, and the corresponding item with discrepancy was removed, based on the results. Accordingly, the revised Brand Personality Scale, comprising of ten attributes, appears to be more appropriate, at any rate, in the Indian context. The undertaken research is shown to support regular dimensions of culture (emic perspective) in the Indian milieu.

Keywords: *Brand personality*; *OnePlus*; *brand personality scale*; *down-to-earth*

Introduction

The past few decades have borne testimony to voluminous research being focussed on consumers and their perception towards the construct of brand personality (Aaker, 1997; Davis, 2000; Silverstein & Fiske, 2005; Sung & Tinkham, 2005; Pydde, 2008; Güse, 2011; Srivastava & Sharma, 2016). Brand personality, as a construct, has been used to comprehend the emotional and symbolic connotations correlated by consumers with the level of involvement with their preferred brands. This, consequently, helps marketers design more apposite and effective marketing strategies (Jansson, 2013). From the perspective of

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consumers, brands may be identified as an arrangement of mental associations and perceptions (Kapferer, 2008; Guthrie & Kim, 2009; Ridgway, 2011; Goh et al., 2013). These diverse forms of spoken, graphical, or circumstantial information are retained in the minds of consumers and augment their perceived value of the product offerings (Keller, 1998). They eventually develop specific brand perceptions, which are pillared on the versatile marketing initiatives adopted by the business enterprise in addition to the trysts experienced by individuals with the brand (Romaniuk & Nicholls, 2006; Sahin et al., 2011; Rudinski, 2016). These perceptions happen to induce psychological progressions in the minds of end users, thereby yielding cognitive-emotional upshots (Bhat & Reddy, 1998; O'Shaughnessy & O'Shaughnessy, 2003). For consumers, brands may serve a diverse range of purposes. They may, for instance, proffer a distinct point of reference or warrant an explicit standard of quality.

Personalities attributed to brands result in the creation of a distinguishing identity for the brand, which can make consumers seek the brand even more. This has triggered greater zeal among branding researchers to probe into the strategic significance of the personality interrelated with a given brand. Aaker (1997) defined brand personality as "the set of human characteristics or traits that consumers attribute to or associate with a brand". Such correlation may encompass various demographic variables, lifestyle determinants and miscellaneous facets of personality. From the perspective of ascertaining the accomplishment of a brand, brand Personality as been observed to be a vital factor in the context of preferences and choice towards given brands (Batra et al., 1993). Brand personality, which has been defined robustly, can engender emotional connection with the brand, which brings about superior levels of conviction and loyalty (Siguaw et al, 1999; Johnson et al., 2000).

Aaker (1997) conceived a strong measurement scale to assess the personality of manifold brands, clustered within four 'brand groups', each comprising of a similar profile of brands. The brand personality scale (BPS) has hence been replicated in multiple cultures to measure consumers' the representational trajectories of consumption and their behavioural upshots. Aaker's personality scale, nonetheless, has been disapproved by more than a few authors in the past, citing several key reasons for warranting the criticism. For example, the study is pillared on a rather ambiguous definition of brand personality, which failed to encompass demographic parameters such as age and gender, and merely focussed on the personality construct (Azoulay & Kapferer, 2003; Bosnjak et al., 2007; Malik & Naeem, 2013). This triggers a difficulty of construct validity as it is unclear what is exactly being studied— perception of brand personality (which is largely a consumer-centric construct) or the perception of consumer traits (which is predominantly a marketer-driven construct). Geuens et al.'s (2009), in contrast, designed a measure of brand personality, encompassing five factors

and twelve items, which included no more than personality traits and when weighed against Aaker's (1997) framework, indicated greater similarity with reference to the 'Big Five' personality framework. Their study indicated high repeatability and cross-cultural validity, in USA along with several other European countries, such as France, Italy, Netherlands, Switzerland, among others.

The current study works toward \addressing the dominant issue of whether the results of the study conducted in a rather Western-dominant setting can be transposable to a different cultural setting, in this case, being India. Based on this observation, the current study shall adopt the measure of brand personality conceived by Geuens et al.'s (2009), as a basis to observe whether Indian consumers envisage and comprehend the personality traits of the OnePlus brand of smartphones in the same way as the other cultures have studied. The rationale behind the selection of the OnePlus brand is that it leads the premium segment of smartphones in India (43 percent market share), based on the report published by global industry analysis firm, Counterpoint Research (2019, July). This has been the primary motivation behind the selection of the brand, as well as the study.

Review of Literature

Erstwhile studies on brand personality is not as abounding and extensive as the literature that is available on brands itself; although brand personality has gained popularity as a research domain for over five decades. For instance, Martineau (1958) suggested that consumers and manufactures alike, have been fascinated by the concept of brand personality even in the 18th century.

Personality is one of the principal constructs, which give meaning to individual perceptions and behaviour (Sojka & Giese, 2001; Letzring, 2008; Akýn, 2011; Zhang et al., 2011). Research on the construct of personality has been a primordial undertaking for researchers across the realm of psychology, predominantly owing to the undeviating relevance of personality in the context of determining various behavioural constructs (Almlund et al., 2011; Ahmad & Thyagaraj, 2015), marketing and consumer behaviour (Dholakia, 1997; Freling & Forbes, 2005 Vainikka, 2015; Udo-Imeh, 2015). The era of active studies on brand personality may be attributed to the 1960s when researchers began arguing about the existence of personality traits even among product categories and brands, just like those observed among human beings (Birdwell, 1968; Eysenck, 1965; Nuttin, 1969; Dolich, 1969). Brand personality soon came to be observed as a potential implement of differentiation and brand equity to marketers and is validated even in contemporary cross-cultural studies (Batra et al., 1993; Goldsmith & Goldsmith, 2012; Seimiene & Kamarauskaiteb, 2014; Gorbaniuk et al., 2015). Research on brand personality took a major leap forward when Aaker (1997)

proposed a definition of brand personality as "a collection of human traits related to a brand." A 42-item inventory was developed, which was grouped into a penta-dimensional personality framework, viz. "sincerity", "excitement", "competence", "sophistication" and "ruggedness". This opened the doors to subsequent researches and delineations of brand personality. Brand personality has also been conceptualized as "an arrangement of human personality traits that are both appropriate for and germane to brands" (Azoulay & Kapferer, 2003).

In the course of the past years, the brand personality framework advanced by Aaker (1997) has probably garnered the maximum interest among academicians, as evidenced by its extensive adoption in brand personality researches conducted across multiple cultural settings (Azoulay & Kapferer, 2003; Parker, 2009). Sweeney and Brandon (2006) grounded their study on the circumplex model of interpersonal problems and outlined brand personality to be the assemblage of various traits of human personality, which epitomize the relational ambit of human personality and pertinently delineate the brand as a reliable relationship companion. Such divergences in brand personality definitions arise because of the desire of the researchers to make the model crisper and binding. Aaker's scale, however, has seen disapproval at several levels. In 2009, Geuens, Weijters, and De Wulf advanced an updated brand personality framework with only 12 personality items, instead of the original 42 item-scale. The five dimensions, as identified in their study were "responsibility", "activity", "aggressiveness", "simplicity" and "emotionality". Their study overcame some of the major limitations of Aaker's (1997) scale. In fact, both 1997 and 2009 studies on brand personality measures were pillared on the "Big Five" human personality model (Tupes and Christal, 1958; Norman, 1963; McCrae and John, 1992). The major differences between the brand personality frameworks developed in the two studies have been encapsulated in Table 1:

There are quite a few significant gaps in literature, in the context of brand personality research. First, unlike Aaker's study, there are a handful of studies, which have tested the validity of Geuens et al.'s scale (Alpatova, 2011; Goldsmith and Goldsmith, 2012). More importantly, smartphones and consumer electronics have not been studied adequately by previous researchers. The current undertaking is thus a preliminary-level study, which seeks to validate, if the new-fangled BPS is relevant in the case of OnePlus smartphones in the Indian context.

Methodology

The current study primarily aims to probe into the meaningful associations and perceptual cues of Indian consumers towards brand personality traits of the

Table 1: Comparison of differences in brand personality frameworks of Aaker (1997) and Geuens et al. (2009)

Author	Theoretical Foundations	Major Strengths	Criticisms	Cross-Cultural Validity
Aaker (1997)	Pillared on the "Big Five personality framework", brand personality is understood as "a set of human characteristics associated with a brand."	The study has a robust theoretical backdrop, as it was the foremost logical and consistent scale to be advanced for quantifying brand personality.	The explanation of brand personality is largely left, ambiguous and encompasses various extraneous dimensions of brand identity. She has also considered only the positive attributes of brand personality in her study.	It is not established as multiple researchers have adopted the scale to varying conclusions.
Geuens et al. (2009)	It is similarly pillared on the Big Five dimensions and used the definition of brand personality proposed by Azoulay and Kapferer (2003)	Brand personality is confined to individual personality attributes that are pertinent to multiple brands, distinct products at the precise point of the brand.	The study has a European flavour, in that the validity and reliability were studied extensively in Belgium and nine other European countries. Another major limitation is that the researchers have relied less on theory in selecting and retaining items, due to which there is now a high probability of deleting valid and meaningful items simply because they did not load onto the existing factors.	The study has been observed to be valid in the European and U.S. consumer markets.

OnePlus brand of smartphones. To this end, the study has implemented Geuens et al.'s (2009) novel framework of brand personality. Expressly, the study seeks to investigate whether the penta-dimensional brand personality framework of OnePlus, as identified in the study, namely "Responsibility" (comprising of items such as "down-to-earth", "stable" and "responsible"), "Activity" (encompassing items such as "active", "dynamic" and "innovative"), "Aggressiveness" (covering items such as "aggressive" and "simple"), "Simplicity" (enveloping components such as "ordinary" and "simple") and "Emotionality" (embracing items such as "romantic" and "sentimental"), are validated in the Indian context or not. In addition to measuring the brand personality of OnePlus smartphones, the study also seeks to identify and establish the demographic profile of OnePlus smartphone users in India.

Brand Selection

The brand focussed in the present study is OnePlus, a Chinese smartphone manufacturer. As of December 2019, OnePlus happens to be the fourth biggest premium-segment smartphone brand across the world. According to a recent research report published by global industry analysis firm, Counterpoint Research (2019, July), OnePlus boasts of attaining the highest market share in the premium smartphone category in India. In mid-2019, OnePlus captured its highest market share of 43 percent (in terms of volume of shipments) in India to evolve as the leader in the premium segment (exceeding INR 30,000) in India. This massive growth was pillared on the sales spike of the flagship OnePlus 7 series of smartphones. In this context, Samsung dived to the second spot in the premium category of smartphones, embracing 22 percent market share with year-on-year sales volumes plunging by16 percent (Mukherjee, 2019). This has been the mainspring for the selection of the OnePlus brand, in the backdrop of the current research. Agarwal (2019) has observed that India has played a fundamental role in steering global accomplishment of the smartphone brand. The premium segment of smartphones has witnessed a growth rate of 18 percent since 2017, and such growth has been steered fundamentally by first-time purchasers of premium smartphones. The current study shall consider the entire range of smartphones offered by the OnePlus brand, namely, "OnePlus 3T", "OnePlus 5", "OnePlus 5T", "OnePlus 6", "OnePlus 6T", "OnePlus 7", "OnePlus 7 Pro", "OnePlus 7T" and "OnePlus 7T Pro".

Sample

The study was executed among a conveniently chosen sample of 368 young participants from select metropolitan cities across India. The cities included in the study are Kolkata (n=134; 36.4 percent), New Delhi (n=104; 28.3 percent), Chennai (n=51; 13.9 percent); Bengaluru (n=41; 11.1 percent) and Mumbai (n=38;

10.3 percent). 65.8 percent (n=242) of the chosen sample were undergraduate students, while 34.2 percent (n=126) were postgraduate students, affiliated to various premier colleges and universities across India. 48.1 percent (n=177) of the chosen participants were male, while 51.9 percent (n=191) were female. The participants in the study were all within the age range of 17 and 28, with the majority being aged between 18 and 22 (n=157; 69.9 percent), followed by those aged 23 and above (n=95; 25.8 percent) and those aged below 18 (n=16; 4.3 percent). The study also revealed that 91.3 percent of the participants (n=336) were active and current users of OnePlus smartphones, and 8.7 percent of the participants (n=32) had used at least one OnePlus smartphone in the recent past but are no longer current users of the brand. 39.4 percent of the participants (n=145) claimed that they used a different brand (Samsung being the most used; 45.5 percent) along with OnePlus smartphones. The study also pointed out that 86.9 percent of the 336 participants (n=292), who were using only OnePlus smartphones were using it for more than 36 months, suggesting that most of them had a moderately clear understanding of the OnePlus brand of smartphones. The demographic sketch of respondents has been illustrated in Table 2.

Table 2: Demographic sketch of participants

Defining Element	Classification	Frequency	Valid Percentage
OnePlus Smart phone Model Used	"OnePlus 3T"	11	0.03
	"OnePlus 5"	14	0.04
	"OnePlus 5T"	47	0.13
	"OnePlus 6"	44	0.12
	"OnePlus 6T"	53	0.14
	"OnePlus 7"	87	0.24
	"OnePlus 7 Pro"	64	0.17
	"OnePlus 7T"	27	0.07
	"OnePlus 7T Pro"	21	0.06
	Total	368	1.00
Metropolitan City of Residence	Kolkata	134	0.36
	New Delhi	104	0.28
	Chennai	51	0.14
	Bengaluru	41	0.11
	Mumbai	38	0.10
	Total	368	1.00
Age	Below 18	16	0.04
	18-22	257	0.70
	23 and above	95	0.26
	Total	368	1.00
Gender	Male	177	0.48
	Female	191	0.52
	Total	368	1.00

Contd...

Contd...

Educational Attainment	Undergraduate	242	0.66
	Postgraduate	126	0.34
	Total	368	1.00
Usage Status of One Plus	Active and current users	191	0.52
	Users in the past but not currently	32	0.09
	Users of other brands along with OnePlus	145	0.39
	Total	368	1.00

Source: Authors' own compilations based on field data collection

Research Instrument

To fulfil the purpose of data collection, a structured questionnaire was disseminated, comprising of twelve traits of brand personality. The questionnaire was segregated into a couple of segments. The initial segment of the structured questionnaire incorporated questions pertaining to demographic profiling of smartphone users such as the model(s) of smartphone used, frequency of purchase and duration of ownership. The second segment of the questionnaire comprised questions related to the 12 traits consistent with the penta-dimensional model of brand personality, namely "responsibility" (viz. "down-to-earth", "stable" and "responsible"), "activity" (viz. "active", "dynamic" and "innovative"), "aggressiveness" (viz. "aggressive" and "bold"), "simplicity" (viz. "ordinary" and "simple") and "emotionality" (viz. "romantic" and "sentimental"). These questions were arranged in a five-point scale ranging from "Highly Expressive" to "Least Expressive". The study was originally administered to 407 students, out of which only 368 complete and valid responses (valid completion rate of 90.4 percent) were considered in the final sample.

Statistical Techniques

Reliability analysis was first used to identify the adequacy of items, if any, in the new brand personality scale, which are not applicable for OnePlus brand of smartphones. The level of correlation among the personality items were analysed in terms of maximum correlation of items with each other, inter-item correlation, adjusted item-to-total correlation as well as test of internal reliability applying Cronbach's alpha, if item deleted. The results are illustrated in Table 3. Maximum correlations were used as a foundation to study the nature of association between the brand personality items in the current research undertaking. Subsequently, Exploratory Factor Analysis (EFA) was undertaken to highlight the problematic personality attributes that may prove to be irrelevant for the brand personality of OnePlus smartphones. The complete scale advocated by Geuens et al. (2009), with 5 dimensions and its 12 items (personality traits) were subjected to

Confirmatory Factor Analysis (CFA) to arrive at a concrete and statistically significant personality measurement model. The aim was to ascertain if the 12-item model is adequately in sync with the data in the current study or not. Items not loading satisfactorily and not resulting in model fit were isolated as items that are not valid in quantifying the brand personality of OnePlus smartphones in India.

Data Analysis

The data obtained from the respondents were initially tested for their reliability, followed by exploratory factor analysis as well as confirmatory factor analysis. Pillared on the results derived from the statistical tests, the personality items were either retained or deleted in the process of determining the validity of the new BPS in the context of OnePlus smartphones in India. The results emanating from the reliability analysis are illustrated in Table 3.

Table 3: Results from analysis of reliability

Item	Maximum Correlation with any other items in the Scale	Cronbach's Alpha (if item deleted)
Down-to-earth	0.285*	0.926
Stable	0.443	0.925
Responsible	0.412	0.925
Active	0.456	0.924
Dynamic	0.443	0.923
Innovative	0.479	0.924
Aggressive	0.429	0.922
Bold	0.403	0.926
Ordinary	0.224*	0.927
Simple	0.467	0.922
Romantic	0.552	0.925
Sentimental	0.427	0.923

*Values representing problem items

Source: Authors' own compilations based on field data collection

The least benchmark score for any personality items in the current study, to load on to the factor structure matrix is kept at 0.3 (Stewart et. al, 2001). Two of the items in the scale, namely, down-to-earth and ordinary, have values below the threshold value of 0.3. These items have not been deleted but have been highlighted at the current stage of analysis. The Cronbach's alpha value for the

brand personality scale of Geuens et al. is 0.928. Results indicate that none of the factors need to be deleted, although the two items, down-to-earth and ordinary are borderline cases. Since they are within the cut-off limit, they have not been deleted yet. A summarized version of the EFA results have been illustrated in Table 4.

Table 4: Summary of initial factor loading of items and results for convergent validity

Factor	Items	Initial Factor Loading	Item Loading Clearly on factor	AVE	CR
Responsibility	Down-to-earth	0.923	Yes	0.828	0.935
	Stable	0.912	Yes		
	Responsible	0.894	Yes		
Active	Active	0.976	Yes	0.870	0.953
	Dynamic	0.892	Yes		
	Innovative	0.929	Yes		
Aggressive	Aggressive	0.889	Yes	0.873	0.932
	Bold	0.978	Yes		
Simplicity	Ordinary	0.967	No	0.926	0.962
	Simple	0.958	Yes		
Emotionality	Romantic	0.981	Yes	0.952	0.975
	Sentimental	0.970	No		

Source: Authors' own compilations based on field data collection

The scale was eventually tested for its construct validity, in the light of two tests, namely, convergent and divergent validity. The convergent validity of the various items listed in the brand personality scale was appraised using the condition conceptualized by Fornell & Larcker (1981). Pillared on the established criteria, the standardized CFA loadings for all the items in the personality scale have overshot the lowest possible threshold value of 0.7, and the composite reliabilities of all factors have also exceeded the threshold value of 0.7. Additionally, the AVE scores have also been in excess of the threshold score of 0.5 (Hair et al, 2006). Thus, it may be stated that convergent validity has been established, given that all the three aforementioned criteria were accomplished by the established model.

Subsequently, the concept's divergent validity had been tested to ascertain whether the construct is indeed distinctive from an alternative one. The results of the discriminant analysis have been illustrated in Table 5.

Table 5: Results of divergent validity

Factor	Inter-Construct Correlations				
	Responsibility	Active	Aggressive	Simplicity	Emotionality
Responsibility	0.910				
Active	0.898	0.933			
Aggressive	0.839	0.908	0.934		
Simplicity	0.864	0.901	0.873	0.962	
Emotionality	0.873	0.882	0.828	0.891	0.976

Authors' own compilations based on field data collection

By contrasting the mutual variance amid components with the AVE from the discrete factors, discriminant validity was established (Fornell & Larcker, 1981). The analysis established that the maximum shared variance (MSV) in addition to the average shared variance (ASV) between factors did not exceed the AVE for the individual factors. The inter-construct correlations exceeded the value obtained from the square root of AVE. Hence, discriminant validity was established.

Next, confirmatory factor analysis was employed to assess the cogency of the 12 items. For the purpose of conducting SEM in the current study, a maximum likelihood procedure was used for the estimation, and the values of the miscellaneous fit items, such as CFI, SRMR, CMIN/DF, GFI, AGFI, NFI, CFI, RMSEA etc. were computed in order to establish the fallouts of the CFA. The cut-off scores for the indices were determined based on the study undertaken by Hair et al. (2010).

In the initial run of CFA, the two problem items were found to be down-to-earth and ordinary, having standard regression weights of 0.343 and 0.368 respectively. The items were not deleted in the initial CFA run, and hence, the model fit indices showed a very poor fit (CMIN/ DF: -3.212; CFI: -0.821; SRMR: 0.06; GFI: 0.38; AGFI: 0.21; NFI: 0.82; CFI: 0.54; RMSEA: -0.553). The items were deleted again but the model fit indices continued to exhibit a poor fit (CMIN/ DF: -1.212; CFI: 0.74; SRMR: 0.05; GFI: 0.55; AGFI: 0.64; NFI: 0.68; CFI: 0.78; RMSEA: -0.257). On the third iteration of the CFA run, the model fit indices were established. The standard regression weights of the selected items in the scale are also analysed (Stable: 0.732; Responsible: 0.701; Active: 0.698; Dynamic: 0.679; Innovative: 0.602; Aggressive: 0.620; Bold: 0.614; Simple: 0.722; Romantic: 0.723; Sentimental: 0.522). The model fit summary of the final run of CFA are illustrated in Table 6.

Table 6: Summary of model fit indices

Goodness of Measure Fit	Recommended Value	Actual Value of Measures	Result of Model Fit
CMIN/ DF	Between 1.00 and 3.00	1.212	Accepted/ Robust
CFI	e" 0.90	0.921	Accepted/ Robust
SRMR	d" 0.08	0.034	Accepted/ Robust
GFI	e" 0.90	0.967	Accepted/ Robust
AGFI	e" 0.90	0.932	Accepted/ Robust
NFI	e" 0.90	0.932	Accepted/ Robust
CFI	e" 0.90	0.912	Accepted/ Robust
RMSEA	d" 0.07	0.045	Accepted/ Robust

Source: Authors' own compilations based on field data collection

The model fit was established as the indices showed a good fit with the theoretical model (CMIN/ DF: 1.212; CFI: 0.921; SRMR: 0.034; GFI: 0.967; AGFI: 0.932; NFI: 0.932; CFI: 0.912; RMSEA: 0.045). However, this was subject to the deletion of two items, down-to-earth and ordinary, establishing the limited soundness of the scale. The final higher-order CFA model for brand personality is illustrated in Figure 1.

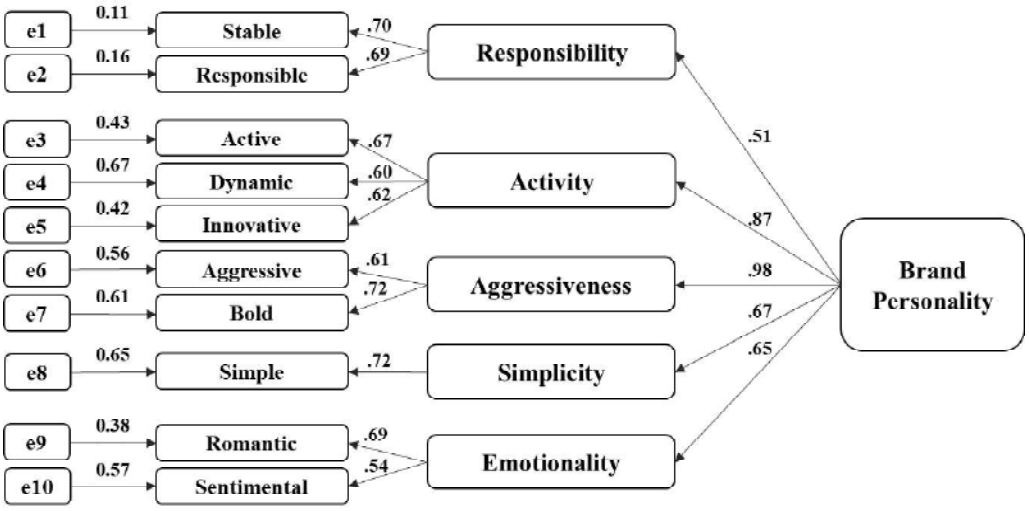

Figure 1: Higher Order CFA Model (Final) for Brand Personality

(Source: Authors' own compilations based on field data collection)

The figure represents the standardized loadings on the various items from the five factors. The model is shown to be robust when the responsibility factor is comprised only of 'stable' and 'responsible' items, and simplicity is comprised only of 'simple'. It may thus be stated that the BPS developed by Geuens et al. (2009) in its original form cannot be applicable for India in the context of premium smartphone brands, such as OnePlus.

Discussion

The current study has been an earnest attempt to assess the brand personality of OnePlus empirically, by means of the penta-dimensional scale pioneered by Geuens et al. (2009) for measuring the construct. The scale was applied in India for one definite brand: OnePlus smartphones in urban Indian markets. The results highlight that two items were not applicable for the brand personality construct of OnePlus smartphones among urban upper middle-class respondents in India. They were 'down-to-earth' and 'ordinary'. This implies that customers or users of OnePlus smartphones do not perceive their handsets to be ordinary or down-to-earth. The inappropriateness of personality traits can be ascribed to an array of explanations spanning from cultural dissimilarities to oddities in brands or product categories. In fact, the 'ordinary' personality trait has been proved as a misfit in earlier studies in the original Aaker scale (Davies, 2001; Tomas & Sekhar, 2008; Ajilore & Solo-Anaeto, 2016) as well.

The other items in the original scale were processed using confirmatory factor analysis, until internal consistency and validity of the brand personality construct was attained. Pillared on the prerequisites of the study conducted by Hair et al. (2010), any measured variable where the standardized residual value exceeds '|2|', it may be implied that the observed frequency is higher than the expected frequency. In the current scenario, the residual for the items 'ordinary' and 'down-to-earth' was alarmingly high, implying that there was something extremely unusual in the model fit. Accordingly, the two items were deleted from subsequent analysis. CFA was executed thrice until the ideal values of the model fit indices were achieved. In each model of CFA that was executed, the discrepancies between the proposed as well as estimated models were ascertained, in addition to the level of significance of such incongruities. In view of that, the problematic item was removed, based on the outcomes. Consequently, the reviewed 10-item adaptation of the Brand Personality Scale appears to be more fitting in the Indian context. The non-validation of items in Geuens et al.'s (2009) study may be attributed to its comparatively low intensity to which brand personality it is intended to assess (Valette-Florence and de Barnier, 2013). As a consequence, such brand personality scales find their application in specific cultures only. This occurs as a result of divergent personality traits that gain significance in the

perception of brands across various product categories, as well as across multiple cultural settings (Venable et al., 2005).

The lack of appropriateness of the personality traits, as obtained from the study, can further be attributed to two broad reasons: product-oriented oddities and culture-oriented oddities. In terms of culture-oriented oddities, two specific traits, namely down-to-earth and ordinary do not appear to fit in to a definite culture and value-centric cultural diversity is mirrored in every entity. In terms of the product-oriented oddities, the two specific traits (down-to-earth and ordinary) do not apply robustly with the various products under the OnePlus brand because of its character and its positioning in the minds of their target audience. Interestingly, this raises an allied and undeviating research question pertaining to brand anthropomorphism, which forms the rudiments of brand personality, while elucidating the human physiognomies that can be ascribed to non-human entities as well, for specific traits. The elementary question that is present now is: should OnePlus at all be perceived as down-to-earth and ordinary? This question is germane because competition in the Indian smartphone market especially in the budget smartphone segment is coercing marketers to make their brands 'aggressive' and 'active' in greater levels than 'ordinary'. Brand personality is also observed to possess a favourable and noteworthy impact on customer buying motivation towards smartphones, although the motivations may be latent in many cases.

Conclusion

Aaker et al. (2001), in their study, advocated that subject to the generalizability or specificity of a given culture, emic and etic perspectives can be derived from the brand personality facets in a cultural setting. The present study is developed from an emic perspective. OnePlus in India has enjoyed immense success in a very short span of time and such phenomenal growth does not associate well with a down-to-earth personality. In fact, an aspiring brand, which continually strives to aggressively capture a highly competitive market especially that of India, is rarely down-to-earth. This does not go on to indicate that the brand is irresponsible, as the brand has proven to be quite stable and reliable, given their high factor loadings. Further, the brand is not perceived by consumers to have an ordinary personality. This is logical as OnePlus boasts of an array of unique points of difference towards consumers, considering an active user community, product updates and application interface. With such activity revolving around OnePlus users, involvement levels are high and the brand is far from being perceived as a smartphone with an ordinary personality.

Implications of the Study

The conclusions derived from the current study present multifarious implications for brand managers and marketing practitioners in connection with the personality traits that define the OnePlus brand. Brand managers must avoid infusing personality traits that respondents do not want to see in their smartphones. The study proffers valued insights to branding professionals to appropriately develop targeting strategies for the end users with new-fangled branding concepts as opposed to the often-used archetypal positioning ideas used to target smartphone consumers and prospects. Although the current study did not seek to compare similar smartphone companies such as Samsung or Lenovo, belonging to the same sector, there is visibly a potential to do so in future researches. Companies that end up with relatively low scores on one or more pivotal facets of their personality would be obligated to re-cogitate the relevance of enhancing their scores. They could gauge the evaluations for individual personality items within a specific dimension. For instance, it would be worthwhile to perceive that most smartphone companies are likely to score high on 'responsibility', for the reason that it would reflect stability and honesty. However, as seen in the current study, a down-to-earth image did not go well with OnePlus users, which would require that the brand managers rethink some of the variables. Since the other factors have exhibited a robust model fit, it offers plenty of insights for the branding team at OnePlus. The Chinese smartphone major can focus more on its activity, while being aggressive in its marketing strategies and consumer connect. The brand could also derive valuable insights from the fact the 'emotionality' dimension has been perceived favourably by respondents, which poses the need to reinforce and uphold its loyalty programmes and interactive user forums. This would increase the possibility of consumers in India forming bonds that are even more meaningful with the company, which interestingly, is not even an Indian company. The company can pioneer more exclusive and consistent services, which would necessarily augment the level of self-assurance among consumers towards the overall image of the company. Das et al. (2013) correctly pointed out that marketers must comprehend their brand's personality type and its relative importance in positioning to their target market.

Scope for Subsequent Research

The principal purpose of this undertaking has been to assess the versatile brand personality components specific to OnePlus in India by adopting the new Brand Personality Scale. This objective itself poses a shortcoming, given that it is confined to only one specific brand. Further research conducted in this domain can help determine the cogency of the novel BPS keeping in mind several brands across varied product categories, in an attempt to generalize the findings. Further, there exists a plethora of opportunities for the study to be carried out and validated

across diverse cultural settings. This study was conducted only in a few urban cities, using convenience as a basis to interview respondents. Other metro and Tier-I cities in India, such as Pune, Hyderabad and Ahmedabad can also be covered so as to advance the consistency and universal acceptability of the research.

REFERENCES

Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research* (34): 347.

Aaker, J. L., Benet-Martinez, V., and Garolera, J. (2001). Consumption of symbols as carriers of culture: A study of Japanese and Spanish brand personality constructs. *Journal of Personality and Social Psychology* (81): 492-508.

Ahmad, A., and Thyagaraj, K. S. (2015). Impact of brand personality on brand equity: The role of brand Trust, brand attachment, and brand commitment. *Indian Journal of Marketing* (45(5)): 14.

Akin, M. (2017). The Impacts of brand personality on brand loyalty: A research on automobile brands in Turkey. *International Journal of Marketing Studies* (9(2)): 134.

Almlund, M., A. Duckworth, J. J. Heckman, and T. Kautz. (2011). *Personality Psychology and Economics*. Pages 1-254 in Handbook of the Economics of Education Vol. 4 (E. A. Hanushek, S. Machin, and L. W¨oßmann, eds.) Amsterdam: Elsevier.

Alpatova, A. (2011). *Comparing brand personality measures*. Germany: LAP Lambert Academic Publishing.

Ambe, H. (2015). *Online brand personality in Sweden*. Sweden: Linnaeus University.

Azoulay, A. and Kapferer, J. N. (2003). Do brand personality scales really measure brand personality? *Journal of Brand Management* (11): 143-155.

Batra, R., Lehmann, D. R. and Singh, D. (1993). The brand personality component of brand goodwill: some antecedents and consequences. Pages 83-97 in Brand Equity and Advertising (D. A. Aaker and A. L. Biel eds.); New Jersey Hillsdale. Lawrence Erlbaum Associates.

Biel, A. (1993). *Converting Image into Equity*. Pages 67-82 in Brand Equity and Advertising, (D. A. Aaker and A. Biel, eds.) New Jersey Hillsdale. Lawrence Erlbaum Associates.

Birdwell, A. E. (1968). A study of the influence of image congruence on consumer choice. *Journal of Business* (41): 76-88.

Borghans L., Duckworth, A.L., Heckman, J.J. and ter, W. B. (2008). The economics and psychology of personality traits. *Journal of Human Resources* (43): 972-1059.

Dholakia, U.M. (1997). *An Investigation of Some Determinants of Brand Commitment*. Pages 381-387 in Advances in Consumer Research (Merrie Brucks and Deborah J. MacInnis, eds.) Provo, UT: Association for Consumer Research.

Bosnjak, M., Bochmann, V. and Hufschmidt, T. (2007). Dimensions of brand personality attributions: A person-centric approach in the German cultural context. *Social Behaviour and Personality*. (35): 303-316.

Bhat, S. and Reddy, S. K. (1998). Symbolic and functional positioning of brands. *Journal of Consumer Marketing*. (15): 32-43.

Das, G., Guin, K.K., and Datta, B. (2013). Impact of store personality antecedents on store personality dimensions: An empirical study of department retail brands. *Global Business Review* (14): 471–486.

Davis, S. M. (2000). *Brand asset management*. San Francisco: Jossey-Bass Inc.

Dolich, I. J. 1969. Congruence Relationships between Self-images and Product Brands. *Journal of Marketing Research* (6): 80-84.

Eysenck, H. J. (1965). A three-factor theory of reminiscence. *British Journal of Psychology* (56): 163-182.

Freling, T.H. and Forbes, L.P. (2005). An empirical analysis of the brand personality effect. *Journal of Product & Brand Management* (14): 404-413.

Geuens, M., Weijters, B., and de Wulf, K. (2009). A new measure of brand personality. *International Journal of Research in Marketing* (26): 97–107.

Goh, K.Y., Heng, C. S. and Lin, Z. (2013). Social media brand community and consumer behavior: Quantifying the relative impact of user-and marketer-generated content. *Information Systems Research* (24): 88-107.

Goldsmith, R. and Goldsmit, E. (2012). Brand personality and brand engagement. *North American Business Press* (12): 11-20.

Gorbaniuk, O., Kusak, K., Kogut, A., and Kustos, M. (2015). Dimensions of political party 'personality' perception. *Journal of Political Marketing* (14): 35–63.

Güse, K.S. (2011). *Brand Personalities and Consumer-brand Relationships as Elements of Successful Brand Management*. Bamberg: University of Bamberg Press.

Guthrie, M., Kim, H.S. and Jung, J. (2008). *The effects of facial image and cosmetic usage on perceptions of brand personality. Journal of Fashion Marketing and Management* (12): 164-181.

Hair, J.F., Black, W.C., Babin, B.J., and Anderson, R.E. (2010). *Multivariate Data Analysis*. New Jersey Upper Saddle River: Prentice Hall.

Jansson, E. (2013). *Cross-cultural differences in brand image perception – an exploration of the Volvo brand – an exploration of the Volvo brand*. Sweden: University of Gothenburg.

Johnson, L., Soutar, G. and Sweeney, J. (2000). Moderators of the brand image/perceived product quality relationship. *Journal of Brand Management* (7): 1-10.

Kapferer, J.N. (2008). *The New Strategic Brand Management: Creating and Sustaining Brand Equity Long Term*. London and Philadelphia: Kogan Page.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing* (57): 1-22.

Letzring, T.D., Wells, S.M. and Funder, D.C. (2006). Information quality and quantity affect the realistic accuracy of personality judgment. *Journal of Personality and Social Psychology* (91): 111-123.

Malik, M.E. and Naeem, B. (2013). Aaker's brand personality framework: A critical commentary. *World Applied Sciences Journal* (24): 895-899.

Martineau, P. (1958). The personality of the retail store. *Harvard Business Review* (36): 47-55.

McCrae, R. R., and John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality* (60): 175-215.

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology* (66): 574-583.

O'Shaughnessy, J. and O'Shaughnessy, N. (2003). *The Marketing Power of Emotion*. London: Oxford University Press.

Parker, B. (2009). A comparison of brand personality and brand user imagery congruence. *Journal of Consumer Marketing* (26): 175-184.

Pydde, M. (2008). *Cultural Differences in the Perception of Brand Personalities*. Germany: GRIN Verlag.

Ridgway, J. L. (2011). *Brand Personality: Consumer's Perceptions of Color Used in Brand Logos*. University of Missouri.

Romaniuk, J., and Nicholls, E. (2006). Evaluating advertising effects on brand perceptions: incorporating prior knowledge. *International Journal of Market Research* (48): 179-192.

Rudinski, S. (2016). *Consumer Perception of Brand Personalization*. The Swedish School of Textiles: University of Boras.

Sahin, A., Zehir, C. and Kitapçi, H. (2011). *The effects of brand experiences, trust and satisfaction on building brand loyalty; an empirical research on global brands*. The seventh International Strategic Management Conference, Paris.

Seimienea, E. and Kamarauskaiteb, E. (2014). Effect of brand elements on brand personality perception. *Procedia: Social and Behavioural Sciences* (156): 429-434.

Siguaw, J.A., Mattila, A. and Austin, J.R. (1999). The brand personality scale: An application for restaurants. *Cornell Hotel and Restaurant Administration Quarterly*. (40): 48-55.

Silverstein, M. J. and Fiske, N. (2005). *Trading up*. New York, NY: Penguin Group Portfolio.

Sojka, J.Z. and Giese, J.L. (2001). The influence of personality traits on the processing of visual and verbal information. *Marketing Letters* (12): 91-106.

Srivastava, K. and Sharma, N.K. (2016). Consumer perception of brand personality: An empirical evidence from India. *Global Business Review* (17): 375-388.

Sung, Y. and Tinkham, S. F. (2005). Brand personality structures in the United States and Korea: Common and culture-specific factors. *Journal of Consumer Psychology* (15): 334-350.

Tupes. E. C. and Christal, R. E. (1958). Stability of personality trait rating factors obtained under diverse conditions. USAF WADC Tech. Note No. 58-61; Lackland Air Force Base. TX: U.S. Air Force.

Udo-Imeh, P. (2015). Influence of personality on the buying behaviour of undergraduate students in universities in Cross River State, Nigeria. *International Journal of Marketing Studies* (7): 64-77.

Vainikka, B. (2015). *Psychological Factors Influencing Consumer Behaviour*. Central University of Applied Sciences.

Valette-Florence, R. and de Barnier, V. (2011). Can 'Micro' and 'Macro' Approaches of Brand Personality Peacefully Coexist? An Illustration with Print Media Brands in a French Setting. The La Londe Conference in Marketing Communications and Consumer Behaviour.

Zhang, Z., Ye, Q., Law, R., and Li, Y. (2010). The impact of e-word-of-mouth on the online popularity of restaurants: A comparison of consumer reviews and editor reviews. *International Journal of Hospitality Management* (29): 694-670.

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Determinants of Adoption of Mobile Banking: A Structural Equation Modeling Approach

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Abstract: In this study, an effort has been made to develop a conceptual model that would have a potentially greater explanation power. The proposed model emphasizes the role of adoption triggers, technological readiness, trust and perceived ease of use. It also shows the relation between these constructs and the adoption of mobile banking. The constructed factors of research like awareness, economic factors, legal issues, ease of use, organizational barrier, intention to use mobile banking and mobile self-efficacy established a positive correlation with customer satisfaction. The findings provide practically useful information to improve the responsiveness and credibility of mobile banking.

Keywords: Mobile banking, technology adoption, technology readiness, perceived ease of use.

Introduction

The Banking sector today is dominated by a digitized operation. The major challenge today is to exploit the untouched sectors like the perception of customers and the adoption of the emerging technology. The success of this sector depends on the acceptance by the customers. The major concern for many researchers is the level of awareness and the adoption rate of such technologies in developing countries (Malhotra, 2011: Duy, 2012).

The rate of adoption and usage of mobile banking is slower in comparison to the advantages it offers. Private and Public players in Indian Banking industry have started taking hardcore steps to institutionalize mobile banking at every branch and set up core teams for its easy adoptions. Also with the latest report by Raghuramrajan Committee, RBI has liberalized its rule to go for a branchless banking system. Banks like ICICI, SBI, BOB are working on generating higher volume of transactions profiting the banking sector.

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There is an increase in the number of Mobile subscribers but the number of mobile banking customers or internet banking customers has not increased. It has become crucial for financial sector to take banking industry at a next level with the emergence of digital India. According to RBI report 2011, the number of mobile subscribers was 961 million and number of mobile banking customers was 22.15 million, which increased in the year 2014. According to KMPG report of 2014, the number of mobile banking users increased to fifty percent of India's population, which brought a scope of light for the banking industry. India's mobile banking transactions was reported at Rs. 52,13,678.397 mn in Jan. 2020, with a monthly average of Rs. 2,52,655.731 mn from April 2011 to January 2020.(India Mobile Payments)Yet it has a long way to go as the number of users and awareness level is yet to reach to the masses.

Review of Literature

In this field, many studies have been conducted using the Technology Acceptance Model (TAM) to determine the key factors explaining the adoption of online banking (Akturan, 2012), (Yu, 2009). The TAM by Davis (1989) and the TAM2 by Venkatesh and Davis (Bala, 2008; Davis, 1989; V.Venkatesh, 2000) arguably do not include factors that are meant to capture key elements such as trust and risk associated with the adoption of e-commerce. Given the privacy concerns and the psychological barriers often associated with conducting transactions in a virtual world, the TAM has proven to be a limited tool (Yao-bin, 2009)). That is why recent studies are using extended versions of the TAM that include factors such as trust and security concerns. (Al-Jabri, 2012; Barnes, 2003; Bandura, 1977) (Compeau, 1995; Bauer, 2006) studied the effects of gender, age and education on new technology implementation among knowledge workers in Saudi Arabia using the Theory of Planned Behaviour (TPB). Chris Lin & Hsieh (Lee, 2009)examined the relationships among technology readiness, perceived service quality, satisfaction and behavioral intentions toward self-service technologies by the customers in Taiwan.

