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Editorial on Growth and Governance, and Strategic Paradox of Global Integration and Local Adaptation

Gurumurthy Kalyanaram

In this issue, we present six interesting and impressive research manuscripts. These manuscripts address important managerial and scholarly issues, and employ varied methodologies. The research addresses the following research and managerial issues.

1. Relationship between supply chain organization and manufacturing
2. Seasonal behavior of daily stock return series
3. Application of the Brownian-walk Monte Carlo simulation in option pricing
4. Factors that impact consumer choice of luxury products
5. Learning and Organizational Development
6. Experiential v. functional benefits in banking service industry

These research manuscripts are in the tradition of manuscripts published in this Journal since my editorial leadership in April 2012.

Here, in this issue, I want to present two interesting research ideas and questions that are worthy of our attention and research efforts. The first idea relates to the potential relationship between governance and growth. The second idea relates to strategic paradox of global integration and local adaptation.

Governance and Growth: Are they endogenous?

While there is considerable agreement that societies with accountable democracies, low corruption, stable property rights and a rule of law are generally more efficient at solving their economic problems, there is divergence in what should be the path of progress for developing societies. Economics and governance theory put forward two broadly distinct frameworks for identifying and designing appropriate growth strategies.

One perspective is that good governance leads to growth and prosperity. Good governance is defined as: focusing on anti-corruption, democratic accountability, strengthening property rights and the rule of law. Supported by the New Institutional Economics developed by Douglass North and others, these elements make markets more efficient. The distinctive feature of this approach is that the activities are rules-based: institutionalizing and enforcing generalized rules of public conduct, and the effect on growth is through making markets more efficient (Khan 2012).

An alternative view affirms that it is growth and specific capacity building that eventually leads to good governance. This view is based on the experience of rapidly growing developing countries and the governance capabilities that have sustained their growth and development. Here, the focus is on administrative and political capacities to address specific problems in a context where markets are not efficient. Instead of general rules, this approach relies on processes and capabilities of critical agencies for

solving particular problems. This approach becomes necessary because the (market) contracting failures are too widespread for efficient allocations by the market.

Some recent evidence suggests that regardless of regime type, 'good governance' approach has achieved limited results in developing countries. On the other hand, process-based governance capabilities in specific agencies were critical for sustaining development in many contexts (Kalyanaram 2012, 2009).Accordingly, the following research questions are of great import.For developing countries:

1. Does good governance lead to growth or is it growth that leads to good governance?
2. Are good governance and growth endogenous?

Strategic Paradox: Global Integration and Local Adaptation

In the field of international management and business, a wide range of issues including market entry, organization, and pricing strategies, governance, competitive dynamics and product design have been addressed and researched (Kalyanaram 2013, 2012, 2003, 1997 and 1995). Increasingly, there is a quest for a general framework for capturing the globalization process of firms in a comprehensive manner: e.g., the Integration-Responsiveness (IR) grid of Prahalad and Doz (1987), the transnational framework of Bartlett and Ghoshal (2003), the meta-national perspective of Doz, Santos and Williamson (2001), and the aggregation-adaptation-arbitrage triangle of Ghemawat (2007). Although many of such frameworks address the fundamental tension between *global integration* and *local adaptation* in the globalization process of firms, they typically do not fully benefit from the underlying conceptual richness of the competing dual objectives as a *strategic paradox*.

Related to this strategic paradox and central to increasing the productivity and efficiency of Japanese firms and improving our theoretical understanding and scholarship in this area , there are specific marketing (including product design, market entry, and pricing), organization, governance research questions (see extant research by Kalyanaram et. al.)

Recently, there has been an increasing stream of research on "paradox", which is defined as "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith and Lewis, 2011). A strategic paradox is then a paradox with considerable strategic significance, and examples include "exploration (for new businesses) vs. exploitation (of existing businesses)", "low cost vs. differentiation"and "speed vs. search scope" in decision making. Given such a pair of competing strategic objectives, the temptation is to view it as an either-or, tradeoff issue and avoid the "stuck in the middle" situation. The fundamental logic of paradox, on the other hand, is "both-and", which encourages to see "interrelatedness" and even synergistic relations between the two conflicting themes while recognizing specific managerial situations in which certain tradeoff decisions are inescapable. The conceptual and managerial richness of paradox derives from this complexity of a pair of strategic themes being contradictory and at the same time synergistic.

Recent studies have found that firms can not only strengthen global integration, but they can also simultaneously enhance global adaptation. That is, co-evolution of both global integration and local adaptation is possible and not only possible but also preferred strategy in some situations as it is with Panasonic in China or Aeon retail outlet in Japan.

Accordingly, the following research questions are interesting and fundamental.

1. What are the paradox-enacting dynamic capabilities in the context of global competition? Dynamic capabilities represent the firm's capacity to alter its resource base for strategic change (Helfat et al., 2007; Eisenhardt and Martin, 2000), and they are important research issues in international management. Domains of activities in which dynamic capabilities manifest are new product development, entries into foreign markets, and new marketing and competitive strategies for demand creation, among others.
2. What are the insights for global market entry, product design and development, pricing and advertising, organizational design, technology, and governance dimensions of globalization strategies of firms?
3. What are the insights on globalization of MNCs through in-depth empirical studies of dynamically evolving interactions of global integration and local adaptation?

Dr. Gurumurthy Kalyanaram: *Editor, and Visiting Professor and former Dean, Research, NMIMS University.*

Dr. Gurumurthy Kalyanaram is a distinguished professor, a management consultant and a corporate advisor. Currently, he is an advisor to and professor at International University of Japan. He advises the University on academic and accreditation matters. Dr. Kalyanaram is also a professor at City University of New York, and a visiting professor at NMIMS University and Tata Institute of Social Sciences. He has served as University Dean for Research, Dean for Business, Director of the Master's Programs, Director of Research and as the Senior Faculty Liaison for External Development.

Dr. Kalyanaram has been a visiting scholar at the Woodrow Wilson International Center for Scholars, a fellow at the Center for Russian and East European Studies, and the Inaugural Endowed Professor in Kazakhstan. Dr. Kalyanaram's areas of expertise are marketing, innovation and management science, and international business and strategy. His research and teaching have been eclectic and inter-disciplinary.

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Multi-Group Moderating Effect of Goods Produced in the Manufacturing Industry: Supply Chain Management Context

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Abstract

The purpose of this research paper is to explore the moderating effects of goods types produced on the relationship between supply chain management and performance of the manufacturing industry.

Based on the review of literature relating to supply chain management and performance of manufacturing firms, a conceptual model was framed and the resulting hypotheses were empirically tested using structural equation modelling (SEM). Primary data was collected using the personal interview method from the executives of manufacturing firms by administering a well structured questionnaire. This data was tested for the moderating effects of goods produced by manufacturing firms. The finding depicts that the types of goods produced by manufacturing firms act as a significant moderating effect on the relationship among supply chain management and performance.

Key words: *Supply Chain Management, Moderating effects, Performance, Path Analysis.*

1. Introduction

The value of the Indian consumer market is almost 250 billion USD. The Indian logistics segment is nearing intonation and value of the world logistics industry is almost USD 3.5 trillion. The cost of logistics generally ranges from 9 to 20% of GDP. The Indian logistics market contributes almost 13% of GDP and the market is expanding at a whopping rate of 20% (Sahay and Mohan, 2003). India is attracting enormous FDI, especially in automobile and electronics industries. This is projected to have a favourable effect on growth of the country. The Government's proposal to allow FDI in the retail sector is anticipated to have a major impact on the economy. Furthermore, development of organised retailing and agricultural processing activities is expected to exert a significant effect on economic growth. The country is highly blessed with enormous human, technological and methodical resources. High entrepreneurial talent is available abundantly in the country. Developments in the economy such as economic reforms, growth in productivity, cheap credit, rising income of the middle class, introduction of Value Added Tax (VAT) and a growing educated middle class fuels consumption, which enhances production, and subsequently the growth of the economy. The challenges posed by the aforementioned discussion can be well countered by Indian manufacturing enterprises only if their quality and service is dramatically enhanced. Towards this endeavour, it becomes inevitable to address the deficiencies encountered by manufacturing enterprises on their SCM front. Only this will render the Indian manufacturing enterprises viable and competitive in the liberalized and globalised scenario. In light of the above situation, it has become inevitable for business firms to focus strictly on SCM to ensure that they are not eroded by the highly competitive global environment. Consequently, Indian companies have initiated measures placing utmost importance to master the SCM process. Numerous research studies have been conducted in the field of SCM and Indian enterprises have to comply with the requisites spelt out in these research studies about their respective SCM practices and adopt an effective SCM which is compatible with the Indian scenario. Innovative, unique and superior supply chain practices adopted by some Indian cases and companies such as Amul, the Shakti project of Uniliver, Dabbawalas of Mumbai, Asian Paints and Marico industries have enabled their companies to outsmart their competitors and manage better profitability and counter the extensive competition waged in the current LPG scenario.

Despite numerous research studies involving SCM being conducted in the western countries, Indian enterprises have not tuned their SCM process at par with their western and other Asian counterparts. This is attributed to the fact that foreign studies on SCM have yielded strong theoretical knowledge but this cannot be replicated to the Indian context blindly. Results of the western authors have to be suitably customized to aptly suit the Indian environment. This requires a comprehensive study on the various factors which impact SCM practices of Indian firms and the inter-relationships of these factors have to be studied closely by giving due importance to the Indian context. Consequently, studies concentrating on the post-liberalization SCM functions of manufacturing firms have started gaining momentum. The proposed research aspires to address the research gap existing in India by providing a theoretical framework regarding the various components related to SCM in India and their impact on the organizational performance of the manufacturing firms. The research article is structured as follows: First, we have framed the theoretical support of this research work and prose of the

conceptual framework. Then, we provide the research methodology and results. In the following section, we discuss the results of this study. Finally, the conclusions of the study are presented along with their potential implications for managers and further research.

2. Review of Literature and Conceptual Model

This section aims to provide a brief idea on the existing literature that supports the proposed conceptual model framed for this research work. It also helps in understanding the theoretical basis and to present the various viewpoints offered by different research studies.

2.1 Supply Chain Practices

Supply chain practices provide a framework of methods and practices that help an organization in effectively integrating various stake-holders of Supply Chain Management namely, suppliers, manufacturers, distributors and customers, thereby resulting in the long run progress of the organization and their overall performance (Stock and Boyer, 2009). The best Supply Chain Practices help an organization in depicting a distinct picture based on various market indicators such as demand forecasting, product availability, inventory management and distribution (Sunil Chopra and Meindl, 2005). Hence, it is not surprising that the best supply chain practices driven organizations achieve superior supply chain performance. However, it has been well-established that internal and external cross-functional collaboration of suppliers and customers direct to superior organizational performance (Thakkar et al., 2008).

Supply chain practice is defined as a *"Set of activities aimed at improving the performance of the whole supply chain"* (Tan, 2002, Chow, 2008 and Koh et al., 2007).

Kannana and Tan (2005) identified significant dimensions of supply chain management which address the different dimensions namely quality management, supply chain practices and some specific elements like just-in-time capabilities. Li et al (2006) have validated three dimensions of supply chain practices namely supply chain planning, JIT production and delivery practices. Due to the lack of consensus about common supply chain practices and multiple priorities on supply chain practices in various literature, this research work intends to focus and identify the commonalities among these practices used currently and provide a framework for improving the supply chain performance and ultimately, better organizational performance. The commonalities of supply chain practices found in the work of Koh et al (2007) have been used in the proposed research work.

2.2 Supply Chain Concerns

An important element of effective SCM includes downstream integration and upstream collaboration of the firm's partners and customers in an effective and efficient manner. However, integration and collaboration of the entire value chain mechanism will be a complicated process. Firms may have to confront complex issues because of excessive dependence on suppliers and this may affect their focus on core capabilities (McMullan, 1996). Conversely, companies which have developed and implemented a supplier evaluation system in order to effectively and efficiently manage suppliers, have failed miserably (Sachan and Datta, 2005). Stank et al. (2011) have developed a set of issues which will adversely affect performance of supply chain and firms should focus their attention on these issues to align the organizational goal with the SCM goal. Similarly, some other supply chain concerns have been explored and presented in the research work of Chow et al (2008). Supply chain concerns have

been defined as "*The issues that prevent an organization from achieving the full potential of their supply chain management"* (Tan, 2002; and Chow et al., 2008). Tan (2002) has identified a list of supply chain issues through an expert's opinion that exert an impact on supply chain performance and organizational performance. The variables used by this researcher have been utilized in this research to measure the supply chain concerns of the manufacturing enterprises.

2.3 Supply Chain Competence

Supply chain competence is a necessary pre-requisite for firms to react to market and financial uncertainties and to manage and sustain their supply chain performance and organizational performance (Gubi et al., 2003). SCM is literally stable only when it is completely endorsed by stakeholders of the organization. Supply chain competences are the ability of the organization to be in total power and control of supply chain operations and performance inspite of issues of external and internal environmental factors. As noted by Yang and Su (2009) and Sauber et al (2008), core competency of organizations is a reflection of the collective learning of the organization over a period of time and their ability to coordinate the diverse skills through an efficient full proof technical system. Larson and Halldorsson (2002) put forth the argument that an organization in today's business environment is driven by four major factors of forecasting - planning of inventory, supply chain efficiency and information accuracy. Effective management of these factors will help the firm to distribute the product or service to their customer at the right time, place and price in an effective and efficient manner. Spekman et al (2002) and Cigolini et al (2004) suggested that supply chain competence should also comprise of planning of supply chain in order management, service fulfilment and procurement of raw material in an effective manner. Supply chain competence has been defined as *"A portfolio of organizational, managerial, technical and strategic capabilities and skills developed by enterprises over time"* (Tracey et al., 2005; Wong et al., 2011 and Chow et al., 2008).

2.4 Supply Chain Performance

Supply chain performance has been evaluated by various researchers in a different manner to assist companies in measuring their supply chain. The supply chain council (SCC) framed the Supply-Chain Operations References (SCOR) model. The model provided a unified process oriented approach of communicating among the different supply chain partners in various decision areas like planning, sourcing, making, and delivering (Gunasekaran et al., 2004).

Most firms lack a clear vision to develop efficient performance metrics for supply chain performance (Shepherd and Gunter, 2005). Furthermore, Olugu and Wong, 2009 pointed out a number of problems in the metrics used to measure the supply chain performance, and hence, they propagated the argument that analysis of supply chain performance is very fragmented within and across the organizations. Sukati et al (2012) argued that validating the supply chain performance should include three different types of performance measurement - Resources measurement (how well the resource is sourced), Output measurement (how well it delivers value to the consumer), and Flexibility (how flexible is the system to external uncertainties). Each of these types is equally important in measuring the supply chain performance of manufacturing firms. Inspite of a vast wealth of information available on the different ways

to measure the supply chain performance of manufacturing undertakings, researchers still point out the need for continued studies in this area because of lack of clarity and comprehensive measurement of supply chain for all situations (Qrunfleh and Tarafdar, 2012 and Bhagwat and Sharma, 2007). Supply chain performance has been defined as "*The overall efficiency and effectiveness of SCM*" (Gunasekaran et al., 2003; Bhatnagar and Sohal, 2008; Vijayasarathy, 2010; and Trkman et al., 2010).

2.5 Organizational Performance

No standardized definition has been framed about organizational performance by researchers (Ou et al., 2010). Some authors have measured the organizational performance of manufacturing enterprises using accounting data like Return on Investment (Hsu et al., 2007), while some authors have used marketing performance indicators like product quality and new product development (Lin et al., 2004). Consequently, Li et al (2006) used in their empirical research work, financial performances of firms in addition to non-financial indicators for measuring organizational performance. In a study conducted by Kristal et al (2010), the authors presented an argument of economists for not using financial data to assess organizational performance. They argue that organizational performance shall determine through economic data, which actually reflects the value of securities of the firm, which will have a bearing on the firm's value. However, measurement of performance of firms using accounting data does not consider the cash flows likely to be generated by the enterprise and future of the firm.

Organizational Performance has been defined as *"How well a firm achieves its market oriented goals as well its financial goals"* (Hsu et al., 2009; Deshpande, 2012; Kannana and Tan, 2004; Tan et al. 1998).

The concept of survival by isolation no longer works between suppliers and the other entities of the supply chain (Stock, 2009). Hence, organizations nowadays tend to move away from the isolation paradigm and look at developing partnerships and effective information sharing between the various trade partners which thereby makes their process become interconnected and overcomes the traditional limitations set by the firm (Cousins et al., 2006). Various viewpoints and definitions have been provided about supply chain management. For example, *"SCM is defined as set approaches utilized to efficiently integrate suppliers, manufacturers, warehouses and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements"* (Simchi-Levi et al., 2008). The issues addressed here are explored under the two categories of supply chain management and organizational performance. Based on the review of literature, key dimensions or constructs and hypotheses have been formulated.

Based on the literature review of past research work, a conceptual model has been framed and ten hypotheses have been formulated, which are portrayed in Figure 2.1. The objective of this research study is to empirically assess the association among essential components of SCM namely supply chain concerns, supply chain practices, supply chain competence, and how these critical components influence supply chain performance which, in turn, impact the organizational performance. In the proposed conceptual model, unobserved or latent

variables about manufacturing enterprises have been measured through the response of the executives regarding the different statements included under each of the variables. Supply chain concerns, supply chain practices and supply chain competence have been taken as independent variables while supply chain performance and organizational performance have been considered as dependent or endogenous variables in respect of the supply chain management components studied in this research. The hypotheses formulated based on the review of literature have been listed in the forthcoming discussions. The above hypotheses shall be tested for exploring the existence of any causality relationship among the proposed variables using SEM framework.

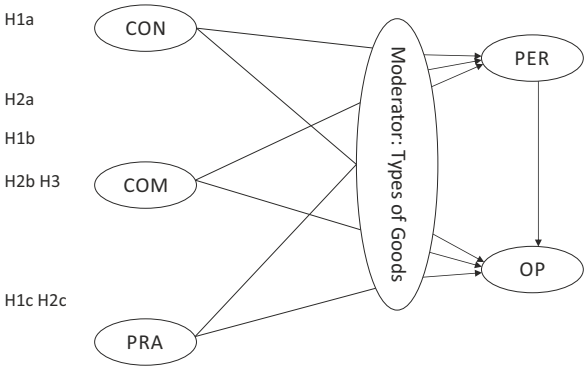

Figure 1: Conceptual Model Proposed in the Research Work

Vanichchinchai and Igel (2010) have conducted research with the object to explore the effect of total quality management practices on supply chain practices and supply chain performance on the Thai automotive industry by framing a conceptual model and testing using SEM. Their findings reveal that total quality management practices have a direct impact on supply chain practices while supply chain performance and supply chain practices have an indirect impact on organizational performance.

Deshpande (2012) has conducted literature review on supply chain management dimensions, supply chain performance and organizational performance with the object of reviewing and developing a conceptual framework that shows a linkage of supply chain management dimension on supply chain performance and linkage of supply chain performance and organizational performance.

Huo (2012) has conducted research with the objective to investigate the impact of supply chain integration on organizational capability and performance through structural equation modelling (SEM) based on data collected from 617 Chinese companies. The research findings revealed that supply chain integration have a direct and indirect effect on organizational capability while supply chain integration acts as a partial and full mediating effect on organizational performance.

Ou et al (2010) have investigated the effect of supply chain management practices on a firm's performance using SEM by collecting samples from Taiwan manufacturing industries. Their conclusion was that supply chain practices have a positive effect on performance while it will exert an indirect impact on financial performance and customer value.

Sukati et al (2012) have studied the relationship between supply chain strategy, supply chain practices and supply chain performance by collecting primary data by administering a questionnaire to 200 managers working in Malaysian manufacturing firms. The data analysed using statistical tools of simple mean, reliability, validity test, correlation and multiple regression, reveal that supply chain practice has a significant effect on supply chain performance while supply chain strategy exerts a weak impact on supply chain performance.

Vijayasarathy (2010) has proposed a research model and tested the proposed hypothesis that supply chain technology affects supply chain performance using the moderating variables of process innovation, partnership quality and uncertainty. Based on the data collected by administering an online questionnaire to 276 manufacturing enterprises and analysed using the statistical tools of factor analysis and ANCOVA model, the research revealed that supply chain technology uses have moderated through process innovation and quality.

Cook et al (2010) have explored the linkage among supply chain practices and organizational performance with the moderating effect of the company's role on supply chain by surveying US manufacturing enterprises. The data analysed using Regression reveals that supply chain practices have a significant impact on organizational performance and the company's role on supply chain makes a significant difference with respect to supply chain practices.