These researches indicate that there is a wide scope for policy makers to increase awareness and acceptance level of mobile banking among masses. There are very few researches done in this sector, which insights for further research. It becomes necessary to understand the motivators, the perception of customers and the point of view of the bankers. Many models are developed in earlier research like TAM models. (Dasgupta, 2011) (Phadtare, 2012).

Objective of the Study

The objective of the present study is to develop a conceptual model for adoption of mobile banking.

Conceptual Framework for the Research Model

In the Mobile banking field, the Technology Acceptance Model has become a cornerstone for explaining technology adoption and use.The study discusses the theoretical model developed for the present study, based on the gaps identified from the literature review. Previous studies on mobile banking adoption pointed out the need to develop a robust and integrated model that explains more variance and better predictive power of the behavior intention to use mobile banking. (Luarn, (2005; Lederer, 2001) Mobile banking is a new technology channel to the banking customers. Hence, it is important to understand their perception towards this technology, by studying the intention towards using mobile banking. This research study proposes to integrate the best-known elements of technology adoption models in a research model, to predict the intention to use mobile banking. It specifies an integrated model that incorporates the relationship of the factors in order to provide a comprehensive representation of the suggested influences of these constructs on customers' intention to use mobile banking services.

During initial stage of the research study, mobile banking usage was at a nascent stage, whereas mobile banking is already established as an electronic channel now. These developments have taken place in the last five years. Many studies have already identified that attracting and retaining customers are largely dependent on the quality of services delivered, which lead to the measurement of service quality (Duy, 2012). For this purpose, the study determines the service quality attributes, and measures the customer satisfaction of mobile banking. The study also determines the current mobile banking consumer's intention to use mobile banking. Research constructs formulated for the present study are discussed below.

Factors affecting Mobile Banking Adoption

Dependent Variable- Behavioral Intention

Fishbein and Ajzen (Ajzen, 1975) defined behavioral intention as "the strength of one's intention to perform a specified behavior". Based on the theories such as TRA, TPB and TAM the behavioral intention found to have an influence on the actual behavior. If the intention is stronger to engage in a behavior, it is more likely to affect the actual behavior (Ajzen, 1991).

The attitude construct is not included in this study since past studies found that it has a weak mediating effect on intention, and it does not directly influence the intention (F.D, 1989). (Davis, 1989).Many studies in Technology prove that behavioral intention significantly influenced the actual use of technology (Bala, 2008). (D, 2000)

Independent Variables

The independent variables/factors which are used in this study to measure the intention to use mobile banking include perceived ease of use, computer self-efficacy, social influence, perceived cost, trust and security.

Awareness

Perceived ease of use(PEOU) is defined by Davis (F.D, 1989) as "the degree to which a person believes that using a particular system would be free of effort". If the mobile banking service is easy to learn and use, it will positively influence the customer to use this service. In mobile banking, many factors can increase the complexity such as navigation problems, small-screen size, transaction issues, etc.Prior study in user acceptance of various information systems such as online banking (Wang et al, 2004), e-commerce, m-commerce, and mobile banking (Ho, 2008) (Lee, 2009) (Luarn, (2005)) has already identified that PEOU is an important determinant of adoption.

Adoption Triggers

The Theory of Reasoned Action (TRA) and its extensions (Ajzen , 1975) specifies that human behavior is preceded by intentions, which are formed based on the individual's attitude towards the behavior and on perceived subjective norms (D, 2000) represents as social influence, which is derived from the theories such as Theory of Reasoned Action(TRA),Theory of Planned Behaviour(TPB), Decomposed Theory of Planned Behaviour (DTPB), Technology Acceptance Model-2 (TAM2).

Mobile Self-Efficacy

Self-efficacy belief is extended in research, referred as computer self-efficacy (CSE) defined as one's perception of his or her ability to use a computer (Compeau & Higgins, 1995) (Compeau, 1995). Many studies in literature already examined the importance of computer self-efficacy (Compeau, 1995) (Aggarwal, May 2014). In the context of mobile banking, if the customer believes that they have the required knowledge, skill or ability to operate mobile banking, then there is a higher chance to attempt the service. Past studies have shown that, there exists empirical evidence of a causal link between perceived ease of use and self-efficacy. (Aggarwal, May 2014; Bala, 2008; F.D, 1989; Luarn, (2005)

Adoption Inhibitors

The adoption inhibitors are further segregated into factors like legal, trust system and organizational barriers. (Akturan, 2012) The studies suggested that the

adoption behavior of respondents here are dependent on various factors. The factors considered in the study here are economic factors, usefulness, ease of use,social influence and relative advantage.

Proposed Model of Consumer Adoption of Mobile Banking

Drawing on the existing body of literature, it identifies six constructs, which suggest to have an influence on intention to use mobile banking (Figure 1). The independent variables/factors which are used in this study include awareness, adoption triggers, mobile self-efficacy, adoption inhibitors and dependent variable behavioural intention. Based on the hypothesis and variable, following model has been proposed for the awareness and adoption of mobile banking.

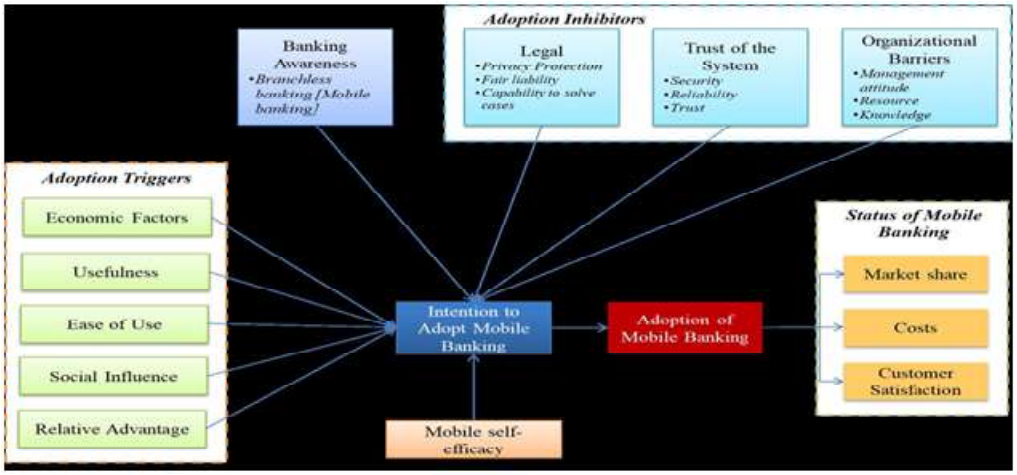

Fig. 1: Proposed model

The research model developed for the present study derived the constructs from the existing technology adoption models such as Technology Acceptance Model (TAM), Decomposed Theory of Planned Behavior (DTPB) and Unified Theory of Acceptance and Use of Technology (UTAUT) (F.D, 1989) (D, 2000).The study added the constructs such as trust, security, and perceived cost, which are relevant to understand the mobile banking acceptance.

Research Hypotheses

According to Fishben and Ajzen (Ajzen F. a., 1975) the perception of adoption is easily affected by a behavioural intension and hence on the basis of the planned behavioural intention studies and Davis study the conceptual model proposes following research hypotheses for mobile banking adoption and perception.

H_1 : Awareness levels of mobile banking do not influence the adoption of mobile banking.

H_2 : Economic factors do not influence the customers' intention to adopt mobile banking.

H_3 : Relative advantage of mobile banking does not significantly influence the customers' intention to adopt mobile banking practices.

H_4 : Usefulness of mobile banking does not influence the customers' intention to adopt mobile banking platform.

H_5 : Trust of System in mobile banking does not affect the intention to adopt mobile banking

H_6 : Legal Environment does not influence the customers' intention to adopt mobile banking practices.

H_7 : Social influence does not have a significant impact on the customers' intention to adopt mobile banking practices.

H_8 : Organizational barriers do not impact the customers' intention to adopt mobile banking significantly.

H_9 : Mobile phone self-efficacy of the customers has no influence on their intention to adopt mobile banking practices.

H_{10} : Ease of Use has no impact on the adoption of mobile banking.

Data Analysis and Results

To analyze the model a survey was carried out through structured questionnaire of 786 respondents of which 712 were considered after cleaning. The analysis was conducted with demographic indicators.

Demographic Variable

The analysis was conducted on those respondents who use mobile banking. The respondents varied from different sectors. This gave a better insight for the analysis. The demographic variables indicate that gender does affect the adoption rate of mobile banking. The adoption rate is not affected by the income of the respondents. This clearly indicates that the financially stable or the low income group, all prefer the adoption of mobile banking for its convenience and not the cost cited. The younger respondents in age signified that the age group of 20 to 40 are more comfortable in the adoption of mobile banking.

Table 1: Demographic variables

S.No.		Category	Percent
1	Gender	Male	42.1
		Female	57.9
2	Age(Years)	18-28	44.9
		28-38	35.4
		38-48	11.2
		>48	8.4
3	Education	High School	9.6
		Graduate	24.2
		Post Graduate	57.3
		Technical Course/ Diploma	2.8
		Others(M phil. & Ph.D)	6.17
4	Occupation	Student	37.1
		Employed	53.4
		Housewife	3.9
		Senior C	1.7
		Others	3.9
5	Monthly Family Income in Rs.	<10k	1.2
		10k – 20k	16.2
		20k – 30k	14.6
		30k – 40k	19.1
		>40k	48.9
6	Marital Status	Married	48.9
		Unmarried	51.1

(Sample Size N= 712)

Structural Equation Modeling

Structural Equation Modeling is a multivariate statistical analysis technique that is used to analyze the structural relationships. The technique is used here to analyze the relationship between the measured variables and constructs in the research.

The Model under Study: The model of Mobile Banking is represented below.

The model of the Performance Measurement Factors has 11 factors, as indicated by the ellipses.

The factors are;

AW = Awareness

SE= Mobile Self-Efficacy

EEOU= Ease of Use

OB= Organizational Barrier

TOS= Trust of the System

USF= Usefulness

RA= Relative Advantage

EF= Economic Factor

SI=Social Influence AMB= Adoption of Mobile Banking

LI= Legal Influence

It has been hypothesized that Awareness, Mobile Self-efficacy, Ease of use, Organizational Barrier, Social Influence, Legal, Trust of the system, usefulness, Relative Advantage, Economic Factors are affecting Adoption of Mobile Banking. There are 56 observed variables, as indicated by the 56 rectangles.

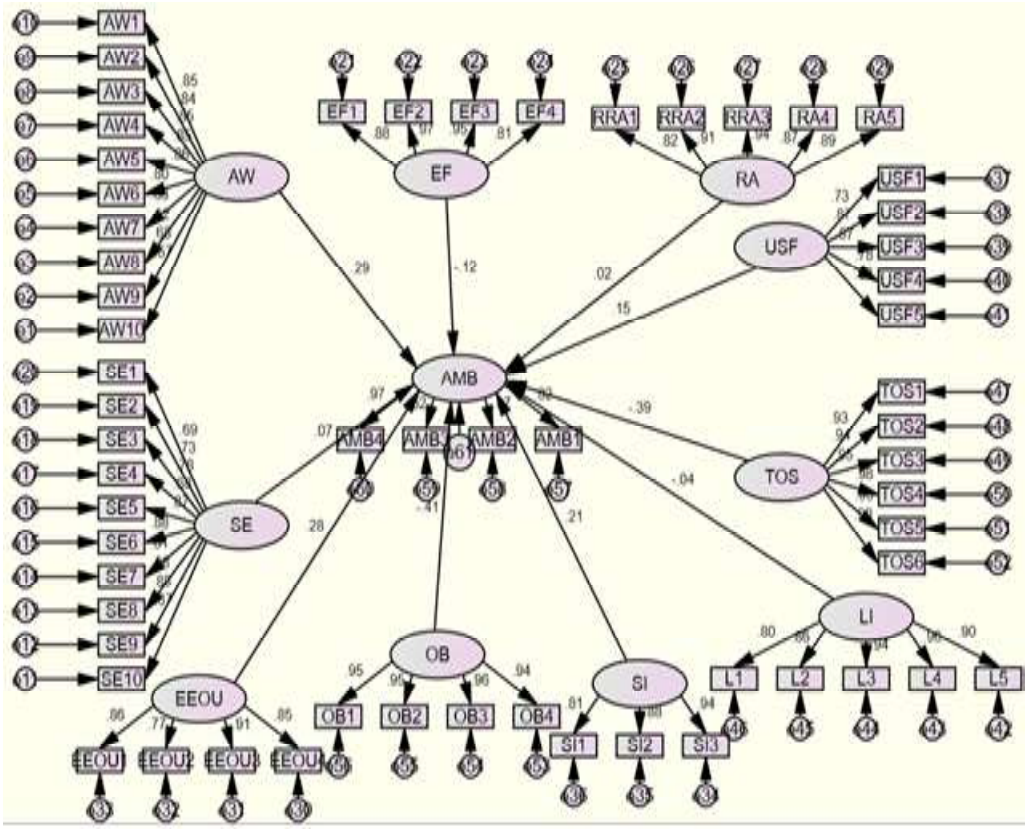

Fig. 2: Proposed model with estimates

Regression Weights: (Group number 1 - Default model):Standardized Regression Weights

The table 2 shows the Standardized Regression weight for each of the variables. It can be seen that all the standardized regression weights are nearer to 0.5 indicating high level of convergent validity. It can be concluded that all variables are contributing in explaining the fair amount of variance in factors. Hence scale of Individual Behavior is to be considered as valid.

Table 2: Regression weights

Factors	Factors	Estimate
AMB	AW	.292
AMB	EF	-.119
AMB	RA	.025
AMB	USF	.146
AMB	TOS	-.386
AMB	LI	-.044
AMB	SI	.211
AMB	OB	-.411
AMB	SE	.071
AMB	EEOU	.284
AW10	AW	.565
AW9	AW	.684
AW8	AW	.815
AW7	AW	.684
AW6	AW	.796
AW5	AW	.855
AW4	AW	.846
AW3	AW	.849
AW2	AW	.842
AW1	AW	.854
SE10	SE	.871
SE9	SE	.876
SE8	SE	.876
SE7	SE	.807
SE6	SE	.878
SE5	SE	.872
SE4	SE	.679
SE3	SE	.776
SE2	SE	.734
SE1	SE	.687
EF1	EF	.878
EF2	EF	.966
EF3	EF	.950
EF4	EF	.809
RRA1	RA	.820
RRA2	RA	.906
RRA3	RA	.937
RA4	RA	.869
RA5	RA	.891
EEOU4	EEOU	.846
EEOU3	EEOU	.908
EEOU2	EEOU	.772
EEOU1	EEOU	.863
SI3	SI	.941
SI2	SI	.885
SI1	SI	.812
USF1	USF	.729
USF2	USF	.868
USF3	USF	.869
USF4	USF	.779
USF5	USF	.824
L5	LI	.895
L4	LI	.958
L3	LI	.940
L2	LI	.858
L1	LI	.796
TOS1	TOS	.926
TOS2	TOS	.942
TOS3	TOS	.955
TOS4	TOS	.977
TOS5	TOS	.931
TOS6	TOS	.902
OB4	OB	.941
OB3	OB	.956
OB2	OB	.954
OB1	OB	.947
AMB1	AMB	.818
AMB2	AMB	.966
AMB3	AMB	.616
AMB4	AMB	.967

Model Fit Summary

The Table 3 shows the model fit.

On the basis of all three types of-fit results, it can be concluded that the hypothesized model fits the sample data extremely well.

Table 3: Model fit summary

Test	Recommended Value	Model Under Study
	Absolute Fit Measures	
χ^2	p> 0.05	p=0.000
CMIN/DF	< 5	2.87
RMSEA	<0.10	0.07
	Relative Fit Measures	
CFI	>0.90	0.92
NFI	>0.90	0.91
RFI	>0.90	0.91
IFI	>0.90	0.91
	Parsimonious Fit Measures	
PCFI	>0.50	0.72
PNFI	>0.50	0.71

Hypotheses testing

H_1: Awareness about mobile banking is positively related with adoption of mobile banking.

Table 4: Results

			Estimate	S.E.	C.R.	P
Awareness AMB	<—-	AW	.228	.025	9.058	***
Economic factor AMB	<—-	EF	-.048	.011	-4.445	***
Relative advantage AMB	<—-	RA	.016	.017	.929	.353*
Usefulness AMB	<—-	USF	.105	.020	5.227	***
Trust of system AMB	<—-	TOS	-.156	.012	-13.425	***

Contd...

Contd...

Legal environment						
AMB	<—-	LI	-.019	.012	-1.672	.095*
Social influence						
AMB	<—-	SI	.109	.014	7.578	***
Organizational barrier						
AMB	<—-	OB	-.162	.011	-14.194	***
Mobile self efficacy						
AMB	<—-	SE	.046	.017	2.664	.***
Ease of use						
AMB	<—-	EEOU	.192	.020	9.816	***

*** P value <0.01 and * P value >0.01

The Table 4 shows the result of hypothesis testing. The standardized regression weight is 0.228. The positive sign indicates that Awareness about mobile banking is positively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Awareness about mobile banking is positively related with adoption of mobile banking.

$H_{2:}$ Economic Factor is negatively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is -0.048. The negative sign is according to the theory that Economic Factor is negatively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Economic Factor is negatively related with adoption of mobile banking.

$H_{3:}$ Relative Advantage is positively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is 0.016. The positive sign is according to the theory that Relative advantage is positively related with adoption of mobile banking. The P value is not less than 0.05 which shows that the relationship is positive but not significant.

$H_{4:}$ Usefulness is positively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is 0.105. The positive sign is according to the theory that Usefulness is positively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Usefulness is positively related with adoption of mobile banking.

$H_{5:}$ Trust of the system is negatively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is -0.156. The negative sign is according to the theory that Trust of system is negatively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Trust of the system is negatively related with adoption of mobile banking.

$H_{6:}$ Legal Environment is negatively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardised regression weight is -.019. The negative sign is according to the theory that Legal environment is negatively related with adoption of mobile banking. The P value is not less than 0.05 which shows that the relationship is not significant.

$H_{7:}$ Social Influence is positively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is 0.109. The positive sign is according to the theory that Social Influence is positively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Social Influence is positively related with adoption of mobile banking.

$H_{8:}$ Organizational Barrier is negatively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is -0.162. The negative sign is according to the theory Organizational barrier is negatively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Organizational Barrier is negatively related with adoption of mobile banking.

$H_{9:}$ Mobile Self Efficacy is positively related with adoption of mobile banking.

The Table 4 shows the result of hypothesis testing. The standardized regression weight is 0.046. The positive sign is according to the theory Mobile self-efficacy is positively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Mobile Self Efficacy is positively related with adoption of mobile banking.

$H_{10:}$ Ease of Use is positively related with adoption of mobile banking

The Table 4 shows the result of hypothesis testing. The standardized regression weight is0.192. The positive sign is according to the theory that Ease of Use is positively related with adoption of mobile banking. The P value is less than 0.05 which shows that the relationship is significant. Hence it can be concluded that Ease of Use is positively related with adoption of mobile banking.

Hypotheses results

	Estimate	S.E.	C.R.	P	Correlation
Awareness	.228	.025	9.058	***	Positive
Economic Factor	-.048	.011	-4.445	***	Positive
Relative Advantage	.016	.017	.929	.353	Negative
Usefulness	.105	.020	5.227	***	Positive
Trust of System	-.156	.012	-13.425	***	Positive
Legal Environment	-.019	.012	-1.672	.095	Negative
Social Influence	.109	.014	7.578	***	Positive
Organizational Barrier	-.162	.011	-14.194	***	Negative
Mobile Self-efficacy	.046	.017	2.664	.***	Positive
Ease of use	.192	.020	9.816	***	Positive

The above table signifies that the hypothesis testing's relation with adoption of mobile banking. Factors like Economic factors, trust of system, legal environment and organizational barriers have a p value less than 0.5, hence they are negatively related whereas factors like awareness, relative advantage, usefulness, social influence, mobile self-efficacy and ease of use show higher p value showing positive relation to the adoption of mobile banking.

Findings

The key findings are presented below:

- The p-values indicate that the factors identified in the current study are awareness, economic factors, relative advantage, mobile self-efficacy, social influence, ease of use, legal environment and organizational barrier which influence the behavioral intention of customers to adopt mobile banking. These p-values indicate that there is a positive correlation between the awareness, relative advantage, usefulness, social influence, mobile self-efficacy and ease of use. This signifies that the respondents are quite aware of mobile banking and significantly affects the adoption rate of mobile banking. This also signifies that factors like economic factor, trust of system, legal environment and organizational barrier are negatively related to the intention to adopt mobile banking. Hence these factors do not affect the respondents' adoption. These factors contribute to the adoption rate significantly and products should be designed as per the expectation of customers.

- A strong correlation exists between mobile self efficacy and adoption rate. This signifies that respondents, who are efficient with usage of mobile and are techno-savvy, find it convenient to use the mobile banking applications.
- Customers' perceived ease of use is directly correlated to customers' intention to adopt mobile banking application. This signifies respondents readily agree to learn the usage of applications for the adoption of mobile banking.
- The economic factor is negatively related to adoption rate, hence the factors like transaction cost, access cost and equipment cost do not affect the adoption rate.
- Perceived Usefulness has a positive relation to the adoption. This implies that if the customers are given proper guidance and educate the users through benefits and usage patterns they can enhance their promotional marketing through innovative market ideas.
- Factor like Social influence is positively correlated to the adoption of mobile banking. Socially active people do affect the adoption rate. Social circles influence behavior of respondents to use mobile banking.
- Adoption Inhibitors like legal constructs, trust of system and organizational barrier have a negative correlation with the adoption of mobile banking. These factors imply that legal formalities, dissemination of information, fair liability for financial mistakes are not taken care of. The banks should work persistently on taking care of legal formalities and resolve it on priority base.
- Yet the significant point to ponder upon is that the respondents do not have trust on system for the mobile banking services. They feel that the networks and technological advancement are not trust worthy and vulnerable to financial frauds.
- The adoption rate is not affected by the income of the respondents. This clearly indicates that the financially stable or the low income group, all prefer the adoption of mobile banking due to convenience it offers without any cost constraints.
- The younger demographics in age signified that the age group of 20 to 40 are more comfortable in the approach of mobile banking adoption. The demographic variables indicate that gender does affect the adoption rate of mobile banking.

Limitations

The study model implication is restricted to the state of Gujarat only with 786 respondents. Second, research model is focused more on the theoretically relevant

factors. This research does not capture factors such as the risk and trust involved in mobile banking adoption.

Conclusion and Implications

One of the theoretical contributions of this research is a new adapted model for mobile banking adoption with a potentially greater explanation power. The proposed model contributes to the literature in two ways. First, it added both positive and negative impact of technology readiness on the level of trust in mobile banking. Second, it includes a moderating effect of perceived critical mass. The model implicates the ways to understand the adoption triggers and adoption inhibitors that affect the behavioral intention for mobile banking. The model shall help the banking fraternity in understanding constructs that form the inhibitors and triggers.

REFERENCES

A., B. (1985). Social Foundations of Thoughts and Actions: A Social Cognative Theory. United States: Prentice Hall

Aggarwal, M. (May 2014). A study on importance of mobile banking. *Indian Journal of Applied Research*, 4

Ajzen. (1991). The theory of planned behaviour. Organizational Behaviour and Human Decision Making Process, 79-211

Ajzen, F. a. (1975). Belie, attitude and intention: An introduction to theory and research

Akturan, U. &. (2012). Mobile banking adoption of the youth. *Marketing Intelligence and Planning*, Vol.30, pp:444

Bala, V. V. (2008). Technology model 3 and research agenda on interventions. *Decision Sciences*, 273-315

Bandura. (1977). Self Efficacy: Towards a unifying theory of behavioural intention. *Psychological Review*, 191-361

Barnes, S. (2003). Mobile banking: Concept and potential. *International Journal of Mobile Communications*

Bauer, H. F. (2006). Measuring the quality of e-banking portals. *International Journal of Bank Marketing*, 866-875

Compeau, H. (1995). Computer self efficacy: Development of a measure and initial test. *MIS Quaterly*,189-211

Cooper, S. (2006). Marketing Research. New York: Mcgraw Hill

D, V. a. (2000). Theoritical extention of technology acceptance model. *Management Science*, 186

Dasgupta, P. (2011). Factors affecting behavioural intention towards mobile banking usage. *Romanian Journal of Marketing*, 6-28

Dasgupta, S. P. (2011). Factors affecting behavioral intentions towards mobile banking usage: Empirical evidence from India. *Romanian Journal of Marketing, 3(1), 6–28*

Davis, B. W. (1989). User aacceptance of computer technology. *Management Science*, 982-1003

F.D, D. (1989). Percieved usefullness, perceived ease of use and user acceptance of information technology. *MIS Quaterly*, pp. 319-340

Garland, D. (1991). New York

Ho, S. H. (2008). *Effects of Self service technology on Customers Value and Customer Readiness.* Retrieved from Internet Research

Lederer, B. a. (2001). Retail banking services strategy: a model of traditional, electronic and mixed distribution choices.. . *Journal of Marketing Research, ,* 353-364

Lee, C. C. (2009). The influence of mobile efficacy on attitude towards mobile advertising. *IEEE*, 1231-1236

Luarn, H. l. ((2005)). Towards an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior* , 873–891

Malhotra, R. (2011). *Facctors affecting adoption of Mobile Banking.* New Zealand

Phadtare, S. &. (2012). Factors influencing the adoption of mobile banking with special reference to Pune City. *ASSCI Journal of Management*, 52–65

Riquelme, H. E. (2010). THe moderating effect of gender in adoption of mobile banking. *International Journal of Bank Merketing*, 28(5), 328-341

Rossman, r. (1998). *An Introduction to Qualitative Research.* Sage Publication

V.Venkatesh. (2000). Determinants of perceived ease of use: Integrating control, motivation and emotion into technology acceptance model. *Information Sysytem Research* , 342-365

Wu, J. H. (2005). An empirical evaluation of revised technology accpetance model. *Information & Management*, 719-729

Yao-bin, C. &. (2009). Trust Transference in mobile banking investigation. *International confer proceedings on Service Science Management and Engineering*

Zikmund. (2000). *Business Research Methods.* Fort Worth

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Social Media Influence Towards Digital India Initiatives

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Abstract: In the present paper authors attempt to explore how does social media influences people towards various facilities offered by Government of India under Digital India Initiatives. Influence of social media was studied with respect to formation of perceived ease of use, perceived usefulness, social influence and perceived risk, which further causes intention to adopt facilities offered under digital initiatives by Government of India. Data for the purpose of study was collected through Google forms from respondents residing in state of Chhattisgarh. Total 98 responses were received and analysed through SPSS using statistical techniques like multiple response analysis, correlation. It was found that respondent's attitude, perceived ease of use, perceived usefulness, perceived risk and social influence created by social media causes intention to adopt facilities offered under digital initiatives by Government of India. Except perceived risk all other factors exercised significant positive influence.

Keywords: Digital initiatives, Digital India Program, Social Media Influence, Attitude, Perceived ease of use, Perceived usefulness, Perceived risk, Social influence, Intention to adopt.

Introduction

21st Century is an era of digitization and information revolution, every sphere of globe has been influenced with the evolution of technological advancement. Internet technology abridged the distances between places and paved way for real time audio as well video conversation between the people living in different parts of the globe using social media apps like whatsapp, skype etc. Social media apps and sites are very much popular due to connectivity, reachability, ease of use, and convenience. Social media sites (Facebook,Instagram,Linkedin, Twitter etc.)provide platform for interaction between citizen to citizen, business to citizen, government to citizen. Government departments are interacting with citizens through social media platforms for disseminating information and for social

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awareness campaigns time to time. Digital India Program (DIP) was launched by the Government of India in the year 2015 to provide access to multiple services and benefits to citizen via internet and digitally empower them. Digitization of services not only ensures participative, transparent and responsive governance but also it increases the effectiveness and efficiency of services provided by the government departments.DIP aims speedy and timely communication of government programs. It also aims to have best possible use of government services and information by citizens. DIP is portfolio of different initiatives taken by government based on nine pillars of growth i.e., Broadband Highways, Universal Access to Mobile Connectivity, Public Internet Access Programme, e-Governance: Reforming Government through Technology, e-Kranti - Electronic Delivery of Services, Information for All, Electronics Manufacturing, IT for Jobs and Early Harvest Programmes (https://digitalindia.gov.in/content/programme-pillars).Table 1 provides snapshot of various key facilities offered under digital initiatives by Government of India. Digital initiative of DIP offers availability of government services and information in secure and user friendly manner anywhere, anytime, on any device. Digital initiative aims to achieve the objectives of: (i) education for all, (ii) information for all, (iii) broadband for all, (iv) leadership structure, and (v) controlled E-governance. Modus operandi of the digital India initiative is "right information at the right time to the right person."This reflects vision of the government that is creation of awareness about policies and services of the government and fulfills the needs of citizens.

Table 1: Key facilities offered under digital initiatives

Facilities	Description
Digital locker system	Provide access to documents/ certificates from original issuers.
MyGov.in	Provide opportunities to citizens in policy making while sharing their valuable ideas.
Swachh Bharat Mission Mobile app	Citizens can participate in cleanliness drives of the government via this app.
e-Sign framework	Offers Aadhar enabled e-KYC to facilitate use of electronic signature.
e-Hospital system	It is an open source hospital management system that connects multiple hospitals.
National Scholarship Portal (NSP)	Scholarship amount is transferred directly in to students account via this portal.
'Broadband Highways'	This initiative aims to encourage usages of broadband internet in India.
Electronics Development Fund	This fund invests in equity of companies for developing new technologies.
SARANSH	It is a tool for comprehensive self-review and analysis for CBSE affiliated schools and parents.

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Passport Seva Project	This facility simplifies the process of issue and delivery of passport to citizens.
PARIVAHAN Portal	This portal automates the process of vehicle registration and issue of driving license by transport authorities and maintains database.
National Knowledge Portal	Aims at connecting all universities, research institutions, libraries, laboratories, healthcare and agricultural institutions across the country.
BHIM	This app provides fast, easy and convenient payment transaction through Unified Payments Interface (UPI).
Digital AIIMS	This connects patients and AIIMS for the purpose of getting appointment for checkup.
UMANG (Unified mobile app for new age governance)	This mobile app makes available all government services at one place.
SWAYAM	This portal provides anywhere, anytime access to course material (9th class to post graduation) to all.
e Biz	This portal provides access to regulatory processes to start and run the business.
e Granthalaya	Provides home access to digital books and library services in local languages.
e VISA	This facility enables prospective visitors to apply online for Indian Visa and pay the fee online.
GSTN	Provides IT backbone for the smooth functioning of the Goods & Services Tax.
e Pathshala	Makes available all educational e-resources like textbooks, audio, video, periodicals etc. through website and mobile app.

(Source: https://digitalindia.gov.in/)

Literature Review

A brief summary of reviewed articles for the purpose of this study is presented in Table 2.

The definitions of the variables, identified and tested in the research model, are presented in the Table 3.

According to Davis (1989) both perceived usefulness of the system and perceived ease of use determine behavioural intention to adopt. Whereas Venkatesh and Davis (2000); and Venkatesh, Morris, Davis, & Davis (2003) found that social influence also impact behavioural intention to adopt directly. Researchers found that attitude predict information technology adoption in various context such as adoption of e-learning system (Cheung and Vogel, 2013; Edmund et al., 2012), adoption of mobile games (Liang and Yeh, 2011), and adoption of mobile cloud services (Park and Kim, 2014). It was found that risk concern impact customers'

Table 2: Summary of reviewed articles

Sr.	Researcher	Objective/s	Findings	Limitation
1	Patel (2010)	• To identify potential of ICT in farming. • To find government initiative in agriculture.	Small and marginal farmers in India utilize digital ecosystem for knowledge sharing and getting co-operation from resourceful farmers to make farming viable and foster agricultural growth.	The study includes digital ecosystem in the area of agriculture only.
2	Sharma et al. (2015)	To study the ways by which the Digital India Program can be implemented.	E-kranti and My government.com are contributing in development of economy.	The studies was confined to Digital India Program only.
3	Chinnu Raja (2017)	To identify the opportunities and challenges of digital India program.	It was found from the study that digitization: • improves efficiency and effectiveness of work, • reduces work load, • makes government services more transparent.	Only opportunities and challenges of Digital India Program were studied.
4	Singh and Rana (2017)	To find out the customer perception and impact of demographic factors on adoption of digital mode of payment.	Except education other demographic factors do not influence adoption of the digital payment.	Study was confined to Delhi NCR region.
5	Gowri and Suhas (2017)	To study the influence of digitization on teaching.	Majority of the respondents are aware about digital pedagogical resources and consider them useful.	Information is collected only from UG and PG lecturers of commerce, management & art.Sample size was small
6	Mohanta et al. (2017)	To study the impact of digital India on governance and citizens.	The study found that digital India campaign created digital infrastructure for effective and efficient governance which ultimately benefitted citizens.	The study was descriptive and analytical.
7	Byakodetal. (2019)	Identify the variables that influence customers' adoption of electronic payment services	The study found lack of training as major reason behind less adoption / use of digital payment.	The study was confined to Nelamangala and Bidadi regions of rural Karnataka

adoption behaviour like security concern (King, 2008; Chen, 2008) and privacy concern (Kao,2009). In light of the above backdrop a research model was proposed which was tested empirically. The tested research model is shown in Figure 1.

Table 3: Definition of variables

Sr.	Variables Tested	Definitions
1	Attitude	It is an individuals' beliefs for the prediction of his/her behavior (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980).
2	Perceived Ease of Use	It is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989).
3	Perceived Usefulness	It is an individuals' belief about usefulness or advantages of an object (Davis,1989).
4	Perceived Risk	It represents "uncertainty about the outcome of the use of the innovation" or "uncertainty that the use of the innovation is secure" (Gerrard and Cunningham, 2003)
5	Social Influence	It is the degree to which an individual user's perception is affected by the belief of others who are important to him/her toward the use of an innovation. (Fishbein and Ajzen, 1975).
6	Intention to Adopt	Customers will adopt the service if they believe it offers added value compared with existing alternatives (Davis, 1989).

(Source: Reviewed Literature)

Research Methodology

Researchers sampled 98 respondents residing in the state of Chhattisgarh. Primary data was collected with the help of a questionnaire created through Google forms. Questionnaire was divided in to two sections. Section one included questions related with respondents' demographics. Section two included questions related with awareness about digital initiatives and respondents opinion about social media influence towards Digital India Initiatives. Respondents opinion about social media influence were measured on Likerts' five point scale (1= strongly agree to 5= strongly disagree). The data was collected during December 2019-Januarary 2020. The secondary data was collected from the websites and journals. The collected data was analyzed using SPSS through percentage method and multiple regression analysis.

Data Analysis and Interpretation

Respondents Statistics

Table 4 presents demographic profile of sampled respondents. Out of total respondents 51% were male and 49% were female. Majority of the respondents (85.7%) were unmarried, whereas rests 14.3% weremarried. Age wise majority

of the respondents (69.4%) belong to the age group between 20-25 years, followed by 26-30 years (10.2%), below 20 years (8.2%), 36-40 years (8.2%), 31-35 years (4.1%) respectively. Education wise 45.9% respondents were postgraduate, followed by graduate (37.8%), undergraduate (13.3%) and professionally qualified (3.1%) respectively. Occupation wise majority of the respondents were students (71.4%), followed by private service (18.4%), and Govt. service others (3.1%) respectively.

Table 4: Respondents demographic details

Demographics	Count	Percentage	Demographics	Count	Percentage
Gender			Age		
Male	50	51	Below 20 years	8	8.2
Female	48	49	20-25 years	68	69.4
Marital Status			26-30 years	10	10.2
Married	14	14.3	31- 35 years	4	4.1
Unmarried	84	85.7	36-40 years	8	8.2
Occupation			Education		
Student	70	71.4	Undergraduate	13	13.3
Govt. Service	3	3.1	Graduate	37	37.8
Private Service	18	18.4	Post Graduate	45	45.9
			Professionally Qualified	3	3.1

(Source: Survey Data)

Respondents Awareness about Digital Initiatives

Respondent's source of awareness was shown in Table 5. It was found that 32.7% respondents came to know about various digital initiatives of Government of India through Whatsapp, followed by Facebook (28.6%), Instagram (28.6%), Youtube (8.2%), and Twitter (2%) respectively.

Table 5: Source of awareness

	Frequency	Percent	Valid Percent	Cumulative%
Facebook	28	28.6	28.6	28.6
Instagram	28	28.6	28.6	57.1
Twitter	2	2.0	2.0	59.2
Whatsapp	32	32.7	32.7	91.8
Youtube	8	8.2	8.2	100.0
Total	98	100.0	100.0	

(Source: Survey Data)

Table 6: Case summary

	Valid Cases		Missing Cases		Total Cases	
	N	Percent	N	Percent	N	Percent
$AW[a]	98	100.0%	0	0.0%	98	100.0%

a. Dichotomy group tabulated at value 1.

Table 7: Awareness about digital initiatives

	Digital Initiatives	Responses	Percent of Cases
	N	Percent	
Digital locker system	41	9.8%	41.8%
MyGov.in	33	7.9%	33.7%
Swachh Bharat Mission Mobile app	63	15.0%	64.3%
e-Sign framework	14	3.3%	14.3%
e-Hospital system	17	4.1%	17.3%
National Scholarship Portal (NSP)	25	6.0%	25.5%
Electronics Development Fund	13	3.1%	13.3%
SAARANSH	12	2.9%	12.2%
Passport Seva Project	11	2.6%	11.2%
PARIVAHAN Portal	6	1.4%	6.1%
National Knowledge Portal	35	8.4%	35.7%
BHIM	13	3.1%	13.3%
Digital AIIMS	9	2.1%	9.2%
UMANG (Unified mobile ap for new age governance)	55	13.1%	56.1%
SWAYAM	8	1.9%	8.2%
e Biz	17	4.1%	17.3%
e Granthalaya	8	1.9%	8.2%
e VISA	6	1.4%	6.1%
GSTN	16	3.8%	16.3%
e Pathshala	9	2.1%	9.2%
Others (Specify)	8	1.9%	8.2%
Total	419	100.0%	427.6%

a. Dichotomy group tabulated at value 1.

(Source: Survey Data)

Table 6, revels that there were 98 respondents and according to table 7, those 98 respondentsin their attempt to answer their awareness about digital initiatives, ticked 419 responses in total. That is an average of slightly more than 4 responses per respondent.There was more than one source of awareness about digital initiatives on the part of respondents. "Swachh Bharat Mission Mobile app" had highest score of 64.3% and share of 15% among all responses, followed by "UMANG (Unified mobile ap for new age governance)" (score 56.1% and share 13.1%), "Digital locker system" (score 41.8% and share 9.8%), "National Knowledge Portal"(score 35.7% and share 8.4%), "MyGov.in" (score 33.7% and share 7.9%),"e-Hospital system" (score 17.3% and share 4.1%),"e-Biz" (score 17.3% and share 4.1%), "GSTN" (score 16.3% and share 3.8%), "e-Sign framework" (score 14.3% and share 3.3%), "Electronics Development Fund" (score 13.3% and share 3.1%), "BHIM" (score 13.3% and share 3.1%), "SARANSH" (score 12.2% and share 2.9%), "Passport Seva Project" (score 11.2% and share 2.6%), "Digital AIIMS" (score 9.2% and share 2.1%), "e Pathshala" (score 9.2% and share 2.1%), "e Granthalaya" (score 8.2% and share 1.9%), "SWAYAM" (score 8.2% and share 1.9%), "others" (score 8.2% and share 1.9%), "PARIVAHAN Portal" (score 6.1% and share 1.4%), "e VISA" (score 6.1% and share 1.4%) respectively.

Table 8: Obstacles to digital initiatives

	Responses		Percent of Cases
	N	Percent	
Spectrum	22	8.5%	22.4%
Broadband	49	19.0%	50.0%
Electricity	21	8.1%	21.4%
Mobile Network	54	20.9%	55.1%
E Governance	26	10.1%	26.5%
Awareness	75	29.1%	76.5%
Other	11	4.3%	11.2%
Total	258	100.0%	263.3%

a. Dichotomy group tabulated at value 1.

(Source: Survey Data)

According to Table 8, respondents in their attempt to answer their opinion about obstacles to digital initiatives, ticked 258 responses in total. That is an average of slightly more than 2 responses per respondent. Respondents perceived "awareness" as major obstacles to digital initiatives that had highest score of

76.5% and share of 29.1% among all responses, followed by "mobile network"(score 55.1% and share 20.9%), "broadband" (score 50% and share 19%), "E governance"(score 26.5% and share 10.1%),"spectrum" (score 22.4% and share 8.5%), "electricity" (score 21.4% and share 8.1%), and other obstacles (score 11.2% and share 4.3%) respectively.

Social Media Influence towards Digital India Initiatives

Respondent's opinion, about social media influence towards Digital India Initiatives, were analysed in this section.

Reliability Analysis

Reliability analysis of the instrument used for data collection was conducted and Cronbach's alpha coefficient was used to check internal consistency of the constructs used in the study. As per the recommendation of Hair et al., (2010) all the constructs are considered reliable as their Cronbach's alpha value is more than 0.7. Table 9, presents construct, number of items in each construct and respective Cronbach's alpha value.

Table 9: Reliability statistics

Construct	No. of Items	Cronbach's alpha
Attitude	3	.733
Awareness	3	.714
Perceived Ease of Use	3	.809
Social Influence	3	.793
Perceived Usefulness	3	.887
Perceived Risk	3	.823
Intention to Adopt	3	.878

Correlation Analysis

Relationships between constructs were examined through Pearson correlation analysis. For this purpose average score of multi-item construct was computed and used in the correlation analysis. According to Lind et al., (2010) correlations between variables are considered strong when the value of correlation lies within 0.05 to 1. Table 10, indicates that all variables were correlated at 0.01 level of significance.