Kristal et al (2010) have tested a conceptual model exploring the effect of supply chain (SC) strategy on capabilities and organizational performance of 174 US manufacturing enterprises. The data analysed using cluster analysis and structural equation model (SEM), reveal that combinative capabilities act as a mediating variable for supply chain strategy and organizational performance. They conclude that SC strategy has a direct and indirect effect on capabilities and organizational performance.

Qrunfleh and Tarafdar (2012) have assessed and tested a conceptual model to find out the impact of supply chain information strategy on supply chain performance and organizational performance by collecting sample data through a questionnaire of 205 manufacturing firms, and hypotheses were tested using SEM. The results show that there is a significant and positive association between supply chain performance and firm performance, and supply chain performance has a mediating effect on supply chain information strategy and organizational performance.

Wong and Wong (2011) have conducted research and proposed a conceptual framework on linkage of supply chain management, knowledge management capability and firm performance in the Asia Pacific region. Data analysed using statistical tools of mediated regression analysis and path analysis reveal that supply chain management practice has a positive and significant impact on knowledge management capability and firm performance.

Yusuf et al (2012) have explored the relationship between agile supply chain competitiveness and business performance of 158 UK managers working in the oil and gas industry. The data analysed using normality test, correlation and one-way ANOVA reveal that supply chain agility has a significant effect on competitiveness and business performance.

Chow et al (2008) found that organizational performance and supply chain practices and competencies have an association in US and Taiwan manufacturing enterprises.

Tan (2002) has indicated in his research work that there is a direct relationship between supply chain competence and organizational performance. Wisner (2003) proved that there is relationship between quality commitment and understanding of the supply chain dynamics and hence, on business performance. Chow et al (2008) found that supply chain competence has a very positive effect on organizational

performance of US and Taiwan manufacturing enterprises. Koh et al (2007) observed in their study that high levels of supply chain practices have a high impact on operational performance. Bhatnagar and Sohal (2008) identified the impact of location decision framework and its resultant effect on the supply chain uncertainties and manufacturing practices. Hsu et al (2007) have identified the direct relationship between operations capability and supply chain management practices and its resultant impact on the organizational performance. Bayraktar et al (2009) have validated that supply chain practices positively impact the operational performance of manufacturing enterprises.Wong et al (2011) have identified the resultant positive influence of knowledge management capabilities on supply chain practices. Sundram et al (2011) have found the existence of a direct relationship among supply chain practices and supply chain performance. Lee et al (2011 have found that organizational performance has an association with SC innovation factor constructs.

Based on the above literature, the following second set of hypotheses has been arrived at:

H1: Goods produced in the manufacturing industry have a moderating effect on the relationship between supply chain management components (concern- H1a, competence- H1b and practices- H1c) and supply chain performance.

H2: Goods produced in the manufacturing industry have a moderating effect on the relationship between supply chain management components (concern- H2a, competence- H2c and practices- H2c) and organizational performance.

H3: Goods produced in the manufacturing industry have a moderating effect on the relationship between supply chain performances and organizational performance.

The literature serves as the source of hypotheses for the proposed study. The section also highlights the source from which the variables used in this study relating to measuring the supply chain concerns, supply chain competence, supply chain practices, supply chain performance and organizational performance of manufacturing enterprises have been obtained. Based on the existing literature, a conceptual model has been proposed and the research gap has been identified that past research studies have focused on various supply chain management components, impact of supply chain management components on organizational performance, and the relationship between supply chain performance and organizational performance. However, there is no study on impact of supply chain management components on supply chain performance and, in turn, its impact on organizational performance. This has been identified as the research gap for the proposed study and the above hypothesis shall be tested for exploring the existence of any causality relationship among the proposed variables using SEM framework. Past research studies have focused on different supply chain management components, impact of supply chain management components on organizational performance, and the relationship between supply chain performance and organizational performance. However, there is no study on impact of supply chain management components on supply chain performance and, in turn, its impact on organizational performance. This has been identified as the research gap for the proposed study.

3. Research Methodology

The research design of the proposed research work is causal in nature. The research work has been conducted mainly based on primary data. Primary data relating to supply chain concerns, competence, practices, performance and organizational performance has been collected from executives of manufacturing firms. The data collection instrument used for this research is a well structured questionnaire. The questionnaire is divided into five parts consisting of questions on supply chain concerns, supply chain competency, supply chain practices, supply chain performance, and organizational performance. The sample population for this study consists of manufacturing firms located in the Union Territory of Puducherry including Pondicherry, Karaikal, Mahe and Yanam. The list of manufacturing enterprises operating in different districts was collected from Department of Industry and Commerce, and Department of Statistics of Government of Puducherry, India. This list was taken as the sample frame of this study. The total population size was 8,364. The sampling technique adopted in this research work is simple random sampling method. The sample size for the study was 255 manufacturing firms. The sample size of the study has been determined using this formula - no = Z2 σ2/e^2 (Israel, G.D., 2009) where Z=1.96, that is, abscissa of the normal curve that cuts off; σ = 8.12 denotes highest variance level of an attribute in the questionnaire; it was calculated from the pilot study data; e = 1 denotes the desired level of precision in the five-point scale questionnaire. The variables needed for the questionnaire were generated through the literature review, and pre-pilot study was conducted to test the content validity of the questionnaire by administering it to subject experts and necessary suggestions were incorporated. The pilot study was conducted on 30 manufacturing firms in the Union Territory of Puducherry and the initial reliability of the questionnaire was tested using Cronbach's- Alpha value, which showed a good reliability result. The main study was conducted using the final questionnaire and the reliability of the questionnaire was tested using the Split-Half reliability test that shows the consistency of the result. The test revealed that the consistency of the questionnaire was improving. The assumptions for Structural Equation Model (SEM) such as normality, linearity, homogeneity and multi-colinearity were checked and the results yielded were found to be satisfactory for applying SEM. Next, the construct validity of the questionnaire such as convergent, discriminate, Norm logical and Predictive validity was tested to ensure the validity of the questionnaire. The results are represented in tabular and figurative forms, and the statistical tools used in this research work are Structural Equation Modeling (SEM) - Confirmatory Factor Analysis (CFI) and Path or Structural Model. The software package used to analyze the above statistical tools is LISREL 8.72.

4. Empirical Results

The Structural Equation Modelling (SEM) framework has been used to test the proposed conceptual model and Hypotheses Testing. SEM consists of two components; the first component relates to using of the Measurement Model or confirmatory factor analysis (CFA) which is employed to identify the items of each construct or variable and also evaluate reliability and validity of each variable or construct. The second component relates to structural model or path analysis, which is employed to examine the causal relationship among constructs or variables.

CFA or Measurement Model

The measurement model for all constructs are tested

and validated through CFA. The measurement model has been portrayed in Figure 2, displaying the reliability of the observed items and scale used to measure the unobserved constructs or latent variables.

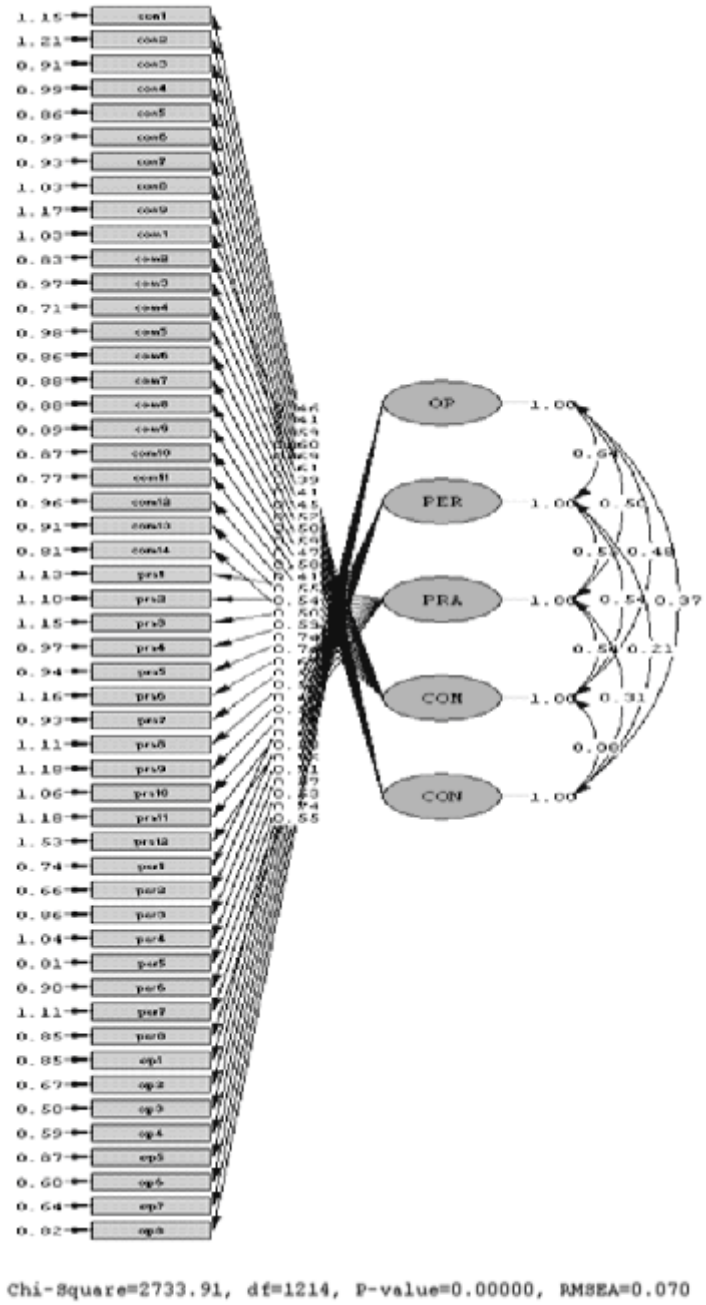

Figure 2: Measurement Model

Results of Confirmatory Factor Analysis (CFA) or Measurement Model are depicted in Table 1.

Table 1: Results of Overall CFA (Measurement Model)

Table	Results of Measurement Model (Confirmatory Factor Analysis)				Results of Validity and Reliability Test Value	
VARIABLES	Factor estimate	t - value	Error variance	R^2	Composite Reliability	Average Variance Extracted (AVE)
SUPPLY CHAIN CONCERNS					0.73	0.47
Con1: Lack of sophisticated information system	0.46	14.29	1.15	0.15		
Con2: Lack of ability in managing Supply chain inventories	0.45	12.55	1.21	0.12		
Con3: Lack of cooperation among supply chain members	0.59	17.88	0.91	0.28		
Con4: Lack of trust among supply chain members	0.60	18.03	0.99	0.27		
Con5: Lack of interest among your suppliers or customers	0.69	20.23	0.86	0.35		
Con6: Competition from other supply chains	0.57	17.49	0.99	0.25		
Con7: Your firm's lack of leverage within your supply chain	0.67	19.94	0.93	0.33		
Con8: Your suppliers' geographical distance	0.72	20.50	1.03	0.34		
Con9: Your customers' geographical distance	0.67	20.12	1.17	0.28		
SUPPLY CHAIN COMPETENCE						
Com1 : The ability to fill orders with improved accuracy	0.61	22.47	1.03	0.27	0.84	0.46
Com2 :The ability to forecasting sales with greater accuracy	0.39	15.17	0.83	0.15		
Com3 :The ability to issue notice on shipping delays in advance	0.47	16.10	0.97	0.15		
Com4 :The ability to respond to a request in a timely manner	0.45	17.00	0.71	0.22		
Com5 :The ability to make high quality products	0.52	19.82	0.98	0.22		
Com6 :The ability to deliver high-quality services	0.50	18.88	0.86	0.22		
Com7 :The ability to respond to the needs of key customers	0.59	22.16	0.88	0.29		
Com8 :The ability to work with key suppliers	0.47	17.79	0.88	0.20		
Com9 :The ability to manage supply chain inventory	0.58	22.11	0.89	0.27		
Com10 :The ability to meet a delivery on promised date	0.46	15.78	0.87	0.16		

Table	Results of Measurement Model (Confirmatory Factor Analysis)				Results of Validity and Reliability Test Value	
VARIABLES	Factor estimate	t - value	Error variance	R^2	Composite Reliability	Average Variance Extracted (AVE)
Com11 :The ability to enhance supply chain's position in terms of integrity	0.44	17.13	0.77	0.20		
Com12 :The ability to enhance supply chain's position in terms of social	0.48	18.51	0.96	0.19		
Com13 :The ability to design low-pollution production process	0.53	20.19	0.91	0.23		
Com14 :The ability to design low-pollution delivering process	0.58	22.05	0.81	0.30		
SUPPLY CHAIN PRACTICES						
Par1: Close partnership with suppliers	0.55	22.63	1.13	0.21		
Par 2:Close partnership with customers	0.54	21.40	1.10	0.21		
Par3:Just in time (JIT) supply	0.50	20.22	1.15	0.18		
Par4:Strategic planning	0.59	23.76	0.97	0.26		
Par5:Supply chain benchmarking	0.74	28.94	0.94	0.37	0.73	0.55
Par6:Many suppliers	0.74	29.29	1.16	0.32		
Par7:Holding safety stock	0.69	27.52	0.93	0.34		
Par8:Subcontracting	0.55	22.35	1.11	0.21		
Par9:E-procurement	0.66	25.99	1.18	0.27		
Par10:Outsourcing	0.66	25.92	1.06	0.29		
Par11:Third Party Logistics (3PL)	0.57	22.61	1.18	0.22		
Par12:Few suppliers	0.18	7.54	1.53	0.02		
SUPPLY CHAIN PERFORMANCE						
Per1 : Improvement in Lead time	0.53	18.55	0.74	0.27		
Per2 : Improvement in inventory turns	0.41	14.88	0.66	0.20		
Per3 : Improvement in level of inventory write off	0.54	18.93	0.86	0.25	0.75	0.54
Per4 : Improvement in Time to market (Product development cycle)	0.55	19.91	1.04	0.23		
Per5 : Improvement of defect rate	0.57	20.07	0.81	0.29		
Per6 : Improvement in order item fill rate	0.44	16.17	0.90	0.18		
Per7 : Improvement in stock out situation	0.52	18.65	1.11	0.19		
Per8 : Improvement in set-up times	0.48	17.63	0.85	0.21		

Table	Results of Measurement Model (Confirmatory Factor Analysis)				Results of Validity and Reliability Test Value	
VARIABLES	Factor estimate	t - value	Error variance	R^2	Composite Reliability	Average Variance Extracted (AVE)
ORGANIZATIONAL PERFORMANCE						
Op1: Market share	0.66	24.24	0.85	0.34	0.75	0.49
Op2:Sales growth	0.58	21.86	0.67	0.33		
Op3:Profit margin	0.76	27.69	0.50	0.53		
Op4:Overall product quality	0.71	26.49	0.59	0.46		
Op5:Overall competitive position	0.57	21.72	0.87	0.28		
Op6:Average selling price	0.53	20.40	0.60	0.32		
Op7: Return on investment.	0.74	27.66	0.64	0.46		
Op8: Return on sales	0.55	21.03	0.82	0.27		

Results of goodness of fit test for CFA model are shown in Table 2.

Table 2: Results of Goodness of Fit Test for Confirmatory Factor Analysis

Model	Normed Chi-square (x^2/df)	P-Value	GFI	AGFI	CFI	NFI	RMESA
Study model	2.25	0.00	0.87	0.85	1.00	1.00	0.070
Recommended value	Less than 3	>0.05	0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	Less than 0.080

The above table highlights the CFA or measurement model results. It can be inferred from the above table that the values of various goodness-of-fit indices are well within the desired limits. The normed chi-square is 2.25, GFI is 0.87, AGFI is 0.85, NFI is 1.00, RMSEA is 0.070 and CFI is 1.00. Furthermore and more importantly, the factor loadings in respect of all the items included in the model are around 0.5 and are highly significant at 0.05 level of significance. Hence, these results suggest that there is no need for any modifications in the model and the available data aptly fits into the proposed conceptual model.

Structural Model or Path Analysis

SEM has been employed to estimate the strength of the causal relationship among unobserved or latent variables of supply chain concerns, supply chain competence, supply chain practices, supply chain performance and organizational performance. Moderating effect occurs when the third variable or construct changes the relationship between two related variables/constructs. Moderators can be metric or non-metric; here, our moderating variable is non-metric, that is, the type of goods produced by manufacturing firms, and Figures 3 and 4 portray these relationships while the results for the proposed structural model are shown in Table 3 and Table 4.