Table 10: Correlations analysis

	IA	AT	AW	PEOU	SI	PU	PR
Intention to Adopt (IA)	1.000						
Attitude (AT)	.533	1.000					
Awareness (AW)	.525	.630	1.000				
Perceived Ease of Use (PEOU)	.559	.587	.618	1.000			
Social Influence (SI)	.445	.448	.550	.619	1.000		
Perceived Usefulness (PU)	.455	.506	.515	.645	.689	1.000	
Perceived Risk (PR)	.373	.450	.606	.653	.534	.508	1.000

**Correlation is significant at 0.01 level.

Regression Analysis

Correlation only indicates presence or absence of relationship, not the nature of relationship. Thus multiple regression analysis was performed to identify whether predictor variables account for variability in a dependent variable.

Table 11: Regression analysis

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig.
		B	Std. Error			
1	(Constant)	1.513	.672		2.251	.027
	AT	.338	.119	.294*	2.849	.005
	PEOU	.310	.128	.320*	2.428	.017
	SI	.092	.105	.106*	.882	.030
	PU	.048	.110	.054*	.433	.016
	PR	-.049	.102	-.053*	-.475	.036
a. Dependent Variable: Intention to Adopt (IA)						
b. Predictors: (Constant), PR, AT, SI, PU, PEOU						
Adjusted R^2		.623				
F11.647**						

*Significant at 0.05 level; **Significant at 0.01 level

The estimated regression equation for the model was formulated as: $Y = 1.513+0.338\ X_1 + 0.310\ X_2 + 0.92X_3 + 0.48\ X_4 - 0.049X_5$

where:

Y =Intention to Adopt

X_1 = Attitude
X_2 = Perceived Ease of Use
X_3 = Social Influence
X_4 = Perceived Usefulness
X_5 = Perceived Risk

Table 11, shows that F statistics (F = 11.647) was significant, at 1 percent level of significance, which confirms fitness of the model. The adjusted R^2 was 0.623 which denotes that all the five constructs together cause 62.3 percent variance with respect to Intention to Adopt. The hypothesis testing results are shown diagrammatically through Figure 1.

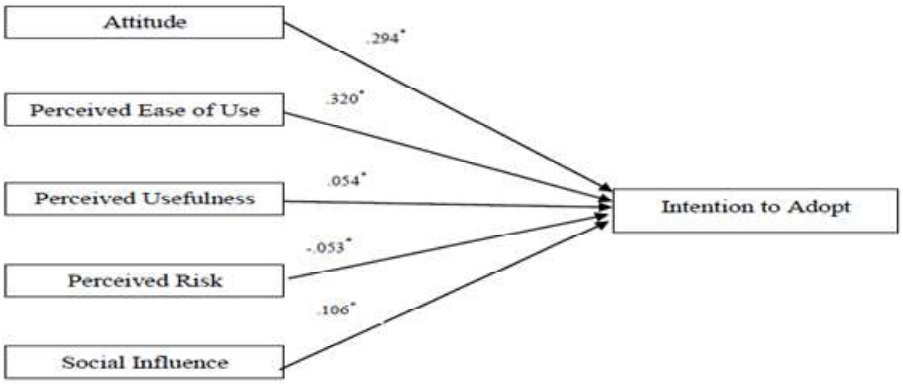

Fig. 1: Tested Research Model

The results in Table 11 and Figure 1 clearly indicate that respondents attitude towards social media's influence significantly influences their intention to adopt facilities offered under digital initiatives by Government of India (â= 0.294, t = 2.251, p < 0.05). Thus $H_1$is supported.H_2, that perceived ease of use created by social media on the part of respondents significantly influences their intention to adopt facilities offered under digital initiatives by Government of India (â= 0.320, t = 2.428, p < 0.05), is supported.H_3, that perceived usefulness revealed by social media about facilities offered under digital initiatives by Government of India significantly influences respondents intention to adopt these facilities (â= 0.320, t = .433, p < 0.05), is supported.H_4, that social media helps in reducing perceived risk about facilities offered under digital initiatives by Government of India which in turn significantly influences respondents intention to adopt these facilities (â= -0.530, t = -.475, p < 0.05), is supported but negative influence was found and established through test statistics.H_5, that social influence exercised by social media users over respondents creates intention to adopt on their part about

facilities offered under digital initiatives by Government of India (â=0.106, t = .882, p < 0.05), is supported.

Findings,Conclusion and Future Research

It was found that Whatsapp was main source of awareness about digital initiatives. Among various facilities offered through digital initiatives respondents were mainly aware about "Swachh Bharat Mission Mobile app" "UMANG (Unified mobile app for new age governance)", and"Digital locker system." Most of the respondents considered low awareness as major obstacle to digital India initiatives. The analysis further indicated that respondent's attitude, perceived ease of use, perceived usefulness, perceived risk and social influence created by social media causes intention to adopt facilities offered under digital initiatives by Government of India. Except perceived risk all other factors exercised significant positive influence with respect to intention to adopt facilities offered under digital initiatives by Government of India. Thus in light of the findings it can be concluded that role of social media is crucial in creation of awareness and intention to adopt facilities offered under digital initiatives by government.

Like any other research this study also had some limitations. Majority of the participants were youngsters studying in various colleges in the state of Chhattisgarh. Future researchers may include participants form other segments and states. Data was collected through Google forms while sharing its link to the contacts in the Whatsapp. Social media influence was studied, towards intention to adopt facilities offered under Digital India Programme, while selecting certain variables identified through careful review of literature. Future researchers may identify and study the role of other variables towards intention to adopt variousfacilities offered under Digital India Programme.

REFERENCES

Ajzen, I., & *Fishbein*, M. (*1980*). Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall.

Bykod, Rajendra Prasad., Chaya U., Kulgude, Pooja., Sharma, Abhishek., Singh, Priyanka and Mazumdar, Chandra Sen. (2015). A Study on Penetration Of Digital Payment System in Selected Areas Of Rural Karnataka. *MSRUAS Journal of Management and Commerce*, 4(2), 18-21.

Chen, L. (2008). A model of consumer acceptance of mobile payment. *International Journal of Mo-bile Communications*, *6*(1), 32–52.

Cheung, R. and Vogel, D. (2013). Predicting user acceptance of collaborative technologies: an extension of the technology acceptance model for e-learning. *Computers & Education*, 63(2), 160-175.

Davis, F.A. (1989). Perceived usefulness, perceived easy of use, and user acceptance of information technology. *MIS Quarterly,* 13(3), 319-40.

Edmunds, R., Thorpe, M. and Conole, G. (2012). Student attitudes towards and use of ICT in course study, work and social activity: a technology acceptance model approach. *British Journal of Educational Technology*, 43(1), 71-84.

Fishbein, M. *and Ajzen*, I. (*1975*). Belief, Attitude, Intention and Behaviour An Introduction to Theory and Research. Addison-Wesley Publishing Co, Inc., Boston.

Gerrard, P. and Cunningham J. B., (2003), The diffusion of internet banking among Singapore consumers. *International Journal of Bank Marketing*, 21(1), 16-28.

Gowri, Pushpa D. and Suhas, U. (2017). A Study On The Influence Of Digital Empowerment Among Teachers In Contemporary Teaching. *Research In Digital Revolution and New India,* 185-191.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). Multivariate Data Analysis. 7th Edition, Pearson, New York.

Kao, D. (2009). The impact of transaction trust on consumers' intentions to adopt m-commerce: A cross-cultural investigation. *Cyberpsychology & Behavior*, 12(2), 225–229.

King, N. (2008). When mobile phones are RFID equipped-finding E.U.-U.S. solutions to protect consumer privacy and facilitate mobile. *Michigan Telecommunications and Technology Law Review*, *15*(1), 107–213.

Liang, T.-P. and Yeh, Y.-H. (2011). Effect of use contexts on the continuous use of mobile services: the case ofmobile games. *Personal and Ubiquitous Computing*, 15(2), 187-196.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2010). *Statistical Techniques in Business & Economics.*14th ed. New York: McGraw Hill Irwin.

Mohanta, Giridhari., Debasish, Sathya Swaroop and Nanda, Sudipta Kishore. (2017). A Study on Growth and Prospect of Digital India Campaign. *Saudi Journal of Business and Management Studies,* 2(7),727-731

Park, E. and Kim, K.J. (2014). An integrated adoption model of mobile cloud services: exploration of key determinants and extension of technology acceptance model. *Telematics and Informatics*, 31(3), 376-385.

Patel,Amrit. (2010), Digital India reaching to small, marginal & women farmers. *International Journal of Research – Granthaalayah*, 4(7),109-121.

Rajan, Chinnu. (2017). Digital India. *International Journal of Emerging Research In Management &Technology,* 6(10), 187-189.

Sharma, Aditya., Sharma, Trivesh., and Sharma, Kavish. (2015). Digital India -A New Change in Economy. *Erpa Journal of Economic Reviews,* 3(12).

Singh, Shamsher and Rana, Ravish. (2017). Study of consumer perception of digital payment mode. *Journal of Internet Banking and Commerce,* 22(3), 1-13.

Venkatesh, V. and Davis, F.D., (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 186-204.

Venkatesh, V., Davis, F. D., Davis, G.B. and Morris, M.G. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27(3), 425-78.

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Do Announcements of Frauds Affect Movement of Stock Price? Evidence from Indian Banking Sector

RUCHITA VERMA AND DHANRAJ SHARMA

Abstract: The purpose of the paper is to investigate the reaction of stock price of Indian banks to announcements of frauds.The study examines the impact of frauds announcements to stock price of banks which experienced fraud using the Event Study Methodology. The fraud cases are selected which amounted to Rs. 1,000 crores or more during the study period of January 2014 to December 2018.Empirical result indicates that fraud announcements do affect the stock price of banks which experienced fraud. In the majority of the cases, the study found negative significant abnormal return and abnormal volume ratio on the event day.The results have the importance for analyzing the behaviour of stock price response with respect to the announcements of frauds and to forecast the stock price immediately after the announcements.

Keywords: Stock Price, Event Study, Abnormal Returns, Frauds' Announcement, and Indian Banking Sector.

Introduction

The Indian banking sector has witnessed substantial growth and revolutionary modification since liberalisation of economy in 1991. Although, the banking sector is well regulated, yet it suffers from diverse obstacles such as financial distress and lack of ethical practices. According to the report of Reserve Bank of India (2018), frauds have increased substantially both in volume and value terms during the last five financial years. The volume of frauds has increased by 19.6 per cent from 4235 to 5064 and the value (loss incurred) has increased by 72 per cent from Rs. 97.5 billion to Rs. 167.7 billion. The fraud in bank or any other corporate entity is entirely unpredictable phenomenon which results in enormous negative economic and social consequences.

The researches on fraud emphasised its harmful impact on shareholders. Song& Han (2017) examined the impact of corporate crime on the stock market in South Korea and found negative reactions to stock prices around the announcements. They found no significant difference in reactions between announcements of

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individual and organisational crimes followed the inferences of (Kouwenberg & Phunnarungsi, 2013). In Germany, Ewelt-Knauer et al. (2015)indicated that shareholder wealth decreases more if at least one board member resigns due to the fraud case.Jayanti & Jayanti (2011) showed that filing for bankruptcy and shutdown by major carriers resulted in negative abnormal returns around the announcement dates for respective firms and positive abnormal returns for rival firms.Davidson et al. (1994) reported negative abnormal stock returns around the announcements of financial reporting violations.

Review of Literature

Empirical evidences demonstrate use of event study to gauge the reaction of the stock price behaviour with respect to positive or negative the announcement. In the recent study, Yin et al. (2018) analysed the role of time varying betas, event induced variance and conditional heteroskedasticity in the estimation of abnormal return around important news announcements. On the basis of 1238 positive and 485 negative profit warnings by listed companies in Hong Kong Stock Exchange, they found presence of price reversal patterns following both positive and negative warnings. The study follows the arguments of Lui et al. 2009; Bremer & Sweeney 1991; and Atkins &Dyl1990. In Saudi Arabia, Syed &Bajwa (2018) studied the response of stock market against the announcements of quarterly earnings based on 1601 events of 115 firms. They found that Saudi stock market does not bear semi-strong form of Efficient Market Hypothesis. Another study on reaction on earning announcements conducted by Angelovska(2017) document that Macedonian investors did not react to the positive news of the companies where as Anwar et al. (2017); Aharony&Dotan (1994); Denis et al, (1994); Michaely et al. (1995) witnessed the positive significant abnormal returns around the announcements. Johnson (1999) who showed the abnormal returns during recession were positively higher than boom and Salminen (2008) documented the interest of investors will be more in assessing information of earning announcements. Renata et al. (2017) based on market model of event study found the positive statistically insignificant AAR within the event. Maitra&Dey (2012) incorporated the CAPM model and Market model separately to measure the market response of dividend announcement in Indian stock market. Bhattacharjee& De (2018) observed that the market reaction to firm specific corporate news varies according to the type of new across different industry groups. They revealedthat finding of the study in Indian context cannot be generalized with the studies in developed markets like US and UK (Antweiler& Frank 2006; Sprenger&Welpe2011; Neuhierl et al. 2013; Ryan & Taffler 2004).

The extant literature also has recognised the importance of event study to measure the effect of announcement of Merger and Acquisition on Shareholders' wealth.

For example, Cho &Ahn (2017) investigated the role of stock payment that results in ownership sharing foreign targets. They found that stock payment in cross-border M&As has a detrimental effect on shareholder value because of the negative signalling effect and stock payment can be beneficial when a foreign target located in a weaker institutional environment and when the cultural distance is large. Another studies conducted by Zaremba&Plotnicki (2016); Dutta& Jog (2009) found strong evidence that announcement of a takeover cerates value for both bidder and acquirers in the short run while Chakraborty (2010) derived no value addition for the shareholders. Rani et al. (2015) documented that cross-border acquisitions of high tech sector target firms in developed markets generate better wealth, supported the findings of Eun et al 1996; Conn et al. 2005; Pyykko2009; Gubbi et al. 2010 and Kohli& Mann 2012. Patel (2018) compared before and after merger position of long term profitability with respect to selected Indian public sector. The study found mix (positive and negative) impact on profitability parameters.

Event study is also used by Wronska et al. (2018) to measure market reaction to share repurchase announcement and the factor which determine the pattern of the market reaction in Poland; Chakrabarti (2017) to investigate the effect on stock returns after stock split in Indian context; Achleitner et al. (2018) to find out effect of foundation ownership on shareholder value; Yildiz el al. (2017) to measure the market reaction to stock grouping announcements; Tan et al. (2017) to explore the influence on corporate governance news on stock performance; Basgoze et al.(2016) to examine the effects of brand value announcements on stock returns of Turkish firms and Tuli&Shukla (2015) to analyze the effect of Qualified Institutional Placement Announcements on Indian Capital Market in India.

From the review of previous studies, it is clear that some studies have been conducted to analyze the impact of fraud announcements on stock price. The present study fills the gap in the literature as it emphasised on stock price reaction for fraud announcements in context of Indian Banks.

Research Methodology

Sample Selection and Sources of Data

In the present study, fraud announcements are considered as event. The study seeks to analyze the impact of bank fraud announcements on the share price of concerned banks. For this purpose we considered the fraud cases in banks which amounted to Rs. 1000 croresor more. The study covers the period from January 2014 to December 2018. Table-1 provides description of samples considered for the study:

Table 1: Description of sample bank frauds

Fraud Company (Formation year)	Promoters/ Director	Nature of Activity	Bank Suffered Most	Fraud Amount (Crores)	CBI Circular issued/ FIR Registered	Code
Firestar Diamond (1999);Gitanjali Group (1966), Mumbai based	Nirav Modi/ Nishal/ Ami/ Mehul Choksi	Diamond Merchant	PNB	11394	13-02-18	Case-I
Rotomac Global Private Limited (1992), Kanpur based	Vikram Kothari/ Sadhana Kothari and Rahul Kothari	Trade and Manufacturing Pens	Indian Overseas Bank	3695.39	18-02-18	Case-II
Totem Infra-structure Ltd (1997), Hyderabad based	Totalpudi Salalith/ Totalpudi Kavitha	Road/ Water Infrastructure Projects	SBI	1394.43	22-03-18	Case-III
Kingfisher Airlines Limited (2003), Mumbai based	Vijay Malya	Domestic and International air travel	SBI	9091.4	27-02-16	Case-IV

Source: Authors' own compilation

In order to analyze the effect of announcements of bank frauds on share price of the banks, the study identify those bank which suffer most in every case. Table 2 shows the list of banks suffered most in every sample cases with respected amount. The historical data of stock price of the identified banks are collected from the website of National Stock Exchange (NSE) on daily basis and the S&P CNX Nifty 50 is considered as market proxy.

Event Study

Event Study is used to analyze the effect of banks' fraud announcements on share price movements of the banks. Following the Ball & Kothari (1991), 21 days event window is used to compute the abnormal return which consists of event date, 10 days before the event and 10 days after the event. The study takes 250 days before event window to compute the expected return. The event is the day on which FIR registered by CBI and issued the circular for fraud detection.

It is important to mention here event date of Case-I and Case II were not trading day due to holiday, that is why next trading day is used as event date.

Table 2: Top 5 banks suffered in each sample case

Case-I	Case-II	Case-III	Case-IV
PNB (11394 Crores)	Indian Overseas Bank (771.07 Crores)	State Bank of India (357.64Crores)	State Bank of India (1874.66Crores)
	Bank of India (754.77 Crores)	Union Bank of India (313.84Crores)	IDBI Bank (885.64Crores)
	Union Bank of India (458.95 Crores)	Bank of Baroda (208.67 Crores)	Punjab National Bank (815.08Crores)
	Bank of Baroda (456.63 Crores)	IDBI (174.47 Crores)	Bank of India (666.13Crores)
	Allahabad Bank (330.68 Crores)	Punjab National Bank (126.30Crores)	Bank of Baroda (639.89Crores)

Source: Authors' own compilation

Table 3: Classification of period for event study

Case	Estimation Period	Pre-Event Period	Event Day	Post Event Period
I	27-01-2017 to 29-01-18 (250 days)	30-01-18 to 12-02-18 (10 days)	14-02-2018	15-02-18 to 28-02-18 (10 days)
II	01-02-2017 to 01-02-18 (250 days)	02-02-18 to 16-02-18 (10 days)	19-02-2018	20-02-18 to 06-03-18 (10 days)
III	06-03-2017 to 07-03-18 (250 days)	08-03-18 to 21-03-18 (10 days)	22-03-2018	23-03-18 to 09-04-18 (10 days)
IV	11-02-2015 to 12-02-16 (250 days)	15-02-16 to 26-02-16 (10 days)	29-02-2016	01-03-16 to 15-03-16 (10 days)

Source: Authors' own compilation

According to Syed &Bajwa (2018); Sharma and Verma (2016), abnormal returns are computed as:

$$AR_{it} = R_{it} - E(R_{it})$$

where:

AR_{it} = Abnormal return of the security i in the period t.

R_{it} = Actual return for the security i in the period t.

$E(R_{it})$= Expected return for the security i in the period t.

Expected return for the company i in the period t is computed as-

$E(R_{it}) = \alpha_i + \beta_i R_{mt}$

α_i = Intercept term

β_i = Regression constant

R_{mt} = Return of the market in the period t

The significant value of t-test at 5% level of significance shows Abnormal Returns are statistically significant from zero and fraud announcement events affect the stock price of concerned banks. (Chakrabarti, 2017; Adnan et al. 2016; Yin et al. 2018)

In order to ascertain the magnitude of abnormal returns over the entire event window, Abnormal Returns are cumulated to compute Cumulative Abnormal Return (CAR).

Average Abnormal Return (AAR) is computed as

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_{it}$$

Cumulative Average Abnormal Returns (CAARs) are computed by summation of Average Abnormal Returns (AAR).

Harris & Gurel (1986) suggested the Mean Abnormal Volume Trading Ratio (MAVR) to test whether there is any abnormal trading volume around the announcement day. Mean Abnormal Volume Trading Ratio is computed as:

$$MAVR_t = \frac{1}{N}\sum AVR_{it}$$

and

AVR_{it} = V it/ Vi / M it / M i

At normal level, Abnormal Volume Ratio (AVR) is equal to 1 which indicates that the firm stock does not witness abnormal trading volume effect.

where,

AVR_{it} is the standardized measure of the abnormal volume of firm i according to market variation.

Vit is the volume of the stock i for the day t

Vi is the average of volume over 40 days prior to event window(-50, -11)

Mit is the volume of the market index for the day t

M i is the average of volume of market index over 40 days prior to event window(-50, -11)

Following the study of Yildiz et al, (2017) we consider 40 days prior to event window for the computation of Mean Abnormal Volume Ratio because short estimation period prevent overlapping effect of grouping announcements.

Analysis and Interpretation

Table-4 presents the Abnormal Returns and test statistics of stock price of the concerned banks during the event window of -10 and +10 days. The abnormal return is the difference between Actual Return and Expected Return (computed with Ordinary Least Square). The result shows that the reaction of the stock price of banks was negative to the announcements of fraud except the Case-IV. The highest negative reaction was observed in the stock price of Punjab National Bank i.e. -8.72% (Case-I) on the event day which increased to -12.98% on the next day of fraud announcement. In the Case-II and III, reaction of stock price of banks was also negative i.e. -1.91% and -1.52% and continue negative on the next day of the event. In Case-IV, surprisingly the positive abnormal return was found on event date. From in-depth analysis, we found, the bank declared the fraudulent company as wilful defaulter on Feb 16, 2016 and registered the complaint on Feb 27, 2016. It was not the trading day so the study consider the next immediate trading day as event. The effect of the fraud was already replicated by the stock price of SBI before the event date. The test statistics (p-value) shows that Abnormal Returns significantly diverges from zero and depicts the effect of fraud announcements on the stock price of banks.

Graph-1 shows Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs) during Event Window of -10 and +10. The study finds negative AAR (-2.5%) on the event date and highest negative impact (AAR) was observed on next day from the event (-4.03%). The result also shows how highest positive CAAR (3.66%) on four day before the event reached to 0 on event day and remain negative during all post event days due to severe combined negative effect of fraud announcements.

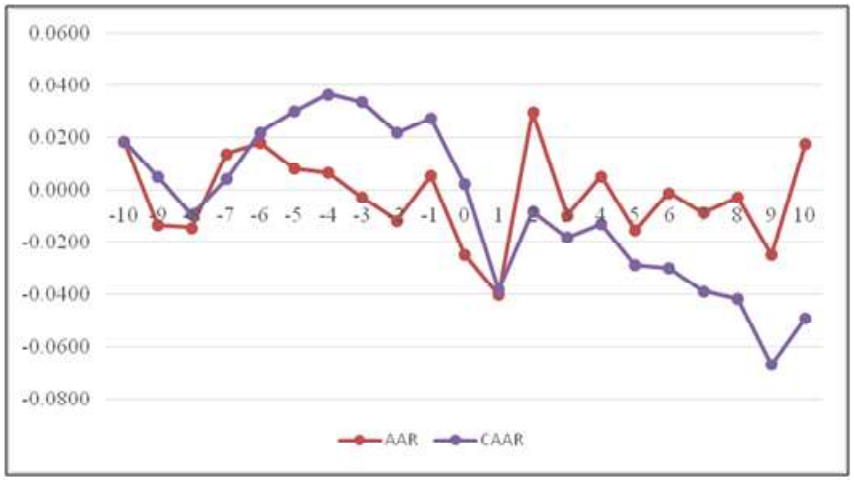
Table 4: Abnormal returns and test statistics in event window

Event	Case-I		Case-II		Case-III		Case-IV	
Window	AR	p-value	AR	p-value	AR	p-value	AR	p-value
-10	0.0130	0.7056	-0.0124	0.1129	0.0271	0.0000**	0.0462	0.0001**
-9	-0.0021	0.9520	0.0006	0.9353	-0.0104	0.1113	-0.0425	0.0002**
-8	-0.0209	0.5454	-0.0122	0.1202	-0.0326	0.0000**	0.0076	0.5018
-7	0.0301	0.3832	0.0286	0.0003**	0.0082	0.2117	-0.0117	0.2998
-6	0.0350	0.3112	-0.0053	0.4973	0.0118	0.0720	0.0297	0.0088**
-5	0.0246	0.4753	0.0110	0.1609	-0.0020	0.7564	-0.0013	0.9097
-4	-0.0153	0.6569	0.0347	0.0000**	0.0222	0.0008**	-0.0154	0.1736
-3	-0.0091	0.7910	-0.0099	0.2063	0.0000	0.9986	0.0071	0.5305
-2	0.0158	0.6474	-0.0431	0.0000**	0.0005	0.9365	-0.0203	0.0720
-1	0.0106	0.7577	0.0028	0.7248	-0.0105	0.1108	0.0187	0.0979
0	-0.0872	0.0119*	-0.0191	0.0152*	-0.0169	0.0103*	0.0230	0.0418*
1	-0.1298	0.0002**	-0.0038	0.6255	-0.0084	0.2008	-0.0192	0.0897*
2	0.0033	0.9227	-0.0028	0.7243	0.0285	0.0000**	0.0895	0.0000**
3	-0.0539	0.1189	0.0008	0.9165	0.0224	0.0007**	-0.0087	0.4384
4	0.0069	0.8403	-0.0162	0.0385*	-0.0020	0.7551	0.0319	0.0050**
5	-0.0036	0.9163	-0.0039	0.6138	-0.0307	0.0000**	-0.0239	0.0343*
6	-0.0161	0.6407	0.0074	0.3415	0.0119	0.0703*	-0.0080	0.4762
7	-0.0373	0.2796	0.0011	0.8849	0.0065	0.3170	-0.0060	0.5936
8	-0.0351	0.3085	0.0133	0.0892	0.0145	0.0275*	-0.0046	0.6802
9	-0.1130	0.0012**	0.0031	0.6905	0.0053	0.4165	0.0048	0.6679
10	0.0469	0.1742	-0.0059	0.4469	-0.0040	0.5389	0.0333	0.0033**

Source: Authors' own compilation;

Note: ** Significance at 1% level and * Significance at 5% level.

Graph-1 Average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) during event window



Source: Authors' own compilation

Table-4 shows the descriptive statistics of Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs) of every cases in seven event windows (-10,+10; -5,+5; -3,+3; -1,+1; 0,+3; 0,+5 and 0,+10). In the Case-I and II, the average of ARs and CARs is negative in all event windows. In the Case-I, the worst AR is found on the immediate next day of the event (-12.98%) and CAR is found on the third day after the event (-18.59%). In Case-II, the negative AR (-1,91%) of the event date is worst AR in events 1,+1; 0,+3; 0,+5; 0,+10 and AR of two day before the event is the worst AR in events. -10,+10; -5,+5; -3,+3. It also shows that highest positive CAR on fourth day before the event (4.50%) reaches to highest negative CAR on fifth day after the event (-5.05%). In Case-III, highest negative AR (-3.26%) and CAR (-1.60%) belong to -10 and + 10 window. In Case-IV, reaction of stock price (AR and CAR) is worst in pre-event period and best in post event period.

Table 5 depicts the Volume Ratio (VR) and Mean Volume Ratio (MVR) during the event window of -10, +10. At normal level, Volume Ratio (VR) is equal to 1, signifies that the firm stock does not witness abnormal trading volume effect. The result shows highest VR in Case-I (3.0965) among all fraud cases on event day. The MVR was also above the normal level on event day. In Case-I, VR (9.9583) reach to highest level of abnormal trading on the next day of event and continue till the fifth day of post event period. There are some incidence of abnormal level in Case- II, III and IV during the event window but on event day, these cases show near to normal level of VR.

Table 4: Abnormal returns and cumulative abnormal returns during multi day event windows

	Case-I							
	AR				CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	-0.0161	0.0468	0.0469	-0.1298	-0.0860	0.1482	0.0817	-0.3841
-5,+5	-0.0216	0.0486	0.0246	-0.1298	-0.0425	0.1188	0.0817	-0.1859
-3,+3	-0.0358	0.0561	0.0158	-0.1298	-0.0358	0.1126	0.0817	-0.1859
-1,+1	-0.0688	0.0720	0.0106	-0.1298	-0.0197	0.1092	0.0817	-0.1353
0,+3	-0.0669	0.0562	0.0033	-0.1298	-0.1147	0.0768	-0.0055	-0.1859
0,+5	-0.0440	0.0562	0.0069	-0.1298	-0.1367	0.0686	-0.0055	-0.1859
0,+10	-0.0381	0.0542	0.0469	-0.1298	-0.2043	0.1032	-0.0055	-0.3841
				Case-II				
-10,+10	-0.0015	0.0163	0.0347	-0.0431	-0.0165	0.0250	0.0450	-0.0503
-5,+5	-0.0045	0.0193	0.0347	-0.0431	-0.0121	0.0312	0.0450	-0.0503
-3,+3	-0.0107	0.0160	0.0028	-0.0431	-0.0131	0.0237	0.0351	-0.0309
-1,+1	-0.0067	0.0112	0.0028	-0.0191	-0.0193	0.0123	-0.0053	-0.0282
0,+3	-0.0062	0.0088	0.0008	-0.0191	-0.0284	0.0029	-0.0244	-0.0309
0,+5	-0.0075	0.0081	0.0008	-0.0191	-0.0350	0.0106	-0.0244	-0.0503
0,+10	-0.0024	0.0094	0.0133	-0.0191	-0.0345	0.0091	-0.0244	-0.0503

Contd...

Contd...

				Case-III				
	AR				CAR			
Event Window	Mean	St Dev	Maximum	Minimum	Mean	St Dev	Maximum	Minimum
-10,+10	0.0020	0.0169	0.0285	-0.0326	0.0177	0.0181	0.0453	-0.0160
-5,+5	0.0003	0.0179	0.0285	-0.0307	0.0162	0.0162	0.0399	-0.0110
-3,+3	0.0022	0.0170	0.0285	-0.0169	0.0152	0.0173	0.0399	-0.0110
-1,+1	-0.0119	0.0044	-0.0084	-0.0169	0.0002	0.0129	0.0142	-0.0110
0,+3	0.0064	0.0224	0.0285	-0.0169	0.0109	0.0227	0.0399	-0.0110
0,+5	-0.0012	0.0228	0.0285	-0.0307	0.0147	0.0210	0.0399	-0.0110
0,+10	0.0025	0.0173	0.0285	-0.0307	0.0236	0.0193	0.0453	-0.0110
				Case-IV				
-10,+10	0.0062	0.0292	0.0895	-0.0425	0.0576	0.0476	0.1346	-0.0005
-5,+5	0.0074	0.0332	0.0895	-0.0239	0.0546	0.0494	0.1346	-0.0005
-3,+3	0.0129	0.0379	0.0895	-0.0203	0.0450	0.0442	0.1115	-0.0005
-1,+1	0.0075	0.0232	0.0230	-0.0192	0.0271	0.0123	0.0412	0.0182
0,+3	0.0211	0.0490	0.0895	-0.0192	0.0694	0.0444	0.1115	0.0220
0,+5	0.0154	0.0428	0.0895	-0.0239	0.0871	0.0447	0.1346	0.0220
0,+10	0.0102	0.0327	0.0895	-0.0239	0.0946	0.0342	0.1346	0.0220

Source: Authors' own compilation

Table 5: Volume ratio and mean volume ratio during event window

Event Window	VR (Case-I)	VR (Case-II)	VR (Case-III)	VR (Case-IV)	MVR
-10	0.7170	0.6493	0.8815	1.1868	0.8587
-9	0.5203	0.8115	0.7583	1.7450	0.9588
-8	0.7865	0.5967	0.8423	1.4262	0.9129
-7	0.7061	0.4244	1.8402	1.0482	1.0047
-6	0.6529	0.3942	0.7345	1.1519	0.7334
-5	0.9461	0.6221	0.6595	0.7976	0.7563
-4	0.8152	0.7106	1.4445	1.3579	1.0821
-3	0.5640	0.8213	0.8532	1.0348	0.8183
-2	0.4975	0.9219	0.8406	0.7666	0.7567
-1	0.7632	0.4928	0.8654	0.9807	0.7755
0	3.0965	0.9229	0.8876	1.4683	1.5938
1	9.9583	0.9548	1.1084	0.7788	3.2001
2	6.9209	0.2885	0.9749	1.8562	2.5101
3	5.6253	0.1985	0.8582	1.2376	1.9799
4	6.3645	0.6342	1.4442	1.6349	2.5195
5	2.0032	0.4415	0.8423	1.0904	1.0944
6	0.8691	0.5384	0.7807	0.9012	0.7724
7	1.3318	0.2935	0.9108	0.7535	0.8224
8	1.6846	0.3126	0.8965	1.0309	0.9812
9	6.9421	0.3758	0.7780	0.7603	2.2141
10	4.7739	0.4849	0.8227	0.8344	1.7290

Source: Authors' own compilation

Conclusion

The result of the study indicates that fraud announcements have the significant effect on the stock price of banks which experienced fraud. In the majority of the cases, we find negative reaction of the stock price and most severe reaction is shown in Case-I where negative Abnormal Return was -8.72% in PNB's stock price and Volume Ratio was 3.0965 which indicates abnormal level of volume trading in stock.

The inferences of the research is only based upon the cases of major fraud in the Indian banks, amounted to Rs. 1000 crore or more which is the limitation of the

study. Another limitation of the research is not to consider the effect of frauds' announcements on rivalry banks. The study can be useful for analyzing the behaviour of shareholders with respect to the announcements and to forecast the stock price immediately after the announcements.

REFERENCES

Achleitner, A. K., Bazhutov, D., Betzer, A., Block, J., &Hosseini, F. (2018). Foundation ownership and shareholder value: an event study. *Review of Managerial Science*, 1–26.

Adnan, A. T. M., Hossain, A., Adnan, A., &Hossain, A. (2016). Impact of M&A announcement on acquiring and target firm's stock price: An event analysis approach. *International Journal of Finance and Accounting*, 5(5), 228–232.

Aharony, J., &Dotan, A. (1994). Regular dividend announcements and future unexpected earnings: An empirical analysis. *Financial Review*, *29*(1), 125-151.

Angelovska, J. (2017). Investors' behaviour in regard to company earnings announcements during the recession period: evidence from the Macedonian stock exchange. *Economic Research-EkonomskaIstraživanja, 30*(1), 647–660.

Antweiler, W., & Frank, M. Z. (2006). Do US stock markets typically overreact to corporate news stories?. Available at SSRN 878091.

Anwar, S., Singh, S., & Jain, P. K. (2017). Impact of cash dividend announcements: Evidence from the Indian manufacturing companies. *Journal of Emerging Market Finance, 16*(1), 29–60.

Atkins, A. B., &Dyl, E. A. (1990). Price reversals, bid-ask spreads, and market efficiency. *Journal of Financial and Quantitative Analysis, 25*(4), 535-547.

Ball, R., & Kothari, S. P. (1991). Security returns around earnings announcements *Accounting Review*, 718-738.

Basgoze, P., Yildiz, Y., &MetinCamgoz, S. (2016). Effect of brand value announcements on stock returns: empirical evidence from Turkey. *Journal of Business Economics and Management, 17*(6), 1252–1269.

Bhattacharjee, N., & De, A. (2018). A perspective on industry classification and market reaction to corporate news: Evidence from India. *Scientific Annals of Economics and Business, 65*(1), 31–50.

Bodhanwala, R. J. (2015). Stock Split: A test of market efficiency on Indian Stocks (2001–2013). *Global Business Review, 16*(5_suppl), 112S-124S.

Bremer, M., & Sweeney, R. J. (1991). The reversal of large stock price decreases. *The Journal of Finance, 46*(2), 747-754.

Chakrabarty, K. C. (2013). Fraud in the banking sector—causes, concerns and cures. in national conference on financial fraud organised by ASSOCHAM, New Delhi (Vol. 26).

Chakraborty, M. (2010). The wealth effects of takeover announcement for firms in the financial services sector in India. *Journal of Emerging Market Finance, 9*(2), 199-227.

Chen, Y., Zhu, S., & Wang, Y. (2011). Corporate fraud and bank loans: Evidence from China. China *Journal of Accounting Research*, 4(3), 155-165.

Cho, H., &Ahn, H. S. (2017). Stock payment and the effects of institutional and cultural differences: A study of shareholder value creation in cross-border M&As. *International Business Review, 26*(3), 461–475.

Conn, R. L., Cosh, A., Guest, P. M., & Hughes, A. (2005).The impact on UK acquirers of domestic, cross-border, public and private acquisitions. *Journal of Business Finance & Accounting, 32*(56), 815-870.

Davidson, W. N., Worrell, D. L., & Lee, C. I. (1994). Stock market reactions to announced corporate illegalities. *Journal of Business Ethics, 13*(12), 979-987.

Denis, D. J., Denis, D. K., &Sarin, A. (1994). The information content of dividend changes: Cash flow signaling, overinvestment, and dividend clienteles. *Journal of Financial and Quantitative Analysis, 29*(4), 567-587.

Dutta, S., & Jog, V. (2009). The long-term performance of acquiring firms: A re-examination of an anomaly. *Journal of Banking & Finance, 33*(8), 1400-1412.

Eun, C. S., Kolodny, R., & Scheraga, C. (1996). Cross-border acquisitions and shareholder wealth: Tests of the synergy and internalization hypotheses. *Journal of Banking & Finance, 20*(9), 1559-1582.

Ewelt-Knauer, C., Knauer, T., &Lachmann, M. (2015).Fraud characteristics and their effects on shareholder wealth. *Journal of Business Economics, 85*(9), 1011-1047.

Gafoor, C. A., Mariappan, V., &Thyagarajan, S. (2018). Board characteristics and bank performance in India. *IIMB Management Review, 30*(2), 160-167.

Gubbi, S. R., Aulakh, P. S., Ray, S., Sarkar, M. B., & Chittoor, R. (2010). Do international acquisitions by emerging-economy firms create shareholder value? The case of Indian firms. *Journal of International Business Studies, 41*(3), 397-418.

Harris, L., &Gurel, E. (1986). Price and volume effects associated with changes in the S&P 500 list: New evidence for the existence of price pressures. *The Journal of Finance, 41*(4), 815-829.

Haß, L. H., Vergauwe, S., & Zhang, Z. (2019). State-ownership and bank loan contracting: evidence from corporate fraud. *The European Journal of Finance, 25*(6), 550-567.

Jayanti, R. K., &Jayanti, S. V. (2011). Effects of airline bankruptcies: an event study. *Journal of Services Marketing, 25*(6), 399-409.

Johnson, M. F. (1999). Business cycles and the relation between security returns and earnings. *Review of Accounting Studies, 4*(2), 93-117.

Kohli, R., & Mann, B. J. S. (2012). Analyzing determinants of value creation in domestic and cross border acquisitions in India. *International Business Review, 21*(6), 998-1016.

Kouwenberg, R., &Phunnarungsi, V. (2013).Corporate governance, violations and market reactions. *Pacific-Basin Finance Journal, 21*(1), 881-898.

Lui, D., Markov, S., & Tamayo, A. (2013). The information content of analysts' risk rating.Working paper, http://www.ssrn. com. Accessed 20 Nov.

Maitra, D., &Dey, K. (2012). Dividend announcement and market response in Indian stock market: An event-study analysis. *Global Business Review, 13*(2), 269-283.

Michaely, R., Thaler, R. H., & Womack, K. L. (1995). Price reactions to dividend initiations and omissions: Overreaction or drift?. *The Journal of Finance, 50*(2), 573-608.

Neuhierl, A., Scherbina, A., &Schlusche, B. (2013). Market reaction to corporate press releases. *Journal of Financial and Quantitative Analysis, 48*(4), 1207-1240.

Patel, R. (2018). Pre & Post-Merger Financial Performance: An Indian Perspective. *Journal of Central Banking Theory and Practice, 7*(3), 181–200.

Pyykko, E. (2009). Stock market valuation of R&D spending of firms acquiring targets from technologically abundant countries. *Journal of Multinational Financial Management, 19*(2), 111-126.

Pyykkö, E. (2009). Stock market valuation of R&D spending of firms acquiring targets from technologically abundant countries. *Journal of Multinational Financial Management, 19*(2), 111-126.

Rani, N., Yadav, S. S., & Jain, P. K. (2015). Impact of mergers and acquisitions on shareholders' wealth in the short run: An event study approach. *Vikalpa, 40*(3), 293-312.

Renata, L., Jurakovaite, O., & Galinskaite, A. (2017).The Analysis of Dividend Announcement Impact on Stock Prices of Baltic Companies.*Central European Business Review, 6*(1), 61.

Reserve Bank of India (2018). Financial sector: regulation and developments (Chapter III), financial stability report, 54-83. Retrieved from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/7CHAPTER3DEC18E065763A15054BCBA3FF2EB075D724FD.PDF

Roslen, S. N. M., Yee, L. S., & Ibrahim, S. A. B. (2017). Green bond and shareholders' wealth: a multi-country event study. *International Journal of Globalisation and Small Business, 9*(1), 61–69.

Ryan, P., &Taffler, R. J. (2004). Are economically significant stock returns and trading volumes driven by firmspecific news releases?. *Journal of Business Finance & Accounting, 31*(12), 49-82.

Salminen, J. H. (2008). Abnormal return of dividend announcements during a boom and a recession.Empirical evidence from the years of 2002-2002 and 2005-2007, including the Finnish extra dividends.

Song, C., & Han, S. H. (2017). Stock market reaction to corporate crime: Evidence from South Korea. *Journal of Business Ethics, 143*(2), 323-351.

Sprenger, T. O., &Welpe, I. M. (2011).News or noise?The stock market reaction to different types of company-specific news events. The Stock Market Reaction to Different Types of Company-Specific News Events (January 4, 2011).

Syed, A. M., &Bajwa, I. A. (2018). Earnings announcements, stock price reaction and market efficiency–the case of Saudi Arabia. *International Journal of Islamic and Middle Eastern Finance and Management, 11*(3), 416–431.

Tan, D. T., Chapple, L., & Walsh, K. D. (2017). Corporate fraud culture: Re-examining the corporate governance and performance relation. *Accounting & Finance, 57*(2), 597-620.

Tuli, A., &Shukla, A. (2015). Informational effect of select private placements of equity: An empirical analysis in Indian capital market. *Vikalpa, 40*(2), 165–190.

Utrero-González, N., &Callado-Muñoz, F. J. (2016). Do investors react to corporate governance news? An empirical analysis for the Spanish market.*BRQ Business Research Quarterly, 19*(1), 13–25.

Wronska-Bukalska, E., Kazmierska-Jozwiak, B., &Rozkovec, J. (2018).The information content of share repurchases–evidence from Poland.*Economics and Management*.

Yildiz, Y., Karan, M. B., &Pirgaip, B. (2017). Market reaction to grouping equities in stock markets: An empirical analysis on Borsa Istanbul. *Borsa Istanbul Review, 17*(4), 216–227.

Yin, S., Mazouz, K., Benamraoui, A., &Saadouni, B. (2018). Stock price reaction to profit warnings: the role of time-varying betas. *Review of Quantitative Finance and Accounting, 50*(1), 67–93.

Zaremba, A., &Plotnicki, M. (2016). Mergers and acquisitions: Evidence on post-announcement performance from CEE stock markets. *Journal of Business Economics and Management, 17*(2), 251–266.

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Efficiency Assessment of Indian Commercial Banks: A Meta-Frontier Approach

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Abstract: The study examines the efficiency of the Indian Commercial Banks in the backdrop of undesirable Non-Performing Assets. The study applies Meta-Frontier approach for assessing the efficiency of banks in heterogeneous Indian banking groups, such as Indian PSU Banks, Domestic Private Banks and Foreign Banks, from managerial point of view. The study reveals that, the issue of Non-Performing Assets which is considered as alarming in case of the Indian banking sector, has not been efficiently and properly addressed by the Indian PSU banks and Domestic Private Banks. None of the Indian PSU banks is able to position as an efficient frontier in the Meta frontier matrix. Wilcoxon matched pairs signed ranks test confirms that only the Indian foreign banks are serious in managing their NPAs effectively. Mann- Whitney independent sample test also confirms that there is a significant difference in Meta efficiency scores and technological gap inefficiency scores of Foreign Banks compared to the PSU and Indian Domestic Private Banks. The Indian foreign banks out perform PSU and Domestic private banks in all respects, which may be owing to their advanced technology, global focus and global experience in banking operations.

Keywords: Bank efficiency, Undesirable output, Data envelopment, Non Performing Asset, Meta-frontier

Introduction

India being one of the biggest economies of the world (fifth in 2019) needs a proficient financial system for its growth and development. For Indian Public Sector Banks (PSBs) with around 70 percent of the pie in Indian Banking, they are expected to have a commitment towards the Indian economy and in encouraging its financial upliftment. In order to achieve India's $5 trillion economy, the banking sector in our financial framework needs to be more efficient. The economy needs the sector to perform to their fullest potential and bolster financial development as opposed to pullback loaning, which detrimentally affects India's development and growth.

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The data envelopment analysis (DEA) as developed by Charnes, Cooper and Rhodes (1978) is one of the powerful and widely accepted tools for measuring efficiency of different industries and sectors all over the globe. This tool has become very popular and powerful for assessing the efficiency or inefficiency of banks and insurance companies as well (Diallo, 2018). As a non parametric method DEA measures the relative efficiency of decision making units (DMUs) with the help of multiple inputs and outputs. However, one of the deficiencies that DEA methodology holds is that the efficiency of DMUs should be measured in the unified and homogeneous technical environment (Kounetas & Napolitano, 2018). In this study we concern with the measuring efficiency of the Indian commercial banks consisting the Public Sector Banks (PSU Banks), Domestic Private Banks and Foreign Banks (ignoring RRBs) of which the technological levels differ and the efficiency comparison on such heterogeneous technological environment may lead us to biased conclusions(Walheer, 2018). Thus, for addressing such issue a meta-frontier approach has been applied. The study also considers one of the well exemplified factor in case of banking industry that is the bad loan or non-performing assets which is considered as undesirable output of banks. The meta-frontier approach helpsus to estimate the efficiency results more objective and unbiased manner even the DMUs belong to heterogeneous classesandwhen the un desirable output (NPA) is considered in the analysis (Carrillo & Jorge, 2018; Li, Liu and Liu (2017).

Review of Literature

Kumar and Gulati (2008) measured the technical, pure technical and scale efficiency of Indian PSU banks for the year 2004-05. The overall efficiency as found by the study using input oriented DEA model was 88.5%. With the help of logistic regression model they observed that non-traditional off balance sheet activities of the banks had positive impact on their overall efficiency. Ray and Das (2011) applied non parametric approach for measuring cost and profit efficiency of Indian banks in the post liberalized period. They found that state owned banks were more profitable compared to the private banks. Jayaraman and Srinivasan (2014) applied a holistic approach for measuring profit efficiency of Indian banks considering desirable as well as undesirable outputs. They found that allocative inefficiency was more responsible towards the profit inefficiency of the Indian banks compared technical inefficiency. Maudos and Pastor (2003) examined the cost and profit efficiency of Spanishbanks and found that cost and profit efficiency moved hand to hand. They found high positive correlation between profit and cost efficiency for Spanish banks. Barros, Managi, & Matousek (2012) examined the technical efficiency of the Japanese banks over the period 2000-2007. They considered non performing loan as undesirable output along with two other desirable outputs. They found that NPL was a big hurdle for the

Japanese banks to improve their efficiency and argued in favor of further restructuring in different segments of Japanese Regional banks. Goyal and Aggarwal (2018) applied Meta frontier DEA for measuring efficiency of Indian commercial banks for the year 2015-16. The study revealed that the Indian banking sector is 73.44% efficient. They found that the group frontier of Indian foreign banks is most close to the Meta frontier. The distance from the Meta frontier of the group frontier for the Indian PSU banks is the maximum. Seiford and Zhu (1999) applied two-stage DEA for measuring efficiency of 55 US commercial banks on profitability and marketability. They found that relatively large banks were more efficient on profitability and small banks at the same time outperformed on marketability.Wang et. al. (2013) measured energy efficiency of different provinces in China. In order to defuse the managerial experience and the technological advancement into the energy efficiency the study suggested about the promotion of communication and cooperation among the different provinces of China. Hanèlová and Melecký (2016) applied meta-frontier analysis of EU- 28 production units for measuring efficiency with road fatality and long term unemployment as undesirable output. Goyal et. al. (2018) made an in-depth analysis of the efficiency of Indian textile industry under meta-frontier approach. The study found that the Indian textile industry suffers from inefficiency and there had been ample scope for efficiency improvement.Chen et. al. (2019) applied cross meta- frontier for assessing heterogeneous Chinese transport industries, taking carbon emission as undesirable output. Their results revealed that that the real efficiency of DMUs was lower than the efficiency value obtained by traditional meta-frontier analysis.

As observed from the studied literature and as per the best of our belief, we can say that the efficiency analysis of Indian banking sector considering heterogeneous technological environment among PSU Banks, Domestic Private Banks and Foreign banks considering the undesirable output like NPA is very insufficient. Though a few papers attempted to make Meta analysis of Indian banking sector.

Data and Methodology

In this study we have considered the scheduled commercial banks operating in India as per RBI website (excluding RRBs) over the period of 2013-14 to 2017-18. Year 2018-19 has been excluded from our study as we are unable to find NPA data of foreign banks for the year 2018-19. Relevant data on 60 banks, 18 PSU, 22 Domestic private and 20 foreign banks have been collected from the RBI website. We have also collected data from Prowess database published by Centre for Monitoring Indian Economy (CMIE), Mumbai. Since, our study is confined to Indian commercial banks involving heterogeneous banking groups, we have applied meta-frontier approach for making detailed and unbiased analysis of

bank efficiency. In this study we have framed two different models one is restricted model (without considering NPA as bad output) and other is unrestricted (considering NPA as an undesirable output). Considering the earlier literature we have applied two outputs and three inputs for measuring efficiency under restricted model and two outputs and four inputs (adding NPA as further input) in case of unrestricted model. Here we have transformed the undesirable output (NPA) as desirable output considering the undesirable output as input(Fried *et al.*, 2008).The two outputs considered are interest margin (Interest spread) and other income, and the three inputs are physical capital proxy by book value of fixed assets, labor proxy by wages and salaries paid and loan able funds proxy by sum of borrowings and deposits. The fourth input is considered as the gross NPA in case of unrestricted model. For making the efficiency scores unbiased from price fluctuations we have deflated the data applying GDP series of banking and insurance taking 2013-14 as base. The GDP data of banking and insurance have been collected from the Economic Intelligence Reports, published by Centre for Monitoring Indian Economy (CMIE). For measuring efficiency score we have applied Carnes, Cooper and Rhodes (CCR) input oriented model assuming constant return to scale (CRS). After getting the efficiency scores of the DMUs under two different models we have applied non-parametric Wilcoxon matched pairs signed- ranks test (equivalent to parametric paired- t test) to find whether the efficiency scores under the unrestricted model is significantly higher than the efficiency score under restricted model. If so then we can say that the banks are more alert for NPA management and the management is taking steps to control NPA. If it is not so then we may say that the banks are reluctant for controlling NPA. Moreover, we have also applied Mann-WhitneyU- test to examine whether there is any significant difference in the efficiency among the different groups of Indian commercial banks.

Considering Meta-frontier technical efficiency scores (MTE) and self group technical efficiency (GTE) scores of different banks, we have computed Meta technology closeness ratio (TCR) and Meta technological gap inefficiency (TGI) of the studied banks. Here, TCR = MTE / GTE, TGI = GTE (1- TCR).

Technology closeness ratio shows how is a DMU close to the technological homogeneity. As TCR is close to 1, technological backwardness as regards to different heterogeneous groups tends to zero. Thus TCR = 1 is most desirable for the DMUs in the heterogeneous groups. Technological gap inefficiency (TGI) measures how much a DMU is inefficient as regards to the technology of the other Meta groups. In this paper we have used MaxDEA-Pro 6.2 software for measuring efficiency of the studied banks.

Table 1: Distribution of technical efficiency scores under meta-frontier (considering NPA as undesirable):

	2014			2015			2016			2017			2018		
Range of Eff. score	PSU BK	PRI BK	FGN BK	PSU BK	PRI BK	FGN BK	PSU BK	PRI BK	FGN BK	PSU BK	PRI BK	FGN BK	PSU BK	PRI BK	FGN BK
0.0d" TE< 0.2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0.2d" TE< 0.4	8	4	0	12	7	0	6	3	0	12	6	3	11	2	1
0.4d" TE< 0.6	6	6	6	6	10	4	12	10	2	6	10	1	7	7	5
0.6d" TE< 0.8	2	6	3	0	4	3	0	6	3	0	4	8	0	11	2
0.8d" TE< 1.0	2	4	3	0	0	8	0	3	5	0	2	4	0	0	6
TE= 0.1	0	1	8	0	1	5	0	0	10	0	0	4	0	2	6
Avr. Efficiency	0.49	0.59	0.80	0.38	0.49	0.80	0.42	0.59	0.87	0.37	0.51	0.72	0.41	0.61	0.78
Minimum	0.25	0.18	0.49	0.28	0.24	0.40	0.29	0.31	0.39	0.24	0.24	0.32	0.21	0.31	0.50
Maximum	0.93	1.00	1.00	0.51	1.00	1.00	0.51	0.96	1.00	0.51	0.91	1.00	0.58	1.00	1.00

Source: Authors' calculation

Layout of Indian Commercial banks under Meta-frontier and the Group frontier.

Findings and Analyses

We have first calculated the technical efficiency scores of 60 Indian Commercial Banks (18 PSU Banks, 22 Domestic Private Banks and 20 Foreign Banks) applying CCR model. We have computed meta-frontier efficiency scores of the DMUs (Banks) considering NPA as undesirable output and ignoring NPA as undesirable output. Similarly, we have also computed self group efficiency scores of the DMUs in different groups. On the basis of the computed scores under Meta frontier we have made the score distribution of DMUs which is depicted in Table 1.

From Table 1 (*prepared from Table A1 in Annexure*) we observe that no Indian PSU bank is able to come as an efficient Meta frontier over the entire period of study. In case of Indian domestic private sector banks however, Yes Bank, Bandhan Bank and HDFC Bank have become efficient frontier in the year of 2014, 2015 and 2018 respectively. Among the foreign banks several of them are found to be efficient frontier and market leader in different years. The average efficiency of foreign banks ranges from 0.72 to 0.80, which shows that the Indian foreign banks are close to Meta frontier and highly efficient in comparison to others. On the other hand the average efficiency scores for Indian PSU banks and domestic private banks ranges from 0.37 to 0.49 and 0.49 to 0.61 respectively. Thus, as per average efficiency score and as per the distribution of such scores (Table 1) foreign banks hold top position and the PSU banks hold the worst position.

In case of group frontier technical efficiency the average efficiency scores for foreign banks, PSU banks and domestic private banks ranges from 0.72 to 0.88, 0.92 to 0.95 and 0.74 to 0.85 respectively. Since the banks are belonging to different heterogeneous groups and as the efficiency scores have been calculated on the basis of the frontier of the respective groups, the efficiency scores of different groups are not directly comparable. Only thing that we can say that, the deviation of efficiency from bank to bank in case of PSU banks in its own frontier is lesser than their counterparts. The happenings may be due to the higher directives and controls towards the PSU banks from the government and the regulator (RBI).

We have tested the difference in Meta efficiency scores among the different banking groups.The results of Mann- Whitney U- test is given in the following table 2:

Table 2: Technical efficiency summary under group-frontier (considering NPA as undesirable):

Bank Category	2014	2015	2016	2017	2018
PSU Banks:					
Average	0.95	0.90	0.90	0.93	0.92
Minimum	0.66	0.73	0.73	0.74	0.57
Maximum	1.00	1.00	1.00	1.00	1.00
Domestic Pvt. Banks					
Average	0.85	0.81	0.78	0.74	0.74
Minimum	0.42	0.47	0.43	0.42	0.38
Maximum	1.00	1.00	1.00	1.00	1.00
Foreign Banks					
Average	0.80	0.82	0.88	0.72	0.88
Minimum	0.49	0.40	0.39	0.32	0.50
Maximum	1.00	1.00	1.00	1.00	1.00

Source: Authors' calculation

Table 3: Results of mann-whitney U-test: difference of efficiency in meta-frontier as per ownership (considering NPA as undesirable):

	2014	2015	2016	2017	2018
PSU vs Private Bks	139.5	120.0**	66.0***	84.0***	58.0***
PSU vs Foreign Bks	43.0***	5.0***	22.0***	27.0***	34.0***
Fgn Bks vs. Pvt. Bks	112.0***	56.5***	62.0***	98.0***	122.0**

*** Sig at 1% level, ** Sig at 5% level, * sig at 10% level

Source: Authors' calculation; figures in the cells are the computed value of U- statistic.

From Table 3 we observe that there is significant difference in the efficiency score under Meta frontier between PSU banks and Domestic Private Banks, PSU banks and Foreign Banks and between Foreign Banks and Domestic Private Banks for all the years of our study except the year 2014. In 2014 we found no significant difference between efficiency scores of PSU and Domestic Private Banks. Thus we may say that apart from the managerial efficiency there are difference in efficiency among the different ownership groups as they use different technology in their operations. As the foreign banks have access of advanced global technology in their operation, the efficiency of the banks in Meta frontier is comparatively higher than the PSU banks and the Domestic private banks. Thus the Indian PSU banks as well as the Indian Private Banks should enrich their

technology in order to face the challenges of global banks and to compete with the foreign banks with respect to efficiency.

Next, we have applied the same Mann- Whitney test to test the significance of the difference between different ownership groups as regards to their technological gap inefficiency. The results are given in Table 4.

Table 4: Results of mann-whitney U-test: difference of meta-technological gap inefficiency as per ownership (considering NPA as undesirable):

	2014	2015	2016	2017	2018
PSU vs Private Bks	98.0***	49.0***	13.0***	11.0***	3.0***
PSU vs Foreign Bks	0.01***	3.0***	0.01***	0.01***	35.0***
Fgn Bks vs. Pvt. Bks	10.0***	30.5***	0.01***	0.01***	172.0

*** Sig at 1% level, ** Sig at 5% level, * sig at 10% level

Source: Authors' calculation; figures in the cells are the computed value of U- statistic.

In case of Meta technological gap inefficiency also we found the similar type of results. Here also there exists a significance among different ownership groups regarding their technological gap inefficiency. Inefficiency as regards to use of modern technology for PSU banks is significantly higher than the foreign banks and domestic private banks in all the years except 2018. In 2018 we found no significant difference between the domestic private banks and the Indian PSU banks as regards to technological gap inefficiency. Thus the Indian PSU banks as well as the Indian domestic private banks should upgrade their banks by introducing high technological equipments in order to reduce their inefficiency compared to the foreign banks.

Wilcoxon Matched-pairs signed ranks test between efficiency scores of restricted and unrestricted models:

Table 5: Wilcoxon matched pairs signed ranks test

	2014	2015	2016	2017	2018
PSU Banks	-1.433	-0.103	-0.450	-0.426	-2.521**
Domestic Pvt. Banks	-1.604	-1.00	-1.00	-0.166	-1.00
Foreign Banks	-2.201**	-1.826*	-3.413***	-1.604	-1.826*

*** Sig at 1% level, ** Sig at 5% level, * sig at 10% level

Source: Authors' calculation; figures in the cells are the computed value of Wilcoxon statistic.

We have applied Wilcoxon matched pairs signed ranks test for testing whether there is any significant difference between the efficiency scores in the restricted model (NPA is ignored) and unrestricted model (NPA is considered as

undesirable output). The results of the matched- pair tests are given in the Table 5.

From Table 5 we observe that the Indian PSU banks are not significantly efficient in their NPA management except for the year 2018, which means that the Indian PSU banks are reluctant and not serious enough in the efficient management of their NPAs. As regards to the Indian domestic private sector banks we also observe similar picture. However, there exists a significant difference in the efficiency of NPA management in foreign banks operating in India as regards to their NPAs. The average efficiency scores of foreign banks in most of the years, when they consider NPA as an undesirable output, are comparatively more than the efficiency scores when they ignore it.

Conclusion and Suggestions

The Indian banking sector especially the PSU banks in India is facing enormous stress due to continuous increase of undesirable non-performing assets (NPA). This alarming situation for the PSU banks as well as Domestic private sector banks may be partly accounted for inefficiency at the managerial levels of banks and partly for the absence of any strict policy from the regulators.

From the descriptive analysis of the Meta efficiency scores we can say that none of the Indian PSU banks is able to prove themselves as market leader or efficient frontier over the entire period of study (2014-2018). In Meta frontier mostly the foreign banks have proved themselves as market leaders, probably as they have global focus, global experience in banking operation and as they are using advanced technology in their banking operations. In case of group efficiency scores under group frontier we observe that the difference in score of PSU banks is not high within the group, which is an indication of high government control and lack of freeness in the operations of the PSU banks. Thus, government and RBI (the main regulator) should give more free space to the Indian PSU banks for their independent operations in order to improve their efficiency.

Mann- Whitney U-test proved that there is significant difference in efficiency among the PSU banks, domestic private banks and foreign banks. The foreign banks outperformed from others. Indian PSU banks as also the Indian domestic private banks should follow the strategies and synergies of foreign banks for improving their efficiency. The recent step of the central government to merge some of the PSU banks may enhance their scale efficiency as well as the technological efficiency and if the result is affirmative more mergers may help them to place them as the market leader in future.

The Indian PSU banks should give more emphasis in their NPA management. Wilcoxon test documented that the Indian PSU banks are not efficient in their NPA management. This may be due to the popular government directives and the degree of corruptions and unhealthy nexus among the higher bank officials. Therefore the RBI should take appropriate steps in controlling the bad loans of banks, which ultimately proves to be costlyin the hands of the stakeholders.

REFERENCES

Barros, C. P., Managi, S., & Matousek, R. (2012). The technical efficiency of the Japanese banks: Non-radial directional performance measurement with undesirable output, *Omega,* 40(1), 1–8. [doi:10.1016/j.omega.2011.02.005]

Carrillo, M., & Jorge, J. M. (2018). An alternative neutral approach for cross-efficiency evaluation. *Computers & Industrial Engineering, 120*, 137–145.

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units, *European Journal of Operational Research, 2* (6), 429–444.

Cooper, W., Seiford, L. M., and Kaoru, T. (2006). Introduction to data envelopment analysis and its uses, Springer Pub.

Diallo, B. (2018). Bank efficiency and industry growth during financial crises. *Economic Modelling, 68*, 11–22.

Fried, H.O., Lovell, C.A.K., and Schmidt, S.S. (2008). *The Measurement of Productive Efficiency and Productivity Growth*. New York, U.S.A.: Oxford University Press.

Goyal, J. and Aggarwal, A. (2018). Efficiency and technology gaps in Indian banking sector: Application of meta-frontier directional distance function DEA approach, *The Journal of Finance and Data Science*, 1-17.

Goyal, J., Singh, R., Kaur, H., and Singh, K. (2018). Intra-industry efficiency analysis of Indian textile industry: A meta-frontier DEA approach, *International Journal of Law and Management,* 1-26.[https://doi.org/10.1108/IJLMA-05-2017-0108]

Hanèlová, J., Melecký, L. (2016). Application of the nonparametric DEA meta-frontier approach with undesirable outputs in the case of EU regions, *Business Systems Research*, 7(2), 65-77.

Jayaraman, A. R., & Srinivasan, M. R. (2014). Analyzing profit efficiency of banks in India with undesirable output – Nerlovian profit indicator approach. *IIMB Management Review*, 26(4), 222–233. [doi:10.1016/j.iimb.2014.09.003]

Kounetas, K., & Napolitano, O. (2018). Modeling the incidence of international trade on Italian regional productive efficiency using a meta-frontier DEA approach. *Economic Modelling, 71*, 45–58.

Kumar, S. and Gulati, R. (2008). An examination of technical, pure technical, and scale efficiencies in Indian public sector banks using data envelopment analysis, *Eurasian Journal of Business and Economics*, 1 (2), 33-69.

Lei Chen, Yan Huang, Mei-Juan Li, Ying-Ming Wang (2019). Meta-frontier analysis using cross-efficiency method for performance evaluation, *European Journal of Operations Research*, 280, 219-229.

Li, L. B., Liu, B. L., Liu, W. L., & Chiu, Y. H. (2017). Efficiency evaluation of the regional high-tech industry in China: A new framework based on meta-frontier dynamic DEA analysis. *Socio-Economic Planning Sciences, 60*, 24–33.

Maudos, J.& Pastor, J. M. (2003). Cost and profit efficiency in the Spanish banking sector (1985-1996): a non-parametric approach, *Applied Financial Economics*, 13(1), 1-12.

Qunwei Wang, Zengyao Zhao, Peng Zhou, Dequn Zhou (2013). Energy efficiency and production technology heterogeneity in China: A meta-frontier DEA approach, *Economic Modeling*, 35, 283–289.

Ramanathan, R. (2003). An introduction to data envelopment analysis: A tool for performance measurement, Sage Publication, New Delhi.

Ray, S. C. and Das, A. (2010). Distribution of cost and profit efficiency: Evidence from Indian banking, *European Journal of Operational Research*, Volume 201(1), 297-307

Seiford, L. M and Zhu, J. (1999). Profitability and marketability of the top 55 US commercial banks, *Management Science*, 45(9), 1270-1288.

Walheer, B. (2018). Aggregation of meta-frontier technology gap ratios: The case of European sectors in 1995-2015. *European Journal of Operational Research, 269*, 1013–1026.

Annexure:

Table A1: NPA and managerial efficiency of Indian commercial banks under meta-frontier and group frontier

	2014		2015		2016		2017		2018	
Bank Name	MTE	GTE	MTE	GTE	MTE	GTE	MTE	GTE	MTE	GTE
St Bk of India	0.7217	1.0000	0.4034	1.0000	0.4667	1.0000	0.3823	1.0000	0.4227	1.0000
Oriental Bank	0.5091	1.0000	0.4522	0.9050	0.4431	0.9050	0.3813	0.8147	0.4495	1.0000
Corp. Bank	0.8839	1.0000	0.5092	0.8477	0.5113	0.8477	0.5096	1.0000	0.5228	1.0000
Bank of Baroda	0.5176	0.9440	0.4448	0.7314	0.4291	0.7314	0.4718	0.8462	0.5751	1.0000
Canara Bank	0.2700	0.9925	0.3326	0.9461	0.3760	0.9461	0.3346	0.9267	0.3979	0.9142
UCO Bank	0.6584	0.6592	0.4891	0.9662	0.4400	0.9662	0.3168	0.9113	0.2946	0.5746
United Bank (I)	0.3927	1.0000	0.3947	1.0000	0.2949	1.0000	0.2422	1.0000	0.2137	1.0000
Union Bank (I)	0.4026	0.8504	0.3541	0.7655	0.4030	0.7655	0.4224	0.9958	0.5096	1.0000
Central Bank	0.3543	0.9396	0.3090	0.9151	0.3746	0.9151	0.2640	1.0000	0.3251	0.7860
Bank of Maha	0.3779	1.0000	0.3730	0.9040	0.4326	0.9040	0.2883	1.0000	0.3896	0.8777
Syndicate Bank	0.4438	1.0000	0.3587	0.8965	0.3778	0.8965	0.2903	0.8829	0.3511	0.9204
Bank of India	0.3111	1.0000	0.3291	1.0000	0.3663	1.0000	0.3577	1.0000	0.3743	0.8029
Allahabad Bank	0.5165	1.0000	0.4157	0.8982	0.4695	0.8982	0.3745	1.0000	0.3853	0.8684
Pun. & Sind Bk	0.2529	1.0000	0.2758	0.9346	0.4035	0.9346	0.3442	0.9680	0.3595	0.8539
Andhra Bank	0.9305	1.0000	0.3987	0.8595	0.5123	0.8595	0.4233	0.7445	0.5844	1.0000
I O B	0.3399	1.0000	0.3114	0.9073	0.3421	0.9073	0.3071	1.0000	0.3833	1.0000

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Indian Bank	0.3000	0.8937	0.3809	0.8815	0.4161	0.8815	0.4152	0.9272	0.5166	1.0000
Punjab Natl.Bank	0.5783	0.7699	0.3797	0.8873	0.4336	0.8873	0.4526	0.7971	0.3355	0.9293
Axis Bank	0.7276	1.0000	0.6828	1.0000	0.8448	1.0000	0.7648	1.0000	0.7503	0.9546
Bandhan Bank	0.1819	0.9474	1.0000	1.0000	0.9615	1.0000	0.9140	1.0000	1.0000	1.0000
City Union Bank	0.5664	0.8984	0.3100	1.0000	0.3945	0.5200	0.6442	0.8288	0.7913	0.8508
CSB Bank	0.8580	0.8693	0.5769	0.8457	0.7711	0.9307	0.2365	0.6386	0.3065	0.3795
DCB Bank	0.3532	0.6673	0.2386	0.5136	0.3109	0.4260	0.4311	0.5852	0.5349	0.5746
Dhanlaxmi Bank	0.2446	0.4213	0.4401	0.7798	0.5855	0.7723	0.2984	0.4195	0.4305	0.4549
Federal Bank	0.6416	0.7908	0.2461	0.4665	0.3749	0.4717	0.4180	0.6801	0.5387	0.6634
HDFC Bank	0.5664	0.8984	0.4365	0.7203	0.8146	1.0000	0.8160	1.0000	1.0000	1.0000
ICICI Bank	0.8411	1.0000	0.7108	1.0000	0.7667	1.0000	0.6405	1.0000	0.6930	1.0000
IDBI Bank	0.6153	0.9261	0.6359	0.9857	0.6026	0.7291	0.4317	0.5871	0.6042	1.0000
IDFC First Bank	0.3390	0.8787	0.4536	0.7661	0.5420	0.6622	0.5696	0.7302	0.4641	0.6144
IndusInd Bank	0.6060	1.0000	0.6278	1.0000	0.7532	1.0000	0.6587	1.0000	0.7615	1.0000
J & K Bank	0.5909	0.8274	0.4710	0.8317	0.5616	0.7283	0.3586	0.4831	0.4684	0.4797
Karnataka Bank	0.6360	0.7051	0.3609	0.5786	0.4954	0.6040	0.4035	0.5745	0.6141	0.7202
Karur Vysya Bk	0.4769	0.6642	0.4341	0.6690	0.5885	0.7530	0.5449	0.7242	0.6592	0.7468
Kotak Mah. Bk	0.6584	1.0000	0.5790	1.0000	0.6391	0.9125	0.5163	0.8092	0.6616	0.7889
Lak. Vilas Bank	0.3965	0.5819	0.5790	1.0000	0.4409	0.5715	0.3845	0.5737	0.3613	0.4317
Nainital Bank	0.9659	1.0000	0.3647	0.5641	0.5227	1.0000	0.3564	0.6077	0.4508	0.4926
RBL Bank	0.4548	1.0000	0.4387	0.9686	0.4386	0.6807	0.4490	0.7604	0.6086	0.8479
South Ind.Bank	0.4338	0.6094	0.3657	0.7802	0.4159	0.5475	0.3978	0.5230	0.4787	0.5515

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T N Merc. Bank	0.8584	1.0000	0.3467	0.5469	0.5485	0.7981	0.4864	0.8163	0.6496	0.7990
Yes Bank	1.0000	1.0000	0.4668	0.8734	0.6358	1.0000	0.5324	1.0000	0.6290	1.0000
A N Z	0.4924	0.4924	0.5553	1.0000	1.0000	1.0000	0.8719	0.8719	1.0000	1.0000
Abu Dhabi Com.	0.5470	0.5470	0.7458	0.7458	0.3889	0.3889	0.3239	0.3239	0.4021	1.0000
Amer. Exp. Bank	1.0000	1.0000	0.4080	0.4080	1.0000	1.0000	1.0000	1.0000	1.0000	0.8052
Bank of America	1.0000	1.0000	1.0000	1.0000	0.9638	0.9638	0.6614	0.6614	0.8510	1.0000
Bk of Nova Sco	1.0000	1.0000	0.8126	0.8126	1.0000	1.0000	0.5365	0.5365	0.5064	0.4968
Barclays Bank	0.8212	0.8212	0.9244	0.9244	1.0000	1.0000	0.7311	0.7311	0.8647	0.9748
BNP Paribas	0.5981	0.5981	0.8519	0.8519	0.6976	0.6976	0.7479	0.7479	0.8770	1.0000
Citibank N. A.	0.8840	0.8840	0.6800	0.6800	0.9573	0.9573	0.8911	0.8911	1.0000	0.8889
Credit Agricole	0.6869	0.6869	0.8706	0.8707	0.7657	0.7657	0.6206	0.6206	0.7561	0.9617
Credit Suisse AG	0.6405	0.6405	0.6636	0.6636	1.0000	1.0000	1.0000	1.0000	1.0000	0.9516
DBS Bank	0.5210	0.5210	0.9649	0.9649	0.4142	0.4142	0.3646	0.3646	0.3266	0.8993
Deutsche Bank	0.7226	0.7226	0.5170	0.5170	0.9512	0.9512	0.8346	0.8346	0.8432	0.6739
Industrial & Com	1.0000	1.0000	0.8207	0.8207	1.0000	1.0000	0.3824	0.3824	0.5203	0.8571
JP Morgan Chase	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9721
Mizuho Corporat	1.0000	1.0000	1.0000	1.0000	0.9401	0.9401	0.6596	0.6596	0.9396	0.6710
Shinhan Bank	1.0000	1.0000	1.0000	1.0000	0.8015	0.8015	0.6020	0.6020	0.5414	1.0000
Soc. Generale	0.5654	0.5654	0.8183	0.8183	0.6791	0.6791	0.6778	0.6778	0.5442	0.7553
Stand.Chart.Bank	0.9461	0.9461	0.5150	0.5150	1.0000	1.0000	0.6650	0.6650	0.7724	0.7042
Sumitomo Mitsui	1.0000	1.0000	0.8494	0.8500	1.0000	1.0000	0.8475	0.8475	0.8911	1.0000
Westpac Banking	0.5804	0.5804	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

MTE = Meta technological efficiency, GTE = group technological efficiency

Source: Authors' calculation

Table A2: Technological closeness ratio and technology gap inefficiency of Indian commercial banks (with NPA as undesirable output):

	2014		2015		2016		2017		2018	
Bank Name	TCR	TGI	TCR	TGI	TCR	TGI	TCR	TGI	TCR	TGI
St Bk of India	0.7217	0.2783	0.4034	0.5966	0.4667	0.5333	0.3823	0.6177	0.4227	0.5773
Oriental Bank	0.5091	0.4909	0.4997	0.4528	0.4896	0.4619	0.4680	0.4334	0.4495	0.5505
Corp. Bank	0.8839	0.1161	0.6006	0.3385	0.6031	0.3364	0.5096	0.4904	0.5228	0.4772
Bank of Baroda	0.5483	0.4264	0.6082	0.2866	0.5867	0.3023	0.5576	0.3744	0.5751	0.4249
Canara Bank	0.2721	0.7225	0.3515	0.6135	0.3974	0.5701	0.3611	0.5921	0.4352	0.5163
UCO Bank	0.9988	0.0008	0.5062	0.4771	0.4554	0.5262	0.3477	0.5945	0.5127	0.28
United Bank (I)	0.3927	0.6073	0.3947	0.6053	0.2949	0.7051	0.2422	0.7578	0.2137	0.7863
Union Bank (I)	0.4734	0.4478	0.4625	0.4114	0.5264	0.3625	0.4242	0.5734	0.5096	0.4904
Central Bank	0.3771	0.5853	0.3376	0.6061	0.4094	0.5405	0.2640	0.736	0.4136	0.4609
Bank of Maha	0.3779	0.6221	0.4126	0.531	0.4785	0.4714	0.2883	0.7117	0.4439	0.4881
Syndicate Bank	0.4438	0.5562	0.4001	0.5378	0.4214	0.5187	0.3288	0.5926	0.3814	0.5693
Bank of India	0.3111	0.6889	0.3291	0.6709	0.3663	0.6337	0.3577	0.6423	0.4661	0.4286
Allahabad Bank	0.5165	0.4835	0.4629	0.4825	0.5227	0.4287	0.3745	0.6255	0.4436	0.4831
Pun. & Sind Bk	0.2529	0.7471	0.2951	0.6588	0.4317	0.5311	0.3555	0.6238	0.4210	0.4944
Andhra Bank	0.9305	0.0695	0.4639	0.4608	0.5960	0.3472	0.5686	0.3212	0.5844	0.4156
I O B	0.3399	0.6601	0.3432	0.5959	0.3771	0.5652	0.3071	0.6929	0.3833	0.6167
Indian Bank	0.3357	0.5937	0.4322	0.5006	0.4720	0.4654	0.4478	0.512	0.5166	0.4834
Punjab Natl.Bank	0.7512	0.1916	0.4279	0.5076	0.4886	0.4537	0.5679	0.3445	0.3610	0.5938
Axis Bank	0.7276	0.2724	0.6828	0.3172	0.8448	0.1552	0.7648	0.2352	0.7860	0.2043

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Bandhan Bank	0.1920	0.7655	1.0000	0	0.9615	0.0385	0.9140	0.086	1.0000	0
City Union Bank	0.6305	0.332	0.3100	0.69	0.7587	0.1255	0.7773	0.1846	0.9301	0.0595
CSB Bank	0.9869	0.0113	0.6822	0.2688	0.8285	0.1596	0.3703	0.4021	0.8076	0.073
DCB Bank	0.5293	0.3141	0.4645	0.275	0.7298	0.1151	0.7367	0.1541	0.9310	0.0397
Dhanlaxmi Bank	0.5806	0.1767	0.5643	0.3397	0.7582	0.1868	0.7114	0.1211	0.9465	0.0244
Federal Bank	0.8113	0.1492	0.5276	0.2204	0.7947	0.0968	0.6146	0.2621	0.8121	0.1247
HDFC Bank	0.6305	0.332	0.6060	0.2838	0.8146	0.1854	0.8160	0.184	1.0000	0
ICICI Bank	0.8411	0.1589	0.7108	0.2892	0.7667	0.2333	0.6405	0.3595	0.6930	0.307
IDBI Bank	0.6644	0.3108	0.6451	0.3498	0.8264	0.1265	0.7354	0.1554	0.6042	0.3958
IDFC First Bank	0.3858	0.5397	0.5921	0.3125	0.8185	0.1202	0.7800	0.1606	0.7553	0.1503
IndusInd Bank	0.6060	0.394	0.6278	0.3722	0.7532	0.2468	0.6587	0.3413	0.7615	0.2385
J & K Bank	0.7142	0.2365	0.5664	0.3607	0.7711	0.1667	0.7423	0.1245	0.9763	0.0113
Karnataka Bank	0.9020	0.0691	0.6237	0.2177	0.8201	0.1086	0.7023	0.171	0.8527	0.1061
Karur Vysy Bank	0.7181	0.1873	0.6488	0.2349	0.7815	0.1645	0.7524	0.1793	0.8827	0.0876
Kotak Mah. Bank	0.6584	0.3416	0.5790	0.421	0.7004	0.2734	0.6381	0.2929	0.8387	0.1273
Lak. Vilas Bank	0.6814	0.1854	0.5790	0.421	0.7714	0.1306	0.6703	0.1892	0.8369	0.0704
Nainital Bank	0.9659	0.0341	0.6465	0.1994	0.5227	0.4773	0.5865	0.2513	0.9150	0.0418
RBL Bank	0.4548	0.5452	0.4529	0.5299	0.6443	0.2421	0.5905	0.3114	0.7179	0.2393
South Ind.Bank	0.7118	0.1756	0.4687	0.4145	0.7596	0.1316	0.7606	0.1252	0.8679	0.0728
T N Merc. Bank	0.8584	0.1416	0.6339	0.2002	0.6872	0.2496	0.5959	0.3299	0.8130	0.1494
Yes Bank	1.0000	0	0.5344	0.4066	0.6358	0.3642	0.5324	0.4676	0.6290	0.371
A N Z	1.0000	0	0.5553	0.4447	1.0000	0	1.0000	0	1.0000	0

Contd...

Contd...

Abu Dhabi Com.	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.4021	0.5979
Amer. Exp. Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.2419	-0.195
Bank of America	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.8510	0.149
Bk of Nova Sco	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0193	-0.009
Barclays Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.8871	0.1101
BNP Paribas	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.8770	0.123
Citibank N. A.	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.1250	-0.111
Credit Agricole	1.0000	0	0.9999	0.0001	1.0000	0	1.0000	0	0.7862	0.2056
Credit Suisse AG	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0509	-0.048
DBS Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.3631	0.5727
Deutsche Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.2512	-0.169
Industrial & Com	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.6071	0.3368
JP Morgan Chase	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0286	-0.028
Mizuho Corporat	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.4004	-0.269
Shinhan Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.5414	0.4586
Soc. Generale	1.0000	0	1.0000	0	1.0000	0	1.0000	0	0.7204	0.2111
Stand.Chart.Bank	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0968	-0.068
Sumitomo Mitsui	1.0000	0	0.9993	0.0006	1.0000	0	1.0000	0	0.8911	0.1089
Westpac Banking	1.0000	0	1.0000	0	1.0000	0	1.0000	0	1.0000	0

TCR= Technology Closeness Ratio; TGI = Technology Gap Inefficiency.

TCR = MTE/GTE; TGI = GTE (1- TCR); where MTE = Meta technical efficiency, GTE = Group technical efficiency,

Source: Authors' calculation

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GST a Game Changer for Indian Auto Companies Share Return?

JIGNESH B TOGADIYA AND VIGNA OZA

Abstract: The Indian auto industry is one of the largest in the world. The industry accounts for 7.1 % of the country's Gross Domestic Product (GDP). Almost 13% of the revenue from central excise is from this sector and claims a size of 4.3% of total exports from India. Despite its contribution to the economy and growth potential, this sector has been combating the hardship of high tax rates for substantially a long period of time now with central excise duty ranging between 12.5% to 30% coupled with introduction of multiple cesses at revenues whims and fancies, most recent being infrastructure cess. This study aims to find the reaction of Indian Auto Companies Share return with respect to the announcement of GST rates and also tries to test efficiency of the stock market. The performance of stock market and its behaviour serves as an indicator of the reactions of the economy of the nation. The Goods and Services Tax is a major tax reform in India which is most likely to boost the economic growth of the country. This expectation of the investors is assumed to be transformed to stock price returns that are either negative or positive. For GST impact Daily, Monthly and Yearly, pre and post GST implementation share return is taken and different statistical tools have been applied to find impact of GST on these returns.

Keywords : Game changer, GST, share returns, Multiple cesses

Introduction

Goods and Services Tax is a comprehensive indirect tax on manufacture, sale and consumption of goods and services throughout India, to replace taxes levied by the central and state Governments. Goods and services tax would be levied and collected at each stage of sale or purchase of goods or services based on the input tax credit method. This method allows GST-registered businesses to claim tax credit to the value of GST they paid on purchase of goods or services as part of their normal commercial activity. Taxable goods and services are not distinguished from one another and are taxed at a single rate in a supply chain

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till the goods or services reach the consumer. Administrative responsibility would generally rest with a single authority to levy tax on goods and services. Exports would be zero-rated and imports would be levied the same taxes as domestic goods and services adhering to the destination principle.

The automobile industry in India is a vast business producing a large number of cars annually, fueled mostly by the huge population of the country. Under the current tax system, there are several taxes applicable on this sector like excise, VAT, sales tax, road tax, motor vehicle tax, registration duty which will be subsumed by GST. Though it is too early to provide an in-depth analysis of cost per product post GST implementation, as some ambiguity still remains due to incentives/exemptions provided by different states to the manufacturers/dealers for manufacturing car/bus/bike, our experts have taken the information available, and predicted the future of this industry. Presently, sales of used cars attract VAT, and in some states, a composite rate and Excise/VAT are not applicable on advance received for supply of goods. Many states provide the Original Equipment Manufacturers (OEMs)/component makers with different investment-linked incentive schemes. The two main components of this scheme are subsidies and interest-free loans allied with VAT/CST payable on sale.

Review of Literature

Purohit (2018) has analyzed GST: A Game Changer for the Indian Economy. The researcher has undertaken ten to eleven samples from the GST council website. The objective of the study is to explore the impact in GST rates on various class of people i.e. poor-class, middle-class and rich-class. The researcher has used only comparative analysis for the available data and concluded that the Central Government has taken very intensive and serious efforts not for the implementation of the GST but has considered essential steps and decide appropriate tax regime for the concerned people. Directly or indirectly, irrespective of the current economic status of the people will get some definite benefits after the execution of the GST. Mukundar (2017) has analyzed the impact of GST on Indian Stock Market.The researcher has collected the data from National Stock Exchange of India. The objective of the study is to analyse impact of GST on different sectors of stock market. The researcher has used Z-test for the testing of hypothesis and concluded that effect of GST is change from one sector to another. From sector wise analysis shows that rubber, cotton and cement increase in total traded quantity while, automobiles, clothing and foods, steel, sugar, tea and textile shows decrease after GST.