Path analysis results of Industrial Goods

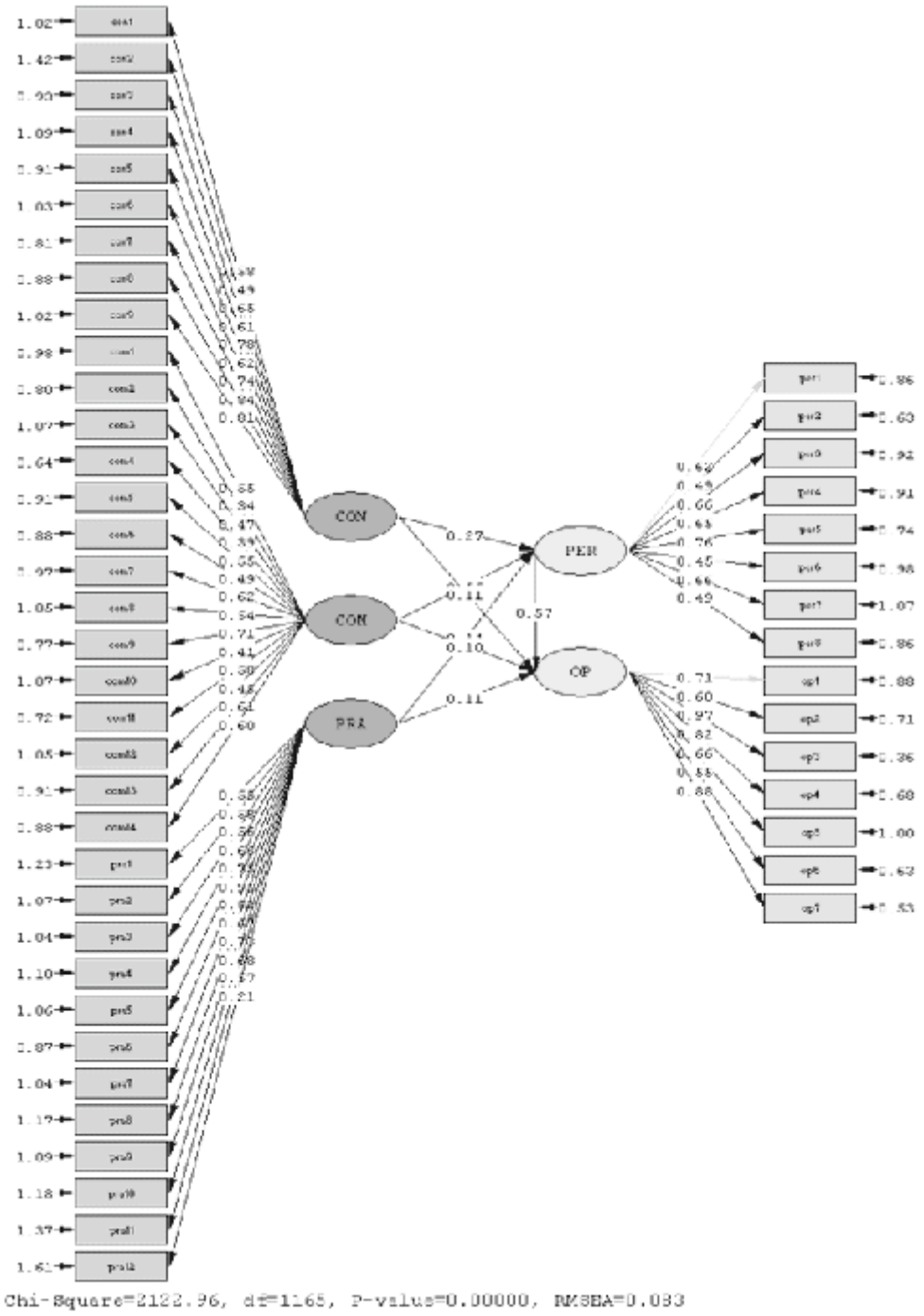

Figure 3: Structural Model of Industrial Goods

Path analysis results of Consumer Goods

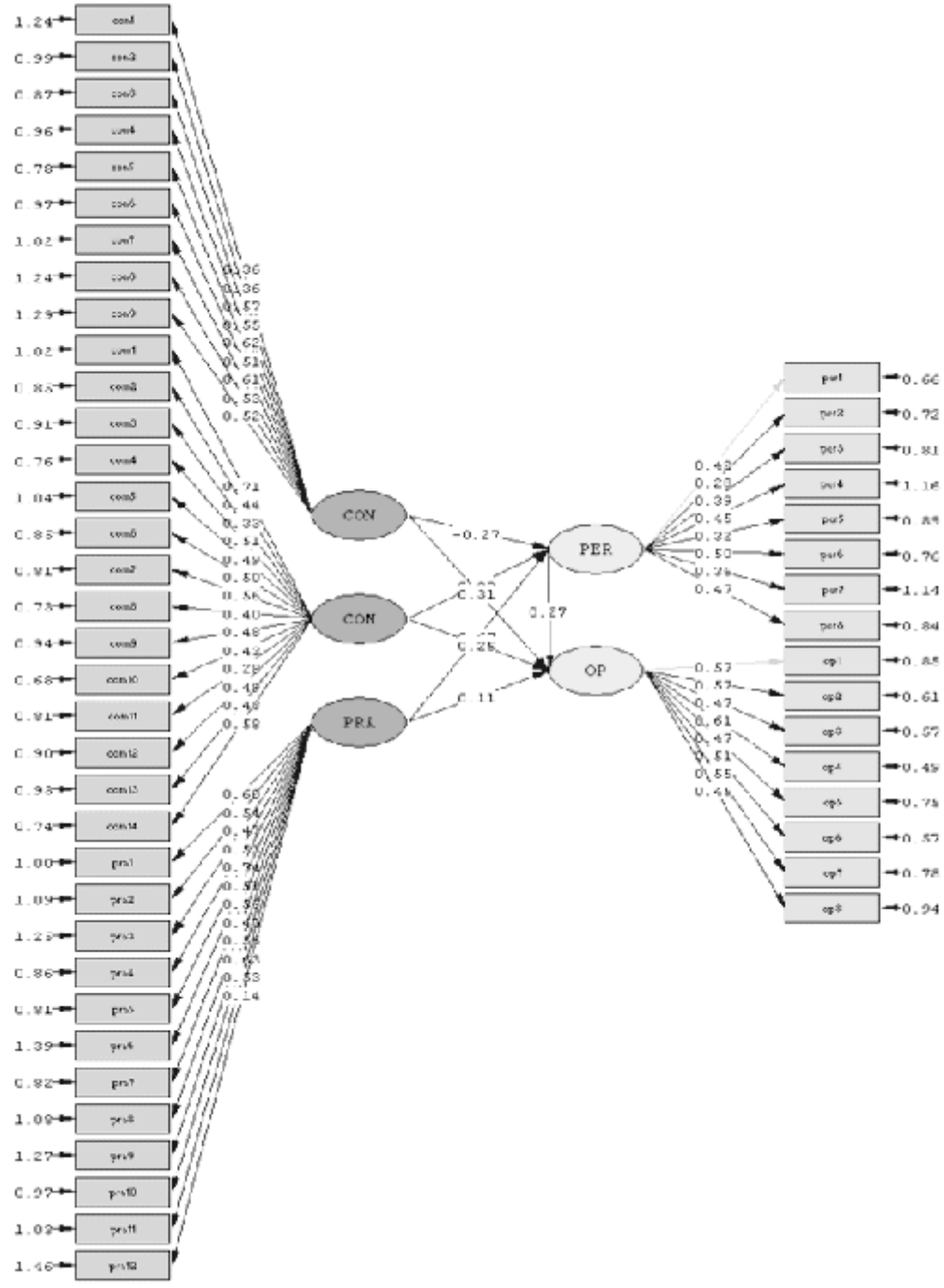

Figure 4: Structural Model of Consumer Goods

Results of structural model have been portrayed in Table 3.

Table 3: Result of Structural Model

Independent Variable	Dependent Variable	Industrial Goods-Beta(S.E)	Consumer Goods-Beta(S.E)	T-statistic	Moderating effect
S C concerns	SC Performance	-0.27(0.03)*	0.27(0.024) *	12.86*	Yes
SC competence	SC Performance	0.08(0.03) *	0.56(0.037) *	9.75*	Yes
S C practices	SC Performance	0.67(0.05*	0.14(0.033) *	9.37*	Yes
S C concerns	Organizational Performance	0.31(0.041)*	0.11(0.032) *	3.8*	Yes
SC competence	Organizational Performance	0.25(0.036) *	0.10(0.056) **	2.3**	Yes
S C practices	Organizational Performance	0.11(0.071) **	0.11(0.035) *	0.12	No
SC Performance	Organizational Performance	0.27(0.17) **	0.57(0.11) *	1.45	No

Note: * sig at 0.01, ** sig at 0.05

Figures 3 and 4 portray seven causal relationships and from Table 3, the beta value, standard error (S.E), and t-value corresponding to the goods produce 'moderating relationships between supply chain management components, supply chain performance and organizational performance. Taking the first causal relationship, the beta value and t-value corresponding to the relationship between supply chain concern and supply chain performance are 0.27* and 0.27* respectively. This serves as a 'no statistically significant evidence to reject the hypothesis that the relationship between supply chain concerns and supply chain performance are moderated by types of goods'. Taking the second causal relationship, the beta value and t-value corresponding to the relationship between supply chain competence and supply chain performance are 0.08* and 0.56* respectively. This serves as 'adequate and significant statistical evidence to accept and support the hypothesis that the relationship between supply chain management components and supply chain performance is moderated by types of goods'.

Taking the third causal relationship, the beta value and t-value corresponding to the relationship between supply chain practices and supply chain performance are 0.67* and 0.14* respectively. This serves as a testimony to the point that there is statistically significant evidence to accept and support the hypothesis that relationship supply chain practices and supply chain performance is moderated by types of goods produced. With regard to the fourth causal

relationship, the beta value and t-value corresponding to the relationship between supply chain concern and organizational performance are 0.31* and 0.11* respectively. This serves as a testimony to the point that there is statistically significant evidence to accept and support the hypothesis that the relationship between supply chain concerns and organizational performance is average moderating effect by types of goods. With regard to the fifth causal relationship, the beta value and t-value corresponding to the relationship between supply chain competence and organizational performance are 0.25* and 0.10** respectively. This serves as a testimony to the point that there is statistically significant evidence to accept and support the hypothesis that the relationship between supply chain competence and organizational performance is average moderating effect by types of goods. With regard to the sixth causal relationship, the beta value and t-value corresponding to the relationship between supply chain practices and organizational performance are 0.11** and 0.11* respectively. This serves as a testimony to the point that there is no statistically significant evidence to accept and support the hypothesis that supply chain practices have a positive causal relationship with organizational performance with no moderating effect of types of goods. With regard to the seventh and final causal relationship, the beta value and t-value corresponding to the relationship between supply chain performance and organizational performance are 0.27** and 0.57* respectively. This serves as a testimony to the point that there is no statistically significant evidence to accept and support the hypothesis that supply chain performance has a positive causal relationship with organizational performance with no moderating effect of types of goods.

6. Conclusions and Implications

In today's competitive scenario, the limited resources available to the firm must be rationally utilized to enhance the performance and efficiency of the firm and provide better value to consumers. This warrants for thorough understanding of the concepts of SCM on the part of executives of manufacturing enterprises. This research work has made an effort to study the moderating effects of goods produced by manufacturing on the relationships among important components of SCM, supply chain performance and organizational performance in an Indianised context. The proposed conceptual model was tested using SEM that will add value to the existing literature in terms of theory building and testing in the Indian context. This research work is the first of its kind conducted in the Indian context to test the causal relationship between vital components of supply chain management and its impact on supply chain performance and organizational performance through the SEM framework. From the results, the linkage of supply chain management in the Indian context can be very well understood. The results depict that types of goods produced by manufacturing industries like industrial and consumer goods act as a moderating variable in the causal relationship among supply chain management components, supply chain performance and organizational performance of manufacturing enterprises. Industrial goods producing manufacturing firms concentrating on improving their supply chain practices and consumer goods producing manufacturing firms concentrating on improving their supply chain competence can significantly improve their overall performance.

6.1 Implications of the study

The study has utilized many variables to study the SCM practices of manufacturing firms. These variables have

tested to be effective, reliable and valid in studying the SCM practices of manufacturing firms. These variables can very well be used by future researchers and academicians to conduct detailed studies on the various factors involved in SCM practices. The various tools suggested by this study can be well utilized by business managers to effectively manage critical SCM issues. The tools suggested by this study can be utilized by business managers to boost their knowledge of the various SCM components and the inter-linking relationships of various dimensions of supply chain competence, supply chain practices and supply chain performance, and their likely impact on the organizational performance. This research provides valuable inputs to strengthen academic thoughts and arguments regarding theory and proposition, measurement scale, methods of approaching the research issues and managerial implications of SCM. This research has made immense contribution by aptly developing a theory integrating various aspects related to SCM and the various issues related to supply chain which may significantly affect the performance of a manufacturing enterprise.

7. Limitations of the Study and Directions for Future Research

The research work covers only manufacturing enterprises and does not concentrate on business firms engaged in the services sector. Hence, future research may be undertaken to assess the supply chain competence of business firms engaged in providing services. Also the study has collected data from a single executive from each manufacturing enterprise. The executive may be specialized in only a single field i.e operations management. The use of a single respondent may lead to generation of inaccurate information. Hence, future research shall focus on multiple respondents from each manufacturing firm using the instrument developed in the study. This will lead to better investigation of the discrepancies in perception among executives within the same firm and the likely effect of such discrepancies on the overall performance of the firms.

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An Empirical Study of Stock Market Anomalies

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Abstract

The market efficiency theory says that only a weak form of efficiency and to some extent, semi-strong form of efficiency show abnormality at some particular time periods. However, previous studies have shown very mixed evidence of stock market anomalies in terms of its size, type and economy; and some anomalies like January Effect, Friday the 13th, Turn of the Year Effect, Turn of the Month Effect, etc. are often found in developed markets too. Taking advantage of such abnormalities is very important for an investor in a stock market. The paper investigates the seasonal behaviour of daily stock return series of S&P CNX Nifty 500, Dow Jones and Shanghai Stock Exchange.

Key Words: *Anomalies, Return*

I. Introduction

The existence of seasonality in stock returns violates the Efficient Market Hypothesis (EMH) in finance. EMH proposes that it is impossible to outperform the market through market timing or stock selection and suggests that all securities are priced efficiently to fully reflect all the information of the intrinsic value of stocks. However, in the context of financial markets and in the case of the equity market, several seasonal effects that create higher or lower returns depending on the time period have been noted. They are called 'anomalies' in literature as they are not explained by traditional asset pricing models. Studies on anomalies reveal that systematic violations of security market efficiency occurs in the equity market due to timing, reaction by investors to information, cash flows, policy decisions, certain macroeconomic events, etc. Such occurrence results in significantly different risk-adjusted returns than those expected. Therefore, if one is able to take advantage of such anomalies, one can earn superior returns (Zeimba and Hensel, 1994). Anomalies can occur with individual securities or with the market as a whole. As it is difficult to study the behaviour of abnormal returns of different securities, major studies in the area of seasonal anomalies are on indices. Even if some anomalies are controversial, difficult to measure and time varying, their studies are challenging and interesting, and provide interesting inputs for portfolio management. Rather than individual securities, indices are a good place to study anomalies. This is because 1. Reasonably long term data is available, and 2. It does not occur due to transaction costs or market failure (Boynton Wentworth, 2006). In the late seventies and eighties, many studies in the capital market provided enough evidence about the futility of information in consistently generating abnormal returns. More specific to these, studies carried out later have identified certain anomalies such as turn of the year, turn of the month, Friday the 13th, holiday effect, January effect, day of the week effect, etc. in both developed and emerging markets (Sarma, 2004).

This paper is organized as follows. Section I introduces about EMH and Anomalies in brief. Section II named Literature Review discusses results of the previous studies. Section III discusses concepts and types of anomalies, rationale for the study, objectives and variables considered for the study. Under the heading Empirical Model in Section IV, various tools to study anomalies and hypotheses are described. Section V and VI show the procedure to test the anomalies for three different markets, results of the same and conclusion. Further, in Section V named empirical results, all four anomalies are presented one by one under Sections A, B, C and D. Under each section, analysis of S&P CNX Nifty 500 is carried out and is followed by Dow Jones and Shanghai Stock Exchange. Finally, Sections VII and VIII present limitations of the present study, future work and managerial implications. The Appendix given at the end of the paper shows further bifurcated results of all four anomalies.

II. Literature Review

Givoly and Ovadia (1983) studied and concluded the phenomenon of high rates of return of common stock in January and found that it comes with two phenomena: 1. high returns during the month of January and 2. the apparent existence of widespread sales of stocks for tax purposes towards the end of the fiscal year. The paper has an interesting finding that due to tax-induced sales, the price of many stocks over the last 35 years was temporarily depressed in December but recovered in the following month of

January. Theobald and Price (1984) concluded that due to a settlement date system employed in the London Stock Exchange, negative return on Monday was found a pervasive phenomenon in the UK as opposed to the US where there is a strong negative weekend effect. Corhay, Hawawini and Michel (1987) found that in the month of January, excess risk premium[1] is significantly higher in the United States than the three European countries namely United Kingdom, France and Belgium. Gultekin and Gultekin (1987) found that like Capital Asset Pricing Model (CAPM), in Arbitrage Pricing Theory (APT), seasonality could explain the risk-return relationship in January only. The paper further explains that the seasonal pattern in the stock return data is so strong in January that asset pricing models based on covariance measures of risk are not likely to explain the turn of the year effect of size-related anomalies. Clare et al (1995) studied seasonality in the equity market and their result indicated that the market tends to rise both in January and April, and to a lesser extent, in December, and fall in September. However, this research could not find enough evidence for the negative average return in September and positive average return in December which other literature has studied and proved. A seminal research carried out by Sarma (2004) empirically proved that the Indian stock market shows seasonality in the returns' pattern and the Monday-Tuesday, Monday-Friday and the Wednesday-Friday sets have positive deviations for all the indices. The study concluded that the observed patterns are useful to explore the opportunities in the Indian stock market return in a timely manner. Peterson (1990) analyzed whether the earnings information seasonality causes stock return seasonality by using six years of data. The researcher studied the intra-quarter effect, the intra-month effect, the January effect and the day-of-the-week effect. The paper concluded that it is not likely that earnings information seasonality is the primary cause of the stock index return seasonality. Contrary to earlier studies, research by Kramer (1994) concluded that there is no evidence of the January effect in excess returns from the multi-factor model.

Jacobs and Levy (1988) found that the calendar anomalies occur at cusps in time. Even if such abnormalities have little economic significance, they apparently evoke special investor behaviour and the human psychology is the most appropriate explanation for this behaviour. Calendar anomalies are most useful and of great interest to traders, and planned traders (professional traders who trade in bulk) can take advantage of calendar-based return patterns. Evidence says that the January effect is one of the strongly found anomalies in the market. However, research by Claessens et al (1995) found limited evidence on turn of the tax effects (period after payment of tax), of small firm effects, or of a relation between seasonal effect and size effect. Further, their research could not determine whether this predictability is caused by market inefficiencies, time varying risk premiums, currency problems, or possible regime switching. Compared to Claessens et al, Priestley (1997) suggested that the outcome of seasonality in the stock return is due to the high risks involved in holding stocks in January and December as this is an important period in the yearly business cycle. The paper concluded that the seasonal outcome for the month of April is related to the risk of the changes in government policy that comes with announcements in the annual budget and at the end of the tax year. On a similar track, Jacobs and Levy (1988) and Haugen and Jorion (1996) found significant evidence of the January

[1] January Premium less the premium during the rest of the year

effect in the New York Stock Exchange. However, the January effect is associated with a significant amount of risk and the effect may persist even in the presence of relatively large expected profits. Further, authors commented that this anomaly is not the manifestation of market inefficiency and is not arbitrageable as the market is slower to arbitrage away inefficiencies.

Robinson (2001) has employed a variety of parametric and non-parametric tests to examine the predictability and the presence of seasonal patterns in the rates of return series for a large majority of stocks listed on the Barbados Stock Exchange. The tests find no statistical evidence of predictability or the presence of seasonal patterns at the Barbados Stock Exchange; however, it may be because the given exchange exhibits the classical limitation of small emerging markets, pointing to a rather under-developed stock market. A widely supported explanation for the January Effect is the tax-loss selling hypothesis. On a similar line, like Jacobs and Levy (1988) and Haugen and Jorion (1996), a research study by Al-Saad (2004) has tried to study the January Effect in the Kuwait Stock Exchange in the absence of tax and other seasonal patterns, if they exist. The paper concluded that taxes are not the underlying cause of seasonality; this is opposite to findings of the earlier studies. Watanapalachaikul and Islam (2006) empirically proved the existence of the day-of-the-week effect and the January effect, and the return differential between Monday and the best performing day is significantly large. The result showed a seasonal trend of returns where February and May were the poorest performing months followed by an overall upward trend until June. Research by Ignatius (1992) examined the relationship of stock return patterns on the Bombay Stock Exchange (BSE) with those of the New York Stock Exchange (NYSE). In BSE, December provides the highest mean monthly return while the last week of December has the highest mean weekly return. However, research indicates that the return pattern of BSE and the NYSE appear to be segmented rather than integrated. Kohers and Kohli (1991) worked on the previously proved evidence that higher January returns accrue disproportionately to small firms. The authors of the research paper concentrated on the S&P Composite Index which consists of securities of large firms, their findings demonstrate the existence of the January effect with a few exceptions. As per their findings, not only were the January returns the highest, but also variations per unit of the returns were lowest compared to the returns in any other month of the year. Vetter and Wingender (1996) too have confirmed the January effect. The authors studied the selected stocks and tested whether seasonality exists for them; they found significant seasonality in January returns of the preferred stocks. Ajayi et al (2004) studied the existence of anomalies in Eastern European Emerging Markets (EEEMs) and empirically showed negative Monday stock returns in six countries of the EEEMs and positive return in five countries of EEEMs. However, these negative and positive returns are significant in only one market. Additionally, only in the case of Estonia Monday returns are significantly lower than the rest of the week. Except for Estonia, the results of the Eastern European Emerging Market provide no statistical evidence to prove the Monday return anomaly. This absence of anomalies shows that despite speculation that emerging markets might exhibit market inefficiencies, EEMs and many more emerging markets show efficiencies. This contradicts with the findings of Sarma (2004) carried out for the same period but in another economy.

Garg et al (2010) studied the Indian and US markets as representatives of developed and emerging markets

respectively for a period of January 1998 to December 2007. The authors further bifurcated the period into two sub-periods - firstly from January 1998 to December 2001 and secondly, from 2002 to December 2007. The empirical analysis provides evidence about the existence of the Monday effect only in India; however, the semi-monthly and turn-of-the-month effects are found in both the markets, which partly conform to the findings of Sarma (2004). The paper concludes that the monthly effect does not exist in both the countries. Contrary to this, research by Nageshwari and Selvam (2011) for the period 1st April 2000 to 31st March 2010 found that the day-of-the-week effect and monthly effect pattern did not appear to exist for the BSE Sensex during the period under study. Research by Pandey and Prachetas (2012) is limited to those stocks whose derivatives are traded on the National Stock Exchange (NSE) as they are traded in large volumes. Their analysis concluded that the high risk-high return paradigm is a fallacy in the capital market and higher average monthly rate of return for low volatility stocks. The finding negates the popularly held assumption of high risk-high return in the capital market and presence of the risk-return anomaly confirms the existence of inefficient or imperfect capital markets. Pandey (2004) empirically tested the existence of seasonality in Kuala Lumpur Stock Exchange's Composite Index and the EMAS (Exchange Main Board All Share) Index, and confirmed the Seasonal Effect in stock returns in Malaysia. It was found that the returns were statistically significant in the months of February and December in the case of EMAS. Bing and Xindan (2006) investigated the different calendar effects in the Chinese stock market and found that the Friday effect exists with low volatility at the early stage, but since 1997, the positive Tuesday effect has been noticed. Further, the researchers also summarized that there was a small firm January effect with high volatility and turn-of-the-month effect disappeared from the Chinese market from 1997.

Tinic and West (1984) found that the risk-return relationship described by the two factors Capital Asset Pricing Model (CAPM) exists only in January and not during the remaining eleven months of the year. Contrast to Tinic and West (1984), a study by Cadsby (1992) confirmed that the CAPM risk premium is significant both in January and during the rest of the period from January 1963 to December 1985. The study also concluded that for each calendar effect on stock returns, there is a corresponding calendar effect on risk-return relationship. Lee and Chang (1988) showed that even after adjusting for the suggested biases, certain anomalies such as firm size, January effect and day of the week effect exists in the Korean market. In this study, close-to-close daily returns were decomposed into close-to-open return and open-to-close return. By using the MSCI Global Equity Indices during various periods, Botha (2013) concluded that there is a weak evidence of the Friday the 13th effect in South Africa and Kenya, and in general, there is no significant difference between stock returns on regular Fridays and Friday the 13th. Anshuman and Goswami (2000) examined the weekend effect by constructing the equally weighted portfolio of 70 stocks for a period of April 1991 to March 1996 and found excess positive returns on Friday and excess negative returns on Tuesday. This partly proves the weekend effect. Kumar and Deo (2007) found evidence for the day-of-the-week effect for the S&P CNX 500 index. Chotigcat and Pandey (2005) tried to study the monthly effect for the stock market of India and Malaysia, and confirmed the existence of the monthly effect.