Manoj and Sharma (2017)found that the short-term impact of GST could be impartial to negative and positive. GST may impact first quarter earnings of India Companies as companies will take some time to make parallel their

production processes with the new structure, regulate to the input tax credit system and get a handle on their working capital requirements. They analyze before and after impact of GST on Different sector like Banking, Cement, Airlines and others. They further concluded that GST has a positive impact on different industry in India. Lourdunathan and Xavier (2017) investigated thechallenges and prospects of implementing GST andconcluded that GST will bring One Nation and One Taxmarket that will provide relief to the producers andconsumers from several taxes. Raj (2016) highlighted the impact of GST onIndian Economy with a comparison between GST andCurrent taxation system. In addition he concluded thatafter implementation of GST, manufacturer, wholeseller and retailer can be easily recovered input taxes inform of tax credits. Chaurasia et al. (2016) concluded that in overall GST will be helpful for the development of Indian economy and this will also help in improving the Gross Domestic Products of the country more than two percent. Akansha andAastha (2016)concluded that GST will provide relief to producers andconsumers by proving wide and inclusivecoverage of input tax credit set-off, service tax set-offand subsuming the several taxes. Further they concluded thatGST has a positive impact on various sectors andindustry.

Research Methodology

Research Design

The present research study is based on Descriptive, Exploratory and Event Study. Descriptive method used when the researcher wants to describe specific behaviour as it occurs in the environment. It provides an accurate description of characteristics of a particular individual, situation or Group. These studies are a mean of discovering new meaning, describing what exist, determining the frequency with which something occurs and categorizing information. Exploratory research studies that are mainly formative, for the purpose of gaining new insights, discovering new ideas and increasing knowledge of phenomena. An event study is an analysis of the impact of any specific new or event directly or indirectly affected to a company and its stock. An event study mostly conducted for the specific company looks at the changes in its stock price relative to the news or event.

Objective

The objective of the study is to determine the impact of Goods and Services tax (GST) on share returns of Selected Indian Auto Companies of BSE.

Hypothesis

There is no significant difference in return of the Selected Indian Auto Companies of BSE before and after GST implementation.

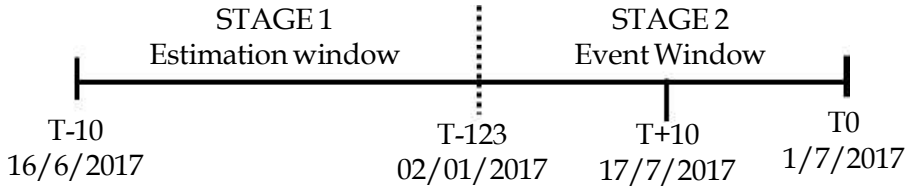
Research Methodology

The present study is mainly based on secondary data. All the related data are collected from the official sites of the companies and financial website like (www.bseindia.com).Out of numbers of companies of Auto sector, researcher has selected Top 5 companies in a sample on the basis of Market Capitalization. Here, sample has been selected by convenient sampling method.

Paired sample T-test has been applied for the study of impact of GST on share returns of Indian Auto Companies. Paired sample T-test is used for the two measurement on the same items, person or thing and also use for two items that are being measured with unique condition. The period of study is selected according to the date of implementation of GST. Date of GST implementation is 1/7/2017 (Saturday). So before and after implementation selected share opening and closing price taken.

Analysis period	Before GST Implementation	After GST Implementation
7 Working Days Analysis	21st June to 30th June 2017	3rd July to 11th July 2017
15 Working Days Analysis	9th June to 30th June 2017	3rd July to 21th July 2017
30 Working Days Analysis	19th May to 30th June 2017	3rd July to 11th Aug 2017
6 Months Analysis	January to June 2017	July to December 2017
1 Year Analysis	July 2016 to June 2017	July 2017 to June 2018

Event study was employed to examine the effect of implementation of GST on Bombay Stock Exchange and selected Automobile companies of Bombay Stock Exchange. The entire sample period is divided into two parts i.e. the estimation window and event window. The event window again was classified as event window before the event day (t 0 to t-10) and event window after the event days (t 0 to t+10). The estimation window is created with the aim of calculating expected return by considering past experience of the Stock market on the selected Automobile companies' returns and the event window is the actual study period. The data is secondary in nature and has been collected from national stock exchange. We have taken our event date as 1st July, 2017.



Maruti Suzuki India Ltd

Table 1: Maruti Suzuki India Ltd (event study analysis)

DAY	Daily Return (%)	Expected Return (%)	AR(%)	CAR(%)	T value AR	T value CAR
-10	-0.006	0.000	-0.006	-0.006	-0.622	-0.622
-9	-0.002	0.010	-0.012	-0.019	-1.176	-1.798
-8	-0.005	0.001	-0.006	-0.025	-0.552	-2.351
-7	0.007	0.001	0.006	-0.018	0.623	-1.728
-6	0.007	0.001	0.005	-0.013	0.518	-1.210
-5	-0.011	-0.005	-0.006	-0.019	-0.590	-1.800
-4	-0.006	-0.006	-0.001	-0.020	-0.075	-1.875
-3	0.007	-0.004	0.010	-0.009	0.971	-0.904
-2	-0.002	0.002	-0.004	-0.014	-0.401	-1.305
-1	-0.001	0.003	-0.004	-0.018	-0.392	-1.698
0	0.020	0.012	0.007	-0.010	0.712	-0.985
1	0.002	0.001	0.001	-0.009	0.099	-0.886
2	0.000	0.002	-0.002	-0.012	-0.233	-1.119
3	0.013	0.006	0.008	-0.004	0.739	-0.380
4	-0.005	0.001	-0.006	-0.010	-0.584	-0.965
5	0.001	0.014	-0.013	-0.023	-1.274	-2.238
6	0.002	0.002	0.000	-0.023	0.001	-2.237
7	0.003	0.003	0.000	-0.023	0.009	-2.228
8	0.012	0.009	0.003	-0.020	0.263	-1.964
9	-0.001	0.000	-0.002	-0.022	-0.165	-2.129
10	-0.004	0.003	-0.007	-0.029	-0.683	-2.813
Average	0.001	0.003	-0.001	-0.017	-0.134	-1.583

(Source: Computed and compiled by researcher.) (T-table value @ 5% = 1.96)

Interpretation

Table 1 shows an event study analysis of Maruti Suzuki (India) Ltd for the data of 10 days before and after the GST implementation. On the day of event, 'T' value of abnormal return (AR) is 0.712 which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no abnormal return (AR) to Maruti Suzuki (India) Ltd on date of event. Even 'T' value of cumulative abnormal return (CAR) is (- 0.985) which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no cumulative abnormal return (CAR) to Maruti Suzuki (India) Ltd on date of event.

Table 2: Maruti Suzuki India Ltd. (t-test: paired two sample for means)

t-Test: Paired Two Sample for Means		Mean	Variance	Observations	Pearson Correlation	df	P(T<=t) two-tail	Result
7 Working Days Pre and Post GST Analysis	Change in Price Before GST	-10.00	1898.76	7	0.0186	6	0.3803	H_0 failed to reject
	Change in Price After GST	17.52	4119.55	7				
15 Working Days Pre and Post GST Analysis	Change in Price Before GST	-16.18	5171.11	15	0.6987	14	0.0528	H_0 failed to reject
	Change in Price After GST	11.94	2758.16	15				
30 Working Days Pre and Post GST Analysis	Change in Price Before GST	-2.41	5173.8	30	-0.2220	29	0.7815	H_0 failed to reject
	Change in Price After GST	2.83	3452.34	30				
6 Month Pre and Post GST Analysis	Change in Price Before GST	263.20	75558.6	6	-0.1670	5	0.6038	H_0 failed to reject
	Change in Price After GST	378.60	149764	6				
1 Year Pre and Post GST Analysis	Change in Price Before GST	209.25	118976	12	-0.2687	11	0.5621	H_0 failed to reject
	Change in Price After GST	98.96	205554	12				

(Source: Computed and compiled by researcher.)

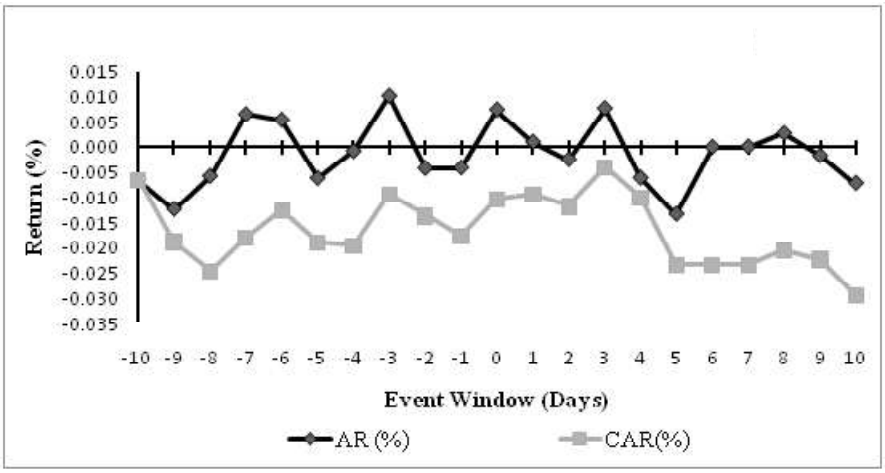


Chart 1: Maruti Suzuki India Ltd. AR & CAR (%)

Chart 1 represents abnormal return (AR) and cumulative abnormal return (CAR) of Maruti Suzuki (India) Ltd for -10 to +10 day's event window. Here, researcher has found that there are 9 positive and 12 negative abnormal returns (AR) during event window. Similarly, there are 21 negative cumulative abnormal returns (CAR) during event window. So, it may be concluded that during event study window of Company's return shows negative trend of both the returns.

From Table 2 it is observed that p value is (0.3803) for the share return of 7 working days pre and post GST analysis of Maruti Suzuki (India) Ltd is higher than 0.05. So, here Null hypothesis is failed to reject. i.e. there is no significance difference in share returns of Maruti Suzuki (India) Ltd. Similarly, for 15 days, 30 days, 6 months and 1 year pre and post GST analysis of Maruti Suzuki (India) Ltd p value for the share returns is higher than 0.05. So, for all the analysis Null hypothesis is failed to reject and researcher may conclude that there is no significance difference in share returns of Maruti Suzuki (India) Ltd during pre and post GST implementation. Maruti Suzuki (India) Ltd is a multinational company so far they deal with many countries and most of the countries are using GST system. So, Maruti Suzuki (India) Ltd may not face any trouble due to GST implementation and from overall analysis it may be concluded that there is no significance difference in share returns of Maruti Suzuki (India) Ltd over the different time frame.

Interpretation

Table 3 represents an event study analysis of Tata Motor Ltd for the data of 10 days before and after the GST implementation. On the day of event, 'T' value of abnormal return (AR) is (- 1.090) which is less than 'T' table value 1.96. So, Null

hypothesis is failed to reject i.e. there is no abnormal return (AR) to Tata Motor Ltd on date of event. Even 'T' value of cumulative abnormal return (CAR) is (-0.967) which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no cumulative abnormal return (CAR) to Tata Motor Ltd on date of event.

Tata Motor Ltd

Table 3: Tata Motor Ltd(event study analysis)

DAY	Daily Return (%)	Expected Return (%)	AR(%)	CAR(%)	T value AR	T value CAR
-10	0.016	-0.004	0.020	0.020	1.235	1.235
-9	-0.007	0.011	-0.018	0.002	-1.110	0.125
-8	0.033	-0.004	0.036	0.038	2.294	2.420
-7	-0.021	-0.004	-0.017	0.021	-1.100	1.320
-6	-0.010	-0.003	-0.007	0.014	-0.461	0.858
-5	-0.021	-0.011	-0.011	0.003	-0.663	0.195
-4	-0.003	-0.012	0.009	0.012	0.558	0.753
-3	0.001	-0.009	0.011	0.023	0.681	1.434
-2	-0.014	-0.002	-0.012	0.010	-0.779	0.655
-1	-0.008	0.001	-0.008	0.002	-0.531	0.123
0	-0.004	0.013	-0.017	-0.015	-1.090	-0.967
1	-0.007	-0.004	-0.003	-0.019	-0.218	-1.185
2	0.010	-0.001	0.011	-0.008	0.711	-0.475
3	0.012	0.004	0.008	0.001	0.508	0.033
4	-0.001	-0.003	0.003	0.003	0.167	0.200
5	0.023	0.016	0.007	0.010	0.445	0.645
6	0.023	-0.001	0.024	0.034	1.516	2.161
7	0.009	0.000	0.009	0.043	0.544	2.706
8	-0.006	0.009	-0.015	0.028	-0.922	1.783
9	-0.014	-0.004	-0.010	0.018	-0.658	1.126
10	0.005	0.000	0.005	0.023	0.341	1.467
Average	0.001	0.000	0.001	0.013	0.070	0.791

(Source: Computed and compiled by researcher.) (T-table value @ 5% = 1.96)

Table 4: Tata Motor Ltd. (t-test: Paired two sample for means)

t-Test: Paired Two Sample for Means		Mean	Variance	Observations	Pearson Correlation	df	P(T<=t) two-tail	Result
7 Working Days Pre and Post GST Analysis	Change in Price Before GST	-5.9	17.5267	7	0.3207	6	0.0239	H_0 rejected
	Change in Price After GST	0.77143	32.2874	7				
15 Working Days Pre and Post GST Analysis	Change in Price Before GST	-3.19	40.4294	15	0.3174	14	0.0723	H_0 failed to reject
	Change in Price After GST	0.20333	25.7816	15				
30 Working Days Pre and Post GST Analysis	Change in Price Before GST	-2.1933	41.4232	30	0.0609	29	0.7754	H_0 failed to reject
	Change in Price After GST	-2.67	46.0794	30				
6 Month Pre and Post GST Analysis	Change in Price Before GST	-8.2667	1857.76	6	0.4870	5	0.9135	H_0 failed to reject
	Change in Price After GST	-6.3917	1235.76	6				
1 Year Pre and Post GST Analysis	Change in Price Before GST	-4.3583	1630.16	12	-0.1740	11	0.5117	H_0 failed to reject
	Change in Price After GST	-15.425	1100.01	12				

(Source: Computed and compiled by researcher.)

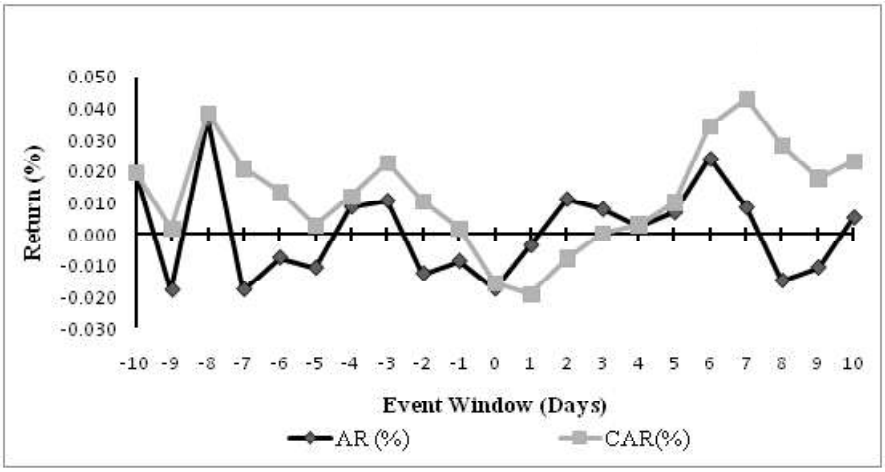


Chart 2: Tata Motor Ltd. AR & CAR (%)

Chart 2 shows abnormal return (AR) and cumulative abnormal return (CAR) of Eicher Motor Ltd for -10 to +10 day's event window. Here, researcher has found that there are 11 positive and 10 negative abnormal returns (AR) during event window. Similarly, there are 18 positive and 3 negative cumulative abnormal returns (CAR) during event window. So, researcher may conclude that during event study window abnormal return (AR) reflect fluctuating trends and cumulative abnormal return (CAR) reflect Positive trend during event window.

From Table 4, it has been observed that p- value 0.0239 for the share return of 7 working days pre and post GST analysis of Tata Motor Ltd is less than 0.05. So, here Null hypothesis is rejected. i.e. there is a significance difference in share returns of Tata Motor Ltd. In case of , 15 days, 30 days, 6 months and 1 year pre and post GST analysis of Tata Motor Ltd p-value for the share returns is higher than 0.05. So, for all the analysis Null hypothesis is failed to reject and a researcher may conclude that there is no significance difference in share returns of Tata Motor Ltd during pre and post GST implementation. After GST implementation, Tata Motor Ltd revised prices for its commercial vehicles, to pass on the benefit of Goods and Services Tax (GST) rates to its customers.The ex-showroom price of cargos have been reduced in the range of 0.3 percent to 4.21 percent, while for passenger transportation the price has been reduced in the range of 0.6 percent to 8.2 percent. As a result GST implementation does not affect share return of Tata Motor Ltd. Hence, researcher may conclude that there is no significance difference in share return of Tata Motor Ltd over different time frame.

Bajaj Auto Ltd

Table 5: Bajaj Auto Ltd (Event study analysis)

DAY	Daily Return (%)	Expected Return (%)	AR(%)	CAR(%)	T value AR	T value CAR
-10	-0.002	-0.001	-0.002	-0.002	-0.171	-0.171
-9	0.009	0.006	0.004	0.002	0.367	0.195
-8	-0.006	-0.001	-0.006	-0.004	-0.600	-0.404
-7	0.002	-0.001	0.002	-0.002	0.221	-0.183
-6	0.007	0.000	0.007	0.005	0.707	0.524
-5	-0.006	-0.004	-0.002	0.003	-0.203	0.321
-4	-0.016	-0.004	-0.012	-0.009	-1.214	-0.893
-3	0.001	-0.003	0.004	-0.005	0.387	-0.506
-2	0.008	0.000	0.007	0.002	0.759	0.253
-1	-0.004	0.001	-0.006	-0.003	-0.580	-0.327
0	0.000	0.007	-0.006	-0.010	-0.663	-0.991
1	-0.007	0.000	-0.007	-0.016	-0.666	-1.657
2	0.000	0.001	0.000	-0.017	-0.041	-1.697
3	-0.015	0.003	-0.018	-0.034	-1.821	-3.518
4	-0.008	0.000	-0.008	-0.042	-0.772	-4.290
5	0.008	0.008	0.000	-0.042	0.029	-4.261
6	0.023	0.000	0.023	-0.019	2.348	-1.913
7	-0.003	0.001	-0.004	-0.022	-0.380	-2.293
8	0.002	0.005	-0.003	-0.026	-0.335	-2.628
9	0.007	-0.001	0.008	-0.018	0.821	-1.807
10	0.000	0.001	-0.001	-0.018	-0.076	-1.883
Average	0.000	0.001	-0.001	-0.013	-0.090	-1.340

(Source: Computed and compiled by researcher.) (T-table value @ 5% = 1.96)

Interpretation

Table 5 represents an event study analysis of Bajaj Auto Ltd for the data of 10 days before and after the GST implementation. On the day of event, 'T' value of abnormal return (AR) is (-0.663)which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no abnormal return (AR) to Bajaj Auto Ltd on date of event. Even 'T' value of cumulative abnormal return (CAR) is (-0.991)which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no cumulative abnormal return (CAR) to Bajaj Auto Ltd on date of event.

Table 6: Bajaj Auto Ltd. (t-test: Paired two sample for means)

t-Test: Paired Two Sample for Means		Mean	Variance	Observations	Pearson Correlation	df	P(T<=t) two-tail	Result
7 Working Days Pre and Post GST Analysis	Change in Price Before GST	-3.5143	571.99	7	0.0754	6	0.4898	H_0 failed to reject
	Change in Price After GST	6.74286	897.302	7				
15 Working Days Pre and Post GST Analysis	Change in Price Before GST	-7.6467	354.638	15	-0.0412	14	0.1887	H_0 failed to reject
	Change in Price After GST	2.75	461.155	15				
30 Working Days Pre and Post GST Analysis	Change in Price Before GST	-7.1417	851.655	30	0.0680	29	0.3677	H_0 failed to reject
	Change in Price After GST	-1.0033	595.336	30				
6 Month Pre and Post GST Analysis	Change in Price Before GST	20.175	10705.1	6	0.2095	5	0.4108	H_0 failed to reject
	Change in Price After GST	69.1417	11899.3	6				
1 Year Pre and Post GST Analysis	Change in Price Before GST	5.6	15848.1	12	-0.0409	11	0.8223	H_0 failed to reject
	Change in Price After GST	-9.4583	33688	12				

(Source: Computed and compiled by researcher.)

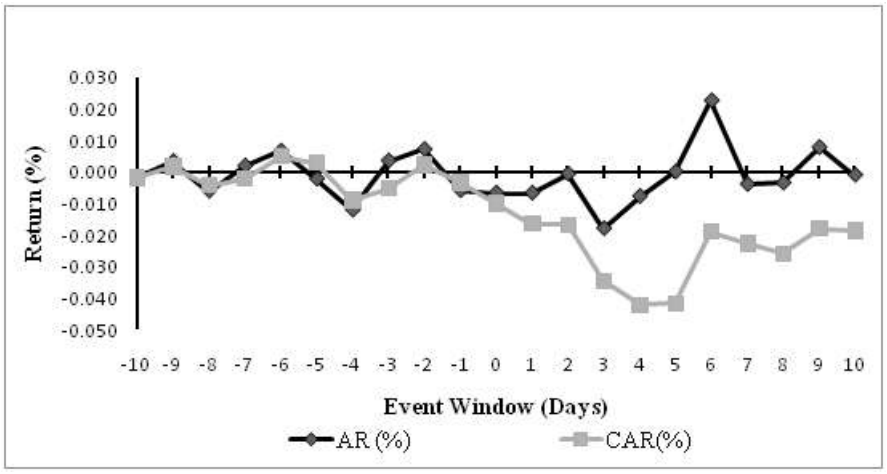


Chart 3: Bajaj Auto Ltd. AR & CAR (%)

Chart 3 shows abnormal return (AR) and cumulative abnormal return (CAR) of Bajaj Auto Ltd for -10 to +10 day's event window. Here, researcher has found that there are 8 positive and 13 negative abnormal returns (AR) during event window. Similarly, there are 4 positive and 17 negative cumulative abnormal returns (CAR) during event window. So, the researcher may conclude that during event study window abnormal return (AR) and cumulative abnormal return (CAR) both reflect negative trend during event window.

From Table 6 researcher has observed that p- value 0.4898 for the share return of 7 working days pre and post GST analysis of Bajaj Auto Ltd is more than 0.05. So, here Null hypothesis is failed to reject. i.e. there is no significance difference in share returns of Bajaj Auto Ltd. In case of , 15 days, 30 days, 6 months and 1 year pre and post GST analysis of Bajaj Auto Ltd p-value for the share returns is higher than 0.05. So, for all the analysis Null hypothesis is failed to reject and researcher may conclude that there is no significance difference in share returns of Bajaj Auto Ltd during pre and post GST implementation. After GST implementation Bajaj Auto Ltd has decreased prices for its vehicles, to pass on the benefit of Goods and Services Tax (GST) rates to its customers. As a result GST implementation does not affect share return of Bajaj Auto Ltd. Hence, researcher may conclude that there is no significance difference in share return of Bajaj Auto Ltd over different time frame.

Mahindra & Mahindra Ltd

Table 7: Mahindra & Mahindra Ltd (Event study analysis)

DAY	Daily Return (%)	Expected Return (%)	AR(%)	CAR(%)	T value AR	T value CAR
-10	0.000	-0.001	0.001	0.001	0.116	0.116
-9	-0.002	0.010	-0.011	-0.010	-1.101	-0.984
-8	0.002	-0.001	0.004	-0.007	0.347	-0.637
-7	-0.003	-0.001	-0.002	-0.009	-0.206	-0.843
-6	0.008	0.000	0.008	-0.001	0.791	-0.052
-5	-0.014	-0.007	-0.008	-0.008	-0.746	-0.799
-4	-0.004	-0.008	0.003	-0.005	0.323	-0.475
-3	-0.011	-0.006	-0.005	-0.010	-0.489	-0.965
-2	0.000	0.000	0.000	-0.010	-0.008	-0.973
-1	-0.006	0.002	-0.008	-0.018	-0.777	-1.750
0	0.012	0.012	0.001	-0.018	0.050	-1.700
1	-0.007	-0.001	-0.006	-0.023	-0.557	-2.258
2	0.022	0.001	0.022	-0.002	2.089	-0.169
3	-0.006	0.004	-0.010	-0.012	-1.001	-1.170
4	-0.001	-0.001	0.000	-0.012	-0.035	-1.204
5	-0.005	0.014	-0.019	-0.031	-1.842	-3.047
6	0.016	0.001	0.016	-0.016	1.527	-1.520
7	-0.010	0.002	-0.011	-0.027	-1.112	-2.632
8	-0.004	0.009	-0.013	-0.040	-1.249	-3.881
9	0.005	-0.001	0.006	-0.034	0.581	-3.300
10	0.004	0.002	0.003	-0.031	0.276	-3.024
Average	0.000	0.001	-0.001	-0.015	-0.144	-1.489

(Source: Computed and compiled by researcher.) (T-table value @ 5% = 1.96)

Interpretation

Table 7 represents an event study analysis of Mahindra and Mahindra Ltd for the data of 10 days before and after the GST implementation. On the day of event, 'T' value of abnormal return (AR) is 0.050 which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no abnormal return (AR) to Mahindra and Mahindra Ltd on date of event. Even 'T' value of

Table 8: Mahindra & Mahindra Ltd. (t-test: Paired two sample for means).

t-Test: Paired Two Sample for Means		Mean	Variance	Observations	Pearson Correlation	df	P(T<=t) two-tail	Result
7 Working Days Pre and Post GST Analysis	Change in Price Before GST	-9.0071	141.15	7	-0.4511	6	0.2557	H_0 failed to reject
	Change in Price After GST	2.0571	236.915	7				
15 Working Days Pre and Post GST Analysis	Change in Price Before GST	-9.0567	114.03	15	0.0304	14	0.0282	H_0 failed to reject
	Change in Price After GST	0.7767	135.799	15				
30 Working Days Pre and Post GST Analysis	Change in Price Before GST	-4.9417	255.939	30	0.2506	29	0.2158	H_0 failed to reject
	Change in Price After GST	-0.7550	180.055	30				
6 Month Pre and Post GST Analysis	Change in Price Before GST	20.9083	4069.23	6	0.8675	5	0.2466	H_0 failed to reject
	Change in Price After GST	-102.3583	80274.5	6				
1 Year Pre and Post GST Analysis	Change in Price Before GST	-10.2125	4542.84	12	-0.0364	11	0.6664	H_0 failed to reject
	Change in Price After GST	-38.2250	42445.1	12				

(Source: Computed and compiled by researcher.)

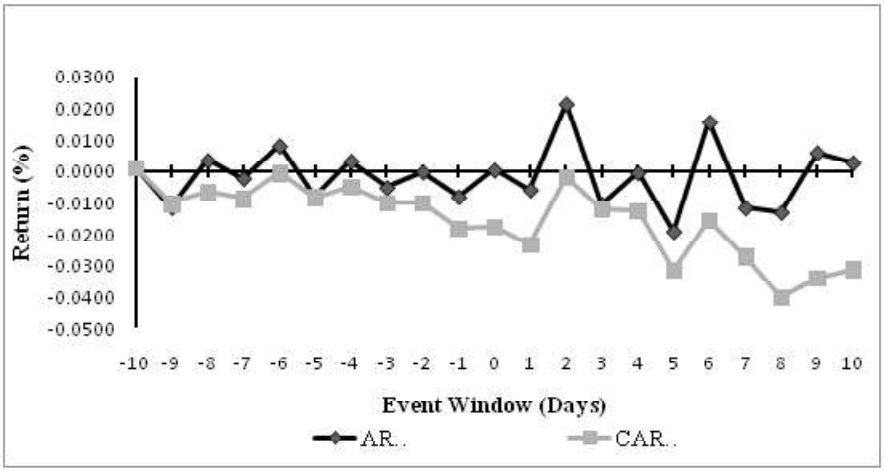


Chart 4: Mahindra & Mahindra Ltd. AR & CAR (%)

cumulative abnormal return (CAR) is (- 1.700) which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no cumulative abnormal return (CAR) to Mahindra and Mahindra Ltd on date of event.

Chart 4 shows abnormal return (AR) and cumulative abnormal return (CAR) of Mahindra and Mahindra Ltd for -10 to +10 day's event window. Here, researcher has found that there are 9 positive and 12 negative abnormal returns (AR) during event window. Similarly, there is 1 positive and 20 negative cumulative abnormal returns (CAR) during event window. So, a researcher may conclude that during event study window abnormal return (AR) reflect fluctuating trends and cumulative abnormal return (CAR) reflect negative trend.

From Table 8 researcher has observed that p- value 0.2557 for the share return of 7 working days pre and post GST analysis of Mahindra and Mahindra Ltd is higher than 0.05. So, here Null hypothesis is failed to reject. i.e. there is no significance difference in share returns of Mahindra and Mahindra Ltd. Similarly, for 15 days, 30 days, 6 months and 1 year pre and post GST analysis of Mahindra and Mahindra Ltd p-value for the share returns is higher than 0.05. So, for all the analysis Null hypothesis is failed to reject and a researcher may conclude that there is no significance difference in share returns of Mahindra and Mahindra Ltd during pre and post GST implementation. Mahindra and Mahindra Ltd, it is a company who deal with many countries so they easily know how to work on GST and they also maintained all the accounts of the taxes and GST only reform of existing tax structure and from overall analysis concluded that there is no significance difference in share return of Mahindra and Mahindra Ltd over different time frame.

Eicher Motor Ltd

Table 9: Eicher Motor Ltd (event study analysis)

DAY	Daily Return (%)	Expected Return (%)	AR(%)	CAR(%)	T value AR	T value CAR
-10	-0.003	0.000	-0.003	-0.003	-0.237	-0.237
-9	-0.009	0.009	-0.018	-0.021	-1.326	-1.563
-8	-0.021	0.001	-0.021	-0.042	-1.568	-3.131
-7	-0.011	0.001	-0.012	-0.054	-0.881	-4.012
-6	0.003	0.001	0.002	-0.052	0.158	-3.854
-5	-0.017	-0.004	-0.014	-0.066	-1.010	-4.864
-4	-0.019	-0.005	-0.014	-0.079	-1.031	-5.895
-3	0.021	-0.003	0.024	-0.056	1.772	-4.122
-2	0.008	0.002	0.006	-0.050	0.445	-3.678
-1	-0.015	0.003	-0.018	-0.068	-1.363	-5.041
0	0.027	0.010	0.017	-0.051	1.263	-3.778
1	0.003	0.001	0.003	-0.048	0.197	-3.581
2	0.007	0.002	0.005	-0.043	0.397	-3.183
3	-0.012	0.005	-0.017	-0.060	-1.272	-4.455
4	0.006	0.001	0.005	-0.055	0.365	-4.090
5	0.003	0.012	-0.009	-0.064	-0.691	-4.781
6	0.007	0.002	0.005	-0.059	0.381	-4.400
7	0.004	0.003	0.002	-0.058	0.124	-4.277
8	-0.007	0.008	-0.015	-0.073	-1.107	-5.383
9	-0.006	0.000	-0.006	-0.079	-0.454	-5.837
10	0.006	0.003	0.003	-0.076	0.226	-5.612
Average	-0.001	0.002	-0.004	-0.055	-0.267	-4.084

(Source: Computed and compiled by researcher.) (T-table value @ 5% = 1.96)

Interpretation

Table 9 represents an event study analysis of Eicher Motor Ltd for the data of 10 days before and after the GST implementation. On the day of event, 'T' value of abnormal return (AR) is 1.263 which is less than 'T' table value 1.96. So, Null hypothesis is failed to reject i.e. there is no abnormal return (AR) to Eicher Motor Ltd on date of event. Even 'T' value of cumulative abnormal return (CAR) is (-

Table 10: Eicher Motor Ltd. (t-test: Paired two sample for means)

t-Test: Paired Two Sample for Means		Mean	Variance	Observations	Pearson Correlation	df	P(T<=t) two-tail	Result
7 Working Days Pre and Post GST Analysis	Change in Price Before GST	-238.2857	152678.5398	7	0.4804	6	0.1032	H_0 failed to reject
	Change in Price After GST	52.9786	157195.1174	7				
15 Working Days Pre and Post GST Analysis	Change in Price Before GST	-260.8133	94996.1498	15	0.1906	14	0.0119	H_0 rejected
	Change in Price After GST	52.2767	122403.8514	15				
30 Working Days Pre and Post GST Analysis	Change in Price Before GST	-104.3567	133807.5537	30	-0.1848	29	0.4046	H_0 failed to reject
	Change in Price After GST	2.2767	272525.8151	30				
6 Month Pre and Post GST Analysis	Change in Price Before GST	624.1917	1579081.8274	6	-0.3200	5	0.8026	H_0 failed to reject
	Change in Price After GST	362.3000	2959162.1900	6				
1 Year Pre and Post GST Analysis	Change in Price Before GST	482.0375	2687005.6664	12	0.3513	11	0.5352	H_0 failed to reject
	Change in Price After GST	110.4792	3514249.3834	12				

(Source: Computed and compiled by researcher.)

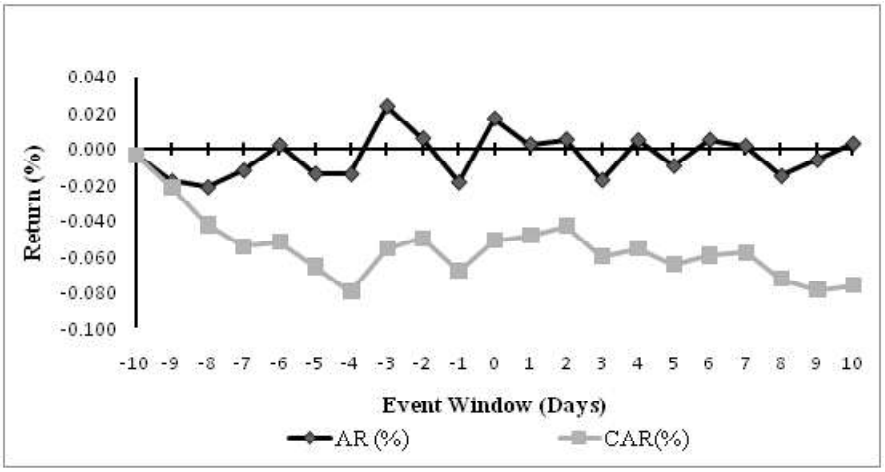


Chart 5: Eicher Motor Ltd. AR & CAR (%)

3.778) which is more than 'T' table value 1.96. So, Null hypothesis is reject i.e. there is cumulative abnormal return (CAR) to Eicher Motor Ltd on date of event.

Chart 5 shows abnormal return (AR) and cumulative abnormal return (CAR) of Eicher Motor Ltd for -10 to +10 day's event window. Here, researcher has found that there are 10 positive and 11 negative abnormal returns (AR) during event window. Similarly, there are 21 negative cumulative abnormal returns (CAR) during event window. So, the researcher may conclude that during event study window abnormal return (AR) reflect fluctuating trends and cumulative abnormal return (CAR) reflect negative trend.

From Table 10 a researcher has observed that p- value 0.1032 for the share return of 7 working days pre and post GST analysis of Eicher Motor Ltd is higher than 0.05. So, here Null hypothesis is failed to reject. i.e. there is no significance difference in share returns of Eicher Motor Ltd. Similarly, 30 days, 6 months and 1 year pre and post GST analysis of Eicher Motor Ltd p-value for the share returns is higher than 0.05. So, for the analysis Null hypothesis is failed to reject and a researcher may conclude that there is no significance difference in share returns of Eicher Motor Ltd during pre and post GST implementation. But in 15 days pre and post GST analysis of Eicher Motor Ltd p-value for the share returns is lower than 0.05. So, here Null hypothesis is rejected. i.e. there is a significance difference in share returns of Eicher Motor Ltd for 15 working days pre and post GST analysis. Eicher Motor Ltd is produced different range of consumers and passengers vehicles. Eicher Trucks and Buses, Commercial Vehicles, have reduced prices by up to 1.5 to 5 per cent in order to pass-on the GST benefit to customers. So, it reflects mixed effect on shares of Eicher motor Ltd. Hence,

researcher may conclude that there is no significance difference in share return of Eicher Motor Ltd over different time frame.

Conclusion and Implication

For the businesses in the automobile sector, GST has been good from a compliance standpoint. The previous state-wise compliance system has now been replaced with a single window for all compliance-related matters. Multiple taxes have been subsumed under GST such as CST, VAT, Service Tax, Entry Tax, Excise Duty, etc. Now, corporates need to deal only with GST officers rather than going to different officers for the various tax departments. From the Government's point of view, it has also been beneficial because of GST revenue sharing between the Centre and States. As the premise of GST states that it is a consumption-based tax rather than an origin-based one, it will increase the revenue of many states because the number of consumers is more than the manufacturers.

REFERENCES

AkanshaKhurana, Aastha Sharma.(2016). Goods and services tax in India- A positive reform for indirect tax system. *International Journal of Advanced Research.*;Vol.4, Issue – 3, Pg.500-505.

P. Chaurasia, S. Singh, P. Kumar Sen (2016). Role of goods and service tax in the growth of Indian economy, *International Journal of Science Technology and Management,* vol.5, issue 2, February 2016.

Raj Kumar. (2016). Comparison between goods and services tax and current taxation system- a brief study. *International Journal of Allied Practice, Research and Review*; Vol. 3, Issue – 4, Pg 09-16.

Lourdunathan F, Xavier P. (2017). A study on implementation of goods and services tax (GST) in India: prospects and challenges. *International Journal of Applied Research;* Vol. 3, Issue -1, Pg. 626-629.

Dr.Manoj Sain, Mr Priyanshu Sharma (2017). A review of goods and services tax (GST): Impact on Indian Stock Exchanges and Various Stock Sectors. *International Journal of Scientific Research and Management* 5 (11), 7418-22

Mukunder A. (2017). Impact of the demonetization on Indian Stock Market, www.reserchgate.net pp. 1-32.

Purohit K., (2018). GST: A game changer for the Indian Economy, *Journal of Commerce and Management,* Issue 23, February 2018, pp. 1-5.

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Impact of Demonetization on Indian Banking Sector Stocks

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Abstract : *This study analyses the market reaction to demonetization, especially the banking sector stocks, with a study of eight banks using the standard event study methodology. The empirical results infer that the average abnormal returns, as well as the cumulative average abnormal returns around the date of demonetization, are positive and significant. The study shows the positive effects of demonetization on stocks of the banking sector.*

Keywords: Demonetization, Banking sector stocks, Abnormal returns

Introduction

When any currency unit loses its status as a legal tender, it is referred to demonetisation. A Government can enforce demonetization for several reasons. The Indian government announced the policy for demonetization of Mahatma Gandhi series bank notes of denominations i.e. Rs.500/- and Rs.1000/-, amounting to Rs.15.44 lakh crores, on 8th November, 2016 as an effort to curb counterfeiting of the banknotes,which is allegedly the major source for funding terrorism, and to hit the stack of black money in the country.As far as Black money is concerned, it is a societal-ill and has many meanings including the currency of a black economy. According to Deodhar (2016), the estimates vary from 15% to 45% while Kumar (2016) estimates it as 38%of the total economy and 62% of GDP in 2012–13.

The direct impact of the policy was upon the balances held by the banks. The banks had never experienced such huge deposits ever since their existence. The money stacked in the black economy has come into the white economy system with the banks having huge balances to provide loans for economic development. The spurt toward cashless transactions in banking deposits, restricted cash withdrawals and shifting individuals, both businesses and customers, has strengthened the role of the banking interface in B2B and B2C industry.The Nifty Bank index closed at Rs.8544 on 8th November 2016 (before the announcement)

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and open at Rs. 8067 on next morning going to as low as Rs. 8002, although recovered itself and close at Rs. 8432 on the same day. Post demonetization, the Nifty Bank index has been quite volatile and after 30 trading days, it closed at Rs.7979 on 22nd December, 2016. However, to draw a statistical inference, this event study is conducted.