III. Data and Methodology

Rationale for the study

Anomalies indicate either market inefficiency (profit opportunities) or inadequacies in the underlying asset pricing model. Even if they are analyzed and documented in the literature, anomalies often seem to disappear, reverse or attenuate. The market anomalies theory convinces that under-developed and emerging markets suffer from market inefficiencies and at a particular calendar time period, a majority of the securities or market as a whole provide abnormal return while developed markets are free from such abnormalities. However, existing empirical literature on market anomalies show that anomaly itself is an anomaly! That means it gives mixed outcomes about its existence at some particular time period and in terms of developed or under-developed market. The extant literature referred to in the previous section has provided a mixed bag of outcomes and thus lead to no conclusion. In addition, empirical evidence by Ignatius (1992) concluded that two different stock indices are segregated rather than integrated. This 'anomaly' itself in the literature has motivated this study to carry out the study of market anomalies in the Indian as well international context and at various periods. Due to higher correlation among the world indices, international diversification has reduced its charm; however, now it has become of utmost important for professionals as well as individuals to study and tap such abnormalities. Further, different economies and markets show different levels of exposure due to worldwide common occurrences like recession and other events. Therefore, it was decided to test the anomalies for three different major markets representing different stages of the economy and further bifurcating into different periods.

Objectives of the study

- To study the selected calendar anomalies in the Indian and international context for the period of January 2003 to December 2013.
- To study whether the market has showed any abnormality during the pre and post-recession period.
- To examine which calendar anomaly still exists in the Indian and international stock market.

Data and Variables

It was decided to study selected calendar anomalies such as the Weekend Effect, Turn-of-the-Month Effect, Turn-of-the-Year Effect and Friday the 13th Effect as these are the most observed market anomalies (Selavakumar 2011) and for that, two international indices namely Dow Jones and Shanghai Composite were considered as they represent developed and emerging-to-developed markets respectively. For the Indian context, S&P 500 was chosen as it is a broad-based index representing 94.95% of free float market capitalization and about 93.64 % of the total turnover of the NSE. To study the above mentioned objectives, daily prices of CNX Nifty 500, Dow Jones and Shanghai Composite were collected from 1st January, 2003 to 31st December, 2013. Hence, the period of the present study covers a period of 11 years. The selected period was further decomposed into pre-recession and post-recession to study the level of different markets as per EMH. The pre-recession period considered for the study is January 2003 to November, 2007 and the post-recession period is July 2009 to December 2013.

Various research instruments such as risk, return, skewness and kurtosis are used in this paper to analyze the Weekend Effect, Turn-of-the-Month Effect, Turn-of-the-Year Effect and Friday the 13th Effect. The Weekend Effect is one of the most important calendar

anomalies and describes the tendency of the stock prices to decrease on Mondays and further get higher on Friday; this implies that closing prices on Monday are lower than the closing prices of the previous Friday. Another anomaly considered for the study is Turn-of-the-Month Effect; it refers to the tendency of the stock market to rise on the last trading day of the month and first three trading days of the next month. Another important anomaly – Turn-of-the-Year Effect - shows a pattern of increased trading volume and higher stock prices in the last week of December and the first two weeks of January. The Friday the 13th Effect is the superstition prevalent more in foreign countries, and to some extent, now in Indian market too.

IV. Empirical Model

It was decided to test the above mentioned four anomalies based on descriptive statistics parameters like risk, return, mean, skewness and kurtosis, and by statistical tests like Kolmogorov Smirnov and Mann-Whitney U test. Indicated below is the formula and explanation applied in the paper.

Returns

To compute the daily returns for each of the index series, the following formula was used:

$$R = LN (I_t / I_{t-1})*100$$

Where,

R= Daily return of the Index (I),

LN= Natural log of the underlying market series (I),

I_t= Closing value of a given index (I) on a specific trading day (t), and

I_{t-1}= Opening value of a given index (I) on a specific trading day ($_{t-1}$)

Standard Deviation

Standard Deviation is known as the root mean square deviation; in other words it is the square root of the mean of the squared deviation from the arithmetic mean. It measures the absolute dispersion.

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Descriptive Statistics:

Under Descriptive Statistics, the Average Daily Returns (mean), Skewness and Kurtosis are computed. The details are as follows.

Mean

Mean is the average value of the series obtained by adding up the series and dividing by the number of observations. It is the most common Measure of Central Tendency.

$$\overline{X} = \frac{\Sigma X}{n}$$

Skewness and Kurtosis

Skewness is a measure of symmetry, or more precisely, the lack of symmetry. Distribution of a data set is symmetric if it looks the same to the left and right of the centre point. The Skewness for a normal distribution is zero and any symmetric data should have skewness near zero. Negative values for the skewness indicate data that is skewed left and positive values for the skewness indicate data that is skewed right. Kurtosis is more commonly defined as the fourth cumulated divided by the square of the variance of the probability distribution.

$$\text{Skew} = \frac{n}{(n-1)(n-2)} \sum \left(\frac{x_i - \bar{x}}{s} \right)^3$$

$$\text{Kurtosis} = \left\{ \frac{n(n+1)}{(n-1)(n-2)(n-3)} \sum \left(\frac{x_i - \bar{x}}{s} \right)^4 \right\} - \frac{3(n-1)^2}{(n-2)(n-3)}$$

Hypothesis tested for the study

The following hypothesis was studied by applying the Mann Whitney U test, to test whether a particular anomaly exists or not for a given period. Indicated below is the statement of the null hypothesis considered for different anomalies.

Turn-of-the-Month Effect

H_{0A}: There is no significant difference between mean return of turn-of-the-month period and mean return of rest-of-the-day period in the last **eleven years**.

H_{0B}: There is no significant difference between mean return of turn-of-the-month period and mean return of rest-of-the-day period in the last **pre-recession period**.

H_{0C}: There is no significant difference between mean return of turn-of-the-month period and mean return of rest-of-the-day period in the last **post-recession period.**

Weekend effect

H_{0A}: There is no significant difference between mean return of Monday and mean return of Friday in the last **eleven years**.

H_{0B}: There is no significant difference between mean return of Monday and mean return of Friday during the **pre-recession period.**

H_{0C}: There is no significant difference between mean return of Monday and mean return of Friday during the **post-recession period.**

Turn-of-the-Year Effect

H_{0A}: There is no significant difference between mean return of turn-of-the-year period and mean return of rest-of-the-day period in the last **eleven years**.

H_{0B}: There is no significant difference between mean return of turn-of-the-year period and mean return of rest-of-the-day period in the last **pre-recession period**.

H_{0C}: There is no significant difference between mean return of turn-of-the-year period and mean return of rest-of-the-day period in the last **post-recession period.**

Friday the 13TH Effect

H_{0A}: There is no significant difference between mean return of Friday the 13th and mean return of an ordinary Friday in the last **eleven years**.

H_{0B}: There is no significant difference between mean return of Friday the 13th and mean return of an ordinary Friday in the last **pre-recession period.**

H_{0C}: There is no significant difference between mean return of Friday the 13th and mean return of an ordinary Friday in the last **post-recession period.**

V. Empirical Results

Many statistical tests (e.g. t-test) require that data is normally distributed and therefore, it should always be checked if this assumption is satisfied. The null hypothesis is that the data is normally distributed and the alternative hypothesis is that the data is not normally distributed. The Kolmogorov-Smirnov test is used for a sample of more than 2000. If p-value is less than 0.05, null hypothesis is rejected. Table 1 below shows the Kolmogorov Smirnov test for all the three indices.

Table 1: The Results of K-S TEST for Normality

The Results of K-S TEST for Normality for CNX Nifty 500 Index			
Kolmogorov-Smirnova			
	Statistic	Df	Sig.
Return	0.073	2742	.000
The Results of K-S TEST for Normality for DOW JONES Index			
Kolmogorov-Smirnova			
	Statistic	Df	Sig.
Return	0.096	2768	.000
The Results of K-S TEST for Normality for SHANGHAI Index			
Kolmogorov-Smirnova			
	Statistic	Df	Sig.
Return	0.063	2665	.000

(Source: Author's calculation)

The Kolmogorov-Smirnov test serves as a goodness-of-fit test. In other words, this test is applied to decide if a sample comes from a population with a specific distribution. The most notable advantage of this test is that the distribution of K-S test statistics itself does not depend upon the underlying cumulative distribution function being tested. Here, for all three indices, p value is less than 0.05 which indicates that null hypothesis is rejected, which means that data is not normally distributed. Thus, it was decided to apply the Mann Whitney U Test to all three indices to test the hypothesis, as data is not normal and there are two independent variables. The reason to apply the Mann Whitney U test is that it is used to compare differences between two independent groups, as here the dependent variable is continuous, but not normally distributed. Further, unlike independent sample t-test, the Mann Whitney U test allows to draw different conclusions about the data depending on the assumption made about data distribution. The null hypothesis for Mann-Whitney U test is: there is no significant difference between mean return of 'Anomaly' period and mean return of 'other' period in the last eleven-year/pre-recession/post recession period. In addition, the alternate hypothesis is: There is a significant difference between mean return of 'Anomaly' period and mean return of 'other' period in the last eleven-year/ pre-recession/post recession period. The criteria is to reject the null hypothesis if p-value ≤ 0.05.

Section A: Turn-of-the-Month Effect

Descriptive statistics is the discipline of quantitatively describing the main features of a collection of information. It provides simple summaries about the sample and about the observations that have been made; the measures used to describe the data set are measures of central tendency and measures of variability or dispersion. Measures of central tendency include mean, median and mode, while measures of variability include standard deviation, the minimum and maximum variables, kurtosis and skewness. Mean is the arithmetic value across the observations and is extremely sensitive to large or small values. Minimum and maximum as their name indicates are the smallest and largest value respectively.

Table 2: The Results of Descriptive Statistics for CNX Nifty 500 Index

	2003-2013		Pre-Recession		Post-Recession	
	TURN[2]	REST[3]	TURN	REST	TURN	REST
Mean	0.109	0.126	0.163	0.122	0.087	0.105
Median	0.194	0.018	0.256	0.003	0.084	0.059
Kurtosis	3.398	6.414	2.591	7.356	1.900	1.758
Skewness	0.759	0.881	1.025	1.065	0.672	0.472
Minimum	6.636	10.841	-4.504	10.841	3.857	6.031
Maximum	4.822	6.752	2.841	6.050	2.720	2.521
Count	528	2214	236	1015	216	907

(Source: Author's calculation)

Descriptive statistics provide a useful summary of security returns when performing empirical and analytical analysis as they provide a historical account of the behaviour of returns. Table 1 above mentions the descriptive statistics of CNX Nifty for 1. The eleven years 2003 to 2013; 2. the pre-recession period; and 3. the post-recession period. The highest mean return is observed at the turn-of-the-month period for CNX Nifty 500 compared to the rest of the period in the pre-recession period. For the whole period of 2003 to 2013 and the post-recession period, the turn-of-the-month period return is less than the rest of the period. In the data, when the skewness is zero and kurtosis is three, it is perfectly normally distributed. From the above table, it can be observed that the condition is not satisfied for all three phases.

Table 3: The Results of the Mann-Whitney U Test for CNX Nifty 500 Index Daily Return

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	510700	85360	101300
Wilcoxon W	2963000	497100	616900
Z	-4.512	-2.942	-3.693
Asymp. Sig.	0	0.003	0

(Source: Author's calculation)

[2] Turn of the Month Effect

[3] Rest of the period i.e. other than turn of the month effect

Since the descriptive statistics and Kolmogorov Smirnov test confirm that data is not normally distributed, the Mann-Whitney U test is applied. Here, at 5 % significance level, the null hypothesis is rejected which indicates that there is a significant difference between the returns of the turn-of-the-month period and the rest of the period. That means the anomaly named Turn-of-the-Month Effect was found in the S&P CNX Nifty 500 index during the whole pre-recession and post-recession period. When this anomaly was tested on the basis of risk and return, mostly this anomaly was noted in the month of January followed by October and December for the time period of 2003 to 2013. For the pre-recession period, this anomaly was found only in the month of July while for the post-recession period, this anomaly existed in the month of August and October only. When turn-of-the-month effect was analyzed on the basis of a year, this anomaly mostly existed in the year of 2003 in period of eleven years (2003 to 2013) and pre-recession period too. In the case of the post-recession period, it existed in the year 2010 and 2011.

In a similar way, turn-of-the-month effect for the Dow Jones Index gives a similar result as shown by the CNX Nifty 500 as the highest mean return is found in the whole period and pre-recession period. For Dow Jones, all data for all periods is positively skewed. From the Mann Whiteny U test, it can be said that null hypothesis fails to be rejected as the p value is greater for all three phases. Therefore, it can be summarised that the turn-of-the-month effect does not exist for the given time period. So, statistically, it can be said that the turn-of-the-month anomaly does not exist; however, when analyzed from the risk and return point of view, results show that mostly this anomaly existed in the months of April, May and November for the time period of 2003 to 2013. During the pre-recession period, the result shows that mostly this anomaly existed in the months of April, May and July and during the post-recession period, it exists in the month of November. On the basis of a year, mostly this anomaly exists in the year of 2004 followed by 2007 in the eleven-year period and the pre-recession period. In the post-recession period, it was found in the year 2011.

Table 4: The Results of Descriptive Statistics for DOW JONES Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	TURN	REST	TURN	REST	TURN	REST
Mean	0.059	0.027	0.095	0.033	0.049	0.071
Median	0.020	0.071	0.043	0.068	0.008	0.092
Kurtosis	7.429	11.105	1.839	1.857	1.692	4.103
Skewness	0.781	0.078	0.165	0.133	0.004	0.517
Minimum	7.990	8.103	-2.592	3.589	2.649	5.613
Maximum	4.516	10.376	3.129	3.550	4.122	3.890
Count	528	2240	236	1003	216	916

(Source: Author's calculation)

Table 5: The Results of Mann-Whitney U Test for DOW JONES Index Daily Returns

	2003-2013	Pre-Recession	Post Recession
Mann-Whitney U	588900	115200	95800
Wilcoxon W	3099000	618700	119200
Z	-0.148	-0.634	-0.725
Asymp. Sig.	0.883	0.526	0.469

(Source: Author's calculation)

Table 6: The Results of Descriptive Statistics for SHANGHAI Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	TURN	REST	TURN	REST	TURN	REST
Mean	0.253	0.039	0.197	0.105	0.288	0.002
Median	0.220	0.056	0.261	0.081	0.220	0.030
Kurtosis	3.019	3.022	3.880	3.560	3.018	1.866
Skewness	0.213	0.237	0.472	0.169	-0.198	0.335
Minimum	8.144	9.526	8.144	9.526	5.466	5.240
Maximum	5.686	7.863	5.530	6.614	4.754	4.175
Count	528	2137	235	952	216	877

(Source: Author's calculation)

Descriptive statistics for the Shanghai Stock Exchange shows that for all three phases, the mean return is higher for turn-of-the-month period than the rest of the period. All data for all periods is positively skewed. Normality study by applying K-S test shows that data is not normally distributed.

Table 7: The Results of Mann-Whitney U Test for SHANGHAI Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	515500	105500	82180
Wilcoxon W	2800000	559200	467200
Z	-3.075	-1.345	-3.016
Asymp. Sig.	0.002	0.179	0.003

(Source: Author's calculation)

The Mann-Whitney U Test results show that the null hypothesis is rejected for the eleven-year period of 2003 to 2013 and the post recession period; however, for the pre-recession period, null hypothesis fails to be rejected. Thus, the turn-of-the-month effect exists for the Shanghai Stock Exchange for the whole period and for the post-recession period while it does not exist for the pre-recession period. When the anomaly was analysed for the Shanghai Stock Exchange based on risk and return, it existed for the months of March and April for the eleven-year period of 2003 to 2013 while for the pre-recession and post-recession periods, it existed for the months of April and November respectively. When it was examined on the basis of a year, it existed for the years 2004 and 2007 for the eleven-year time period and the pre-recession period respectively while for the post-recession period, it was found in the year 2011.

Section B: Turn-of-the-Year Effect:

Table 8: The Results of Descriptive Statistics for CNX Nifty 500 Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	TURN [4]	REST [5]	TURN	REST	TURN	REST
Mean	-0.072	-0.081	-0.089	-0.064	-0.108	-0.063
Median	0.017	0.025	-0.063	0.071	-0.082	-0.021
Kurtosis	7.816	5.977	-0.076	7.503	1.275	0.722
Skewness	-1.480	-0.851	-0.089	-1.138	-0.144	-0.330
Minimum	-7.396	-10.841	-2.965	-10.841	-2.403	-3.857
Maximum	2.368	6.752	2.303	6.050	2.101	2.720
Count	144	2599	62	1176	54	946

(Source: Author's calculation)

Descriptive statistics for the S&P CNX Nifty Index shows all negative means for all three time periods and all data for all periods is negatively skewed. From the K-S test, it was found that data is not normally distributed.

[4] Turn-of-the-year effect period

[5] Rest of the period i.e. other than turn-of-the-year effect period

Table 9: The Results of Mann-Whitney U Test for CNX Nifty 500 Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	186900	34860	24460
Wilcoxon W	197400	36810	25950
Z	-0.022	-0.583	-0.523
Asymp. Sig.	0.982	0.56	0.601

(Source: Author's calculation)

The Mann-Whitney U Test indicates that for all three time phases, null hypothesis fails to be rejected. This shows that this anomaly did not exist in the CNX NIFTY 500 index during the period of study. When the said anomaly was further examined based on return and risk, the result shows that mostly this anomaly exists in the year 2004 for all three time phases[6]. Here, return and volume of the last two weeks of December and first week of January are comparatively higher than the rest of the period of that year. Therefore, it can be concluded that this anomaly did exist in Nifty 500 only for Year 2004.

Table 10: The Results of Descriptive Statistics for DOW JONES Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	TURN	REST	TURN	REST	TURN	REST
Mean	0.099	0.031	0.149	0.040	0.162	0.047
Median	0.085	0.061	0.038	0.065	0.111	0.066
Kurtosis	2.201	10.555	3.389	1.792	2.584	3.805
Skewness	0.364	-0.068	1.162	-0.148	0.884	-0.432
Minimum	-2.558	-8.103	-1.623	-3.589	-1.149	-5.613
Maximum	3.129	10.376	3.129	3.550	2.325	4.122
Count	127	2642	58	1183	51	956

(Source: Author's calculation)

Descriptive statistics for the Dow Jones Index shows a higher mean return for Turn-of-the-Year Effect for all three phases and data is not normally distributed for this index.

[6] Entire period, pre and post recession

Table 11: The Results of the Mann-Whitney U Test for DOW JONES Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	165500	33370	23160
Wilcoxon W	3657000	733700	480600
Z	-0.259	-0.353	-0.601
Asymp. Sig.	0.795	0.724	0.548

(Source: Author's calculation)

Here, at 5% significance level, null hypothesis fails to be rejected for all three phases. Therefore, statistically it says turn-of-the-year effect did not exist for this index. Based on risk-return study, it shows it exists only in the years 2003 and 2013 for the eleven-year time period. Here, for 2003 and 2013, the return and volume of the last two weeks of December and first week of January are comparatively higher than for the rest of the period of that year. For the pre-recession and post-recession periods, it existed in 2003 and 2013 respectively. Thus, like turn-of-the-month effect, this anomaly does not exist in the Dow Jones Index.

Table 12: The Results of Descriptive Statistics for SHANGHAI Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	TURN	REST	TURN	REST	TURN	REST
Mean	0.215	0.075	0.375	0.105	0.066	0.060
Median	0.226	0.082	0.174	0.102	0.276	0.050
Kurtosis	0.413	3.065	-0.012	3.799	-0.075	1.849
Skewness	0.055	-0.242	0.455	-0.271	-0.070	-0.151
Minimum	-4.435	-9.526	-2.853	-9.526	-2.728	-5.240
Maximum	3.579	7.863	3.579	6.614	2.836	4.175
Count	131	2493	57	1133	48	880

(Source: Author's calculation)

For the Shanghai Stock Exchange for all three phases, higher mean return is found for turn-of-the-year period compared to the rest of the period and data is positively and negatively skewed. The K-S test shows data is not normally distributed.

Table 13: The Results of Mann-Whitney U Test for SHANGHAI Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	156200	29840	20470
Wilcoxon W	3265000	672300	408100
Z	-0.842	-0.966	-0.358
Asymp. Sig.	0.4	0.334	0.72

(Source: Author's calculation)

The p value indicates that null hypothesis fails to be rejected for all three phases. Therefore, statistically it can be said that Turn-of-the-Year Effect did not exist in the Shanghai Stock Exchange. On the basis of return and risk, this anomaly existed in the years 2003, 2004 and 2011 as return and volume of the last two weeks of December and first week of January were comparatively higher than for the rest of the period. For the pre-recession period, it existed in 2003 and 2004; for the post-recession period, it existed in 2010. Therefore, the anomaly did not exist for the Shanghai Stock Exchange.

Section C: Weekend Effect

Table 14: The Results of Descriptive Statistics for CNX NIFTY 500 Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	MONDAY	FRIDAY	MONDAY	FRIDAY	MONDAY	FRIDAY
Mean	0.146	0.016	0.117	0.039	0.065	0.073
Median	0.080	0.068	0.162	0.124	0.056	0.074
Kurtosis	8.941	8.156	11.896	9.130	5.425	0.211
Skewness	1.863	1.055	2.345	-1.252	1.183	0.148
Minimum	10.841	9.487	10.841	-9.344	6.031	3.290
Maximum	3.638	6.752	3.132	6.050	2.521	2.266
Count	546	541	245	244	222	222

(Source: Author's calculation)

Descriptive statistics for the weekend effect for CNX NIFTY 500 shows that data is positively and negatively skewed. Weekend Effect is found only for the post-recession period. Normality test shows that data is not normally distributed.

Table 15: The Results of Mann-Whitney U Test for CNX NIFTY 500 Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	144100	29040	23910
Wilcoxon W	293400	59180	48660
Z	-0.699	-0.541	-0.54
Asymp. Sig.	0.485	0.589	0.589

(Source: Author's calculation)

Here, for all three phases, null hypothesis fails to be rejected. Thus, the weekend effect does not exist in the CNX Nifty 500. When it was analysed on the basis of return–risk, the mean return on Monday during the period 2003 to 2013 was negative and the mean return on Friday was also negative but if the sign is ignored, it indicated that the return on Monday is far higher than the return on Friday which is totally opposite to the belief about the weekend effect (that the return on Monday is lower than the previous Friday). During the pre-recession period, the return on Monday is negative; so we can say that during the pre-recession period, the weekend effect did exist and during the post-recession period, the return on Monday and Friday is very close.

Table 16: The Results of Descriptive Statistics for DOWJONES Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	Monday	Friday	Monday	Friday	Monday	Friday
Mean	0.017	0.007	0.066	0.000	0.078	0.038
Median	0.000	0.071	0.052	0.046	0.012	0.125
Kurtosis	15.192	4.047	3.337	1.446	6.894	1.338
Skewness	0.258	0.190	-0.142	-0.212	-0.595	-0.605
Minimum	-7.990	-3.752	-3.589	-2.872	-5.613	-3.148
Maximum	10.376	6.337	3.550	2.755	3.769	2.275
Count	521	552	231	250	214	223

(Source: Author's calculation)

The Dow Jones' descriptive statistics shows data is positively and negatively skewed for all three phases. The return on Monday is higher than that of Friday. The K-S test shows that data is not normally distributed.

Table 17: The Results of Mann-Whitney U Test for DOWJONES Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	142900	27650	23400
Wilcoxon W	278900	59020	46410
Z	-0.174	-0.804	-0.348
Asymp. Sig.	0.862	0.421	0.728

(Source: Author's calculation)

Like the CNX Nifty 500 Index, the Dow Jones Index result shows that for all three phases, null hypothesis fails to be rejected. In short, the weekend effect did not exist in the Dow Jones Index during the period of study. When it was analysed on the basis of return-risk, the mean return on Monday is positive and more than the return on Friday during period 2003 to 2013, the pre-recession and post-recession periods. Thus, in this index, the weekend effect does not exist.

Descriptive results for the Shanghai Stock Exchange shows the weekend effect is found only in the post-recession period. Further, like the earlier study, data is not normally distributed. Table 19 below reveals that for the Shanghai Stock Exchange, for all three phases, null hypothesis fails to be rejected and so concludes that the weekend effect does not exist in the Shanghai stock market during the period of study. Examination of the weekend effect based on risk-return criteria for the whole eleven-year period and pre-recession period concludes that the return on Monday is higher than that on Friday. However, the weekend effect anomaly did exist during the post-recession period as the return on Monday is comparatively lower than that of Friday.

Table 18: The Results of Descriptive Statistics for SHANGHAI Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	MONDAY	FRIDAY	MONDAY	FRIDAY	MONDAY	FRIDAY
Mean	0.188	0.107	0.311	0.069	0.071	0.192
Median	0.212	0.061	0.212	0.026	0.171	0.123
Kurtosis	2.040	1.720	2.878	1.148	1.980	2.299
Skewness	-0.421	0.117	-0.274	0.375	-0.537	-0.045
Minimum	-8.144	-4.470	-8.144	-4.329	-5.466	-4.470
Maximum	5.162	5.661	5.111	4.920	4.754	4.175
Count	526	533	236	239	214	220

(Source: Author's calculation)

Table 19: The Results of Mann-Whitney U Test for SHANGHAI Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	132900	25430	22860
Wilcoxon W	275300	54110	45870
Z	-1.453	-1.856	-0.519
Asymp. Sig.	0.146	0.063	0.604

(Source: Author's calculation)

Section D: Friday the 13th Effect

Table 20: The Results of Descriptive Statistics for CNX NIFTY 500 Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	Friday the 13th	Ordinary Friday	Friday the 13th	Ordinary Friday	Friday the 13th	Ordinary Friday
Mean	0.338	0.030	0.337	0.029	0.135	0.082
Median	0.234	0.055	0.077	0.130	0.315	0.129
Kurtosis	0.266	7.999	-0.232	8.879	-1.235	0.195
Skewness	0.581	1.039	1.245	1.232	-0.325	0.129
Minimum	0.849	9.487	-0.225	9.344	-0.849	3.290
Maximum	2.107	6.752	1.464	6.050	0.953	2.266
Count	19	523	8	236	8	215

(Source: Author's calculation)

Descriptive statistics for Friday the 13th Effect shows contrary to belief that a higher mean return is found on Friday the 13th than the rest of the Fridays in a year. The table shows that even if the number of Friday the 13th (19) is significantly less than ordinary Fridays (523), the return of Friday the 13th is marginally higher than the return of an ordinary Friday. Normality test says data is not normally distributed.

Table 21: The Results of Mann-Whitney U Test for CNX NIFTY 500 Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	4185	855	727
Wilcoxon W	140700	28820	23730
Z	-1.156	-0.453	-0.723
Asymp. Sig.	0.248	0.65	0.47

(Source: Author's calculation)

Results from the Mann-Whitney U test shows that for all three phases, null hypothesis fails to get rejected i.e. the Friday the 13th Effect did not exist in the S&P CNX Nifty 500 Index during the period of study. Assessment of the above anomaly based on risk-return characteristics shows that for all three phases, the mean return of Friday the 13th Effect is higher than that of an ordinary Friday. Thus, both the results conclude that the Friday the 13th effect does not exist for S&P CNX Nifty.

Table 22: The Results of Descriptive Statistics for DOWJONES Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	Friday the 13th	Ordinary Friday	Friday the 13th	Ordinary Friday	Friday the 13th	Ordinary Friday
Mean	0.026	0.006	0.121	0.004	0.049	0.038
Median	0.062	0.071	0.048	0.046	0.053	0.126
Kurtosis	-0.370	4.050	1.244	1.403	0.228	1.382
Skewness	0.395	0.188	-0.468	0.220	0.624	-0.636
Minimum	-1.058	-3.752	0.882	2.872	1.058	-3.148
Maximum	1.604	6.337	0.479	2.755	1.604	2.275
Count	19	533	8	242	8	215

(Source: Author's calculation)

Like the S&P CNX Nifty 500, results of descriptive statistics for Dow Jones shows the Friday the 13th return is higher than that of an ordinary Friday. Data is negatively and positively skewed for all periods and they are not normal.

Table 23: The Results of Mann-Whitney U Test for DOWJONES Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	4995	873	811
Wilcoxon W	5185	909	847
Z	-0.1	-0.472	-0.273
Asymp. Sig.	0.92	0.637	0.784

(Source: Author's calculation)

In a similar way, null hypothesis fails to be rejected which means the effect did not exist for the Dow Jones index for the given period. Based on risk-return profile for all three phases, the mean return on Friday the 13th is much higher than that of an ordinary Friday.

Table 24: The Results of Descriptive Statistics for SHANGHAI Index Daily Returns

	2003-2013		Pre-Recession		Post-Recession	
	13th Friday	Ordinary Friday	13th Friday	Ordinary Friday	13th Friday	Ordinary Friday
Mean	0.040	0.109	0.016	0.071	0.197	0.191
Median	0.266	0.058	0.051	0.026	0.341	0.106
Kurtosis	3.192	1.703	2.231	1.036	0.745	2.275
Skewness	0.178	0.123	0.117	0.367	1.121	0.033
Minimum	3.160	4.470	0.547	4.329	1.438	4.470
Maximum	3.134	5.661	0.545	4.920	1.158	4.175
Count	19	514	8	231	8	212

(Source: Author's calculation)

Descriptive statistics in the Shanghai Index shows most of the data is positively skewed and for the whole eleven-year period and the pre-recession period, the return on Friday the 13th is far less than that of an ordinary Friday while only in the case of the post-recession period, return on Friday the 13th is higher than that of an ordinary Friday. Normality result says that data is not normally distributed as p value is less than 0.05.

Table 25: The Results of Mann-Whitney U Test for SHANGHAI Index Daily Returns

	2003-2013	Pre-Recession	Post-Recession
Mann-Whitney U	4869	919	784
Wilcoxon W	5059	27720	23360
Z	-0.021	-0.026	-0.362
Asymp. Sig.	0.983	0.979	0.717

(Source: Author's calculation)

Mann Whitney U Test shows that for all three phases, null hypothesis fails to be rejected. In short, the Friday the 13th Effect did not exist in the Shanghai Index Return during the given study period. The risk-return profile shows that for all three time frames, return on Friday the 13th is far higher than the return on an ordinary Friday. Thus, from statistical tests as well as from risk-return analysis, it can be concluded that in the Shanghai Stock Exchange, the Friday the 13th anomaly does not exist.

VI. Findings and Conclusion

The present study analyzed the presence of anomalies in the Indian as well as the developed market of the world for a period of 2003 to 2013, the pre-recession and post-recession periods. The study has used daily prices of three major indices namely S&P CNX Nifty 500, Dow Jones and Shanghai Stock Exchange. The study confirms that not a single calendar anomaly considered for the study exists for the Dow Jones index. Turn-of-the-month effect did exist in the Chinese stock market but not in all periods of study. For the Nifty 500, turn-of-the-month effect did exist during all the periods of study whereas other anomalies did not exist. Thus, the Dow Jones index, already the most developed one, is the most efficient. The Shanghai market has recently turned into a developed one from the emerging markets and shows moderate results with respect to seasonality patterns while for the Indian market, it can be pointed out that being on the emerging front, it shows a very satisfactory sign of market efficiency.

Table 26: Summary Table of Anomalies

Market	Turn of the Month	Turn of the Year	Weekend Effect	Friday the 13th
S&P CNX Nifty	√	x	x	x
Dow Jones	X	x	x	x
Shanghai	√	x	x	x

(Source: Based on Author's calculation)

VII. Limitation of the Research and Future Work

Like most of the previous studies, this study too has considered only cyclic factors rather than fundamental factors, which affects the stock market performance. The present study has studied only the above-mentioned four anomalies; however, there is ample evidence of the January effect in developed markets. For instance, in USA, December is the tax month; therefore, one of the explanations put forward for the existence of seasonality in stock returns is the existence of tax loss selling hypothesis. Thus, the financial houses sell shares, whose values have fallen, to book losses to reduce their taxes. Because of this selling, stock prices decline. However, as soon as December ends, people start buying and as a result, stock prices bounce back and this results in a higher return in the beginning of the year known as the January effect. On a similar track, for the Indian market, it would be good to study stock market abnormality during 1. the February-March period and 2. the Diwali period and so on. It is also interesting to study intraday variations in the market; this can even be combined with anomalies like the weekend effect and Friday the 13th effect. Further, an attempt can be made to study the size effect in the Indian as well as other emerging markets as such anomalies are found in markets like US, Japan and others. For better examination, anomalies should be studied on minute-to-minute and hourly basis.

VIII. Managerial Implications

Studies of such systematic repeated patterns observed in the market help investors and portfolio managers to execute their investment strategy as well as regulators to make the market immune to such abnormalities. It can help index fund managers to take appropriate timely decisions in terms of trading and thus reduce the tracking error.

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APPENDIX

Table A: Turn Of The Month Effect

YES = ANOMALY EXISTS*NO = DOES NOT EXISTS											
CNX NIFTY 5OO											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
JAN	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO	YES
FEB	YES	NO	NO	NO	YES	YES	NO	NO	NO	YES	NO
MAR	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO
APR	NO	YES	NO	YES	NO	NO	YES	YES	YES	NO	NO
MAY	YES	YES	NO	YES	NO	NO	YES	NO	NO	NO	YES
JUN	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
JUL	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
AUG	NO	YES	YES	NO	NO	NO	YES	YES	YES	YES	NO
SEP	NO	NO	YES	YES	YES	YES	NO	YES	YES	NO	NO
OCT	YES	YES	NO	NO	YES	NO	YES	YES	NO	YES	YES
NOV	YES	NO	NO	NO	NO	NO	NO	YES	YES	YES	yes
DEC	YES	NO	NO	YES	YES	NO	YES	NO	YES	YES	no

DOWJONES COMPOSITE STOCK EXCHANGE											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
JAN	NO	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO
FEB	NO	NO	YES	NO	YES	NO	YES	YES	NO	NO	NO
MAR	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO
APR	NO	YES	YES	NO	YES	NO	YES	YES	YES	NO	NO
MAY	NO	YES	YES	NO	YES	NO	YES	NO	YES	YES	NO
JUN	YES	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO
JUL	YES	NO	NO	YES	YES	NO	NO	NO	YES	NO	NO
AUG	NO	YES	YES	NO	NO	NO	YES	NO	NO	NO	NO
SEP	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
OCT	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO
NOV	YES	YES	NO	NO	NO	YES	NO	YES	YES	YES	
DEC	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	

SHANGHAI COMPOSITE STOCK EXCHANGE											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
JAN	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO	NO
FEB	NO	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES
MAR	YES	NO	YES	NO	NO	YES	NO	YES	YES	YES	NO
APR	YES	YES	NO	YES	YES	NO	YES	YES	NO	NO	NO
MAY	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	NO
JUN	YES	NO	NO	NO	NO	YES	NO	NO	YES	NO	YES
JUL	YES	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES
AUG	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO
SEP	NO	NO	YES	NO	YES	NO	NO	YES	NO	NO	YES
OCT	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	YES
NOV	YES	YES	NO	NO	NO	NO	NO	YES	NO	NO	
DEC	NO	YES	NO	YES	NO	NO	YES	NO	NO	NO	

Table B: Turn of The Year

	CNX Nifty500	DJIA	Shanghai
2003	NO	YES	YES
2004	YES	NO	YES
2005	NO	NO	NO
2006	NO	NO	NO
2007	NO	NO	NO
2008	NO	NO	NO
2009	NO	NO	NO
2010	NO	NO	YES
2011	NO	NO	NO
2012	NO	NO	NO
2013	NO	YES	NO

Table C:- 13TH Friday

CNX NIFTY 500		DOW JONES		SHANGHAI	
	JAN 2003 TO DEC 2013		JAN 2003 TO DEC 2013		JAN 2003 TO DEC 2013
Friday 13th		**Friday 13th**		**Friday 13th**	
Mean	0.392	Mean	0.024	Mean	0.111
Sd	0.789	Sd	0.783	Sd	1.363
Observations	18	Observations	18	Observations	18
Other Friday		**Other Friday**		**Other Friday**	
Mean	-0.036	Mean	0.000	Mean	-0.036
Sd	1.491	Sd	1.003	Sd	1.491
Observation	516	Observation	525	Observation	506

Table D: Weekend Effect

CNX NIFTY 500					
2003-2013		**Pre-Recession**		**Post-Recession**	
Mean	S.D.	MEAN	S.D.	MEAN	S.D.
-0.146	1.444	-0.117	1.491	-0.065	0.999
DOW JONES					
2003-2013		**Pre-Recession**		**Post-Recession**	
MEAN	S.D.	MEAN	SD	MEAN	SD
0.017	1.284	0.066	0.808	0.078	0.951
SHANGHAI					
2003-2013		**Pre-Recession**		**Post-Recession**	
MEAN	SD	MEAN	SD	MEAN	SD
0.188	1.695	0.311	1.615	0.054	1.446

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A Practical Application of Monte Carlo Simulation for Options Pricing

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Abstract

In this paper, an attempt has been made to describe a practical application of the Brownian-walk Monte Carlo simulation in option pricing. This simple Monte Carlo routine is useful in option pricing and forecasting productivity, installation rates, labour trends, etc. While Monte Carlo simulation is very useful and relevant to calculate the "P50 value" for contingency planning, the true strength of Monte Carlo simulation is in data extrapolation or forecasting. This paper throws light on some basic elements of Monte Carlo simulation approach for its application. The model can assist corporates to develop unique and accurate near-term market insights and trends in order to compete in the marketplace on analytics. Hence, in this paper, in particular, an attempt has been made to first study an options pricing (OP) model that produces an analytical solution, and then analyze two numerical options pricing models in terms of accuracy.

Key Words: *Monte Carlo simulation, options pricing, options pricing models, future development, Convergence test*

I - Introduction

1.1 Monte Carlo Simulation

Monte Carlo simulation (also known as the Monte Carlo Method) lets us see all the possible outcomes of our decisions and assess the impact of risk, allowing for better decision making under uncertainty. Monte Carlo simulation is a computerized mathematical technique that allows people to account for risk in quantitative analysis and decision making. Monte Carlo simulation furnishes the decision-maker with a range of possible outcomes and the probabilities that will occur for any choice of action. It shows the extreme possibilities—the outcomes of going for broke and for the most conservative decision—along with all possible consequences for middle-of-the-road decisions. The technique was first used by scientists working on the atom bomb; it was named after Monte Carlo, the Monaco resort town renowned for its casinos. Since its introduction in World War II, Monte Carlo simulation has been used to model a variety of physical and conceptual systems. Probability is a way to bracket the volatility of short-term forecasts (seemingly random data). Monte Carlo simulation is a specialized probability application that is no more than an equation where the variables have been replaced with a random number generator. In other words, Monte Carlo is another computer approximation routine or numerical method that replaces geometry, calculus, etc. A Monte Carlo simulation is a method for iteratively evaluating a deterministic model using sets of random numbers as inputs. This method is often used when the model is complex, non-linear, or involves more than just a couple uncertain parameters.

1.2 Monte Carlo Simulation Function - Monte Carlo simulation performs risk analysis by building models of possible results by substituting a range of values—a probability distribution—for any factor that has inherent uncertainty. It then calculates results over and over, each time using a different set of random values from the probability functions. Depending upon the number of uncertainties and the ranges specified for them, a Monte Carlo simulation could involve thousands or tens of thousands of recalculations before it is complete. Monte Carlo simulation produces distributions of possible outcome values. By using probability distributions, variables can have different probabilities of different outcomes occurring. Probability distributions are a much more realistic way of describing uncertainty in variables of a risk analysis. Common probability distributions include:

a. **Normal –**The user simply defines the mean or expected value and a standard deviation to describe the variation about the mean. Values in the middle near the mean are most likely to occur. It is symmetric and describes many natural phenomena such as people's heights. Examples of variables described by normal distributions include inflation rates and energy prices.

b. **Lognormal –** Values are positively skewed, not symmetric like a normal distribution. It is used to represent values that don't go below zero but have unlimited positive potential. Examples of variables described by lognormal distributions include real estate property values, stock prices, and oil reserves.

c. **Uniform –** All values have an equal chance of occurring, and the user simply defines the minimum and maximum. Examples of variables that could be uniformly distributed include

manufacturing costs or future sales revenues for a new product.

d. **Triangular –** The user defines the minimum, most likely, and maximum values. Values around the most likely are more likely to occur. Variables that could be described by a triangular distribution include past sales history per unit of time and inventory levels.

e. **PERT–** The user defines the minimum, most likely, and maximum values, just like the triangular distribution. Values around the most likely are more likely to occur. However, values between the most likely and extremes are more likely to occur than the triangular; that is, the extremes are not as emphasized. An example of the use of a PERT distribution is to describe the duration of a task in a project management model.

f. **Discrete –** The user defines specific values that may occur and the likelihood of each. An example might be the results of a lawsuit: 20% chance of positive verdict, 30% change of negative verdict, 40% chance of settlement, and 10% chance of mistrial.