Literature Review

As stated by Campbell, Lo, & Mackinlay (1997), Dolley (1933) conducted the first-ever event study to analyse the impacts of stock splits on stock prices with a sample size of 95 for the period from 1921 to 1931. Thereafter, the event study literature attained the momentum in the late 60s.Later on Ball & Brown (1968); Fama, et. al. (1969); Brown & Warner (1980 & 1985); and many others contributed to this methodology. Corrado (1989); Boehmer, et. al. (1991); Cowan (1992); Corrado & Zivney (1992); Kolari & Pynnonen (2010 & 2011) have come up with several corrections and additions to the parametric as well as non-parametric tests used in the event studies. Mishra (2005) examined a sample size of 46 stocks listed on the NSE using the event study methodology for studying the market reaction around bonus announcements and concluded that the results supported the hypothesis that the Indian stock market is semi-strong efficient. Nikkinen, et. al. (2006) analysed the performanceof GARCH volatilities across tenkeymacroeconomic news announcementsof the United States on a sample of thirty-five local stock markets segregated in six regions and found that the markets are impacted by the U.S. macroeconomics news announcements, however, the degree of impact varies across nations. Malhotra, Thenmozhi & Kumar (2007) conducted an event studywith a sample size of 24 bonus issues to examine the market reactions to bonus announcements and found that the market under-reacted to it. Cai, Zoo & Zhang (2009) studied the reaction of the exchange rates in 9rising markets to the macroeconomic news of the U.S. as well asthe domestic economies during the period from 2000 to 2006 using log returns and GARCH model and found that although big U.S. macroeconomic news has strongly impacted the returns and stability of global exchange rates, other domestic news has not.Singh (2010) (as quoted in Saini & Minakshi, 2016) found that different political and economic events, both, inside and outside India, affect the stock markets and suggest that tomake appropriate decisions for their investment purposes, the investors should be aware of those effects. Mehndiratta&Gupta (2010) (as quoted in Pandey & Jaiswal, 2017)conducted astandard event study toanalyse the effects of dividend announcements onfifteen listed companiesaround sixty days of the announcementdates. They supported the Efficient Market Hypothesis with theprobability of informationcontent in dividend announcement in NSEin the post-announcement period and that dividendincrease lead to positive abnormal returns.Miglani (2011) examined the

price reaction to right issues announcement with a sample size of 32 right issues during the period 2005 & 2010 to test the semi-strong efficiency of the Indian Stock Market. She used the standard event study method andfound that abnormal returns on and around the announcement date were significant. Gumus, et. al. (2011) examined the effects of domestic as well as foreign macroeconomic news over 8 years on the Istanbul Stock Exchange and concluded that foreign macroeconomic news announcements had no significant impact on the ISE but the domestic macroeconomic news do impact the market volatility. Babita, , Prakash, & Shakila, B. (2012) using the standard event methodologyexamined the effects of 104 bonus announcements on the BSE listed stocksduring the period January 2010 to December 2011.Their results supported the semi-strong form of the Efficient Market Hypothesis. They concluded that shorter window reflect announcement effects better than longer windows. Muthukamu & Rajamohan (2015) examined the stock price reactions to bonus issues for 30 companies and found that the market reacted positively depending on the size of the issue. While big issues were significant, small issues were found to be non-significant.Saini & Minakshi (2016) examined the impact of the devaluation of Chinese Yuan on global stock markets and revealed negative market reactions at the announcement of the disruptive change by China. Dash & Bagha (2017) studied the effects of demonetisation on stock pricemovements in the Indian banking sector using the Runs test to conclude that there was no significant effect of demonetization on movements of the stock prices in the banking sector in India. Ganesan & Gajendranayagam (2017) examined the impact of demonetisation on the Indian economy by using the paired-sample t-tests and regression analysis on the gross domestic product and gross value added data for various sectors and found that few sectors have been positively impacted while the real estate sector has been negatively impacted for the short term. They concluded that demonetisation was a sort of dialysis and not the solution to the problem; it needs to be repeated after some time. Chauhan & Kaushik (2017) conducted an event study to examine demonetisation effects on the stocks of S&P BSE 100 companies and found that there were no notable effects of demonetisation on the stock prices. It was only a short term effect. Bharadwaj, et. al. (2017) using efficient market hypothesis with a sample size of 16 NSE company's data for pre and post-demonetisation period and concluded that demonetisation has positively impacted the stock market suggesting that investors must use the information available then and there for maximising their gains. Pandey & Jaiswal (2017) examined the price behaviour of 51 stocks traded on the NSE using the standard event study method and OLS market model for average abnormal returns. They found significant abnormal returns impacting positively to the financial, IT and energy sector stocks while impacting negatively to the automobile and consumer goods sector. They also concluded that the post-event period can be utilised by the investors for earning some abnormal returns. They further concluded that

significant abnormal returns on and after demonetisation imply that no information was previously available.

Going through the literature of the past 15 years, it is found that numerous studies to test the impact of bonus, right, stock-split and dividend announcements over the stock markets have been conducted. More than 500 event studies have been conducted to date(Kothari & Warner, 2006). However, very few event studies concentrate to analyse the impact of any macroeconomic policy of a government on the stock market behaviour. Although some studies (Nikkinen, et. al., 2006; Cai, Zoo & Zhang, 2009; Singh, 2010; Gumus, et. al., 2011; and, Saini & Minakshi, 2016) have been conducted to measure the impact of macroeconomic news announcements of the U.S. and China over global stock markets;except Chauhan & Kaushik (2017) and Pandey & Jaiswal (2017) other studies were not found in the context of event studies conducted to examine the impact of the Indian Government's policy announcements/implementations over the Indian Stock Exchange.

Objective

The objective of this paper is:

- to examine the impacts of the Indian Government's demonetization policy on the banking sector stocks of the Nifty.

Hypothesis

Abnormal returns on and around demonetization are less than or equal to zero

Research Methodology

The sample in the study consists of 8 banks out of 12 banks that constituted the Nifty Bank during the period of study. Although there were more banks whose data could have been taken for the study but based on the criterion of selection for the Nifty Bank, only those common in the Nifty Bank Index and Nifty 50 Index were considered for the study. The data from 28th June 2016 to 22nd December 2016 have been collected from the NSE website.

"More complicated methodologies do not convey any benefit and, in fact, 'make the researcher worse-off'(Brown & Warner, 1980: 249). Brown & Warner(1985) (as quoted in Kothari & Warner, 2006) conclude that the specific risk-adjustment strategies are very successful in identifying abnormal performance while performing short-window event studies. According to Brown & Warner (1985), although abnormality and partiality in the estimation of the market model are unimportant to test abnormal performances, the selection of the variance estimator is. For this, they suggest hypothesis testing assuming cross-sectional independence

because "as the number of sample securities increases, the average excess return in a cross-section of securities congregates to normality" (Brown & Warner, 1985: 25). Accordingly, the standard event study methodology,as in Brown & Warner (1980; 1985),has been used in this study.

An event study starts with the determination of the event, the event date, the event window, the estimation window &the estimation model. The demonetisation move of the Indian government is our Event and the event date (t) is 9th November, 2016. Although the demonetization was announced on 8th November 2016, the effective date has been considered here as 9th November 2016 because it was announced after trading hours. The event window is of 61 days from t_{-30} to t_{+30} days. The estimation window shall be a period just before the event window. In this case, it is of 60 days from t_{-90} to t_{-31} days. The estimation model for estimating the normal returns is the OLS regression model.

First of all, we have to find the daily abnormal returns in the event window. The abnormal return is the difference between the expected return and the actual return on the stock. The formula is as below:

$$AR_{jt} = R_{jt} - \mathrm{ER_{jt}}$$

Where,

$AR_{jt}$is the abnormal return on security j on day t;

$R_{jt}$is the actual returnon security j on day t; and,

$ER_{jt}$is the normal return on the security j on day t.

The actual return for the security is calculated by subtracting the previous day's price of a security from the price as on the day of calculation and dividing the difference by the previous day's price. The actual returnfor security j on day t,R_{jt},is calculated as:

$$R_{jt} = \frac{P_{jt} - P_{jt-1}}{P_{jt-1}} X\ 100$$

Where,

P_{jt} is the price of security j on day t; and,

P_{jt-1} is the price of security j on day t-1.

The normal return on the security j, ER_{jt}, is derived as:

$$ER_{jt} = \alpha + \beta(R_{mt})$$

Where,

α&β is calculated intercept and slope values with the help of regression model.

R_{mt} is the rate of return on market index on day t.

After the abnormal returns for each day in the event period has been calculated, the day-wise abnormal returns of each of the stocks in the sample are aggregated. The aggregated day-wise abnormal returns are then divided by the sample size. In this way, the average abnormal returns (AARs), $AAR_{t,}$ for the event period of 61 days are calculated using the formula below:

$$AAR_t = \frac{1}{N}\sum_{j=1}^{N} AR_{jt}$$

Where,

N is the Sample size

Once the AARs are calculated, the daily cumulative AARs (CAARs), $CAAR_{k,}$ is calculated using the following formula:

$$CAAR_k = \sum_{t=1}^{k} AAR_t$$

Now that the cross-sectional aggregation and time-series aggregation have been done and we have calculated the AARs and the CAARs during the event window, we need to test for their significance. To test for statistical significance of the AARs and the CAARs, we use the t-statistics. The t-statistics for AARs is calculated by dividing the AARs by the aggregate estimation period standard deviation of the daily abnormal returns and the t-statistics for CAARs is calculated by dividing the CAARs by the product of the aggregate estimation period standard deviation of the daily abnormal returns and the square root of the absolute value of corresponding event day plus 1. The following formula is used to calculate the pre-event standard deviation of daily abnormal returns:

$$\sigma_{j,est} = \sqrt{\frac{\sum_{-90}^{-31}\left(AR_{jt} - AAR_{est}\right)^2}{n}}$$

Where,

$\sigma_{j,est}$ is the standard deviation of daily abnormal returns of the estimation period;

AAR_{est} is the AARon security j for the estimation period; and, n is the number of days in the estimation period

Now, the aggregate estimation period standard deviation, $\sigma_{N,pre}$, is calculated as follows:

$$\sigma_{N,est} = \sqrt{\frac{\sum_{i=1}^{N} \sigma_{i,est}^2}{N^2}}$$

As discussed earlier, the t-statistics for AARs is calculated as:

$$t_{AARt} = \frac{AAR_t}{\sigma_{N,est}}$$

Similarly, the t-statistics for CAARs is calculated as:

$$t_{CAARt} = \frac{AAR_t}{\sigma_{N,est}\sqrt{N_{t+1}}}$$

Where,

Nt+1 is the absolute value of event day t plus 1

Thus, the t-values obtained will be used to test the hypothesis of the study.

The null hypothesis to be tested is that"on and around demonetization,abnormal returns are less than or equal to zero".If the AARs and the CAARs are found to be positive as well as significant, it indicates that the market reacted positively and the abnormal returns on the demonetization day and post-demonetization were more than those during the pre-demonetization period.If the t-test statistic lies between -1.96 to +1.96 or -2.58 to +2.58, the pertinent abnormal return is not significant at 5% or 1% levels of significance respectively.

Discussion

Table1 depicts the descriptive statistics of the daily AARs during the event window. The mean AAR for the sample is 0.03 with a maximum of 2.86, a minimum of -1.68 and a standard deviation of 0.74. The sample distribution is positively skewed which means that it is right-tailed and the probability for extremely negative outcomes is less. The kurtosis of 3.21 also indicates that the

distribution is leptokurtic, i.e., the tails are fatter and the risk of extreme outcomes is low.

Table 1: Descriptive statistics of the AARs during the event window

Mean	Median	Standard Deviation	Standard Error	Skewness	Kurtosis	Min.	Max.
0.03	-0.05	0.74	0.10	0.85	3.21	-1.68	2.86

Table2 presents the daily AARs, the CAARs and the corresponding t-values for the event window period, i.e., t-30 to t+30 days. The empirical results depict that a negative AAR is experienced on 16 trading days during the pre-demonetization period of 30 days and 17 trading days during the post-demonetisation (including the effective date of demonetisation) period of 31 days. However, during a shorter period, i.e., t-3 to t+3 days only one trading day has experienced a negative AAR while on the rest of the 6 trading days, the AARs are positive. Further, for the observations before the demonetization, no significant AAR is noticed while during the post-demonetization period, significant average abnormal returns are noticed. While significant AARs at 5% confidence level are observed on t+3 and t+28 days, the AARs on the effective day t, t+1, t+7 and t+12 are significant at 1% level. This infers that during the post-demonetization period the banking sector stocks have earned significant abnormal returns. The empirical results also infer that the CAARs during the period t-30 to t-2 days are not significant while those during the period from t-1 to t+11 days are significant. While the CAAR on t-1 day is significant at 5% level, the CAARs on t to t+11 days are significant at 1% level. The positive, increasing and significant CAARs from t-1 to t+11 days indicate that the market reacted optimistically to the demonetization move.

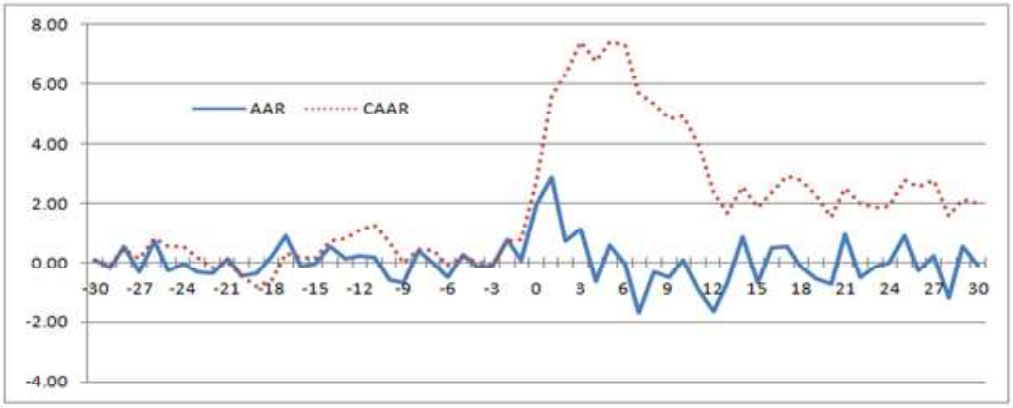

Fig. 1: AARs and CAARs for the event window (t-30 to t+30) days period

Table 2: Daily AARs, CAARs and t-values for the pre & post-demonetization period

	Pre-Demonetization Period				Post-Demonetization Period				
Days	AAR	t_{AARt}	CAAR	T_{CAARt}	Days	AAR	t_{AARt}	CAAR	t_{CAARt}
t-30	0.09	0.17	0.30	0.30	t	1.95	3.74**	3.51	6.755**
t-29	-0.20	-0.38	0.24	0.24	t+1	2.86	5.50**	6.37	8.667**
t-28	0.55	1.05	0.44	0.44	t+2	0.72	1.39	7.10	7.878**
t-27	-0.31	-0.59	0.33	0.33	t+3	1.11	2.14*	8.21	7.894**
t-26	0.71	1.36	0.60	0.60	t+4	-0.63	-1.20	7.58	6.522**
t-25	-0.27	-0.53	0.51	0.51	t+5	0.60	1.16	8.19	6.428**
t-24	-0.04	-0.08	0.50	0.50	t+6	-0.05	-0.09	8.14	5.917**
t-23	-0.33	-0.64	0.38	0.38	t+7	-1.68	-3.24**	6.46	4.390**
t-22	-0.35	-0.68	0.25	0.25	t+8	-0.33	-0.64	6.12	3.925**
t-21	0.15	0.28	0.31	0.31	t+9	-0.50	-0.96	5.62	3.420**
t-20	-0.45	-0.86	0.13	0.13	t+10	0.09	0.18	5.72	3.315**
t-19	-0.36	-0.69	-0.02	-0.02	t+11	-0.91	-1.75	4.81	2.669**
t-18	0.22	0.42	0.08	0.08	t+12	-1.66	-3.18**	3.15	1.681
t-17	0.93	1.78	0.50	0.50	t+13	-0.70	-1.35	2.45	1.260
t-16	-0.12	-0.24	0.46	0.46	t+14	0.86	1.65	3.31	1.644
t-15	-0.04	-0.09	0.45	0.45	t+15	-0.66	-1.27	2.65	1.273
t-14	0.56	1.08	0.74	0.74	t+16	0.51	0.98	3.16	1.473
t-13	0.12	0.23	0.83	0.83	t+17	0.54	1.03	3.69	1.675

Contd...

Contd...

t-12	0.25	0.48	0.99	0.99	t+18	-0.13	-0.24	3.57	1.574
t-11	0.17	0.33	1.13	1.13	t+19	-0.53	-1.01	3.04	1.308
t-10	-0.57	-1.10	0.85	0.85	t+20	-0.73	-1.41	2.31	0.969
t-9	-0.67	-1.29	0.48	0.48	t+21	0.97	1.87	3.28	1.345
t-8	0.42	0.81	0.78	0.78	t+22	-0.48	-0.93	2.80	1.121
t-7	-0.04	-0.07	0.80	0.80	t+23	-0.13	-0.24	2.67	1.048
t-6	-0.48	-0.93	0.51	0.51	t+24	0.00	0.01	2.68	1.029
t-5	0.28	0.54	0.76	0.76	t+25	0.90	1.73	3.58	1.348
t-4	-0.14	-0.27	0.71	0.71	t+26	-0.26	-0.50	3.31	1.226
t-3	-0.13	-0.24	0.68	0.68	t+27	0.23	0.44	3.54	1.288
t-2	0.79	1.53	1.66	1.66	t+28	-1.17	-2.26*	2.37	0.847
t-1	0.07	0.13	2.13	2.13*	t+29	0.54	1.05	2.92	1.024
T	1.95	3.74**	6.76	6.76**	t+30	-0.11	-0.21	2.81	0.969

* Significant at a p-value of 0.05. **Significant ata p-value of 0.01

Figure1 presents the AARs and the CAARs for the t-30 to t+30 days. It clearly depicts that the AARs and CAARs before the demonetization followed a similar trend and even overlapped each other. However, just from the day of demonetization, the CAARs rose drastically for a few days in a big M pattern. Also the AARs and the CAARs after the demonetization never overlapped each other and there existed some gap between them. This infers that the demonetization had a positive impact on the banking sector stocks that lead to consistent positive CAARs during the post-demonetization period of 30 days.

Table 3 presents the AARs and the CAARs for the period around the demonetization. Event period of 15 days, 7 days and 3 days are studied from days -7 to +7, -3 to +3 and -1 to +1 respectively. It is noticed that the AARs during the short period of 3 days and 7 days period including few days' pre and post-demonetization, are high and significant. The CAARs during the 3 days, 7 days and 15 days period including few days' pre and post-demonetization, are high and significant at 1% level. Pre and post-event period of 10 days, 7 days and 3 days are studied from days -10 to -1, -7 to -1, -3 to -1, 0 to +2, 0 to +6 and 0 to +9 respectively. The AARs during the pre-demonetization period, i.e., 10 days, 7 days and 3 days before demonetization, are not significant while the AARs during post-demonetization period of 3 days is significant. Even the CAARs during the pre-demonetization period, i.e., 10 days, 7 days and 3 days before demonetization, are not significant while the CAARs during post-demonetization period of 3 days, 7 days and 10 days are significant.Non-significant abnormal returns during pre-demonetization period infer that the market had no information leakage. Significant pre-event ARs and CARs indicate that information leaks in stock exchanges before the announcement (Ahsan, Chowdhury& Sarkar, 2013; Bhuvaneshwari & Ramya, 2014). The abnormal returns are significant in the shorter windows around demonetization. Shorter windows reveal the effects of announcementsbetter than the longer windows (Babita, Prakash, & Shakila, 2012). The results, thus, infer that the market had no information beforethe announcement of demonetization and accordingly it reacted optimistically leading to abnormal returns.

Figure2 represents the AARs and CAARs for the 10 days, 7 days and 3 days from days -10 to -1, -7 to -1, -3 to -1, 0 to +2, 0 to +6 and 0 to +9 respectively around demonetisation. It is seen that as we move towards the demonetization day, both the AAR and the CAAR start rising and from the effective date the rise was tremendous. It indicates that abnormal returns were higher and positive since demonetization. It could also be inferred that the positive impact of demonetization over the banking sector stocks continued for a few days.

Table 3: AARs and CAARs around demonetization

Window Period	AAR	tAARt	CAAR	tCAARt
-7 to +7	0.35	0.67	5.24	2.60**
-3 to +3	1.05	2.02*	7.38	5.36**
-1 to +1	1.62	3.12**	4.87	5.41**
-10 to -1	-0.05	-0.10	-0.47	-0.29
-7 to -1	0.05	0.10	0.35	0.25
-3 to -1	0.24	0.46	0.73	0.81
0 to +2	1.84	3.54**	5.53	6.14**
0 to +6	0.94	1.81	6.57	4.78**
0 to +9	0.41	0.79	4.06	2.47*

* Significant at p value of 0.05. **Significant at p value of 0.01

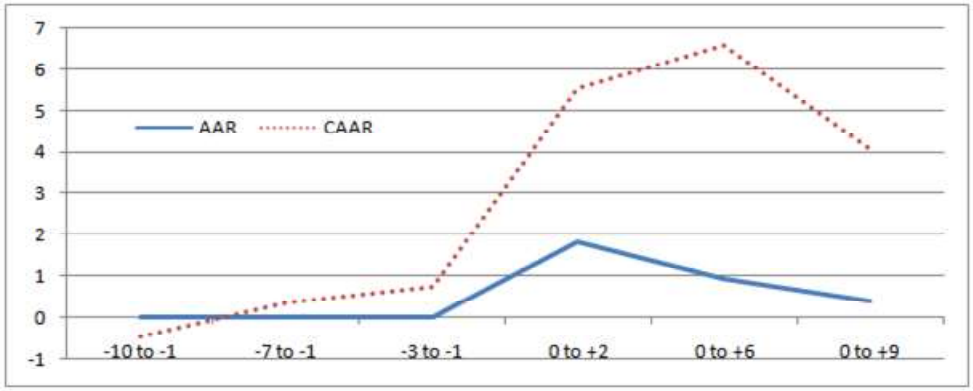

Fig. 2: AAR and CAAR around demonetization

Conclusion

Based on empirical findings, it seems that demonetization affected the banking sector stocks positively. Significant abnormal returns also confirm that information affects the stock returns and post-event period can be utilised by the investors for earning some abnormal returns. The presence of significant abnormal returns on the event day as well as the post-event period implies that the market had no information about demonetization previously (also supported by Pandey & Jaiswal, 2017; and, Bharadwaj, et. al., 2017).

The review of the literature reveals that very few studies have been conducted using event study methodology in India.The study emphasises the use of event study to analyse the impacts of demonetisation on banking sector stocks and

also provides a scope for further study in the field. Researchers may conduct further study with a bigger sample size increasing the scope with stocks of other sectors and aggregating some more events.We anticipate that the literature can be enhanced by the use of other test statistics and using other models of abnormal return.

REFERENCES

Ataullah, A., Song, X., & Tippett, M. (2011). A modified Corrado test for assessing abnormal security returns.*The European Journal of Finance,* 17(7), 589-601. Retrieved from http://dx.doi.org/10.1080/1351847X.2011.554294

Ahsan, A. F. M. M., Chowdhury, M. A. R., & Sarkar, A. H. (2014). An empirical study on market reaction around the bonus issues announcements in Bangladesh. *International Journal of Economics and Finance,* 6 (1), 82-98. DOI: http://dx.doi.org/10.5539/ijef.v6n1p82 Retrieved from http://ccsenet.org/journal/index.php/ijef/article/view/30892/19065

Babita, R., Prakash, P., & Shakila, B. (2012). Market reaction to bonus announcements: Empirical evidence from Bombay stock exchange. *Adarsh Journal of Management . Research* Retrieved from http://www.adarshjournals.in/index.php/ajmr/article/download/88336/67326

Bharadwaj, Et. al. (2017). Impact of demonetization on Indian stock market. *International Journal of Management*, 8 (3), 75–82. Retrieved from http://www.iaeme.com/MasterAdmin/Journal_uploads/IJM/VOLUME_8_ISSUE_3/IJM_08_03_007.pdf

Bhuvaneshwari, K. & Ramya, K. (2014). Impact of stock split announcement on stock prices. *International Journal of Management*, 5(3), 36-46. Retrieved from http://www.iaeme.com/MasterAdmin/uploadfolder/10120140503004/10120140503004.pdf

Brown, S. J., & Warner, J. B. (1980). Measuring security price performance. *Journal of Financial Economics,* 8(3), 205–258. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.553.4024&rep=rep1&type=pdf

Brown, S. J., & Warner, J. B. (1985). Using daily stock returns, the case of event studies. *Journal of Financial Economics*, 14(1), 3–31. Retrieved from http://leeds-faculty.colorado.edu/bhagat/brownwarner1985.pdf

Cai, F., Joo, H., & Zhang, Z. (2009). The impact of macroeconomic announcements on real time foreign exchange rates in emerging markets. International Finance Discussion Papers, No. 973, May 2009. Retrieved from https://www.federalreserve.gov/pubs/ifdp/2009/973/ifdp973.pdf

Campbell, J. Y., Lo, A. W., and A. C. MacKinlay, A.C.(1997). The econometrics of financial markets. Princeton University Press. Available online at: https://www.nrc.gov/docs/ML1208/ML12088A329.pdf

Chauhan, S., & Kaushik, N. (2017). Impact of demonetization on stock market: Event study methodology, *Indian Journal of Accounting*, XLIX(1), 127-32. Retrieved from http://indianaccounting.org/downloads/17%20%20%20Swati%20Chauhan%20&%20Nikhil%20Kaushik.pdf

Corrado, C. J. (1989). A nonparametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 23, 385–95. Retrieved from https://doi.org/10.1016/0304-405X(89)90064-0

Corrado, C. J., & Zivney, T. L. (1992). The specification and power of the sign test in event study hypothesis tests using daily stock returns. *Journal of Financial and Quantitative Analysis,* 27, 465–78.DOI: 10.2307/2331331

Cowan, A.R. (1992). Nonparametric event study tests. *Review of Quantitative Finance and Accounting, 2*, 343–358.Retrieved from https://doi.org/10.1007/BF00939016

Dash, S. D., & Bagha, P. (2017). Impact of demonetization on stock price movements in banking sector of India, *International Journal of Research and Scientific Innovation,* IV(VIIS), 33-36. Retrieved from https://www.rsisinternational.org/IJRSI/Issue44/33-36.pdf

Demonetization: Impact on the Economy (2016, November, 14). NIPFP Working Paper no. 182. Retrieved from http://www.nipfp.org.in/media/medialibrary/2016/11/WP_2016_182.pdf

Deodhar, R. P. (2016). Black money and demonetization (November 14, 2016). Retrieved from https://ssrn.com/abstract=2869172

Ganesan, G., & Gajendranayagam, B. (2017). Impact of demonetization on Indian economy, *International Journal of Applied Research*, 3(9), 433-36. Retrieved from http://www.allresearchjournal.com/archives/2017/vol3issue9/PartG/3-8-156-693.pdf

Gumus, Et.al. (2011). The impact of domestic and foreign macroeconomic news on stock market volatility: Istanbul stock exchange. *Bogazici Journal*, 25(1), 123-37. Retrieved from http://www.serialsjournals.com/serialjournalmanager/pdf/1470724804.pdf

Here is what PM Modi said about the new Rs 500, Rs 2000 notes and black money (2016, November, 8). *India Today*. Retrieved from http://indiatoday.intoday.in/story/live-pm-narendra-modi-addresses-nation/1/805755.html.

Kolari, J. W., & Pynnonen, S. (2010). Event study testing with cross-sectional correlation of abnormal returns. *The Review of Financial Studies*, 23(11), 3996-4025. Retrieved from https://doi.org/10.1093/rfs/hhq072

Kolari, J. W., & Pynnonen, S. (2011). Nonparametric rank tests for event studies. *Journal of Empirical Finance*, 18(5), 953-971. Retrieved from https://doi.org/10.1016/j.jempfin.2011.08.003

Kothari, S. P. & Warner, J. B. (2006). Econometrics of event studies. Handbook of Corporate Finance: Empirical Corporate Finance, B. Espen Eckbo (ed.).Retrieved from http://www.bu.edu/econ/files/2011/01/KothariWarner2.pdf

Kumar, A (2016). Economic consequences of demonetization: Money supply and economic structure. *Economic & Political Weekly*, LII(1), 14–17. Retrieved from http://www.epw.in/system/files/pdf/2017_52/1/CM_LII_1_07012017_Arun_Kumar.pdf

Malhotra, M., Thenmozhi. M., & Kumar, G. A. (2007). Stock market reaction and liquidity changes around bonus issue announcement: Evidence from India. 10th capital markets conference, Indian Institute of Capital Markets Paper. Retrieved from http://ssrn.com/abstract=962830

Mehndiratta, N. & Gupta, S. (2010). Impact of dividend announcement on stock prices. *International Journal of Information Technology and Knowledge Management,* 2(2), 405-10. Retrieved from http://csjournals.com/IJITKM/PDF%203-1/47.pdf

Miglani, P. (2011). An empirical analysis of impact of right issues on shareholders returns of Indian listed companies. *Journal of Arts, Science & Commerce*, II (4), 169-76. Retrieved from www.researchersworld.com/vol2/**issue**4/Paper_19.pdf

Mishra, A. K. (2005). An empirical analysis of market reaction around the bonus issues in India. Retrieved from https://core.ac.uk/download/pdf/9315482.pdf

Muthukamu, M. & Rajamohan, S. (2015). Stock price reaction to bonus issue – evidence from Indian equity market. *International Academic Research Journal of Economics and Finance,* 3(4), 32-41. Retrieved from https://acrpub.com/article/publishedarticles/0210**2015**IARJEF232.pdf

Nikkinen, J., Omran, M., Sahlström, P., & Äijö, J. (2006). Global stock market reactions to scheduled U.S. Macroeconomic News Announcements, *Global Finance Journal,* 92-104. Retrieved from http://www.egx.com.eg/pdf/global_us_gfj.pdf

Note ban: J&K sees 60% dip in terrorism-related violence, hawala operations down 50%. (2017, January, 07). *Times of India.* Retrieved from http://timesofindia.indiatimes.com/india/note-ban-jk-sees-60-dip-in-terrorism-related-violence-hawala-operations-down-50/articleshow/56385244.cms

Pandey, D. K., & Jaiswal, A. K. (2017). Impacts of demonetization on Indian stock market- An empirical study, *Barkaat Journal of Finance Al& Management,* 9 (2), 46-66. DOI: http://dx.doi.org/10.5958/2229-4503.2017.00015.7

Roychoudhury, A. (2017, January, 05). 94% of demonetised notes have been deposited back in banks. *Business Standard.* Retrieved from http://www.business-standard.com/article/economy-policy/94-of-demonetised-notes-have-been-deposited-back-in-banks-117010401187_1.html

Rs 4,172 cr dirty money recovered since Nov 8, Rs 105 cr seized in new notes. (2016, December, 30). *India TV News.* Retrieved from http://www.indiatvnews.com/business/india-rs-4-172-cr-dirty-money-recovered-since-nov-8-rs-105-cr-seized-in-new-notes-363023

Saini, A. & Minakshi (2016). Impact of devaluation of Chinese Yuan on Global Stock Markets. *IJABER,* 14(7), 5309-16. Retrieved from http://www.serialsjournals.com/serialjournalmanager/pdf/1470724804.pdf

Shariff, A & Khan, A. U. (2016, November, 16). Why demonetization will not eliminate black money or corruption. *The Wire*. Retrieved from https://thewire.in/80319/demonetization-will-not-eliminate-black-money-or-corruption/

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Information Search Behaviour for Health Care Services

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Abstract: For making informed decisions regarding healthcare services, it is important to study how, where and when patients search for information. The present research bridges the gap between healthcare service providers and the information search behaviour of patients and their attitude across customer information search before availing healthcare services and the level of time customers spent on searching for information before availing healthcare services. This study also provides steps to improve the awareness level of patients regarding the search for healthcare information. The present research involves single cross-sectional descriptive study. A structured questionnaire was designed to collect responses. Based on 212 respondents, the study has brought forward the issue of credibility of information available to patients and its repercussions for healthcare services. This study about information search behaviour for healthcare services is crucial for planning, strategizing and policy making in the health sector leading to improvement in a health situation.

Keywords : Information search, Health care services, perceived benefits, consumer's attitude

Introduction

Health and education are two major pillars of any developing country. A healthy and educated nation plays an important role in transforming from developing to a developed country. The Indian healthcare sector is growing with great speed and likely to reach USD 280 billion this year. There is a growing trend in searching for information for products or services before buying them. The emergence of the internet and widespread reach of mobile phones has been a major factor in the online search. Services are fundamentally different in nature from goods. Services are perishable, intangible, inseparable, and non-standardized. Services are predominately high in experience and credence qualities and are more difficult to evaluate in advance of purchase. Therefore, pre-purchase information search and evaluation for services is a complicated process and quite different from that of goods.

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Like the product, search for services involves multiple steps starting from identification of the problem to gathering information to the evaluation of options and finally availing service and finally feedback regarding services. The key component in this search process relates to information search carried out by patients and their relatives. One of the important considerations are the source of information. There are four major sources of information namely personal, commercial, public and experimental sources (Kotler and Keller, 2009).

Review of Literature

Gavrilov et al. (2016) have described how are e-services beneficial in healthcare funding in Macedonia. As the new technology is arising in healthcare practices, the cost of availing these facilities also becomes expensive. Healthcare funding enables to have access to these facilities. Saha and Daw (2016) have observed that for availing healthcare services, poor and middle-class families are inclined towards public hospitals instead of private. As public hospitals are more cost-effective and medicines are also available there free of cost. Whereas, private hospital fees are out of their reach. Cooley and Madupu (2009) have explored which sources of information are being utilized by consumers in two information search situations- when they are searching for themselves and when they are searching for someone else. Based on a qualitative study, they have concluded that consumers are referring to objective online sources along with sources such as word of mouth. Consumers have been found to use objective sources of information and put more time and effort when searching for information for someone. Alpay et al. (2009) have explained the relationship between information search and information understanding, as consumers are internet-friendly they look for every information on the internet. But the information available on different sources is not tailor-made, so it is not easily understandable. Therefore, searching for the information is the easy part and understanding it is rather difficult.

Ngangbam and Roy (2019) have explored the attitude of patients towards healthcare in north-east India. The northeast part of India has a higher ratio of illiterate and poor families. They do not have access to good healthcare facilities as for some parts road connectivity is not available. For some villages, primary healthcare is the only means available to them. Private facilities have been expensive and are only utilized by rich and Hindu families. Zhang and Hou (2017) have explored the effects of two types of risks on two different searching situations. Broadly, the two types of risk are functional risk and emotional risk. As consumers are now innovative towards their purchasing style, they search for information regarding products from various sources.Yasinand Ozen (2011) have explained that the consumers in turkey who are seeking healthcare services are more dedicated to getting information from e-health websites. They used

this information as a complementary tool instead of self-diagnosis. They value this activity because of its high quality, perceived benefits, and reliability of the information they found on e-health websites. As searching and information gathering is more trusted than word of mouth for healthcare. Cudmore et al. (2011) have explained the factors which are important to build medical websites interactive so as to encourage consumers searching behavior. In this context, two medical websites and two commercial healthcare websites are compared and their performance is measured based on perceived quality, usability, perceived information quality, website design, and consumer familiarity.

Shabbir et al. (2016) have explored patients' perceptions of the perceived service quality of private and public hospitals. They determine the difference in expected and perceived service quality through GAP analysis. Both the private and public healthcare providers fail to meet the patient's expectations. In private hospitals, facilities, staff, and room service are better than public hospitals, whereas public hospitals are better in terms of physician medical services. Isetta (2008) has explained how evidence-based practices in healthcare services are important to enhance service quality and patients satisfaction. It is the integration of best research evidence with medical practices and patients satisfaction. With these practices, practitioners can understand better patient's problem and with proper techniques can provide a positive outcome. Naidu (2009) has explored the variables which affect patient satisfaction and healthcare quality. Healthcare quality is also one of the variables on which patient satisfaction depends. Patient satisfaction is a measure of efficient healthcare delivery which turns to be the loyalty of the patients once they are satisfied. Patient satisfaction can be achieved when expected service quality meets with the perceived service quality. Kshetri (2011) has explained the trend of off-shoring in the healthcare industry. Industrialized healthcare providers of the developed country are off-shoring towards developing economies. It can benefit both the country as well as to the industry. As the healthcare industry is one of the contributors to enhancing the GDP of the economy and in developing nations as the workforce is cheaper for low-end jobs. For high – end jobs, there are regulatory implications for the sending country. A summarised form of literature review is presented below:

Author (Year)	Insights
Isetta (2008)	The author has explained that evidence-based practices (EBP) in healthcare services help practitioners to better understand the patient's problem and with proper techniques can enhance the service quality and patient satisfaction.
Alpay et al. (2009)	The study has concluded that searching for the information is easy but understanding it is the difficult part because the information available on different sources is not tailor-made, so it is not easily understandable.

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Cooley and Madupu (2009)	It was revealed that customers utilize both subjective sources of information (i.e. Word Of Mouth) and objective internet-based sources in two information search situations- searching for themselves and for someone else (eg.Loved ones).
Naidu (2009)	Patient satisfaction can be achieved when expected service quality meets with the perceived service quality. Patient satisfaction is a multi-dimensional healthcare construct which is affected by many variables. Healthcare quality affects patient satisfaction, which in turn influences positive patient behaviours such as loyalty. This article, by reviewing published research, found that to improve health service performance and image, it is necessary to work upon patient satisfaction and healthcare quality.
Cudmore et al.(2011)	They have explained that factors such as usability, perceived information quality, website design, and consumer familiarity are important to build medical websites interactive to encourage consumers searching behavior.
Kshetri (2011)	Paper has explained the trend where Industrialized healthcare providers of the developed country are off-shoring low end healthcare services towards developing economies as the workforce is cheaper for low-end jobs and it benefits both the countries as well the healthcare industry.
YasinandOzen (2011)	It has been found that searching and information gathering by consumers on e-health websites is more trusted than word of mouth for healthcare because of its perceived benefits, quality and reliability.
Gavrilov et al. (2016)	Authors have described how e-services are beneficial in the healthcare funding in Macedonia. Healthcare funding enables to have access to new technological facilities.
Saha and Daw (2016)	They have observed that poor and middle-class families are inclined towards Public Hospitals for healthcare services as they are cost-effective.
Shabbir et al. (2016)	Using GAP analysis, this paper has explored patients' perceptions of the perceived and expected service quality of private and public hospitals. It has been found that public hospitals are better in terms of physician medical services, whereas in private hospitals, the facilities, staff, and room service are better.
Zhang and Hou (2017)	They have explored the effects of functional and emotional risk on two different searching situations. Consumers are internet-friendly, so they search for product information from various sources.
Ngangbam and Roy (2019)	They have explored the attitude of patients towards healthcare in north-east India. People do not have access to good healthcare facilities due to poor road connectivity. Private Facilities have been expensive and are only utilized by rich and Hindu families. So, primary healthcare is the only means available to them.

Figure 1: Wordcloud of top 25 words in the literature

The above-mentioned figure clearly indicates that information search has been given attention by previous researches and literature reviewed in the present research was appropriate and consistent with the research problem.

The information search behaviour of customers has been less explored in the literature in the context of healthcare services in India. Customers use various sources of information in different situations like searching for themselves, friends or family. This information search involves time, effort and risk. Thus, for making informed decisions regarding healthcare services, it is important to study how, where and when patients search for information. The present research bridges the gap between healthcare service providers and the information search behaviour of patients and their attitude. This study also provides steps to improve the awareness level of patients regarding the search for healthcare information.

Objectives of the Study

- To explore information search behavior of customers in healthcare services.
- To find out the relationship between the attitude of consumer during information search and searching for information before availing healthcare services.
- To examine the relationship between the attitude of consumer during information search and time spent on information search.
- To suggest measures to enhance the awareness level of customers in searching information on healthcare services.

Methodology

Research Design

The present study is based on single cross-sectional research design. A two-step research approach was used, wherein first exploratory study was adopted to define the research problem precisely. The main purpose of exploratory research is to further investigate or probe a phenomenon. In order to have clarity of research problem, an exploratory research design is being carried out. Therefore, exploratory design helps in clarity of concepts, definitions of constructs and to identify variables of study. It also helps in formulating hypotheses. The first phase of research included an extant review of the literature and identification of variables of the study. After the exploratory study, hypotheses were framed and a descriptive study was carried out to test the hypotheses. Descriptive studies are formal, pre-planned and structured studies, carried out when the research problem is clearly defined.

Once variables are identified, a structured questionnaire was designed to collect responses. Here, we describe the structure of the questionnaire as follows; the first part of the questionnaire was related to the demographic profile of respondents (gender, marital status, age group, occupation, and income). It was also ascertained whether they have availed healthcare services recently. If the answer was yes, then the time period was also asked. There were a couple of filter questions to identify whether the respondent contacted is appropriate for the present study. Respondents were asked about the source of information and time spent by them for availing search information. It was followed by 21 statements measured on a Likert Scale of 1 to 5 (1 indicating Strongly Disagree and 5 denoted Strongly Agree). The last section of the questionnaire was open-ended to understand their views on the availability and quality of information on the internet. The pilot test involving 20 respondents through face to face survey was conducted to check the difficulty level, wording, sequence and consistency of the questionnaire. Based on the feedback of respondents and preliminary data analysis, the questionnaire was finalized. Here we describe the selection of the specific questions used.

Non-probability convenience sampling was used. It is based on ease of selection of sample. The samples were chosen simply because they were most convenient to choose from. The survey was conducted using offline and online mode. There was a very poor response rate on email, despite repeated reminders, only 35 respondents filled up an online survey. Face to face survey was conducted for a higher response rate. In total 250 respondents completed the survey. Out of which only 212 responses were usable.

Variable	Author's name	Statement
Time availability	Elliot (1994)	"I had little time to search for information when I availed the healthcare service"
		"I had little time to search for information because I was concerned about worsening health condition"
Self-Assessed Knowledge	Flynn and Goldsmith (1999)	"Compared to the average person, I am very knowledgeable about the healthcare services I have availed"
		"Compared to my friends, I am very knowledgeable about the healthcare services"
Information Search	Chaudari (2000)	"I would search for more information before availing healthcare services".
		"I would like to know more about healthcare services"
		"I would discuss with others about healthcare services"
Need for cognition	Cacioppo, Petty & Kao (1984)	"I prefer to do something that challenges my thinking abilities rather than something that requires little thought".
		"I don't like to do a lot of thinking for availing healthcare services"
		"I am hesitant about making healthcare decisions without thinking about them"
		"I like to have the responsibility of handling a situation that requires a lot of thinking".
Perceived Cost	Heaney and Goldsmith (1999)	"Searching for information about healthcare services takes a long time".
		"Searching for information about healthcare services requires a lot of effort".
Perceived Benefits	Srinivasan and Ratchford (1991)	"It pays to make inquiries regarding healthcare services".
		"There is too much to lose by being ignorant/ill-informed about healthcare services"
		"By rushing into making healthcare decisions, one could miss choosing the most suitable doctor/hospital"
		"I learned which doctor/hospital is suitable for me by searching around"
Satisfaction with Search Process	Diehl and Zauberman (2005)	"I am satisfied with the information gathered about the various healthcare alternatives."
		"Based on my information search for healthcare services, I am overall satisfied with the search experience."
		"I am totally satisfied with the doctor/hospital chosen after searching for information."