During a Monte Carlo simulation, values are sampled at random from the input probability distributions. Each set of samples is called iteration, and the resulting outcome from that sample is recorded. Monte Carlo simulation does this hundreds or thousands of times, and the result is a probability distribution of possible outcomes. In this way, Monte Carlo simulation provides a much more comprehensive view of what may happen. It tells us not only what could happen, but how likely it is to happen. Monte Carlo simulation provides a number of advantages over deterministic, or "single-point estimate" analysis:

- **Probabilistic Results.** Results show not only what could happen, but how likely each outcome is.
- **Graphical Results.** Because of the data a Monte Carlo simulation generates, it's easy to create graphs of different outcomes and their chances of occurrence. This is important for communicating findings to other stakeholders.
- **Sensitivity Analysis.** With just a few cases, deterministic analysis makes it difficult to see which variables impact the outcome the most. In Monte Carlo simulation, it's easy to see which inputs had the biggest effect on bottom-line results.
- **Scenario Analysis.** In deterministic models, it's very difficult to model different combinations of values for different inputs to see the effects of truly different scenarios. Using Monte Carlo simulation, analysts can see exactly which inputs had which values together when certain outcomes occurred. This is invaluable for pursuing further analysis.
- **Correlation of Inputs.** In Monte Carlo simulation, it's possible to model interdependent relationships between input variables. It's important for accuracy to represent how, in reality, when some factors go up, others go up or down accordingly.

II - LITERATURE REVIEW

In the world of finance, mathematical models can be used as approximations to value complex real market derivatives. The modelling of financial options gained popularity when *Fisher Black and Myron Scholes, 1973* introduced the Black and Scholes (BS) model, which later became the foundation of the literature on options pricing where various studies are made on extending the model and developing alternative approaches to the valuation of options. A recent literature by *Broadie and Detemple, 2004* focuses on

the trends and development of financial options modelling with emphasis on the development of models that depart from the assumptions of the classic BS model, since empirical evidence suggests that the BS prices tend to differ from the market prices of options due to the assumption that sharp changes in stock prices are negligible (*MacBeth and Merville, 1979; Vasile and Armeanu, 2009*). Several modifications of the model have been made to reduce discrepancies between these assumptions and the real world. Examples are the extension of the BS model with illiquidity (*Cetin et al., 2004*), the inclusion of transaction costs through adjusting the volatility (*Leland, 1985*), and also extensions to include jump-diffusion models and stochastic volatility models. Since financial markets undergo stochastic fluctuations, numerical methods such as Monte Carlo (MC) methods become useful tools to price options. Alternatively, binomial methods are discrete numerical approaches that can value options at any point in time until expiration. The literature has also expanded beyond the basics of these numerical methods, such as *Giles (2007) his* work on improving efficiency by introducing a multilevel approach to the MC method, and most recently, *Kyoung and Hong (2011)* presented an improved binomial method that uses cell averages of payoffs around each node in addition to the standard method. Essentially in this literature, the goal is to improve both the accuracy and efficiency in approximating values of options pricing (OP) models. For the convenience of further discussion, the notations used throughout the paper are summarized below:

S price of underlying asset
K strike or exercise price
C value of the European call option
r risk-free interest rate
t time in years
T maturity date
μ volatility of returns of the underlying asset
σ drift rate
ρ a probability measure

Common abbreviations used are:

GBM Geometric Brownian motion
OP Options pricing
BS Black-Scholes
MC Monte Carlo
PDE partial differential equation
SDE stochastic differential equation

III-RESEARCH DESIGN

3.1-Options - An *option* is a derivative security that grants the buyer of the option the right, but not the obligation, to buy or sell an underlying asset, *S* (such as a stock, a bond or an index portfolio) on or before an expiration date, *T,* for an *exercise or strike price*, *K*. A *call option* is the right to buy, while a *put option* gives the right to sell. Let's take an example of a call option. Say a company holds 100 shares of a stock priced at $20 each. An investor believing the price will go up in a month's time enters into a contract with the company to buy the stock at, say $19 after one month. All the investor needed to pay is the premium of (stock - strike) = 20-19 = $1 per share. If the price did go up on the exercise date, the investor will exercise the option and gain the profit of buying cheap and selling high in the market. If the price goes down, the contract will expire and becomes worthless so he will only lose the premium price he paid to enter into the contract in the first place.

3.2-Option Styles

Exercising the options can be of several styles and some common ones are listed below. The first two are plain vanilla options. The third option is a non-vanilla

option and the rest are exotic options.

- European options: Options that can only be exercised on the expiration date.
- American options: Options that can be exercised on or before the expiration date.
- Bermudan options: Options that can be exercised at any fixed period of time.
- Asian options: Options whose payoff depends on the average underlying asset over a certain period of time.
- Barrier options: Options either come into existence after a barrier is breached (up-and-in or down-and-in) or drop out of existence as a result of breaching the barrier (up-and-out or down-and-out).
- Look back options: Options that depend on the minimum (for call) or maximum (for put) value of the stock price over a certain period of time.
- Digital options: Options whose payoff is fixed after the underlying asset exceeds the exercise price.

3.2 (i) - The Put-Call Parity: The no-arbitrage assumption, which places a bound on the options, is important for this principle so that the same payoff is maintained for both the call and put options. The idea is that if a portfolio containing a call option has the same payoff at expiration as a portfolio containing a put option, then they must have the same value at any given time before the expiration. This is known as the put-call parity. Let C and P be the value of the call and put options at any time t respectively, and let T be the time at expiration, K the strike price and S the stock price at time t. Then, the payoffs at expiration are:

C = max(S - K; 0); and

P = max(K - S; 0):

The payoff at expiry is

$$C - P = \max(S - K; 0) - \max(K - S; 0)$$

$$\begin{cases} (S - K) - 0 \text{ if } S \geq K \\ (0 - (K - S) \text{ if } S \leq K \\ \quad = S - K \end{cases}$$

Finally, discounting the value of the portfolio, the put-call parity is defined as:

$$C - P = S - K.\, e^{-r\,(T-t);}$$

where *r* is the discounted risk-free rate. The basic idea of the put-call parity can be applied to the Black-Scholes model that values call and put options independently, which we will derive later.

3.2 (ii) Risk-Neutral Valuation - A risk-neutral measure is a measure applied to arbitrage-free options valuation where the growth rate μ is replaced by the risk-free rate *r*. For example, for a continuous-time measure, we define a stochastic process, that is, a geometric Brownian motion (GBM) with the following stochastic differential equation (SDE):

$$dS = \mu S dt + \sigma S dW; \quad (2.1)$$

where σ is the volatility and W is a Brownian motion. To make the equation risk-neutral, dW is redefined with a new measure so that we get:

$$dW = dW' + \frac{\mu - r}{\sigma}.dt$$

This equation is a result of applying the *Girsanov* theorem, which calculates the likelihood ratio of the original measure and the risk-neutral measure (refer to *Seydel (2005)*). Hence, Equation (2.1) yields:

$$\begin{aligned} dS &= \mu S dt + \sigma S(dW' - \frac{\mu - r}{\sigma}.dt) \\ &= \mu S dt - (\mu - r) S dt + \sigma S dW'; \\ &= r S dt + \sigma S dW' \end{aligned}$$

3.2 (iii) The Black-Scholes Model - The BS model is a classic example of an options pricing model that was developed by *Fisher Black and Myron Scholes* in their seminal work in 1973. Their approach to options pricing problems is to solve a partial differential equation (PDE) with a final condition at t = T to obtain a unique solution. The fundamental idea is to find a closed-form solution to the Black-Scholes PDE by first using the Ito's calculus from Ito's lemma to obtain the BS equation, and then transform it to the heat equation to get the unique solution, and finally transform the solution back to find the corresponding solution of the Black-Scholes PDE.

The Black-Scholes PDE is an important part of the BS model. This PDE describes the option over time and is used to obtain the BS formula for pricing options. The underlying asset is assumed to follow the GBM with an SDE as defined in Equation (2.1). Itô's lemma states that for the SDE defined and any twice differential function, *C*, of *S* and *t*, we have:

$$dC = \left(\mu S\frac{\partial C}{\partial S} + \frac{\partial C}{\partial t} + \frac{1}{2}\sigma^2 S^2\frac{\partial^2 C}{\partial S^2}\right)dt + \sigma S\frac{\partial C}{\partial S}dW \quad (2.2)$$

The Wiener process dW is random so we want to eliminate this variable in order to obtain the PDE. This can be achieved by constructing a portfolio ∏ consisting of a long call for an option and short Δ shares of the underlying asset. A long call is the purchase of a call option while a short call is the selling of the underlying asset. Therefore, the portfolio is defined as:

$$\prod = C - \Delta S$$

A small change in the portfolio for a time period of [t; t + Δt] results in:

$$d\prod = dC - \Delta dS$$

Applying Equations (2.1) and (2.2) into the equation yields:

$$d\Pi = \left(\mu S\frac{\partial C}{\partial S} + \frac{\partial C}{\partial t} + \frac{1}{2}\sigma^2 S^2\frac{\partial^2 C}{\partial S^2}\right)dt + rS\frac{\partial C}{\partial S}dW - \Delta S dt + \sigma S dW \quad (2.3)$$

To eliminate any risk of price movement, we apply delta hedging, which simply means that $\Delta = \frac{\partial C}{\partial S}$, to Equation (2.3) to get:

$$d\Pi = \left(\frac{\partial C}{\partial t} + \frac{1}{2}\sigma^2 S^2\frac{\partial^2 C}{\partial S^2}\right)dt$$

The assumption of no-arbitrage defines the rate of return of the portfolio as d∏ = r∏dt. Therefore, the Black-Scholes PDE is given by:

$$\frac{\partial C}{\partial t} + \frac{1}{2}\sigma^2 S^2\frac{\partial^2 C}{\partial S^2} + \frac{\partial C}{\partial S}rS - rC = 0$$

3.3 Purpose of Study - The original aim was to develop and evaluate a computational tool for simulating the binomial OP model and the Monte Carlo (MC) simulation for the valuation of European options. However, as the work progressed and as more background materials were gathered, a need to steer the project in a different direction came into light for several reasons as summarized below.

1. Current research interests in the area of financial modelling are prominent in finding ways to improve options pricing models, by introducing alternative mathematical methods to price options or by modifying current models. A project related to evaluating methods to improve options pricing models would make a good contribution to this research area.
2. Developing a computational tool requires a programming language that can call a plotting library or a separate tool for plotting static graphs. This initial set up had already proven to be time-consuming for the author so there is a risk of not completing the project in time if

an attempt is made to build a tool to price options.

3.4 Objectives of the study -

- To understand the different models proposed in options pricing and additional extensions or modifications made to improve the models.
- To implement the algorithms for the binomial OP model and the MC simulation.
- To test and evaluate the accuracies of the binomial and MC simulation relative to the solution obtained from the BS formula.
- To implement the algorithm for the multilevel MC simulation.
- To apply the multilevel MC simulation to the European option.
- To evaluate the efficiency of the multilevel MC simulation for the European options.

3.5 Methodology

This paper is divided into small groups of sub-projects, where for each group, we investigate the behaviour of an options pricing model in terms of how well it approximates a solution or converges towards one. The study begins with background research on options pricing models, which includes the Black Scholes (BS) model, binomial OP model and the MC simulation. The background reading also includes current research in improving these models. The next step is to study the behaviour of binomial options pricing model. This includes implementing the model and providing a test case to test the model. The evaluation is then done by comparing the accuracy of this model relative to the BS model. The MC simulation is then investigated. Similarly, the model is implemented and tested with the same test case for consistency. Again, the evaluation is carried out by showing convergence of this MC value to the BS value. Two discretized methods are then introduced: Euler and Milstein schemes, to which implementation, testing and evaluation are carried out. Finally, an improved MC method in terms of efficiency is investigated. Similarly, the model is implemented. Testing and evaluation includes finding the computational costs and the root mean-square error of the model. As an extension, the Milstein scheme is introduced to this model to further improve the efficiency. The same methodology applies for this multilevel Monte Carlo simulation with the Milstein scheme.

3.6 Limitation of research -

Since the focus of the paper is to investigate the behaviour of existing options pricing models, this research limits only to it and does not focus on developing any model. Time factor has also been a great constraint. Due to time constraint, several problems that have been originally planned were not carried out.

3.7 Managerial implication-

This research aims to evaluate the efficiency and behaviour of the model and hence, can be applied in the real world in a better and improved form. Further, we could take a different direction and look at extensions to the models. For example, we can reduce the assumptions of the models and introduce more complex methods to price the options. Therefore, the models presented in this project are standard models that can be readily applied in the real world. The binomial options pricing model proves to converge faster to the BS model compared to the MC simulation, although it is much less flexible due to the assumption that there are only two possible price movements. The multilevel methods introduced to the MC simulation shows an increased efficiency, albeit not by much, but with promising results. The

application of the Bermudan option would make for an interesting case for future work.

IV - DATA ANALYSIS

Implement the algorithms for the binomial OP model. Test and evaluate the accuracies of the binomial relative to the solution obtained from the BS formula.

4.1 Binomial Options Pricing Model

The binomial OP model is a lattice tree model that approximates a continuous random walk in discrete time with a fixed number of periods. A direct relationship of this model with the BS model may not be immediately evident but in the case of European options, the binomial value converges to the BS value as the number of periods increase. This model shares the same basic assumptions as the BS model and assumes an asset price path that follows a GBM.

4.2 Valuing the Options

In essence, the binomial OP model divides the time line into m equally-spaced intervals, where for each period δt = T/m, the price either goes up by an up-factor u or down by a down-factor d. Thus, if the current stock price is S, the stock price at the next period is either Su or Sd. For the next period, Su goes up to Suu or down to Sud and similarly, Sd goes to Sdu or Sdd. Notice that the stock price recombines at this stage since Sdu = Sud as per Figure I; therefore, this reduces the number of possible prices so that after m periods, there are only m +1 possible prices. We next define values for the parameters u and d. The Cox, Ross and Rubenstein (1979) (CRR)[10] method assumes that u and d are determined by the volatility σ, such that:

$$u = e^{\sigma\sqrt{\delta t}}, \text{ and } \quad d = \frac{1}{u} = e^{-\sigma\sqrt{\delta t}}$$

Another important assumption is the risk-neutrality measure. Under this assumption, an investor's risk preferences are not taken into account so therefore, we assume that the return on the investment is a risk-free interest rate r. The steps involved in finding the option value are quite straight forward. We shall define the steps for finding a call option C. For a one-period binomial tree, the option will be Cu if the stock price goes to Su and Cd if the stock price goes to Sd.

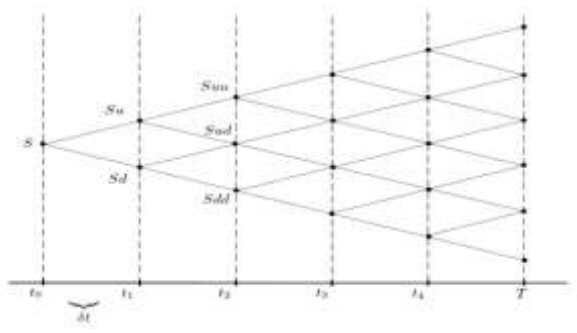


Figure I - A binomial tree with m = 5 of possible asset prices.

Hence, from the intrinsic value formula, we can define Cu and Cd as:

$$= \max(0; S_u - K);$$

$$C_d = (\max\ 0; S_d - K);$$

Suppose we build a portfolio that stores shares of a stock for investment. Let Δ be the number of shares and B be the price invested in the bonds of the stock. The portfolio payoff is thus ΔS + B. We can equate this to the option payoff, in this case the call option C, so that the up and down options become:

$$\Delta Su + e^{r\delta t}B = C_u, \text{ and} \qquad (4.1)$$

$$\Delta Sd + e^{r\delta t}B = C_d. \qquad (4.2)$$

Solving Equations (4.1) and (4.2), we find that:

$$\Delta = \frac{C_u - C_d}{(u-d)S} \text{ and } B = \frac{uC_d - dC_u}{(u-d)e^{r\delta t}}$$

Therefore, the call option is

$$C = \Delta S + B = \left[\frac{e^{r\delta t} - d}{u-d}C_u + \frac{u - e^{r\delta t}}{u-d}C_d\right] / e^{r\delta t}$$

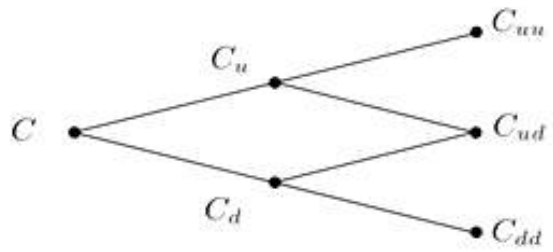


Figure II- Possible option prices for a 2-period binomial tree

To simplify the term, we let:

$$p = \frac{e^{r\delta t} - d}{u-d} \text{ and } 1 - p = \frac{u - e^{r\delta t}}{u-d},$$

and hence, we can write the call option as:

$$C = [pC_u + (1-p)C_d]e^{-r\delta t}$$

Now we consider a call option with two periods. After the first period, C_u either goes up to C_{uu} or down to C_{ud} (Figure II). C_d is analogous. From the previous derivation, we find that:

$$C_u = [pC_{uu} + (1-p)C_{ud}]e^{-r\delta t}, \text{ and}$$

$$C_d = [pC_{du} + (1-p)C_{dd}]e^{-r\delta t}.$$

Algorithm 4.2 : An algorithm for a binomial options pricing model.

```
function BinomialOPM (T, S , K, r , sigma , n) {
deltaT:= T/ n ;
up:=  exp( sigma * sqrt ( deltaT ) ) ;
down:=  1/up ;
cu:=  (up * exp(–r * deltaT) – exp(–q * deltaT ) )
      * up/(up^ 2 – 1 ) ;
cd:=  exp(–r * deltaT) – cu ;

for i := 0 to n { c ( i ):= S * up^ i * down^(n – I );
i f c ( i )< 0 then c ( i )=0;
}
for j := n–1 to 0 step – 1 {
          for i := 0 to j {
                    c ( i ):= cu * c ( i )+ cd * c ( i +1);
    }
}
return c ( 0 ) ; }
```

Generally for m periods, the equation is given by:

$$C = \left[\sum_{j=a}^{m} \left(\frac{m!}{(m-j)!j!}\right) p^j (1-p)^{m-j} u^j d^{m-j} S - K\right] e^{-r\delta t} \quad (4.3)$$

where a is the minimum number of upward moves such that the strike price falls below the stock price upon expiry so that it can be exercised. In other words, we require that $u^a d^{m-a} S > K$.

In implementing the binomial model, the multi-period steps are computed recursively where the first step involves calculating the options at the terminal nodes and then working backwards to obtain the value of the first node. Algorithm 4.1 summarizes the steps in obtaining the binomial value of a call option. We can test the algorithm using the test case from the previous section where S = 250, K = 200, T = 1, r = 0:05 and σ = 0:2, with an additional parameter m for the number of periods. If we choose m to be 10 and run the

algorithm, we obtain a binomial value of approximately 61:536162. Now that we have the binomial value, we want to verify that the result is correct so we compare it with the exact solution found from the BS formula. As it turns out, the binomial value converges to the BS value as the number of periods increase.

4.3 Convergence of the binomial OP model to the BS model

First, we investigate the relationship between the binomial OP model and the BS model. Equation (4.3) with m periods can be rewritten as:

$$C = S\left[\sum_{j=a}^{m} \frac{m!}{(m-j)!j!} p^j (1-p)^{m-j} \frac{u^j d^{m-j}}{e^{r\delta t}}\right] - Ke^{-r\delta t}\left[\sum_{j=a}^{m} \frac{m!}{(m-j)!j!} p^j (1-p)^{m-j}\right]$$

Replacing the two parts in parentheses with functions Ø(a; m; p') and Ø (a; m; p) respectively, we obtain a simpler equation of the form:

$$C = S[\emptyset(a; m; p')] - Ke^{-r\delta t}[\emptyset(a; m; p)],$$

where $p' = ue^{-r\delta t}p$. From Cox, Ross and Rubenstein (1979)'s work on the convergence of the binomial formula to the BS formula, as m tends to infinity,

$$\emptyset(a; m; p') \to N(d_1) \text{ and } \emptyset(a; m; p) \to N(d_2)$$

Hence, the BS formula is a limiting case of the binomial OP model.

Next, we investigate the convergence of the binomial OP model to the BS model. This can be easily demonstrated with a plot of the number of periods m against the option values found using the binomial OP model (Figure III). Cox, Ross and Rubenstein (1979)[11] provided a proof for the convergence as m tends to infinity. Their proof uses a special case of the central limit theorem which imposes restrictions on u and d. However, the proof provided is too specific. Hsia (1983))[12] applied a more general proof for the convergence of the Binomial OP model to the BS formula without restricting u and d, using the DeMoivre-Laplace limit theorem with the only condition being $mp \to \infty$ as $m \to \infty$. Qu (2010))[13] further demonstrated that there is a direct proof of the Binomial OP model converging to BS formula as m tends to infinity with the use of direct approximation of binomial probability from the normal distribution.

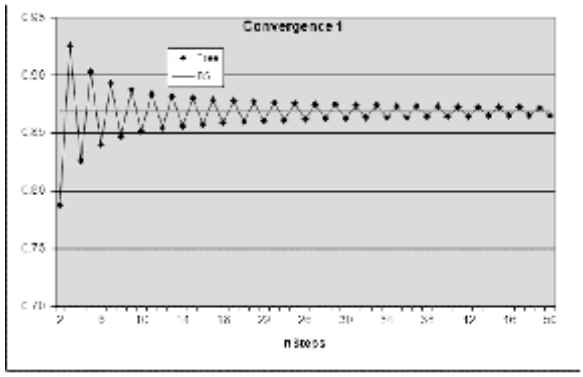


Figure III: A plot demonstrating the convergence of the binomial model to the BS model as m increases

Based on Chang and Palmer (2007)'s paper) [14], the rate of convergence from the Binomial OP model to the BS formula was found to be *1/m*. In the evaluation of the binomial OP model, we verify that this statement is true. Taking the same test case, we test the convergence with different values of *m*. Recall that the BS value was found to be 0.8689. For each value of *m*, we find the absolute error such that:

error = binomial value – BS value

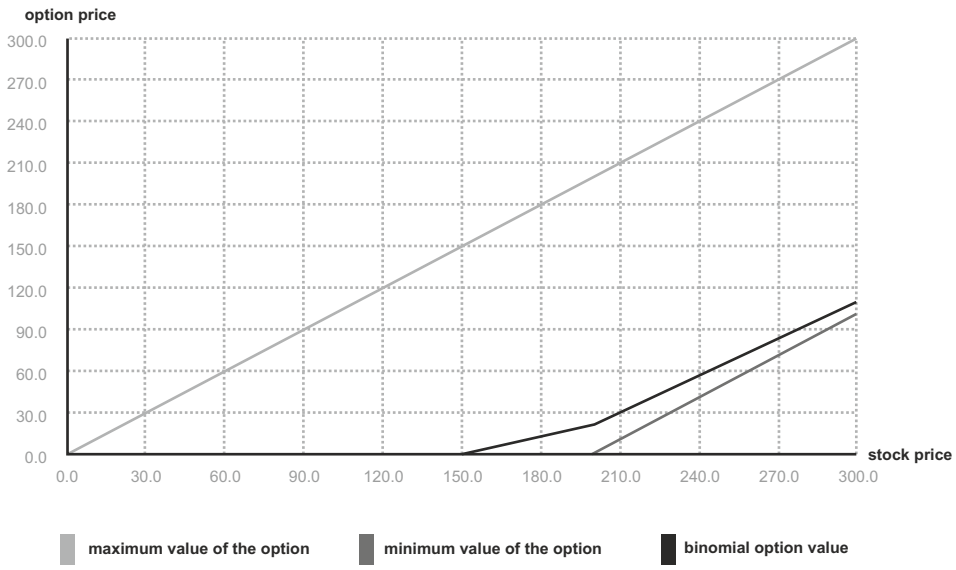
m	Binomial Value	|error|	1/m	Ratio=|error|/(1/m)
10	0.8513	0.017595	0.1	0.175947
50	0.8653	0.003559	0.02	0.17793
100	0.8671	0.001781	0.01	0.17809
200	0.8680	0.00089	0.005	0.178059
500	0.8685	0.000355	0.002	0.177693
1000	0.8685	0.000355	0.001	0.355386

Table I - Table of absolute errors for different m for a European call option.

The model is valid if its absolute error is proportional to the convergence rate, $|error| \propto \frac{1}{m}$

The result can be seen in Table I. Hence, the implementation of this model is correct.

Figure IV is a stock-option graph using the binomial model for n = 2 that illustrates how the option prices changes with different stock prices. Included in the graph are the maximum and minimum values. The minimum value of the option (intrinsic value) is the value at which a call option is in-the-money (i.e. the strike price is below the stock price). In other words, it is the actual value of the stock as opposed to the option value and is calculated by taking the difference between the strike price and the stock price. Option prices, on the other hand, are calculated using the equation $c = \left[\sum_{a=0}^{n} \binom{n}{a} p^a (1-p)^{n-a} u^a d^{n-a} S - K\right] e^{-rT}$, *where a is the smallest non-negative integer such that* $u^a d^{n-a} S > K$. The **time value** (extrinsic value) is the difference between the option price and the intrinsic value. As an option moves closer to maturity, the values of the options move closer to the intrinsic value, which means that the time value decays and eventually becomes worthless when it reaches maturity (Ugur, 2008))[15].



V - EMPIRICAL RESULTS

Implement the algorithms for the MC simulation.

Test and evaluate the accuracies of the MC simulation relative to the solution obtained from the BS formula.

5.1 **Monte Carlo Simulation** - Valuing of options is not limited to European and American options, which are the most basic styles of options. There are also exotic options with complicated features, such as the Asian option that takes the average underlying asset price over a predetermined period of time, and they cannot be easily valued using binomial OP model or the BS model due to their inflexibility in implementation. Therefore, in this chapter, we present another popular approach to valuing these options: **the Monte Carlo simulation**. This technique can easily simulate the stochastic process using random numbers and is flexible in terms of combining multiple sources of uncertainties.

Hence, it is practical for options that suffer from the curse of dimensionality, such as the real option. For the interest of this report, we will only apply the standard Monte Carlo simulation to European-style option to demonstrate its convergence to the BS model.

5.2 **Valuing the Options -** The MC simulation, which was first proposed by Boyle (1977), uses pseudo-random numbers to simulate price paths. It is a useful method to price options that has multiple uncertainties. We shall derive a sample path for the MC simulation. Recall in Equation (2.1) that the underlying asset is assumed to follow the GBM given by the SDE,

$$dS = \mu S dt + \sigma S dW,$$

where μ is the drift rate and σ is the volatility. Since the risk-neutrality assumption also applies here, we let μ = r, where r is the risk-free interest rate.

Algorithm 5.2: An algorithm for a standard Monte Carlo simulation.

```
function MonteCarlo {
        % m → number of time steps
        % n → number of simulation paths
        timestep := T/m;
        sum:= 0 ;
        for i := 1 to n {
                for j := 1 to m {
                        S = S * exp [ ( r – 0.5 * sigma
^2) * timestep + sigma * sqrt ( timestep ) * rand ] ;
                }
                        sum := sum + max(S–K, 0 ) ;
}
value := sum/n*exp(–r * timestep ) ;
return value ;
}
```

Using the properties of lognormal distribution, we let C = logS(t) and apply it to the Itô's formula to get:

$$d\log S(t) = \left(r - \frac{1}{2}\sigma^2\right)dt + \sigma dW$$

$$S(t) = S(t-1)\exp\left[\left(r - \frac{\sigma^2}{2}\right)\delta t + \sigma dW\right]$$

We generate the sample path for m periods by dividing the time period [0; T] into m intervals of δt to produce a sample path of:

$$S(t_j) = S(t_{j-1})\exp\left[\left(r - \frac{\sigma^2}{2}\right)\delta t + \sigma\sqrt{\delta t}Z_j\right], Z_j \sim \Phi(0,1) \text{ and } j = 1, \ldots, m$$

The payoff, X(ω), for a European call option is max (S(t) – K; 0) for a sample path ω. To sample n asset price paths, we find the sample mean of the payoffs discounted to present using the risk-free rate, r, to obtain:

$$\bar{X} = \frac{1}{n}\sum_{i=1}^{n} X(\omega_i)e^{-rm\delta t}$$

(5.2)))This simple iteration can be seen in Algorithm 4.2. The pseudorandom number used for this implementation is a normally distributed value from the normal distribution N ~ (0, 1). (5.2)

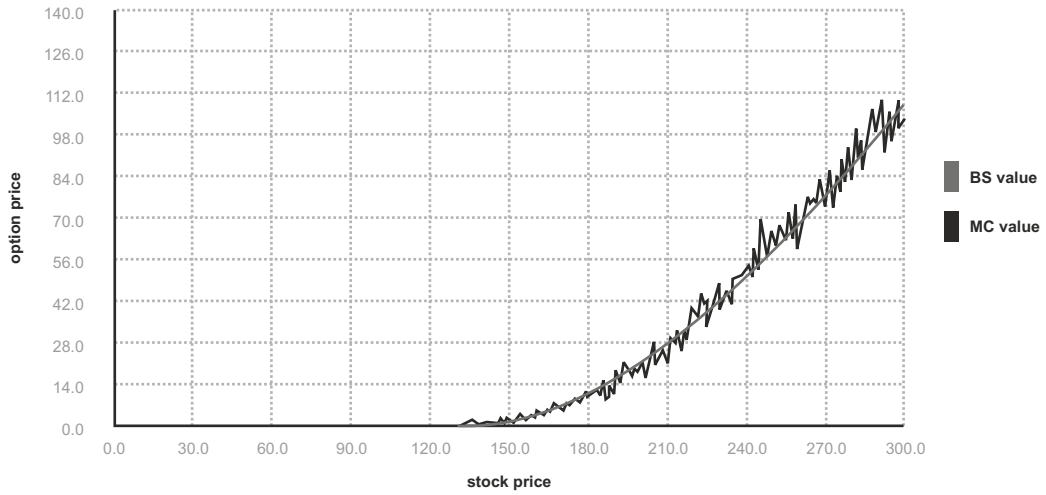


Figure V: A plot comparing the Monte Carlo simulation and the BS model for n = 100.

We begin our test with the test case we used in the earlier example. Setting the parameters S = 250, K = 200, r = 0:05 and σ = 0:2, we can generate a MC value with predetermined n and m. We demonstrate the results obtained from this simulation by plotting a graph of stock price against the option price. Figure 4.4 shows this result for n = 100 and m = 100, with comparison to the BS values.

6 Convergence Test - Convergence test suggests that the MC values tend to the BS closed-form solution when n increases. Although the convergence in Table II does not seem conclusive, there is an indication that the values are getting closer to the BS value of 61:4720918984744 as per Figure IV. For example, for $n=10^2$, the difference between the highest and the lowest MC values within the three seeds are approximately 9:494630, whereas for $n=10^6$, the difference is approximately 0:099661, indicating that there is a significant decrease in the standard deviation of the MC values as *n* increases.

		MC value **2.2.1**	2.2.2
2.2.3 2.2.4 2.2.5 2.2.6	**2.2.7**	**2.2.8**	**2.2.9**
n	**Seed 1**	**Seed 2**	**Seed 3**
2.2.10	2.2.11	2.2.12	2.2.13
10^2	59.1854875330700	55.66077308258579	65.15540374696462
10^3	62.3879080724478	60.420893879950015	60.806343515915735
10^4	61.3979056884734	60.716972462469144	61.06141350337705
10^5	61.5693015528772	61.44086461566363	61.612622484545696
10^6	61.5366498823280	61.43698915939219	61.502473728570706

Table II: A table of mean MC values with m = 1000 and different values of n.

To find the approximation error, we first need to calculate the estimated variance. Let $a = E(X)$ and $b^2 = VarX$ be the expectation of X and the variance respectively. If we obtain n samples X_i for i = 1, 2, …, n, then the approximation of a is:

$$\hat{a} = \frac{1}{n}\sum_{i=1}^{n} X_i$$

Therefore, the estimated variance is:

$$b^2 = \frac{\sum_{i-1}^{n}(X_i - \hat{a})^2}{n-1}$$

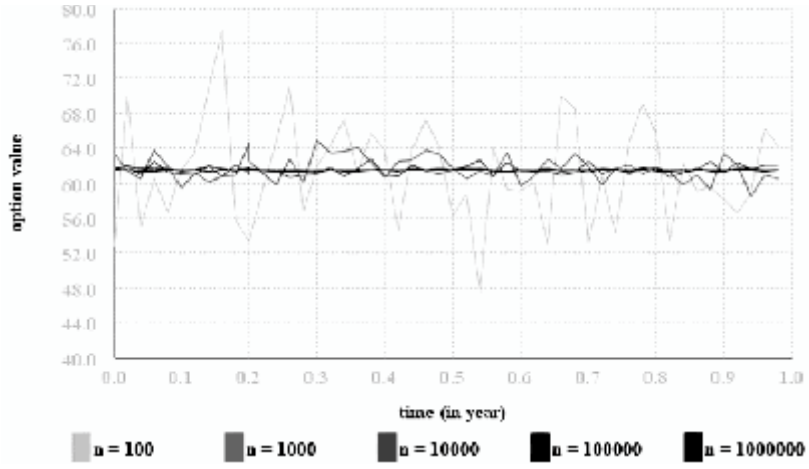


Figure VI: A plot of the Monte Carlo simulations for different values of n.

7 Simulation Process -

1. Create all necessary variables, including total number of simulations N, number of trading days each year n, expected return for asset using average of the five year realized annual return r, volatility sigma, asset value at day 0 (today) iniIndex, strike price Strike, risk free rate rf and all matrices we will need to store values.
2. Within each of the 252 steps for one simulation, we will generate a random number with normal distribution first. The variable "change" is calculated using the aforementioned equation.
3. In order for investors to be indifferent between holding the underlying asset and another asset generating 9.7% return as well, the probability for the underlying asset to go up is calculated as

$$\frac{9.07\% - \text{down}}{\text{up} - \text{down}}$$

in which up is defined as "change" when "change" is greater than 1 and down as "1/change", vice versa.

4. A random number is generated to determine if the index value will go up or down.
5. Repeat step 2-4 for the rest of the 251 steps.
6. Repeat step 2-5 for the rest of the N-1 simulations.
7. After finishing the simulation, we essentially have the performance of the asset in 10,000 different worlds. To determine when to exercise early, we will look at the index number at each step and calculate its future value. If the result is higher than the ending index number of that specific world, we call that step as an optimal early exercise time.
8. Divide the total number of optimal exercise opportunities by (n-1)*N to get the percentage amount of time investors will be better off by exercising their American call option early.

VI - EVALUATION

In this study, two types of evaluation have been discussed. They are: the evaluation of the models and the evaluation of the implementation. The first part gives a brief summary of all the evaluations of the models explained in earlier chapters. The next part explores the more technical side of the evaluation, giving insights on the choice of programming language used and then discussing the implementation of the algorithms.

6.1 Evaluation of Models -

Both the solutions obtained from the BS model and the binomial OP model can be easily verified by comparing them against option calculators. The MC simulation is much harder to compare since the model generates random values. Different test cases can simply be applied on our implementation of the BS model and that of the BS calculator to verify that the results are the same. Our result is accurate up to 15 decimal places. This calculator prints the entire binomial tree and hence, it is possible to verify that all values in our binomial tree are correct. Again, the result from this calculator is accurate up to 6 decimal places. However, a 6-decimal place accuracy of a result for comparison should provide enough information to verify that our model returns the correct result. Now, referring to the evaluation in earlier chapters, we verified that the binomial OP value converges to the BS value with an increase in the number of periods, as demonstrated. For the MC simulation, we rely on the BS model, which was found to produce correct results, to verify that the MC value is correct. The result is seen in Section 4.2, which explores the effect of increasing the number of simulation paths.

All implementation of the models are executed on the same machine to eliminate any error in the variation of

the performances of different machines. The test cases are also kept consistent so that comparisons of results can be made between the models. For the choice of programming language, we do not require a fast language since we want to compare the performance of different models through observations of their execution times.

A round off issue may emerge especially in implementations where calculations are required in many runs. We rely on the precision of the double values used in the implementation, although round-off errors cannot be completely eliminated. The codes implemented in this project are not fully tested, each only having one test case since they are only used for analyzing. Nevertheless, the results from the test case are verified.

VII-CONCLUSION

In this report, we first outline two standard options pricing models and evaluate them based on their accuracy and efficiency, and then apply the multilevel MC simulation as a method to improve the efficiency of the MC simulation. The result for the binomial options pricing model shows that the accuracy relative to the BS model can be achieved with a large number of periods, m. The convergence rate from this result is verified as 1=m, which is a theoretical convergence rate presented by Chang and Palmer (2007))[16]. The MC OP model is the next model to be investigated. We test the standard MC simulation by initially running a simulation of n paths for three seeds. These three seeds are taken to show how the result varies when they are run on different number of paths n. Due to its random nature, there is a sampling error associated with taking random variables to estimate the payoff, which we want to minimize. The result shows that increasing the number of paths will reduce the sampling error at a rate of 1=pn. However, to achieve the level of accuracy of a binomial OP model takes a much greater computational effort for the MC simulation.

Since discretized methods are applied in the multilevel MC simulation, a study of these methods is necessary. The convergence order takes into account the bias due to discretization.

5.1 Future Work

For future work, another method we could consider is the Runge-Kutta method that simplifies the calculation of the asset price by replacing the derivative term of the Milstein scheme with a simpler term while still keeping the same convergence order. Application of the multilevel MC simulation to the Bermudan option proved to be quite a challenge since this option style is path-dependent. In addition, the multilevel method adds to the complexity of pricing the American option so it is also wise to price the American option using the standard MC simulation. One method to price options of this style is to use the Longstaff-Schwartz's least square approach (Longstaff and Schwartz, 2001))[17]. For the multilevel MC simulation, application to other exotic option styles such as barrier and look back options can be tested to observe the behaviour of this method in estimating payoffs of different option styles. Here, we also present ideas on potential areas of options pricing for future work. We have seen two standard models that price options numerically. We may use another popular numerical method, finite-difference methods, to compare its performance with the other models.

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Exploring the role of Country of Origin for Luxury Personal Care Products in India

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Abstract

Indian consumers are widely using luxury brands primarily in the perusal care segment. The number of high net worth individuals has increased, awareness is enhanced and individuals are concerned about their looks and presentation. This paper explores the factors that consumers consider while buying luxury personal care products; additionally, it also explores the effects of country of origin on consumers' behaviour in the same segment. We carried out qualitative research in two phases; first, focus group discussions were conducted in two metro cities, Mumbai and Delhi. Second, in-depth interviews were conducted to gain deeper insights from the respondents. The study found that brand promise and value, packaging, customization and quality of the product are the factors that influence luxury consumers' behaviour. They prefer online media for exploring the products. Country of origin as well as social media had a very low impact on their behaviour for luxury personal care products; social media being a mass medium, there is no exclusivity in these platforms. We have developed a conceptual model that can help marketers of such products develop better strategies.

Keywords: *Luxury Products, Country of Origin, India, Luxury Personal Care Products*

1. Introduction:

The luxury market has a double-digit annual growth rate globally. It is predicted that worldwide revenues of luxury products would grow faster than the global Gross Domestic Product, GDP. The growth is primarily observed in emerging countries such as Brazil, Russia, India and China as they account for 11% of the global sales; this is expected to grow by 16% over the next five years (Luxury Goods in India, 2013). The present volume of sales of luxury personal care products in India is INR 6 billion (Euromonitor International, 2014). Moreover, India is specifically becoming the increasingly preferred destination for luxury brands, besides China. The Indian luxury market is projected to reach $14.7 billion by 2015 (Jha, 2013). India has several luxury brands such as Burberry, Hermes, Gucci, Dior, Louis Vuitton, etc. with a high market share. Additionally, the number of high net worth individuals has increased in India and they prefer luxury brands. Indian consumers who buy luxury products are knowledgeable, ambitious and are willing to spend on these brands (Jain et al., 2012). It provides a good platform for luxury brands as consumers are excited about this concept. Luxury brands are primarily in all the product categories such as apparel, accessories, automobiles and personal care category. India is a promising market for luxury brands (Euromonitor, 2013) and therefore, brands are keen to explore it.

Beauty and personal care products consistently perform very well in the Indian markets. The value percentage growth in the premium personal care products form 2007-2012 was 207.3% and in 2013, it grew by 25.8%. Moreover, this segment is expected to grow by 30-35% (KPMG, 2014) this year. The primary consumers of these products are from the urban markets; these consumers are concerned about personal grooming. Urban males are also focused on their looks and appearance and consciously select luxury products for their grooming. It is expected that this category will continuously grow as consumers are increasing their focus on personal grooming. Consumers are willing to buy these products as they feel that this category provides a good value proposition. Globalization has also served as a catalyst as it has helped in increasing the level of awareness of international brands among consumers ("Beauty and Personal Care in India", 2013). However, in India, there is a high potential and several opportunities to explore this untapped segment as there are just a few brands. There are no Indian luxury brands in the personal care segment. There are primarily international brands with few outlets in India.