A Parametric test, one-way ANOVA has been used in the present study which involves the study of means of two or more populations. Statistical analyses were conducted through IBM-SPSS and Excel.

Hypotheses Development

In order to test the relationship between variables, inferential research in the form of hypothesis testing is presented. The dependent variable is the information search behaviour for healthcare services and the independent variables are searching information before availing healthcare services and time spent on information search before availing healthcare service. We selected independent variables according to theoretical models that describe healthcare utilization. The hypotheses have been grouped based on variables studied. Thus, the hypotheses are constructed as follows:

H_1: The consumer attitude towards the mean score of a) usefulness, b) deterrent, c) awareness, d) knowledge, and e) satisfaction does not remain same across if the customer has searched for any information before availing healthcare services.

H_2: The consumer attitude towards the mean score of a) usefulness, b) deterrent, c) awareness, d) knowledge, and e) satisfaction does not remain same across the level of time customers spent on searching for information before availing healthcare services.

Findings and Discussion

The demographic profile of the respondents which is presented in Table 1, shows that the majority of the respondents were below 25 years of age (50.48%), then 25 to 45 years of age (43.27%), 45 to 60 years of age (6.25%) and a very small percentage above 60 years. The majority of the respondents are unemployed (50%). Followed by, salaried employee (37.38%), professional (7.77%), and self-employed (4.85%). Most of the respondents in the present study possessed a postgraduate degree (46.23%) followed by graduate (42.45%), professional degree (10.36%), and others (0.47%).

Almost two third of respondent surveyed have searched information before availing health care service. The time spent for search varied from less than one hour to more than 5 hours. One third of respondents agreed that they have spent less than one hour and almost 11 percentage indicated that they have spent more than 5 hours for information search.

Table 2 represents the mean and standard deviation of all the items measured on a scale of 1 to 5. The mean ranged from 2.59 to 4.07. Following table presents measures of central tendency and dispersion score for each statement used in the survey instrument.

Table 1: The demographic profile of the respondents (n = 212)

S.No	Demographic	Categories	Frequency	Percentage	Cumulative Percentage
1.	Age (in Years)	Below 25 Years	103	48.6	48.6
		25-45 Years	89	42	90.6
		45-60 Years	13	6.1	96.7
		Above 60 Years	7	3.3	100
2.	Occupation	Unemployed	101	47.6	47.6
		Salaried	76	35.8	83.4
		Employed	16	7.5	90.9
		Professional	10	4.7	95.6
		Self-Employed	9	4.4	100
3.	Family Annual Income (in Rs.)	Up to 1 Lakh	9	4.2	4.2
		1 to 5 Lakh	50	23.6	27.8
		5 to 10 Lakh	33	15.6	43.4
		More than 10 Lakhs	107	50.5	93.9
			13	6.1	100
4.	Educational Qualification	Graduate	87	41	41
		Post Graduate	98	46.2	87.2
		Professional	22	10.4	97.6
		Degree	1	0.5	98.1
		Others	4	1.9	100

Table 2: Descriptive statistics

	N	Mean	Std. Deviation
I had little time to search for information when I availed the healthcare service.	209	2.89	1.324
I had little time to search for information because I was concerned about worsening health condition.	207	2.86	1.301
Compared to the average person, I am very knowledge-able about the healthcare services I have availed.	208	3.35	1.132
Compared to my friends, I am very knowledgeable about the healthcare services.	207	3.23	1.048
Compared to people who avail healthcare services a lot, I am very knowledgeable about the healthcare services.	209	3.09	1.110
It pays to make inquiries regarding healthcare services	210	3.19	1.271
There is too much to lose by being ignorant/ ill-informed about healthcare services.	208	4.07	1.070
By rushing into making healthcare decisions, one could miss choosing the most suitable	209	3.92	1.002

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doctor/hospital.			
I learned which doctor/hospital is suitable for me by searching around.	210	3.64	1.090
I would search for more information before availing healthcare services.	208	4.04	.962
I would like to know more about healthcare services.	209	3.92	.955
I would discuss with others about healthcare services.	210	3.88	.899
I prefer to do something that challenges my thinking abilities rather than something that requires little thought.	208	3.68	1.052
I don't like to do a lot of thinking for availing healthcare services.	207	2.59	1.277
I am hesitant about making healthcare decisions without thinking about them.	207	3.46	1.202
I like to have the responsibility of handling a situation that requires a lot of thinking.	205	3.65	.967
Searching for information about healthcare services takes a long time.	207	3.38	1.016
Searching for information about healthcare services requires a lot of effort.	207	3.37	1.057
I am satisfied with the information gathered about the various healthcare alternatives.	206	3.36	.947
Based on my information search for healthcare services, I am overall satisfied with the search experience.	206	3.46	.864
I am totally satisfied with the doctor/hospital chosen after searching for information.	207	3.69	.883

As evident from the above table, each statement is having Standard deviation greater than 0.5 and mean scores are distinctly different from 3.00 Therefore, it can be concluded that there were no unengaged responses.

Hypotheses Testing

H_{1a}: The consumer attitude towards mean score of usefulness does not remain same across if the customer has searched for any information before availing healthcare services.

ANOVA was used to test relationship between perceived mean score of usefulness and whether the respondents have searched for any information before availing health care services. The relationship between these variables was significant for respondents who have searched for any information before availing health care services, $F(1,199) = 14.562$, $p = 0.000$.

Table 3: Results of One-way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Average usefulness	Between Groups	6.229	1	6.229	14.562	.000
	Within Groups	85.125	199	.428		
	Total	91.354	200			
Average deterrent	Between Groups	6.872	1	6.872	11.057	.001
	Within Groups	126.172	203	.622		
	Total	133.044	204			
Average awareness	Between Groups	3.648	1	3.648	3.793	.053
	Within Groups	194.314	202	.962		
	Total	197.962	203			
Average knowledge	Between Groups	1.237	1	1.237	1.461	.228
	Within Groups	169.331	200	.847		
	Total	170.568	201			
average satisfaction	Between Groups	1.472	1	1.472	3.766	.054
	Within Groups	77.793	199	.391		
	Total	79.266	200			

H_{1_b}: The consumer attitude towards mean score of deterrent does not remain same across if the customer has searched for any information before availing healthcare services.

The relationship between these variables was significant for respondents who have searched for any information before availing health care services, $F(1,203) = 11.057$, $p = 0.001$.

H_{1_c}: The consumer attitude towards mean score of awareness does not remain same across if the customer has searched for any information before availing healthcare services.

The relationship between these variables was insignificant for respondents who have searched for any information before availing health care services, $F(1,202) = 3.793$, $p = 0.053$.

H_{1_d}: The consumer attitude towards mean score of knowledge does not remain same across if the customer has searched for any information before availing healthcare services.

The relationship between these variables was insignificant for respondents who have searched for any information before availing health care services, F (1,200) = 1.461, p = 0.228.

H_{1_e}: The consumer attitude towards mean score of satisfaction does not remain same across if the customer has searched for any information before availing healthcare services.

The relationship between these variables was insignificant for respondents who have searched for any information before availing health care services, F (1,199) = 3.766, p = 0.054.

H_{2_a}: The consumer attitude towards different factor's means score of usefulness does not remain same across the level of time customers spent on searching for information before availing healthcare services.

ANOVA was used to test relationship between perceived mean score of usefulness and how much time a respondent spends on searching for information before availing health care services. The relationship between these variables was significant for the time factor a respondent spends on searching for information before availing health care services, F (4,196) = 5.1410, p = 0.001.

Table 4: Results of one-way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Average usefulness	Between Groups	8.694	4	2.173	5.140	.001
	Within Groups	82.870	196	.423		
	Total	91.564	200			
Average deterrent	Between Groups	9.446	4	2.362	3.829	.005
	Within Groups	123.954	201	.617		
	Total	133.400	205			
Average awareness	Between Groups	9.232	4	2.308	2.426	.049
	Within Groups	189.310	199	.951		
	Total	198.542	203			
Average knowledge	Between Groups	5.396	4	1.349	1.603	.175
	Within Groups	166.656	198	.842		
	Total	172.051	202			
average satisfaction	Between Groups	2.350	4	.587	1.486	.208
	Within Groups	77.862	197	.395		
	Total	80.212	201			

H_{2_b}: The consumer attitude towards mean score of deterrent does not remain same across the level of time customers spent on searching for information before availing healthcare services.

The relationship between these variables was significant for the time factor a respondent spends on searching for information before availing health care services, F (4,201) = 3.829, p = 0.005.

H_{2_c}: The consumer attitude towards mean score of awareness does not remain same across the level of time customers spent on searching for information before availing healthcare services.

The relationship between these variables was significant for the time factor a respondent spends on searching for information before availing health care services, F (4,199) = 2.426, p = 0.049.

H_{2_d}: The consumer attitude towards mean score of knowledge does not remain same across the level of time customers spent on searching for information before availing healthcare services.

The relationship between these variables was insignificant for the time factor a respondent spends on searching for information before availing health care services, F (4,198) = 1.603, p = 0.175.

H_{2_e}: The consumer attitude towards different factors mean satisfaction does not remain same across the level of time customers spent on searching for information before availing healthcare services.

The relationship between these variables was insignificant for the time factor a respondent spends on searching for information before availing health care services, F (4,197) = 1.486, p = 0.208.

Table 5: Summary of hypotheses tested

Hypotheses		*Supported/ Not supported*
H_{1_a}:	The consumer attitude towards mean score of usefulness does not remain same across if the customer has searched for any information before availing healthcare services.	Supported
H_{1_b}:	The consumer attitude towards mean score of deterrent does not remain same across if the customer has searched for any information before availing healthcare services.	Supported
H_{1_c}:	The consumer attitude towards mean score of awareness does not remain same across if the customer has searched for any information before availing healthcare services.	Not Supported
H_{1_d}:	The consumer attitude towards mean score of knowledge does not remain same across if the customer has searched for any information before availing healthcare services.	Not Supported

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H_{1e}:	The consumer attitude towards mean score of satisfaction does not remain same across if the customer has searched for any information before availing healthcare services.	Not Supported
H_{2a}:	The consumer attitude towards mean score of usefulness does not remain same across the level of time customers spent on searching for information before availing healthcare services.	Supported
H_{2b}:	The consumer attitude towards mean score of deterrent does not remain same across the level of time customers spent on searching for information before availing healthcare services.	Supported
H_{2c}:	The consumer attitude towards mean score of awareness does not remain same across the level of time customers spent on searching for information before availing healthcare services.	Supported
H_{2d}:	The consumer attitude towards mean score of knowledge does not remain same across the level of time customers spent on searching for information before availing healthcare services.	Not Supported
H_{2e}:	The consumer attitude towards different factors mean satisfaction does not remain same across the level of time customers spent on searching for information before availing healthcare services.	Not Supported

Conclusion

It was found that the attitude of consumer towards mean score of usefulness and deterrent does not remain same across if the customer has searched for any information before availing health care services. The results indicate that consumer attitude towards mean score of usefulness, deterrent and awareness does not remain same across the level of time consumers spent on searching for information before availing health care services. However, there was no significant difference between consumer attitude towards mean score of knowledge and satisfaction across both consumer search before availing health care services and time spent on information search before availing health care services. The study founds that both the government and corporate health care sector needs to work cooperatively to increase the awareness level of patients and their relatives. To secure patient's safety it is very necessary to dissemination reliable information. Healthcare is one of the twelve champion sectors identified by the Ministry of Commerce and Industry, Govt. of India in 2018. The government and the private sector have taken various steps to improve the availability and accessibility of health services in India. However, the information gap between healthcare service providers and patients causes many problems. Information is the real power. As a developing nation, we need to understand how information search in the health care sector is evolving and what should be its implications for the future.

The study has brought forward the issue of credibility of information available to patients and its repercussions for healthcare services. Information on the

internet which is freely available and easily accessible may not always be true. Thus, patients or their relatives should refer to authentic information providers such as professional medical sites, and registered sources and they must not fall prey to any suspicious source for information. Government should make efforts to regulate information provided on internet regarding health care sector. The development of government sources operated mobile apps for the dissemination of health information can also be helpful.

Health care is a sector that requires a great deal of attention from the government. This study about information search behaviour for healthcare services may be crucial for planning, strategizing and policy making in health sector leading to improvement in health situation. It has made a timely and significant contribution to the literature on information search in healthcare sector.

Limitations and Scope of Future Research

The present study is based on perception and the instrument used for measuring perception may not be truly able to capture the actual behaviour.Future researchers may identify factors influencing search behaviour and their impact on the satisfaction level of services. Another important limitation is the sample size. A sample size of 212 respondents was used. Further studies can increase the sample size to generalize the results. Third, the present research involves a single cross-sectional design where observation was made at one point in time. The focus was on studying the phenomenon at a single time. Future researchers could incorporate a longitudinal design to study the changes in variables over a period of time.

REFERENCES

Alpay, L., Verhoef, J., Xie, B., Te'eni, D., &Zwetsloot-Schonk, J. (2009). Current challenge in consumer health informatics: Bridging the gap between access to information and information understanding. *Biomedical Informatics Insights*, *2*, BII.S2223.

Atkinson, N., Saperstein, S., &Pleis, J. (2009). Using the internet for health-related activities: findings from a national probability sample. *Journal of Medical Internet Research*, *11*(1), e5.

Awasthy, D., Banerjee, A., & Banerjee, B. (2012). Understanding the role of prior product knowledge to information search. *Asia Pacific Journal of Marketing and Logistics*, *24*(2), 257-287.

Beatty, S. E., & Smith, S. M. (1987). External search effort: An investigation across several product categories. *Journal of Consumer Research*, *14*(1), 83-95.

Becker, V., Heeschen, V., Schuh, K., Schieb, H., &Ziemssen, T. (2018). Patient satisfaction and healthcare services in specialized multiple sclerosis centres in Germany. *Therapeutic Advances in Neurological Disorders*, *11*, 17562856177 48845.

Benyoucef, M., Kuziemsky, C.E., Rad, A.A., &Elsabbahi, A. (2011). Modeling healthcare processes as service orchestrations and choreographies. *Business Process Management Journal, 17*, 568-597.

Bhatia, R., & Taneja, U. (2019). Factors Affecting Indian Consumers' Intention to Use eHealth Services. *Journal of Health Management*, *21*(2), 258-278.

Braunsberger, K., Buckler, R. B., & Luckett, M. (2008). Dimensions of total product knowledge in a service environment. *Journal of Services Marketing*, 22(7),509-519.

Brodie, M., Flournoy, R. E., Altman, D. E., Blendon, R. J., Benson, J. M., & Rosenbaum, M. D. (2000). Health information, the internet, and the digital divide: Despite recent improvements, Americans' access to the Internet—and to the growing body of health information there—remains uneven. *Health Affairs*, *19*(6), 255-265.

Cacioppo, J. T., Petty, R. E., & Feng Kao, C. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, *48*(3), 306-307.

Calero, R., Gallarza, M. G., del Chiappa, G., &Nerbón, O. (2016). Perceptions of healthcare service end users: A cross-cultural comparison between Spain and Italy. *Journal of Health Management*, *18*(2), 337-349.

Chang, B. L., Kao, H. O., Lin, S. J., Yang, S. H., Kuo, Y. W., &Jerng, J. S. (2019). Quality gaps and priorities for improvement of healthcare service for patients with prolonged mechanical ventilation in the view of family. *Journal of the Formosan Medical Association*, *118*(5), 922-931.

Cho, S., & Workman, J. E. (2014). Influences of gender, need for affect, and tolerance for risk-taking on use of information sources. *Journal of Fashion Marketing and Management, 18(4),*465-482.

Coleman, W., Warren, W. E., & Huston, R. (1996). Perceived risk and the information search process in the selection of a new dentist: An empirical investigation. *Health Marketing Quarterly*, *13*(2), 27-41.

Cooley, D. O., Madupu, V. (2009). How did you find your physician? An exploratory investigation into the types of information sources used to select physicians. *International Journal of Pharmaceutical and Healthcare Marketing, 3(1),*46-58.

Cudmore, B. A., Bobrowski, P. E., &Kiguradze, T. (2011). Encouraging consumer searching behavior on healthcare web sites. *Journal of Consumer Marketing, 28(4),*290-299.

Daultani, Y., Chaudhuri, A., & Kumar, S. (2015). A decade of lean in healthcare: current state and future directions. *Global Business Review*, *16*(6), 1082-1099.

Davies, K. (2007). The information seeking behaviour of doctors: a review of the evidence. *Health Information & Libraries Journal*, *24*(2), 78-94.

Diehl, K., &Zauberman, G. (2005). Searching ordered sets: Evaluations from sequences under search. *Journal of Consumer Research, 31(4)*, 824-832.

Duggirala, M., Rajendran, C., &Anantharaman, R. N. (2008). Patient perceived dimensions of total quality service in healthcare. *Benchmarking: An International Journal, 15(5),*560-583.

Ek, S. (2015). Gender differences in health information behaviour: a Finnish population-based survey. *Health Promotion International*, *30*(3), 736-745.

Elliott, M. T. (1994). An investigation of consumer external information search for professional services. *Journal of Marketing Management (10711988)*, *4*(2).

Ferguson, T. (1997). Health care in cyberspace: patients lead a revolution. *The Futurist*, *31*(6), 29.

Flynn, L. R., & Goldsmith, R. E. (1999). A short, reliable measure of subjective knowledge. *Journal of Business Research*, *46*(1), 57-66.

Gallagher, S., Doherty, D.T., Moran, R. (2008). Internet use and seeking health information onlinein Ireland: demographic characteristics and mentalhealth characteristics of users and non-users.*Health Research Board,4.*

Gavrilov, G., Vlahu-Gjorgievska, E., &Trajkovik, V. (2016). Analysis of introducing e-services: a case study of Health Insurance Fund of Macedonia. *Journal of Health Organization and Management, 30(3),* 354-371.

Gonçalo, C. R., & Borges, M. D. L. (2010). Healthcare services based on knowledge structure. *Journal of Health Management*, *12*(4), 553-572.

Gray, N. J., Klein, J. D., Noyce, P. R., Sesselberg, T. S., &Cantrill, J. A. (2005). Health information-seeking behaviour in adolescence: the place of the internet. *Social Science & Medicine*, *60*(7), 1467-1478.

Thi Thu Ha, B., Mirzoev, T., & Morgan, R. (2015). Patient complaints in healthcare services in Vietnam's health system. *SAGE Open Medicine*, *3*, 2050312115610 127.

Hallyburton, A. (2016). A conceptual approach to practitioners' health information literacy. *Reference Services Review, 44(2),* 178-190.

Heaney, J. G., & Goldsmith, R. E. (1999). External information search for banking services. *International Journal of Bank Marketing.*

Higgins, O., Sixsmith, J., Barry, M.M., &Domegan, C. (2011). A literature review on health information-seeking behaviour on the web: a health consumer and health professional perspective. *European Center for Disease Prevention and Control.*

Hill, C. J. (2001). The nature of problem recognition and search in the extended health care decision. *Journal of Services Marketing, 15(6),* 454-479.

Hollick, R. J., Black, A. J., Reid, D. M., & McKee, L. (2019). Shaping innovation and coordination of healthcare delivery across boundaries and borders. *Journal of Health Organization and Management*.

Isetta, M. (2008, November). Evidence-based practice, healthcare delivery and information management: a contemporary case study. In *Aslib Proceedings: New Information Perspectives* (Vol. 60, No. 6, pp. 619-641). Emerald Group Publishing Limited.

Islam, M. S. (2015). Introducing modern technology to promote transparency in health services. *International Journal of Health Care Quality Assurance*, 28(6), 611-620

Kalichman, S. C., Cherry, C., Cain, D., Weinhardt, L. S., Benotsch, E., Pope, H., &Kalichman, M. (2006). Health information on the internet and people living with HIV/AIDS: Information evaluation and coping styles. *Health Psychology*, *25*(2), 205.

Keeling, D., Khan, A., &Newholm, T. (2013). Internet forums and negotiation of healthcare knowledge cultures. *Journal of Services Marketing, 27(1),* 59-75.

Kotler, P., & Keller, K. L. (2009). Marketing management (13th end).

Kshetri, N. (2011). The healthcare off shoring industry in developing economies–institutional and economic foundations. *International Journal of Health Care Quality Assurance, 24(6),* 453-470.

Kuhlmann, E., & Annandale, E. (2012). Researching transformations in healthcare services and policy in international perspective: An introduction. *Current Sociology*, *60*(4), 401-414.

Lee, Y. J., Park, J., &Widdows, R. (2009). Exploring antecedents of consumer satisfaction and repeated search behavior on e-health information. *Journal of Health Communication*, *14*(2), 160-173.

Lorence, D. P., Park, H., & Fox, S. (2006). Assessing health consumerism on the Web: a demographic profile of information-seeking behaviors. *Journal of Medical Systems*, *30*(4), 251-258.

Lueg, J. E., Moore, R. S., & Warkentin, M. (2003). Patient health information search: An exploratory model of web-based search behavior. *Journal of Organizational and End User Computing (JOEUC)*, *15*(4), 49-61.

Mattila, A. S., & Wirtz, J. (2002). The impact of knowledge types on the consumer search process. *International Journal of Service Industry Management*, 13(3), 214-230.

Mesabbah, M., &Arisha, A. (2016). Performance management of the public healthcare services in Ireland: a review. *International Journal of Health Care Quality Assurance, 29(2),*209-235.

Moretti, F. A., Oliveira, V. D., & Silva, E. M. (2012). Access to health information on the internet: a public health issue?. *Revista da Associacao Medica Brasileira (1992)*, *58*(6), 650-658.

Mosadeghrad, A. M. (2013). Healthcare service quality: towards a broad definition. *International Journal of Health Care Quality Assurance, 26(3),* 203-219.

Mosadeghrad, A. M. (2014). Patient choice of a hospital: implications for health policy and management. *International Journal of Health Care Quality Assurance, 27(2), 152-164.*

Mukherjee, A., & McGinnis, J. (2007). E healthcare: an analysis of key themes in research. *International Journal of Pharmaceutical and Healthcare Marketing, 1(4),* 349-363.

Naidu, A. (2009). Factors affecting patient satisfaction and healthcare quality. *International Journal of Health Care Quality Assurance, 22(4),* 366-381.

Ngangbam, S., & Roy, A. K. (2019). Determinants of health-seeking behaviour in Northeast India. *Journal of Health Management*, *21*(2), 234-257.

Padma, P., Rajendran, C., &Lokachari, P. S. (2010). Service quality and its impact on customer satisfaction in Indian hospitals. *Benchmarking: An International Journal*, *17(6),* 807-841.

Padma, P., Rajendran, C., & Sai, L. P. (2009). A conceptual framework of service quality in healthcare. *Benchmarking: An International Journal*, *16(2),* 157-191.

Pang, P. C. I., Chang, S., Pearce, J. M., &Verspoor, K. (2014). Online health information seeking behaviour: Understanding different search approaches. In *PACIS* (p. 229).

Pentescu, A., Cetinã, I., &Orzan, G. (2015). Social media's impact on healthcare services. *Procedia Economics and Finance*, *27*, 646-651.

Phiri, J. (2017). Stakeholder expectations of performance in public healthcare services. *Meditari Accountancy Research*, *25(1),* 136-157.

Rahimnia, F., &Moghadasian, M. (2010). Supply chain leagility in professional services: how to apply decoupling point concept in healthcare delivery system. *Supply Chain Management: An International Journal*, *15(1),* 80-91.

Saha, A. K., & Daw, G. (2016). Attitude of patients towards public healthcare services in Kolkata metropolitan area: An empirical approach. *Journal of Health Management*, *18*(3), 401-409.

Shabbir, A., Malik, S. A., & Janjua, S. Y. (2017). Equating the expected and perceived service quality. *International Journal of Quality & Reliability Management*, *34(8),* 1295-1317.

Shaffer, T. R., & Sherrell, D. L. (1997). Consumer satisfaction with health care services: The influence of involvement. *Psychology & Marketing*, *14*(3), 261-285.

Sharma, J. K., & Narang, R. (2011). Quality of healthcare services in rural India: the user perspective. *Vikalpa*, *36*(1), 51-60.

Srinivasan, N., &Ratchford, B. T. (1991). An empirical test of a model of external search for automobiles. *Journal of Consumer Research*, *18*(2), 233-242.

Tong, V., Raynor, D. K., &Aslani, P. (2014). Gender differences in health and medicine information seeking behaviour: a review.*Journal of the Malta College of Pharmacy Practice, 20,*14-16.

Ya°in, B., &Özen, H. (2011). E health information search intentions of Turkish internet users. *International Journal of Pharmaceutical and Healthcare Marketing*, *5(2),* 135-152.

Zhang, L., Tong, H., Demirel, H. O., Duffy, V. G., Yih, Y., &Bidassie, B. (2015). A practical model of value co-creation in healthcare service. *Procedia Manufacturing*, *3*, 200-207.

Zhang, Z., & Hou, Y. (2017). The effect of perceived risk on information search for innovative products and services: the moderating role of innate consumer innovativeness. *Journal of Consumer Marketing*, *34(3),* 241-254.

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The Role of APEDA on Agri-Exports in India A Structural Equation Model for Global Exports Development

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Abstrct: This study probes into the relationship between the export developments components of APEDA and exports development. A total of 242 responses were collected from the exporters, registered with APEDA-Hyderabad using close ended questionnaire. The data was examined with the help of Confirmatory Factor Analysis and Structural Equation Modeling (SEM) using Analysis of Moment Structure (AMOS) software. The result of the study shows that the fit indices have an acceptable fit to the model.

Key words: Farmers, Agriculture products, APEDA, Exports, Exports development

Introduction

Largest arable agriculture land, 15 climatic regions and 46 types of soil are the unique features of the Indian agriculture compared with global level (*Food and Agriculture organisation - 2016*). Agriculture sector is accounted for just 18 percent of the total 2.6 trillion economies in India. However, the total agriculture exports in India were 5.4 billion in 1995 and increased to 8.0 billion in 2010 and 30.4 billion in 2017. India has 1.5 percent share 360.9 billion global Agri-exports in 1995 and increased to 1.8 percent in 2010 and 2.6 percent in 2017. The share of agriculture sector from total exports in India is 19.1 percent in 1995 and the same is registered at 10.6 percent in 2010 and 12.66 percent in 2018.

The Indian Government established Agriculture & Food Products Export Development Authority under the APEDA act in December, 1985 passed by parliament. The act implemented all over the country except Jammu & Kashmir with effect from 13th Feb. 1985. The authority was established with an objective of developing the agriculture products & processed food and promoting the Agri-exports in the country. It has a mission to enhance foreign exchange earnings in agriculture sector through enlarged exports and to increase the farming income

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of the farmer. It is an apex body under the Ministry of Commerce and closely 37,000 Agri-exporters all over the country were registered at APEDA. The authority performs several promotional programmes to increase the Agri-exports such as conducting international trade fairs, products promotions, arranging buyers and sellers meets, etc. On the other hand, it also carried out development of export infrastructure, quality development and market development.

Review of Literature

Naidu & Cavusgil (1998) concluded that 1991 reforms changed the Indian export scenario at international level. Francis & Dodd (2004)concluded that enhancing the capabilities, resources, strategies and competitiveness are the major factors in the context of exports through firms. Khorshidi et al. (2016) identified 69 indicators for the exports development through free trade zones in Iran. Sandip (2012) concluded that the APEDA has been playing a substantial role in the promotion of agriculture products export. Suresh and Mathur (2016)found that there was a substantial improvement in the exports of agriculture produce whereas many variations based on the commodity. The study observed the significant increase in the case of cotton, cereals, sugar etc. whereas decrease in case of fruits, nuts, fish, etc. Further, the authors concluded that growth in yield through changes in total factor productivity should be a key factor that determines the India's potential to generate exportable surplus. Bhuvaneshkumar and Lakshimi (2016) concluded that Indian agriculture sector has landmark. Further, the study expected that India would be occupied a top place in respect of export of the agriculture commodities. APEDA has been playing a remarkable role in the promotion of the agriculture products exports. Subhash (2016) concluded that the agriculture trade quantity between India and ASEAN countries was very less because of the tariff for agriculture products in India is higher than the ASEAN members. The author also suggested that the government has to lay down the policy to promote the Agri. produces that have comparative advantage in exports. Further, suggested that the Indian has to focus on promotion of vegetable, fruits, rice, meet, and cereal products exports to the ASEAN countries. Mahendra (2018) concluded that the agriculture sector in India is a state matter as per constitution. Therefore, there should be coordination between the state and central in respect of achieving the growth, inclusiveness and sustainability of the farming. Nilanjan (2001) concluded that supply side variables are tremendously significant for maintaining a huge export growth. Tamizharasan (2018) concluded that the agriculture export was declined because of oversupply and less commodity price in the international market.

Objectives of the Study

- To study the role of APEDA in Agri. Exports in India
- To suggest a Structural Equation Model for the development of global export of APEDA products

Role of APEDA in Agri-Products Export

Table 1 shows the total APEDA agriculture products export trend in India. It can be understood that APEDA has been contributed about 50 percent of total agriculture exports in India. The total agriculture exports are 38.5 billion in 2017-18 including 18.13 billion exports through APEDA. It is observed that the Agri-product exports through APEDA are fluctuating in its growth rate under the study period. Fall in global price, slow down in global economy are the main reasons in registering the fluctuating trends in agriculture exports through APEDA.

Table 1: Export of agri-productsthrough APEDA

Year	Total Agriculture exports *($ billion)*	APEDA Products Export *($ billion)*	Annual Growth Rate*(%)*	Share of APEDA products in total Agri-export*(%)*
2018-19	38.5	18.13	-2.5	47.09
2017-18	38.2	18.60	14.8	48.7
2016-17	33.3	16.19	-1.28	48
2015-16	32.1	16.40	-2.3	50.2

Source: APEDA annual reports

Table2 shows the top ten commodities exported from India through APEDA. It is observed that Basmati rice is occupied top position in respect of APEDA exports worth Rs. 26870 crores. It is also observed that buffalo meat is the second top product exported by APEDA followed by non-basmati rice, Gargum and cereal.

Table 2: Top 10 export commodities of APEDA 2017-18

Position	Product	Value in Rs. *(Crores)*
1	Basmati Rice	26870
2	Buffalo Meat	26034
3	Non Basmati Rice	22968
4	Guargum	4170
5	Cereal	3560
6	Fruits & Vegetables	3405
7	Groundnuts	3386
8	Fresh Onions	3089
9	Misc. Preparations	2853
10	Fresh Grapes	2146

Source: APEDA annual reports

Table 3 shows the top ten global markets of APEDA products. It is observed that Vietnam has occupied the top position with 2445.73 million of exports in 2017-18 followed by UAE with 1332.78 million, Saudi Arabia with 1256.52 million and USA with 1141.90 million exports.

Global Exports Development Model

The Government recognised that increasing the volume of Exports in agriculture sector is one of the main factors which help to double the farmer's income. In this context, Agriculture Export Policy- 2018 was formulated by the Government and given the directions to various agriculture export nodal agencies like APEDA, Tobacco Board, etc. for increasing the exports. According to the Agriculture Policy-2018, apart from the global price changes and economic crisis, India has many challenges in Export of Agriculture products such as low farm productivity, poor infrastructure, failure in marketing access, etc.

Table 3: Top 10 global markets for APEDA 2017-18

Position	Country	Exports *(Millions)*
1	Vietnam	2445.73
2	UAE	1332.78
3	Saudi Arabia	1256.52
4	USA	1141.90
5	Iran	1009.09
6	Bangladesh	1008.72
7	Iraq	669.62
8	Nepal	660.78
9	Malaysia	641.82
10	U K	415.45

Source: APEDA annual reports

Table 4: Elements of the model and indices used by various authros

Author Name	Export Model element and indices
Nemkova et al. (2012)	Export planning, export Innovation, Export resources, Type of decision, Structure.
Moghaddam and Foroughi (2012)	Marketing development, Product management, Global price.
Samsddoha and Ali (2006)	Export knowledge, export commitment, export development programme.

Source: literature study

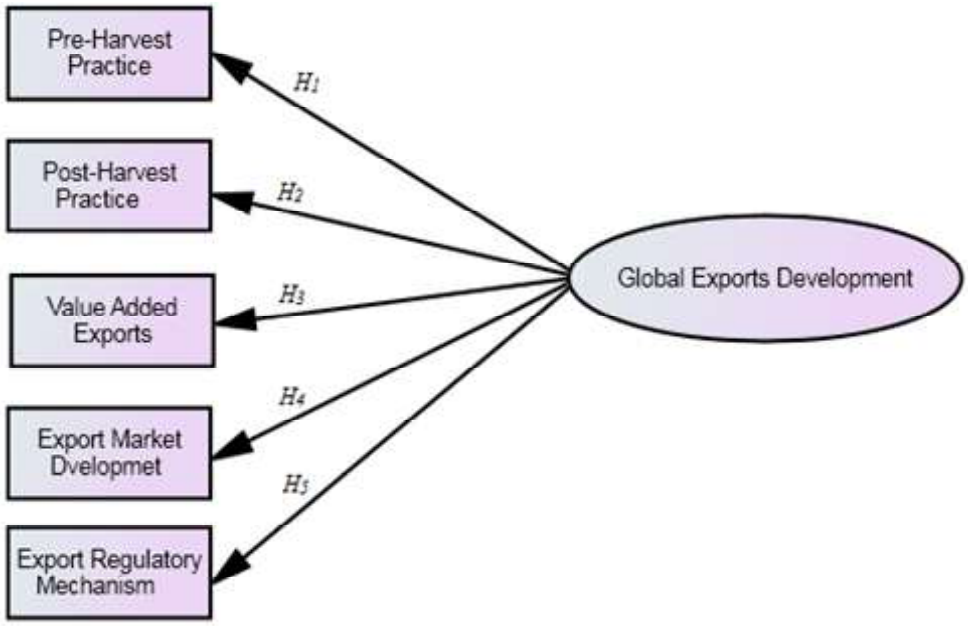

Fig. 1: Proposed global exports development model

Hypotheses of the Study

H_{01}: *Pre-harvest practice* has no impact on global export development.

H_{02}: *Post-harvest practice* has no impact on global export development.

H_{03}: *Value added export* has no impact on global export development.

H_{04}: *ExportMarket development* has no impact on global export development.

H_{05}: *Regulatory Mechanism* has no impact on global export development.

Methodology and Measurement

Both primary and secondary data are employed in the present study. The secondary data were collected from the Annual reports of Agriculture and Processed Food products Development Authority(APEDA) Ministry of Agriculture Ministry of Commerce whereas the primary data were collected from the agricultural exporters. The statistical population 648 consist of active exporters who registered with APEDA from the Telangana State. Applying 'simple random sampling technique', the sample size of the study is 242 exporters. A self administrated questionnaire was distributed to the exporters who engaged with Agri-exports from the Telangana state. Reliability test outcome of the instrument for the pilot study acquired Cronbach's alpha value as 0.92 which indicates acceptable reliability and consistency as it is more than 0.60 *(Nunnally - 1978)*.

Confirmatory Analysis

The Development of global Agri-exports which is a main objective of this research work, was measured with five factors namely Pre-harvest practice (PeHP), Post-harvest practises (PoHP), Promotion of Value Added Exports (PVAE), Export Market Development (EMD), and Export Regulatory Mechanisms (ERM). The model fit indices result of inter-related model between selected factors (unobserved) and the measured (observed) variables with their suggested values are available in Table 5. The model fit indices of five different unobserved variables with corresponding observed variables were within to the suggested values. Hence it is decided that there is a inter dependence association between unobserved and observed variables. The list of observed variables which makes its interdependent association with the corresponding unobserved variables is presented in Table 6. The further analysis related to the estimation of reliability and the validity of the data collection tool is performed with this confirmed unobserved variables.

Table 5: Model fit indices of interdependence association

	Result of dormant construct considered					Suggested values
Fit Indices	PeHP	PoHP	PVAE	EMD	ERM	
CMIN	16.94	14.56	7.81	9.34	6.24	——-
P - Value	0.76	0.258	0.274	0.310	0.296	>0.05
CMIN/DF	1.279	1.263	1.282	2.117	1.265	≤ 5.00 (Hair *et al.* 1998)
CFI	0.922	0.986	0.993	0.954	0.978	≥0.90(Hu&Bentler, 1999)
GFI	0.994	0.988	0.993	0.982	0.964	≥ 0.90 (Hair *et al.* 2006)
AGFI	0.964	0.968	0.973	0.952	0.984	≥ 0.90 (Hair *et al.* 2006)
NFI	0.958	0.923	0.962	0.994	0.988	≥ 0.90 (Hair *et al.* 2006)
IFI	1.091	1.021	1.058	0.991	1.045	≥ 0.90 (Hair *et al.* 2006)
TLI	0.931	0.974	0.982	0.942	0.942	≥ 0.90 (Hair *et al.* 2006)
RMSEA	0.031	0.034	0.031	0.061	0.051	≥ 0.90 (Hair *et al.* 2006)
Before CFA	8	9	5	6	7	——-
After CFA	6	6	4	5	5	——-

Table 6: Major variables analyzed for measuring global export development

Major Factors	Sub-variable
Pre-Harvest Practice (PeHP)	PerH1. Clusters development PerH2. Educating the farmers about exports needs PerH3. Providing quality inputs and fertilizer PerH4. Linking farmers and FPOs in the cluster PerH5. Linking the produce with the exporters PerH6. Assistance for farmers' training through ATARI

Post-Harvest Practice (PoHP)	PoHP1. Increase of Collection Centre PoHP2. Increase of Processing Units PoHP3. Laboratory facilities PoHP4. Strengthening Supply Chain Logistics PoHP5. Strengthening Cold Chain Logistics PoHP6. Cargo handling facilities at exit ports
Promotion of Value Added Exports (PVAE)	PVAE1. Branded value added products like mangos, etc. PVAE 2.Promotion of Organic products PVAE 3. Promoting small food grains like millet, foxtail Millet (Korralu), Dan yard (Vudhalu) PVAE 4. Increase flowers exports
Export Market Development (EMD)	EMDT1. Issue of Sanitary and phyto sanitary notification EMD2. Identification of new markets EMD3. Participation in International Trade Fairs EMD4. Reverse Buyer-Seller Meets EMD5. Increasing the organic products
Export Regulatory Mechanism (ERM)	ERM1. Pre and post harvest practice authority ERM2. GST reduction on Cargo services ERM3. export policy of APEDA ERM4. Financial support to the farmers ERM5. R & D Institutional support.

Source: based on questionnaire execution

Table 7 shows that there are no offending estimates and the significant results of the fit indices also support the CFA measurement model. With a chi-square/ degree of freedom (÷²/df) value of 3.481, which is within the maximum point of 5.0, the measurement model is attested to be fit. Moreover, the baseline fit indices are also greater than the 0.90 cut off point, i.e., CFI = 0.937, GFI = 0.925, AGFI=0. 954, NFI=0. 962, IFI=0. 965 and TLI=0. 957 which indicate a good fit with the measurement model. Finally, RMSEA value of 0.058 is below the cut off value of 0.08, which also indicates a good fit of the measurement model. The two validity measures (i.e. convergent and discriminant) can be estimated with the help of Structural equation modelling (SEM).

Table 7:The model fit indices of confirmatory factor analysis

Fit Indices	Results	Suggested values
Chi square / DF	3.481	d" 5.00 (Hair *et al.*1998)
Comparative Fit Index (CFI)	0.937	> 0.90 (Hu & Bentler 1999)
Goodness of Fit Index (GFI)	0.925	> 0.90 (Hair *et al.*2006)
Adjusted Goodness of Fit Index (AGFI)	0.954	>0.90 (Daire *et al.* 2008)
Normated Fit Index (NFI)	0.962	>0.90 (Hu & Bentler 1999)
Incremental Fit Index (IFI)	0.965	e"0. 90 (Bagozzi & Yi 1988)
Tucker Lewis index (TLI)	0.957	e" 0.90 (Hair *et al.*1998)
Root mean square error of approximation (RMESA)	0.058	< 0.08 (Hair *et al.*2006)

Source: Primary Data

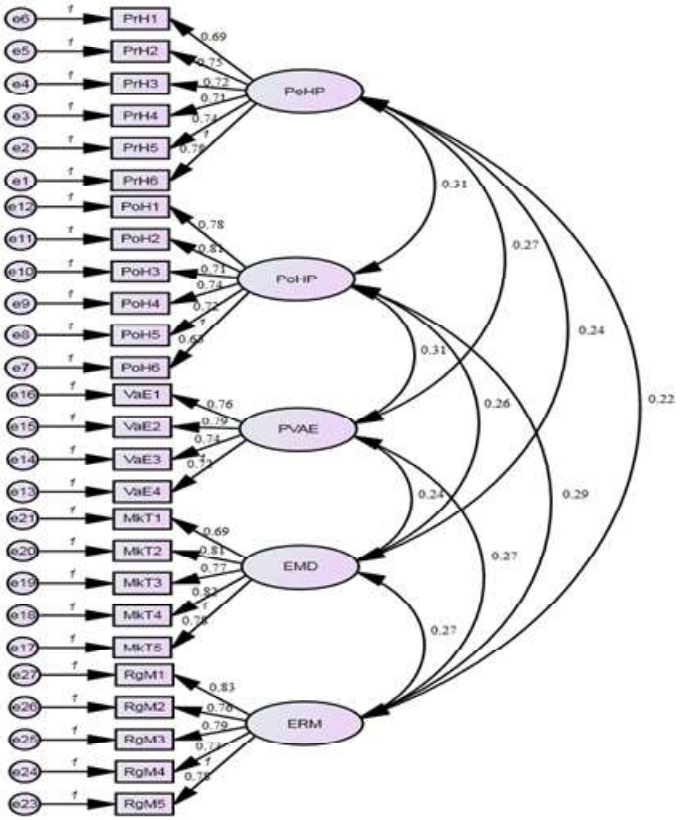

Fig. 2: Confirmatory factor analysis

Source: primary data

Average Value, Construct Reliability and Discriminant Validity

Convergent validity refers to the amount of variance shared by the measurement items in their measurement of the same trait, Byrne (2010). From the analysis factor loading of the entire manifest variable of the dormant construct Pre-Harvest Practices are significant as required for the convergent validity with the lowest value of 0.69 (PeHP1) and the highest value of 0.78(PeHP6). For the dormant construct Post Harvest Practices provision the factor loading of the manifest variables are also significant as required for the convergent validity with the lowest value of 0.63(PoHP6) and the highest value of 0.81(PoHP2). Similarly, for all the dormant construct of this research work the factor loading of the respective manifest variable reaches the significant value of the factor loading i.e. above 0.5. Among 26 manifest variables considered for this study only 1 variable reaches the minimum value i.e. 0.63 (Cargo handling facilities at exit ports), factor loading values of 3 variables fall between 0.6 to 0.7, factor loading values of 19 variables fall between 0.7 to 0.8 and regarding the remaining 4 variables the factor loading values fall between 0.8 to 0.9 these values are presented in Table 8.

Table 8: Factor loading, variance extracted and reliability estimates

Dormant construct	Manifest Variable	Factor Loading	Item Reliability	Delta	Average Variance Extracted	Construct Reliability
PeHP	PeHP 1	0.69	0.476	0.52	0.536	0.874
	PeHP 2	0.75	0.560	0.44		
	PeHP 3	0.72	0.518	0.48		
	PeHP 4	0.71	0.504	0.50		
	PeHP 5	0.74	0.548	0.45		
	PeHP 6	0.78	0.608	0.39		
PoHP	PoHP 1	0.78	0.613	0.39	0.539	0.875
	PoHP 2	0.81	0.656	0.34		
	PoHP 3	0.71	0.504	0.50		
	PoHP 4	0.74	0.548	0.45		
	PoHP 5	0.72	0.518	0.48		
	PoHP 6	0.63	0.397	0.60		
PVAE	PVAE 1	0.76	0.578	0.42	0.567	0.840
	PVAE 2	0.79	0.624	0.38		
	PVAE 3	0.74	0.549	0.45		
	PVAE 4	0.72	0.518	0.48		
EMD	EMD 1	0.69	0.476	0.52	0.601	0.822
	EMD 2	0.81	0.656	0.34		
	EMD 3	0.77	0.593	0.41		
	EMD 4	0.82	0.672	0.33		
	EMD 5	0.78	0.608	0.39		
ERM	ERM 1	0.83	0.689	0.31	0.606	0.885
	ERM 2	0.76	0.578	0.42		
	ERM 3	0.79	0.624	0.38		
	ERM 4	0.73	0.533	0.47		
	ERM 5	0.78	0.608	0.39		

Source: Primary Data

The estimates of construct Inter Correlation (IC), Construct squared Inter Correlation (SIC) and the average of corresponding construct pair AVE related to the verification of discriminant validity of sample data of this research work are available in Table 9.The discriminant validity measures show that the entire construct pair's AVE is greater than the SIC of each corresponding construct. Hence it is decided that the discriminant validity conforms the suggested measures.

Table 9:Discriminant validity estimates

Construct	IC	SIC	AVE
PeHP <—> PoHP	0.659	0.4343	0.537
PeHP <—> PVAE	0.585	0.3422	0.552
PeHP <—> EMD	0.246	0.0605	0.556
PeHP <—> ERM	0.148	0.0219	0.524
PoHP <—>PVAE	0.571	0.3260	0.552
PoHP <—>EMD	0.272	0.0740	0.541
PoHP <—>ERM	0.156	0.0243	0.52
PVAE<—>EMD	0.167	0.0279	0.561
PVAE <—> ERM	0.116	0.0135	0.557
EMD <—> ERM	0.159	0.0253	0.540

Source: Primary Data

Structural Equation Model (SEM)

In order to ascertain the global export development of APEDA products the Structural Equation Model with the help AMOS package was utilised. For this purpose 5 major variables have been confirmed namely Pre-Harvest Practices (PeHP), Post-Harvest Practices (PoHP), Promotion of Value Added Exports (PVAE), Export Marketing Development (EMD) and Export Regulatory Mechanisms (ERM). In this study, after developing the first level CFA (Table 7) and its validation, the structural model was developed to estimate the structural relationship between the factors of global export Development. The structural model verified with the help of AMOS is shown in Figure 3 and its estimates are exhibited in Table 10.

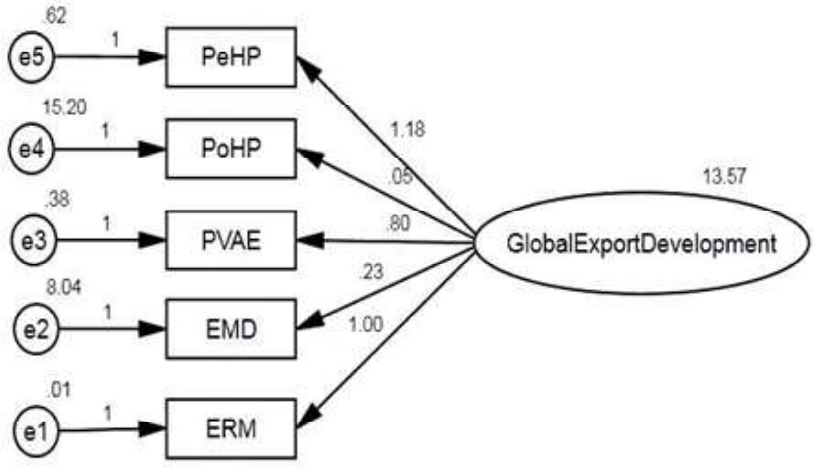

Fig. 3: SEM – model standardized estimates

Source: primary data

Table 10 shows that there are no offending estimates and the significant results of the fit indices also support the measurement model by maximum likelihood method. With a chi-square/degree of freedom (÷²/df) value of 3.481, which is within the maximum point of 5.0, the measurement model is attested to be fit. Moreover, the baseline fit indices are also greater than the 0.90 cut-off point, i.e., CFI = 0.937, GFI = 0.925, AGFI=0. 954, NFI=0. 962, IFI=0. 965 and TLI=0. 957 which indicate a good fit with the measurement model. Finally, RMSEA value of 0.058 is below the cut off value of 0.08, which also indicates a good fit of the measurement model.

Table 10: Summary of model fit indices

Fit Indices	Results	Suggested values
Chi square / DF	3.481	d" 5.00 (Hair et al.,1998)
Comparative Fit Index (CFI)	0.937	> 0.90 (Hu and Bentler, 1999)
Goodness of Fit Index (GFI)	0.925	> 0.90 (Hair et al.,2006)
Adjusted Goodness of Fit Index (AGFI)	0.954	>0.90 (Daire et al., 2008)
Normated Fit Index (NFI)	0.962	>0.90 (Hu and Bentler, 1999)
Incremental Fit Index (IFI)	0.965	e"0. 90 (Bagozzi and Yi, 1988)
Tucker Lewis index (TLI)	0.957	e" 0.90 (Hair et al.,1998)
Root mean square error of approximation (RMESA)	0.058	< 0.08 (Hair et al.,2006)

Source: primary data

Table 11: Estimates of structural equation model

Structural Path			Factor Score Weight	SE	CR	P
PeHP	<—-	GED	0.781	.037	21.11	< 0.01**
PoHP	<—-	GED	0.831	.036	23.08	< 0.01**
PVAE	<—-	GED	0.753	.039	19.31	< 0.01**
EMD	<—-	GED	0.824	.036	22.89	< 0.01**
ERM	<—-	GED	0.671	.033	20.33	< 0.01**

Source: primary data, Note: 1. ** denotes significance at 1 % level.

As per results in Table 11, the 'p' value is below 0.01 at 1 percent significant level and all the null hypotheses were rejected. The standardized estimates reveals that the Global export development is significantly and positively related with Pre-harvest practice (PeHP) (â = 0.781, p < 0.01), Post harvest practice (PoHP) (â = 0.831, p < 0.01), Promotion of Value Added Export (â = 0.753, p < 0.01), Export

Market Development (EMD)(â = 0.824, p < 0.01) and Export Regulatory Mechanism (ERM) (â = 0.671, p < 0.01). The results of the structural equation model demonstrated that Global Exports Development has a significant positive effect on all the five factors.

Findings and Conclusions of the Study

The study observed that the Agriculture and Food Product Export Development Authority (APEDA) has been playing a crucial role in respect of exports of agriculture products from India. The structural model results reveal that 'Agri-Export Development' is highly depended on the pre-harvest practice, post harvest practice; value added exports, market access and regulatory mechanism of Agriculture and food Product Export Development Authority. The empirical findings revealed a significant positive relation between pre and post harvest practice and global agri-exports development *(H_{01} & H_{02})*. Therefore, it is concluded that the APEDA has to focus on pre and post harvest practices to develop the agri-exports at Globally. In this context, cluster identification, communicating the farmers about exports standards, measures in usage of fertiliser, well laboratory facilities, supply chain logistics development, etc. are the key elements. The study found that the promotion of value added exports has a positive relation with agri-export development *(H_{03})*. It has been found that market development has a positive relation with the improvement of agri-exports *(H_{04})*.

REFERENCES

Naidu GM., Cavusgil ST. (1998). An export promotion model for india: implications for publicpolicy. *International Business Review*. 6(2).

Francis, J & Dodd CC. (2004). Impact of exports promotion programmes on firms competitiveness, strategies and performance: The case of Canadian high technology SEMs". *International Marketing Review*. 21: 474-495.

Khorshidi & etc.(2016). A study to design and explain the export development model in iran's free trade zones. *International Business Management*. 10(15).

Indian Agriculture Research Institute. (1999). Agriculture policy: Vision 2020'. New Delhi.

Sandip Das (2012). Agriculture products exports in India. *Yojana.* P.12-14.

Suresh Aand V C Mathur. (2016). Export of agriculture commodities from India: performance and prospects. *Indian Journal of Agriculture Science*. Vol.86 (7).

Subhash Jagdambe (2016). Analysis of exports competitiveness of India agriculture products with ASEAN countries'. *The Institute for Social and Economic Change Working Paper No. 356*. Bangalore.

Tamizharasan M. (2018). Growth of agriculture trade in the Indian economy. *International Journal of Research and Innovation in Social Science*.Vol.2 (3).

Nemkova, E., AL. Souchon and Hughes P. (2012). Export decision making orientation: an exploratory study. *International Marketing Review. 29:349-378.*

Moghaddam and Foroughi. (2012). The influence of marketing strategy elements on market share of firms. *International Journal of Fundm. Psycho. Social Sci*. 2: 19-24.

Samsuddoha, AK. & Ali. MY. (2006). Mediated effects of export promotion programs of firm export performance. *Asia. Pac. Journal of Mkt. Logistic.,* 18.

Nilanjan Banik. (2001). An analysis of India's exports during the 1990s. *Economic and Political Weekly,* November.

Bhuvaneshkumar N. and Lakshimi Prabha R. (2016). Role of APEDA in export performance. *International Journal of Marketing Research Review*. Vol. 4(3).

Mahendra Dev S. (2018). Transformation of Indian agriculture- growth, inclusiveness and sustainability, *Indira Gandhi Institute of Development Research working paper.* New Delhi.

S Victor & Amirthaiyan S. (2017). Sustaining organizational change structural path model approach: A Study at Tiruppur Textile Hub. *Asian Journal of Research in Business Economics and Management*, Vol. 7, No. 11.

Nunnally, J. (1978). Psychometric theory. New York: McGraw-Hill.

Agriculture Exports Policy (2018). Government of India.

Statement of Activities (2019). Department of Commerce, Ministry of India.

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Climate Change Disclosure: A Study of BSE 100 Companies In India

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Abstract: Heavy industrialisation led to emission of injurious pollutants which detrimentally affect the climate. Many companies are taking several steps for climate change issues. Different stakeholders demand from companies to disclose their contribution towards environment and climate change. Companies are trying to disclose more information about their involvement in climate change protection in the reports. The study tries to find the level of climate change disclosure by top 100 BSE listed companies from 2008-09 to 2017-18. Level of climate change disclosure has been reflected through global warming, climate change, greenhouse gas, emission, climate change mitigation, Co2, carbon emission. The study finds that level of climate change disclosure has been increased thrice over the study period. BRR (Business Responsibility Report) circularand Paris climate agreement have significantly amplified level of disclosure.

Keywords: Climate change, Emission, CO2, Global warming, Disclosure.

Introduction

Climate change is burning and threatening issue of current time. Global temperature is rising rapidly as an average temperature of planet raised approximately 1.62 degree Fahrenheit from the 19th century. The marines are absorbing most of the increasing heat that is why top 2300 feet water of oceans finding .4 degree Fahrenheit hotter since 1969. Apart from this, ice sheets are shrinking due to every year Antarctica mislaid 127 billion tones of frost every year, sea level is also rising, high temperature events are also increasing over the period, desertification, extinction of species etc. Individual's activities, emitting industries and nations are all responsible for climate change. Some are more accountable than others. The main reasons for climate changes are increasing level of greenhouse gases, deforestation, increasing population, obliteration in marine eco-system. There are some international agreements signed by countries to manage such climate change risks like UNFCCC (United Nations Framework

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Convention on Climate Change) in 1992 to manage greenhouse gas concentration in the air, Kyoto Protocol agreement in 1997 to bind the GHG emission reduction targets and Paris Climate agreement in 2015 to control climate change. At present, climate change is attive area for research. There are various international studies which have studied the climate change (Rankin at el., 2011; Andrew and Cortese, 2011; Stanny, 2012; Aguiar and Fearfull, 2010; Chatterjee, 2012; Kouloukoui, 2018; Ghomi and Leung, 2013; chu at el., 2012; Lorenzo, 2009; Alvarez et al., 2011; Berthelot and Robert, 2011; Suttipun and Staton, 2012).

India also stands on vulnerable stage due to climate change risks. Mostly Indians are directly or indirectly dependent on natural resources. These natural resources are negatively affected by climate change which is sign of disastrous consequences. As per World Bank report, India will face highest pressure on water, soil, air and forest in the world by 2020. India had signed and approved the Paris agreement and Kyoto Protocol. In spite of this, MCA (Ministry of Corporate Affairs) issued NVG (National Voluntary Guidelines) in July, 2011 for companies on environment, social and economic responsibilities. Industries are immense users of natural resourcesso, it is the basic duty of industrial sector to fulfil responsibilities towards society and environment as part of business exercises. NVG is based on variety of principles which deal with different types of business responsibilities and its reporting. Followed by this, SEBI issued circularas on August, 2012 for top 100 BSE and NSE listed companies that it is mandatory to present BRR(Business Responsibility Report) in their annual report by adhering NVGs guidelines. In 2015, SEBI made mandatory for top 500 companies to present BRR in their annual report as all stakeholders are interested to know the contribution of business towards environment and society. Climate change is the main issue in environment theme. It is important to know about the contribution of industrial sector towards climate change risk and its mitigation through their reporting. Some earlier studies have enlighten the climate change scenario in India (Barien et al., 2004; Kumar et al., 2006; Chattopadhyay, 1997; menon et al., 2002; Dash et al..2007; Bhattacharya, 2006; Vedwan and Rhoades, 2001; Charumathi and Rahman, 2018; Sathaye, 2006; Brenkert and Malone, 2005; Ravindranath, 2005; Sinha and Swaminathan, 1991). India is facing climate change problems due to highindustrialisation (Mgbemene, 2016; Guangdong et al., 2016; Bhandari and Garag, 2015).

Literature Review

Lorenzo et al.(2009) examined the different factors effecting the greenhouse gas emission of Fortune 101companies. The study found that size of firms and Kyoto Protocol were positively related with disclosure whereas leverage, ROE (Return on Equity), ROA (Return on Assets) and M to B (Market to Book) ratio were negatively related. Alvarez et al. (2011) studied the factors which were helpful for disclosing opportunities emerging from climate changes on the basis of data

of 162 companies during 2007. The study found that the companies which ratified the Kyoto Protocol were highly indulged in environment activities and were presenting more information on opportunities emerging from climate changes than the companies which were less indulged in environment activities.Berthelot and Robert (2011) studied the climate changes disclosure of Canadian gas and oil firms in 2007 and further studied the effect of environment committee in BOD (Board of Director), ownership structure, media visibilityand political exposure. The study found that there were less climate changes disclosure and having environment committee, powerful media visibility, broadly held ownership structure had significant relation with disclosure whereasaudit firm not showing any relation. Freedman and Jaggi (2011) made a comparison of GHG (Greenhouse gas) disclosure of E.U., U.S., Canadian, Japanese and Indian companies during 2005. The study found that pollution disclosure of U.S.A. and Indian firms were very small as compare to the other countries. The study also found that there were no significant relationship found between carbon emission and GHG disclosure. Chu et al. (2013) studied greenhouse gas reporting of top 100 Shanghai Stock Exchange listed companies in China during 2010 and also investigated effect of some characteristics on reporting. The study found that greenhouse gas reporting level of Chinese companies was moderate and industry sector & size had significant relationship with greenhouse gas reporting whereas state ownership indicated negative relationship. Overseas listing and profitability didn't find as predictor. Ghomi and Leung (2013) examined attribute affecting the voluntary greenhouse gas by Australian 151 corporations during 2012. The Study found that GHG disclosure had positively associated with size, listing status and corporate governance. It also explained that the companies which were voluntarily indulge into GHG activities, were more likely to disclose such information. Freedman and Jaggi (2015) made a comparative analysis of global warming disclosure of 282 companies from Canada, Japan and European Union during 2005. The study found that global warming disclosure of E.U. companies was less than Canada and Japan. It also found that there were no significant association between global warming disclosure and variation in carbon emission. Kouloukoui et al. (2018) observed the climate risk reporting of top 100 companies in whole world as per Bloomberg & price water house cooper and also analysed the effect of companies attributes on climate risk reporting. The study found that 14% companies hadn't any climate risk reporting and 9.9% companies didn't provide information on climate risk mitigation actions, policies and strategies. The study further found that continent, activity sector and efficiency of BOD has significant relation with climate reporting while size of companies and companies from developed countries didn't show any significant relation with disclosure level.Charumathi and Habeebu (2018) studied the disclosure on climate changes by top 50 NSE companies before and after BRR (Business responsibility Report) and Paris Climate treaty. It also studied year-wise, company-wise and industry-

wise climate change disclosure during the study period from 2009-10 to 2016-17. The study found that there was significant effect of BRR and Paris Climate treaty implementation on climate change disclosure.

Objectives

The objectives of the study are:

- To study the year-wise, company-wise, industry-wise and group-wise climate change disclosure by top 100 BSE listed companies
- To find out difference in climate change disclosure before and after BRR and Paris climate change agreement implementation.

Research Methodology

Sample size: The sample of the study included top 100 BSE listed companies as on 07 January, 2019 (Annexure-1). One company named 'Shreeram Transport Finance Co. Ltd.' excluded from sample due to inaccessibility of site during data collection period. These companies are classified into 17 broad industries as per BSE sector and industry index just as Basic Material, Industrial, Health care, Auto, Consumer Discretionary goods and services, Capital goods, Energy, Fast Moving Consumer goods, REALTY, Oil and gas, Metal, Power, Utilities, Finance, Information Technology, Telecom, and TECK. This classification further segregated into two broad categories such as polluting and non-polluting as shown in Table 1.

Table 1: Sample detail

Pollution Category	Industry-wise	No. of companies	Percentage
Polluting	Basic Material	10	10.10%
	Industrial	5	5.05%
	Health Care	11	11.11%
	Auto	13	13.13%
	Consumer Discretionary G & S	3	3.03%
	Capital Goods	4	4.04%
	Energy	3	3.03%
	Fast Moving Consumer Goods	9	9.09%
	REALTY	1	1.01%
	Oil and Gas	5	5.05%
	Metal	3	3.03%
	Power	2	2.02%
	Utilities	1	1.01%

Contd...

Contd...

Non-Polluting	Finance	20	20.20%
	Information Technology	5	5.05%
	Telecom	3	3.03%
	TECK	1	1.01%
Total		99	100%

www.bseindia.com

Time Period: Time period of the study covered 10 years from 2008-09 to 2017-2018. Data points of the study should be 1000 for the 10 years data of 100 companies but due to non-availability of data of one company, data points for the study are 990.

Data Collection: Secondary data has collected from the annual reports, sustainability report and integrated reports of companies. Reports downloaded from the websites of respective companies. Data collected on the basis of 7 keywords which are most frequently used keywords related to climate change in the annual reports such as 'global warming', 'climate change, 'greenhouse gas', 'emission', 'climate change mitigation', 'CO2', 'Carbon emission'.(Charumathi and Habeebu, 2018).Content Analysis method applied to collect the data. Nvivo software used to know frequency of keywords in annual reports, sustainability reports and integrated reports.

Methods of Analysis: Data is analysed with the help of one way ANOVA to know year-wise, company-wise, category-wise and sector-wise difference in climate change disclosure, paired sample t-test is applied to know the difference before & after implementation of BRR and Paris agreement. For the analysis purpose, time period divided into two parts 2008-09 to 2012-13 before BRR implementation and 2013-14 to 2017-18 after BRR implementation and for Paris agreement, time period has been taken 2012-13 to 2014-15 before Paris agreement and 2015-16 to 2017-18 after Paris Agreement. SPSS and Nvivo software were used to analyse the data.

Hypotheses

H_{1_0}: There is no significant difference year-wise, company-wise, industry-wise and group-wise in climate change disclosure

H_{2_0}: There is no significant difference in climate change disclosure before and after BRR and Paris Climate agreement implementation

Results and Discussion

Table 2: Year-wise number of reports and descriptive statistics

Years	Annual report	Sustainability report	Integrated Report	Total	% Change	Mean	Std. Deviation
2008-09	320	483		803		8.1111	23.94803
2009-10	287	404		691	-14%	6.9798	17.46599
2010-11	408	527		935	35%	9.4444	18.90698
2011-12	458	732		1190	27%	12.0202	26.63701
2012-13	683	791		1474	24%	14.8889	25.79784
2013-14	910	1021		1931	31%	19.5051	27.97352
2014-15	871	1175		2046	6%	20.6667	29.07976
2015-16	1109	1274		2383	16%	24.0707	29.69892
2016-17	1445	1240	106	2791	17%	27.1212	33.51402
2017-18	1420	1209	251	2880	3%	26.5556	33.26646

Note: Results computed through Nvivo software

Table 2 presents number of keywords in annual reports, sustainability reports and integrated reports over the 10 years. Keywords in all reports are showing increasing trend over the study period which demonstrates that companies are taking more initiatives in climate change over the period. After 2012-13, climate change disclosure gets increased in sustainability reports while integrated reports gained popularity after 2016-17. Disclosure mean was 8.11 amid 2008-09 while it increased to 26.56 during 2017-18 which is three times more than 2008-09.Changes in disclosure level take place during 2010-11 (35%) and 2013-14 (31%) while during 2014-15 and 2017-18 changes occur at lowest rate than the previous year.

Table 3: Year-wise result of ANOVA

Test	Statistic	df1	df2	Sig.
Levene test	10.250	9	980	.000
Welchtest	8.560	9	398.162	.000

Source: SPSS calculation

Table 3 shows the year wise outcome of Levene test andWelch test. Calculated p-value of levene test is less than .05 so one assumption 'homogeneity of variance' of ANOVA has not been met. So,Welch test has applied to test year-wise difference in climate change disclosure. There is significant difference year-wise in climate

change disclosure such as significant p-value of Welch test is .000 which is less than .05 therefore null hypotheses are rejected.

Table 4: Company-wise descriptive statistics

	Mean	Standard Deviation	Mini-mum	Maxi-mum	Sum
Global Warming	7.575757576	6.831934183	0	34	750
Climate change	51.74747475	75.12565575	0	434	5123
Greenhouse Gas	12.80808081	20.29158706	0	131	1268
Emission	61.68686869	102.3024374	0	648	6107
Climate Change Mitigation	2.101010101	5.634251937	0	33	208
CO2	33.15151515	59.80331088	0	466	3282
Carbon Emission	3.585858586	5.771163539	0	33	355
SUM	172.6565657	219.7253927	0	1005	17093

Source: SPSS Calculation

Table 3 explains descriptive statistics of keywords of climate change. 'Emission' and 'climate change'are highly disclosed words in reports while 'climate change mitigation' and 'carbon emission' are least disclosed items. Keywords disclosure indicates that companies are aware about climate issues and providing information on climate change emission but there is lack of responses towards climate change mitigation. Shree Cement, Reliance and ITC are highly concerned about climate change as their climate change disclosure is highest whereas Indiabulls Housing Finance, HDFC Life, Bajaj holding and investment, Bajaj Finance are not working for climate change as there is zero disclosure of these companies.

Table 5: Company-wise result of ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	465747.491	98	4752.525	13.791	.000
Within Group	307051.500	891	344.614		
Total	772798.991	989			

Source: computed through SPSS

Table 5 provides the output of company wise difference in climate change disclosure. An analysis of variance shows the effect of'type of company' on 'climate change disclosure' is significant as computed significant value F (98,891) = p = .000 is less than .05 which means there is significant difference in climate change disclosure among the companies.So, Null hypothesis is not supported.

Table 6: Industry-wise descriptive statistics

	N	Mean	Std. Deviation	Mini-mum	Maxi-mum
Basic Material	100	34.1800	43.07906	0.00	166.00
Industrial	50	12.3000	16.82715	0.00	69.00
Health Care	110	2.2091	5.75987	0.00	43.00
Auto	130	14.3615	22.76915	0.00	143.00
Consumer Discretionary Goods And Services	30	3.9333	5.13899	0.00	17.00
Finance	200	7.1550	16.61600	0.00	94.00
Tech	10	1.5000	1.43372	0.00	4.00
Telecom	30	17.2667	19.81454	0.00	66.00
Capital Goods	40	26.0500	29.78724	0.00	108.00
Power	20	20.8500	29.87566	0.00	124.00
Energy	30	44.1000	41.71856	0.00	136.00
Fast Moving Consumer Goods	90	17.4556	30.23063	0.00	128.00
Metal	30	37.6333	31.51845	0.00	106.00
Realty	10	1.8000	3.45768	0.00	10.00
Oil And Gas	50	22.9400	27.37749	0.00	122.00
Utilities	10	14.2000	7.46548	4.00	23.00
Information Technology	50	35.0600	30.87923	0.00	101.00
Total	990	16.9364	27.95343	0.00	166.00

Source: computed through SPSS

Table 6 shows industry wise descriptive statistics of climate change disclosure over the study period. Energy industry is highly indulged in climate change disclosure with mean score 44.10. Followed by this, METAL and IT industry got second and third position in climate change disclosure respectively. TECK, REALY and healthcare industries with mean 1.50, 1.80and 2.21 respectively got the last positions in climate change activities. 53% industries have disclosed information more than average climate change disclosure whereas 47% industries less than that.

Table 7: Industry-wise result of ANOVA

Test	Statistic	df1	df2	Sig.
Levene	22.202	16	973	.000
Welch F-test	20.973	16	174.631	.000

Source: computed through SPSS

Table 7 presents industry-wise difference in climate change disclosure amid the study period. Significant p-value of levene test is .000 which is insignificant therefore assumption of 'homogeneity of variance' is abandoned. Welch test applied to test industry-wise difference in climate change disclosure. Significant p-value of test is .000 thus null hypothes is not supported which means there is significant difference in climate change among the industries.

Table 8: Group-wise descriptive statistics

Groups	N	Mean	Std. Deviation	Mini-mum	Maxi-mum
Polluting	70	18.6429	29.77615	0.00	166.00
Non-polluting	29	12.8172	22.48362	0.00	101.00
Total	99	16.9364	27.95343	0.00	166.00

Source: calculated through SPSS

Table 8 gives the descriptive statistics of polluting and non-polluting group. Among the 99 companies 70 companies are polluting companies and 29 non-polluting companies. Average disclosure of polluting group is 18.64 for climate change disclosure while for non-polluting group is 12.82. Polluting companies are taking more initiatives than non-polluting as polluting companies are more responsible to badly effect the climate change.

Table 9: Group-wise result of ANOVA

Test	Statistic	df1	df2	Sig.
Levene	13.310	1	988	.000
Welchtest	11.276	1	707.195	.001

Source: calculated through SPSS

Table 9 shows output of Levene and Welch test to check the difference in climate change as ANOVA's condition 'Homogeneity of variance' is not fulfilled. Welch test applied to test the difference and computed significant p-value is .001 which is less than .05 so null hypothesis not supported which means there is significant difference in climate change disclosure among the polluting and non-polluting group.

Table 10: Paired sample t-test for climate change disclosure pre and post BRR Implementation

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 Pre-Post	-13.29495	24.64792	1.10784	-15.47161	-11.11829	-12.001	494	.000

Source: Computed through SPSS

Table 10 presents results of paired sample t-test for climate change disclosure before and after business responsibility report circulation passed. Significant p-value is .00 which is less than 5% level of significance so null hypothesis is rejected which means there is significant difference in climate change disclosure of top BSE companies before and after BRR circular passed. Involvement of Companies in climate change has been increased from 2012.

Table 11: Paired sample t-test for climate change disclosure pre and post paris climate agreement

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 pre_paris-post_paris	-7.56229	25.16977	1.46050	-10.43657	-4.68801	-5.178	296	.000

Source: Computed trough SPSS

Table 11 provides upshot of paired sample t-test on climate change disclosure before and after execution of Paris Climate agreement. As estimated significant p-value is less than .05 as a result null hypothesis not supported. It means implementation of Paris Climate agreement has significant effect on climate change functions therefore, it demonstrates that there is significant difference in climate change disclosure before and after execution of Paris Climate Agreement.

Conclusion

The study found that means score of climate change disclosure has been increased from 8.11 to 26.56 during 2008-09 to 2017-18 and disclosure level made better especially after 2012-13.Climate change and emission are most frequently

presented keywords while carbon emission and climate change mitigations are least disclosed keywords in reports. Shree Cement, Reliance and ITC Companies have presented highest climate change disclosure in annual reports while Indiabulls Housing Finance and HDFC Life and Bajaj Holding stand on last position as per disclosure. Energy industry and polluting group are more concerned about climate change. There is a significant change in disclosure after BRR and Paris Climate treaty implementation (Alvarez et al., 2011; Kouloukoui et al.,2018; Charumathi and Habeebu, 2018).

REFERENCES

Andrew, J., &Cortese, C. (2011, September).Accounting for climate change and the self-regulation of carbon disclosures. *Accounting Forum* (Vol. 35, No. 3, pp. 130-138).Taylor & Francis.

Berthelot, S., & Robert, A. M. (2011). Climate change disclosures: An examination of Canadian oil and gas firms. *Social and Environmental Accounting*, 5(1/2), 106-123.

Bhandari, D., & GARG, R. (2015).Effect of industrialization on environment (Indian Scenario). *Global Journal for Research Analysis*, 4(12), 281-282.

Bhattacharya, S., Sharma, C., Dhiman, R. C., &Mitra, A. P. (2006).Climate change and malaria in India. Current Science, 90(3), 369-375.

Chatterjee, A. (2012). Assurance of corporate greenhouse gas disclosures in the mining and crude oil production sector: a comparative inter-national Study. Journal of the Asia-Pacific *Centre for Environmental Accountability*, 18(2), 75-102.

Chrumathi B. and RahmanHabeebu (2018).Climate Change Related Disclosure by Large Indian Companies - Pre and Post Business Responsibility Reporting and Paris Climate Accord. *Journal of Accounting and Finance*, 32(1), 16-31.

Chattopadhyay, N., &Hulme, M. (1997). Evaporation and potential evapotranspiration in India under conditions of recent and future climate change. *Agricultural and Forest Meteorology*, 87(1), 55-73.

Chu, C. I., Chatterjee, B., & Brown, A. (2013).The current status of greenhouse gas reporting by Chinese companies. *Managerial Auditing Journal*.

Dash, S. K., Jenamani, R. K., Kalsi, S. R., & Panda, S. K. (2007).Some evidence of climate change in twentieth-century India. *Climatic Change*, 85(3-4), 299-321.

Dash, S. K., Jenamani, R. K., Kalsi, S. R., & Panda, S. K. (2007).Some evidence of climate change in twentieth-century India. *Climatic Change*, 85(3-4), 299-321.

De Aguiar, T. R., &Fearfull, A. (2010). Global climate change and corporate disclosure: pedagogical tools for critical accounting?. *Social and Environmental Accountability Journal*, 30(2), 64-79.

Freedman, M., &Jaggi, B. (2011). Global warming disclosures: impact of Kyoto protocol across countries. *Journal of International Financial Management & Accounting*, 22(1), 46-90.

Freedman, M., &Jaggi, B. (2015). Global warming and corporate disclosures: a comparative analysis of companies from the European Union, Japan and Canada. In Sustainability, Environmental Performance and Disclosures (pp. 129-160). Emerald Group Publishing Limited.

Gallego-Álvarez, I., Rodríguez-Domínguez, L., &García-Sánchez, I. M. (2011).Study of some explanatory factors in the opportunities arising from climate change. *Journal of Cleaner Production,* 19(9-10), 912-926.

Kouloukoui, D., da Silva Gomes, S. M., de Oliveira Marinho, M. M., Torres, E. A., Kiperstok, A., & de Jong, P. (2018).Disclosure of climate risk information by the world's largest companies. Mitigation and Adaptation Strategies for Global Change, 23(8), 1251-1279.

Kumar, K. R., Sahai, A. K., Kumar, K. K., Patwardhan, S. K., Mishra, P. K., Revadekar, J. V., ... & Pant, G. B. (2006). High-resolution climate change scenarios for India for the 21st century. *Current Science*, 90(3), 334-345.

Leung, Z. B. G. P. (2013). An empirical analysis of the determinants of greenhouse gas voluntary disclosure in Australia. *Accounting and Finance Research*, 2(1).

Levitus, S.; Antonov, J.; Boyer, T.; Baranova, O.; Garcia, H.; Locarnini, R.; Mishonov, A.; Reagan, J.; Seidov, D.; Yarosh, E.; Zweng, M. (2017). NCEI ocean heat content, temperature anomalies, salinity anomalies, thermosteric sea level anomalies, halosteric sea level anomalies, and total steric sea level anomalies from 1955 to present calculated from in situ oceanographic subsurface profile data (NCEI Accession 0164586). Version 4.4.NOAA National Centers for Environmental Information.Dataset.doi:10.7289/V53F4MVP

Li, G., Fang, C., Wang, S., & Sun, S. (2016). The effect of economic growth, urbanization, and industrialization on fine particulate matter (PM2. 5) concentrations in China. *Environmental Science & Technology*, 50(21), 11452-11459.

Menon, S., Hansen, J., Nazarenko, L., &Luo, Y. (2002).Climate effects of black carbon aerosols in China and India. *Science*, 297(5590), 2250-2253.

Menon, S., Hansen, J., Nazarenko, L., &Luo, Y. (2002).Climate effects of black carbon aerosols in China and India. *Science*, 297(5590), 2250-2253.

Mgbemene, C. A., Nnaji, C. C., &Nwozor, C. (2016). Industrialization and its backlash: focus on climate change and its consequences. *Journal of Environmental Science and Technology*, 9(4), 301-316.

O'Brien, K., Leichenko, R., Kelkar, U., Venema, H., Aandahl, G., Tompkins, H., ...& West, J. (2004). Mapping vulnerability to multiple stressors: climate change and globalization in India. *Global Environmental Change,* 14(4), 303-313.

Prado-Lorenzo, J. M., Rodriguez-Dominguez, L., Gallego-Alvarez, I., &García-Sánchez, I. M. (2009). Factors influencing the disclosure of greenhouse gas emissions in companies world-wide. *Management Decision*, 47(7), 1133-1157.

R. S. Nerem, B. D. Beckley, J. T. Fasullo, B. D. Hamlington, D. Masters and G. T. Mitchum. Climate-change-driven accelerated sea-level rise detected in the altimeter era. PNAS, 2018 DOI: 10.1073/pnas.1717312115

Rankin, M., Windsor, C., &Wahyuni, D. (2011). An investigation of voluntary corporate greenhouse gas emissions reporting in a market governance system: Australian evidence. Accounting, *Auditing & Accountability Journal*, 24(8), 1037-1070.

Ravindranath, N. H., Joshi, N. V., Sukumar, R., &Saxena, A. (2005).Impact of climate change on forests in India. arXiv preprint q-bio/0511001.

Sathaye, J., Shukla, P. R., &Ravindranath, N. H. (2006). Climate change, sustainable development and India: Global and national concerns. *Current Science-bangalore*, 90(3), 314.

Sathaye, J., Shukla, P. R., &Ravindranath, N. H. (2006). Climate change, sustainable development and India: Global and national concerns. *Current Science-bangalore*, 90(3), 314.

Stanny, E. (2013).Voluntary disclosures of emissions by US firms. *Business Strategy and the Environment*, 22(3), 145-158.

USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp, doi: 10.7930/J0J964J6

Annexure 1

S.no.	Industry	BSE Code	Company
1	Basic material	ACC	ACC Ltd.
2		AMBUJACEM	Ambuja Cement Ltd
3		GRASIM	Grasim Industries Ltd.
4		HINDALCO	Hindalco Industries Ltd.
5		NMDC	NMDC Ltd.
6		PIDILITIND	Pidilite Industries Ltd.
7		SHREECEM	Shree Cement Ltd.
8		TATACHEM	Tata Chemicals Ltd.
9		ULTRACEMCO	UltraTech Cement ltd.
10		UPL	UPL Ltd.
11	Industrial	ADANIPORTS	Adani Port and Special Economic Zone Ltd
12		BHARATFORG	Bharat Forge Ltd.
13		CONCOR	Container corporation of India Ltd.
14		SIEMENS	Siemens Ltd.
15		TATAMTRDVR	Tata Motors Ltd.
16	Health care	APOLLOHOSP	Apollo Hospitals Enterprise Ltd.
17		AUROPHARMA	AurobindoPharma Ltd.
18		BIOCON	Biocon Ltd.
19		CADILAHC	Cadila healthcare Ltd.
20		CIPLA	CiplaLrd.
21		DIVISLAB	Divi'sLabortries Ltd.
22		DRREDDY	Dr. ReddysLabortories Ltd.
23		GLENMARK	Glenmarkparmaceuticals Ltd.
24		LUPIN	Lupin Ltd.
25		PEL	Piramal Enterprises Ltd.
26		SUNPHARMA	Sun Pharmaceutical Industries Ltd.
27	Auto	ASHOKLEY	Ashok leyland Ltd.
28		BAJAJ-AUTO	Bajaj Auto Ltd.
29		BOSCHLTD	Bosch Ltd.
30		CUMMINSIND	Cummins India Ltd.

Contd...

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31		EICHERMOT	Eicher Motors Ltd.
32		EXIDEIND	Exide Industries Ltd.
33		HEROMOTOCO	Hero Motocorp Ltd.
34		M&M	Mahindra and Mahindra Ltd.
35		MARUTI	Maruti Suzuki India Ltd.
36		MOTHERSUMI	MothersonSumi Systems Ltd.
37		MRF	MRF Ltd.
38		TATAMOTORS	Tata Motors Ltd.
39		TVSMOTOR	TVS Motor Ltd.
40	Consumer discretionary G & S	ASIANPAINT	Asian Paints Ltd.
41		PAGEIND	Page Industries Ltd.
42		TITAN	Titan Company Limited
43	Finance	Axis bank	Axis Bank Ltd.
44		BAJFINANCE	Bajaj Finance Ltd.
45		BAJAJFINSV	Bajaj Finserve Ltd.
46		BAJAJHLDNG	Bajaj Holding & investment Ltd.
47		BANKBARODA	Bank of Baroda
48		EDELWEISS	Edelweiss Financial Services Ltd.
49		FEDERALBNK	Federal Bank Ltd.
50		HDFC	Housing Development Finance Corporation Ltd
51		HDFCBANK	HDFC Bank Ltd
52		HDFCLIFE	HDFC Life Insurance Company Ltd.
53		IBULHSGFIN	Indiabulls Housing Finance Ltd.
54		ICICIBANK	ICICI Bank Ltd.
55		INDUSINDBK	Indusind Bank Ltd.
56		KOTAKBANK	KotakMahindera Bank Ltd.
57		LICHSGFIN	LIC housing Finance Ltd.
58		M&MFIN	Mahindra and Mahindra Financial Ltd.
59		PNB	Punjab National Bank
60		RECLTD	REC Ltd.
61		SBIN	State Bank of India

Contd...

Contd...

62		YESBANK	Yes Bank Ltd.
63	Teck	ZEEL	Zee Entertainment Enterprise Ltd.
64	Telecom	BHARTIARTL	BhartiAirtel Ltd.
65		IDEA	Vodafone Idea Ltd.
66		INFRATEL	BhartiInfratel Ltd.
67	Capital goods	BEL	Bharat Electronics Ltd.
68		BHEL	bharat Heavy electricals Ltd.
69		HAVELLS	Havells India Ltd.
70		LT	Larsen & Toubro Ltd.
71	Power	NTPC	NTPC Ltd.
72		POWERGRID	Power grid Corporation Ltd.
73	Energy	BPCL	bharat Petroleum Corporation Ltd.
74		COALINDIA	Coal India Ltd.
75		RELIANCE	Reliance Industries Ltd.
76	Fast moving consumer goods	BRITANNIA	Britannia Industres Ltd.
77		COLPAL	Colgate Palmolive Ltd.
78		DABUR	Dabur India Ltd.
79		GODREJCP	Godrej consumer Products Ltd.
80		HINDUNILVR	Hindustan Unilever Ltd.
81		ITC	ITC Ltd.
82		MARICO	Marico Ltd.
83		NESTLEIND	Nestle India Ltd.
84		TATAGLOBAL	Tata Global Beverages Ltd,
85	Metal	JSWSTEEL	JSW Steel Ltd.
86		TATASTEEL	Tata Steel ltd.
87		VEDL	Vedanta Ltd.
88	Realty	DLF	DLF Ltd.
89	Oil and Gas	GAIL	GAIL India Ltd.
90		HINDPETRO	Hindustan Petroleum corporation Ltd.
91		IOC	Indian Oil Corporation Ltd.
92		ONGC	Oil and Natural Gas Corporation Ltd.

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93		PETRONET	Petronet LNG Ltd.
94	Utilities	TATAPOWER	Tata Power Co. Ltd.
95	Information Technology	HCLTECH	HCL Technologies Ltd.
96		INFY	Infosys Ltd.
97		TCS	Tata Consultancy Service Ltd.
98		TECHM	Tech Mahindra Ltd.
99		WIPRO	Wipro Ltd

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