Luxury branding is widely studied in literature the focus is primarily on different cultures (Eng & Bogaert, 2010), experience of consumers and their motives (Venkatesh et al., 2010), intentions towards purchase (Amatulli & Guido, 2011) and the Indian consumer's behaviour (Jain et al., 2012). However, there were a few studies on Indian luxury consumers and in our literature view, we could identify only one study (Godey et al., 2012) on country of origin that was related to India. This study was conducted in seven countries and India was part of the entire research project and focused on the effect of country of origin on luxury purchase decisions. It is an unusual phenomenon that luxury brands have foreign origin and do not have an Indian heritage. There is a dearth of knowledge in comprehending motives and drivers of consumers in India. This paper captures Indian luxury consumers and understands the role of country of origin in their purchase decisions primarily for the personal care category. This study focuses on understanding and analysing the consumer perceptions on luxury brands and the drivers that

motivate the Indian consumers to purchase luxury personal care products.

In the subsequent section, we will review the literature on luxury, luxury brands and purchase behaviour, cue utilization as a theoretical framework, country of origin, country image and consumer ethnocentrism. After reviewing the literature in the following sections, we propose objectives, research methodology which includes study 1 and 2, empirical results, proposition and conceptual model developed from the data, discussion, implication and scope for future research.

2. Literature Review

2.1 Luxury

Luxury can be defined as the concept of seeking happiness via consumption. This was initiated originally by the western countries but eventually was used by the other nations as well. Luxury can be defined as a state of comfort or elegance with the high price (Wong & Ahuvia, 1998) and artistic (Roper et al., 2013) and experiential in nature (Berthon et al., 2009). There are various definitions about luxury by different scholars. They have defined luxury as comfort, extravagance, splendour, lavishness, and opulence (Hallott, 2013). Luxury also represents quality, uniqueness, high price, exclusivity, heritage and speciality (Berthon et al., 2009). Consumers perceive luxury to be novel and exclusive, and satisfaction can be derived from rarity (Cervellon, 2013). Luxury brands have to always modify their strategies according to the consumer preferences and global demand (Daswani & Jain 2011).

Consumers focus on exclusivity in luxury which evokes esteem and respect. Additionally, high prices are perceived to be an evidence of excellent quality by consumers. Moreover, Phau and Prendergast (2000) support this argument with the statement that brands that induce exclusivity and have renowned and established identity are termed as luxury brands. They have high brand awareness, excellent perceived quality and are able to retain sales and consumer loyalty. The benefits that the consumers derive from luxury brands are hedonic, symbolic, experiential and functional. The consumers' intention to use the products for pleasure is referred to as hedonic, symbolic and experiential. Physical attributes of the products, performance, and quality and craftsmanship elements are related to functional dimensions of luxury brands (Berthon et al., 2009). Luxury brands are consumed due to two drivers - personally and socially oriented attributes (Truong, 2010). Interestingly, Kapferer (1998) found that consumers perceived that excellence, beauty and distinctiveness of the products are important dimensions to adore luxury brands. The worth of a luxury brand is confirmed by its inherent characteristics such as outstanding performance, classiness, intrinsic values and high quality. Additionally, the luxury market consists of affluent as well as non-affluent consumers (Hader, 2008) as the latter also aspire for these upscale brands. Consumers have different purchase behaviours while buying luxury brands. There are different motives and drivers that influence their decisions.

2.2 Luxury Brands and Purchase Behaviour

Traditionally, the primary motive of purchasing luxury brands was to show off or to impress others, which was considered to be the principles of luxury brands marketing management (Vigneron & Johnson, 1999). The concept of luxury branding has evolved from the theory of impression management to the fact that consumers have an internal urge to create a favourable social image by their purchases (Mandrik, 1996; Sallot, 2002). The two outcomes of this behaviour are social

salience and social identification. Social salience is an effect where the brand is a symbol of tastefulness and importance for the consumer. Social identification is an effect where the brand is considered as a common sign for social groups. Marketers also used this theory while developing strategies for luxury brands by reducing the utilitarian element and displaying upfront the noticeable achievement and enhancement of sociality by emphasizing on "buying to impress others".

There are two views about luxury brand consumption - socially oriented and personally oriented. Socially oriented views focus on the 'show off' attitude while personally oriented views emphasize that luxury is being consumed by consumers for personal satisfaction. Personal orientation was theorized by Wong and Ahuvia (1998) and it was found that luxury consumption is associated with self-directed hedonic experience, private meanings of the products and analysis of the products by individual-based standards. Literature of luxury branding has also moved from "buying to impress others" as stated by many studies (Vigneron & Johnson, 1999) to personal consumption. Therefore, it is essential to discuss the elements of personally oriented luxury consumption such as self-directed pleasure, self-gift giving, congruity with internal self, quality assurance and independent self-construal in detail to understand the consumers comprehensively.

2.2.1 Luxury Brands and Self – Directed Pleasure

Self-directed pleasure has been defined as an important element which individuals perceive in creating their own hedonic experience. This experience is intensive and impulsive yet self-determined (Csikszentmihalyi, 1990). Le Bel and Dube (2001) stated that self-directed pleasure features the feelings of bliss, contentment, and ecstasy for the self that is contrasted to the relational qualities of caring, love and interpersonal warmth which dominate other-directed pleasure. Moreover, there are two types of pleasure developed from the hedonic experience - personalized and socialized. Interestingly, Vigneron and Johnson (1999) proposed that consumers with stronger personal orientation may seek self-directed pleasure from luxury-brand products. When seeking self-directed pleasure, consumers attend only to sensuous and affective gratifications for the self, and the luxury-brand product that has affective values catering to the consumer's personal preference would be acquired. Additionally, Kucukemiroglu (1999) empirically verified this concept among different segments of consumers with different lifestyles and found that self-directed pleasure is a statistically significant dimension in luxury consumption.

2.2.2 Luxury brands and Self-gift Giving

Self-gift giving as a form of self-communication was conceptualized by Mick and Demoss (1990). It is related to inordinate indulgences, which specially mean to satisfy the self's own dreams and aspirations. A framework was later developed by Roth (2001) to describe how consumer objects are used by people to attain "affective" goals. The study also discovered "affective consumption" for depicting the behaviour of self-gift giving. It denotes positive feelings to achieve the goal and leaving the negative affective state. Moreover, there are four types of affective consumption, namely, recovery, relief, sensation and fulfilment.

The strategies for improving the negative mood are relief and recovery, and better feelings can be accomplished by sensation and fulfilment. The decision making rationale is self-gift regardless of the

type of affective consumption. According to mood theorists, consumers who are in a bad mood buy luxury products to work on the negativity. Interestingly, when consumers want to celebrate, then again they would like to indulge in luxury with a strong emotional state (Luomala, 2002). Additionally, it was found in the luxury brand consumption behaviour that "by the self for the self" is a precursor of personal orientation (O'Cass & Frost, 2002). Individuals consume luxury as a self-gift and not for impressing others. The integration of affective consumption theory and mood regulation theory demonstrate that self-gift giving can be an antecedent of personally-oriented luxury consumption.

2.2.3 Congruity with Internal Self

There are primarily two types of self - external (social) and internal (private). The external self is associated with the way other individuals perceive the person. The internal self is related to the individual and how the person perceives him or herself. These two facets constitute the totality of self but variations in the personality traits may make one element to be more dominant in decision making (Sirgy & Johar 1999).

According to Doherty and Schlenker (1991), high private-conscious consumers exhibit a stronger personally oriented disposition towards the product's image. Recently, Puntoni (2001) also confirmed that there is a significant impact of self-congruity on luxury-brand purchase. The findings indicated that consumers, who are more private-conscious and stronger in personally oriented disposition, will buy a luxury-brand product primarily due to the congruity between their internal self and the image of the product.

2.2.4 Luxury Brands and Quality assurance

Superior quality is an important attribute of luxury products. Consumers perceive that prestige and premium price offers better quality of luxury products as compared to non-luxury items (O'Cass & Frost 2002). Hafstrom, Chae and Chung (1992) identified that 'perfectionism and high-quality consciousness' consumers are highly concerned about product quality and are inclined to buy luxury brands mainly due to their perceived excellence in quality and performance. Luxury brands are usually not purchased for the conspicuousness of the brand name but for the excellent product quality (Gentry et al., 2001). Moreover, consumers do not buy counterfeit luxury brands as they have inferior quality. It is known as "the quality assurance effect", which is utilitarian in nature and is considered by many luxury consumers while making the purchase decision. Miquel, Caplliurer and Aldas-Manzano (2002) further confirmed that consumers who give emphasis on quality are inclined to buy prestige-brand products over store-brand products. They perceive that quality differs in both the categories. Therefore, it can be stated that consumers select prestige brands because of high quality and factors such as 'buying to impress others' do not affect their purchase behaviour. These findings also support the view that quality assurance is an antecedent of personally oriented luxury-brand consumption.

2.2.5 Luxury Brands and Independent self-construal

Social psychologists say that independent self-construal allows the individuals to define objectives and prioritize personal goals over group goals. Independent self-construal deals with the characteristic of having a separate, unique and decontextualized self that allows people to participate in the world by expressing their own thoughts, feelings and actions. The emphasis is on personal goals,

personal achievement and appreciation of unique characteristics.

In short, individuals with independent self-construal exhibit a propensity to be individualistic, egocentric, autonomous, self-reliant and self-contained. They asses themselves on a merit basis, take care of themselves and enjoy being unique and different from others. This is also associated with the personal orientation towards luxury-brand purchase (Gudykunst & Lee 2003). Therefore, it is important to understand how independent self-construal is a primary element for luxury-brand consumers who focus on self-directed consumption goals.

It is very important to note that the studies primarily come from developed countries and with the Western perspective. They are not from emerging countries such as India. There is much less focus to understand the Indian market and its consumers in spite of the fact that there would be 400,000 HNIs by 2015 with a collective wealth of $2.6trillion (ASSOCHAM, 2013).

2.2.6 Luxury brands and Indian Consumers

Indian consumers evaluate luxury brands by aesthetics, value and style. It helps the brands to develop a long-term association with the consumers (Som, 2011). Indian consumers grow up in a social environment and are concerned about their image in society (Schultz and Jain, 2013) Indian consumers also admire innovations with historical importance as they make decisions via values and culture (Atwal & Kahn, 2009). They are influenced by western nations but have customs and rituals from the Indian culture (Schultz and Jain, 2013). Additionally, Indian luxury consumers have two categories - global Indians who have 'old' money and young Indians who have 'new' money. The global Indian indulges in luxury for personal satisfaction while the young Indian consumes luxury due to high peer pressure and to appear to be flamboyant. They are more tech savvy and use more digital media while consuming luxury than the global Indian (Schultz and Jain, 2013). Moreover, Indian consumers are emotional and portray their emotions about luxury products extensively on digital platforms; for instance, they make purchases with their friends and it is primarily known as “we purchase” (Schultz and Jain, 2014). They also use three mediums for their luxury consumption - TV, mobile and computer. They read blogs to initiate discussions (Schultz and Jain, 2014) and websites, apps, sitcoms and Twitter to accumulate further information about luxury brands (Jain et al., 2014). They also like sophistication and comfort primarily when they shop alone. Additionally, they use their internal cue for assessing quality, self indulgence and symbolic characteristics for luxury brands (Jain et al., 2012). It can be inferred that consumers emphasize on product traits and brand involvement. In our literature review, we have identified that many studies have focused on basic elements of products but only one study has emphasized on country of origin and its effect on Indian consumers, which is another crucial area of brand involvement.

2.3 Theoretical Framework

Cue utilization framework helps in encapsulating the effect on brand familiarity which deals with the direct and indirect association of brand and consumer experience (Campbell & Keller, 2003). This theory states that consumers use multiple cues to frame judgments about brands to evaluate the product quality (Olson, 1972). The cue utilization theory defines the two cues that influence the purchase decision: extrinsic and intrinsic. The extrinsic cues are related to the consumer. These cues are associated with brand, packaging, characteristics, quality, price,

brand and country of origin. However, intrinsic cues are the basic characteristics of the products and cannot be changed as easily as physical elements need to be modified. Country of origin is the external cue that is used by the consumers while making evaluations.

2.4 Country of Origin

Earlier the term "Made in" was used by many companies and organizations to state the origin of the products and brands. However, now "country of assembly", "country of design" is extensively used in marketing communication strategies after globalization (Lee et al., 2013). Many multi-national companies and organizations have shifted manufacturing from their own country to various nations in the world (Godey et al., 2012), primarily to reduce the cost and attain a competitive advantage. Companies develop a standardized process for products and manufacture brands in different countries. It can be inferred that products are manufactured in one country and are branded and standardized in another nation causing a great deal of fussiness among the consumers (Snaiderbaur, 2009).

Country of origin is the extrinsic cue that affects the assessment pattern of consumers for various products and brands (Verlegh & Steenkamp, 1999). Consumers' cognitive, affective and normative thinking is influenced by country of origin as they associate it with product quality, value of the product, perceived risk and purchase intentions. Additionally, many meta-analysis and empirical studies have identified country of origin as an influence on the actual purchase of the consumers (Verlegh & Steenkamp, 1999). The name of the country becomes the categorical cue as it facilitates consumers in processing the information. It is also cognitive in nature as it encapsulates the brand origin and different products developed in a nation. It can be stated that consumers assess the products and brands according to the stereotypical beliefs about the countries. Interestingly, when several nations are involved in the product, consumers are able to differentiate between country of origin and manufacturing nation (Lee at al., 2013).

Country of Origin is considered to be a very important aspect for a luxury brand. It needs to be investigated crucially in consumer behaviour primarily for luxury brands. These brands are from the high involvement category and the purchase decision is carried out scientifically and in a thoughtful manner as consumers pay extra over the basic products.

A brand, in a way, represents the history of a firm. It has been widely accepted as the representation of 'the memory' of a firm, encompassing the research activities, innovations, process technologies, or any other investment carried out by the firm over time. However, brands can be used by customers as a channel or means of expression of their individualism, attitudes, and needs. Moreover, the brand defines how the product is perceived by the customers. Brand creates imagery in the mind of the consumer and associates it with the country of origin. Consumers' purchase intentions are primarily studied with the three parameters - 1. the fundamental components of the brand and the specific functions it performs; 2. the relational dimension of the brand and brand personality; and 3. the brand experience. Additionally, it has been examined that the interplay between the brand and the country of origin affect the perceptions and purchase intent of the individuals. According to Haubl and Elrod (1999), perception of a brand can be enhanced when the country of origin is visible to the consumers. The images also influence the perception

about country of origin (Busacca, Bertoli & Molteni, 2006). The perceived country of origin helps in shaping the personality of the brand. Therefore, it is important to intersect country of origin and brand for effective understanding of the concepts. The brand interactions and the country of origin are important, especially for global brands as they may have different country of manufacturing/assembly and country of design or origin. Pecotich and Ward (2007) identified that a brand can develop a holistic image by using the various elements and familiarizing consumers with it. Country of origin takes precedence over the brand as it formulates the perception about product quality.

Maheswaran (1994) also indicated that the country of origin is used by the consumers while evaluating products as it indicates product quality. The degree to which the country of origin affects evaluations is determined by the strength of the attribute information and level of expertise of the consumers. Consumers need clear information about country of origin as it helps them in developing decisions about the brand. They do not like unclear and ambiguous information about country of origin of the brand. Moreover, it can be inferred that country of origin acts as an external informational clue for consumers' perceptions and evaluations of the product (Verlegh & Steenkamp, 1999). The country of origin acts as a signal of product quality and influences the consumers' perceptions about the brand value and associated risk (Phau & Chao, 2008).

Research on the country of origin is also primarily focused on consumers' quality evaluations and intentions to purchase a product (Agrawal & Kamakura, 1999). Price is another element that is important besides quality when country of origin is discussed because it represents "the amount of money we must sacrifice to acquire something we desire" (B.Monroe, 2003). Another reason for focusing more on price is that it identifies to what extent consumers' perceptions of different countries of origin are dissimilar as it is reflected in the amount that the consumers pay for various product categories (D.Jaffe & D.Nebenzahl, 1993). The studies identified that consumers are willing to pay higher prices for branded products associated with a country of origin which has a favourable image as compared to the products from a nation that has a less familiar image. It gets further reflected in the actual purchase as well (Fischer et al, 2012).

Research about country of origin and luxury branding is primarliy focused on developed nations such as US and Australia (Guhan-Canli & Maheswaran, 2000) but accoridng to our knowledge, there are no exclusive studies on emerging markets such as India. There are different stereotype images about various countries and it influences the consumer perception about the brands (Lotz & Hu, 2001).

2.5 Country Image

The image of the countries are developed in terms of these elements - historical, economic and political (Nagashima, 1970). The image of the country also gets affected by the workmanship, prestige, design and innovation (Roth & Romeo, 1992). Moreover, a country's image also infleunces the consumer's purchase decisions. Some studies found that the country of manufacture is more important than the quality and price of the brands (Lantz & Loeb, 1996). Consumers have a positive image about developed nations and perceive a good image about the countries which produce products of good quality (Lee et al., 2013).

A cross cultural study between Australia and US found that there was no difference in consumers' attitude pertaining to luxury brands as both the nations are renowned globally. However, China was considered to manufacture low quality products, which influences consumers' purchase decisions even in other countries (Lee et al., 2013). It would be crucial to comprehend what would be the role of the country of origin and image for luxury brands primarily for other emerging markets such as India.

Some research studies discussed consumer ethnocentrism as it is associated with the assessment of purchasing products developed in a foreign country while having the image of the nation (Sharma et al., 1995). It was found that consumers with high ethnocentrism would buy products from their own nation (Paciolla & Mia, 2011).

2.6 Consumer ethnocentrism

Consumer ethnocentrism is the loyalty consumers have with brands and products manufactured in their own nation. Consumers relate this with a sense of belonging and acceptability among the group members. Consumers evaluate products on the basis of product traits and quality that are developed in their own country with the brands manufactured by other nations. It can be inferred that consumers with high ethnocentrism will not consider products manufactured by foreign countries as it may adversely affect the economy of their own country due to rise in unemployment. These individuals also feel that it is not patriotic to buy products manufactured abroad. However, consumers with a non-ethnocentric perspective do not lay emphasis on the country of origin as they do not evaluate the product with this dimension. They appreciate and have a positive attitude about foreign brands. It affects the country's image and the level of industrialization (Lee et al., 2013).

3. Research Objectives:

The major research objectives are:

1. To identify the various factors considered for purchasing luxury personal care brands for existing and prospective consumers.
2. To determine the role of the country of origin for luxury personal care brands on existing and prospective consumers while making purchase decisions.

4. Research Methodology:

Qualitative case based methods were undertaken such as consumers' perception, attitude and behaviour towards luxury personal care products and role of the country of origin in purchase decisions. This method is used when theories and principles are not established (Yin, 2003). These methods were chosen against quantitative tools as the authors wanted to gain an in-depth understanding and explore a new area which was not structured or organized (Sliver et al., 2013). Earlier, research on Indian consumers found that conventional Indian values and consumption pattern have transformed as collectivism gives way to individualism (Jain et al., 2012).

4.1 Study 1:

This study consisted of focus group discussions where the objective was to generate insights that would help in understanding the needs, perceptions, opinions, attitudes and factors related to luxury personal care brands. We also aimed to study the role of the country of origin on consumers for luxury personal care brands. Focus groups were chosen for this study as they were based on group interaction; this also helped participants to respond and discuss the issues in a

comprehensive manner (Morgan & Krueger, 1993). Focus groups are more commonly used in qualitative research (Malhotra & Dash, 2011) as it provides valuable information primarily while examining consumption phenomena.

4.1.1 Protocol

Initially, secondary research from literature was carried out on luxury brands, which included studies of emerging markets such as India. The research involved the exploration of existing literature on luxury brands (Kapferer, 1998), the concept of country of origin (Lee et. al., 2013), and its role in consumer behaviour (Jain et. al., 2012).

A discussion guideline was developed according to the existing literature and the research objectives. The discussion protocol was drafted in three phases : first, a general discussion about luxury; second, perceptions, drivers, experience and expectations to purchase luxury personal care products, role of the country of origin in buying these products and third, aspirations and expectations from Indian luxury personal care products.

Projective techniques such as word association and image association were also used during this discussion to identify the level of awareness of the respondents with regard to luxury brands, the country of origin of these brands and purchase drivers of personal care luxury brands.

4.1.2 Sample Characteristics

Respondents in the age group of 18-30 of both genders who mainly buy luxury personal care products were purposively sampled to participate in the focus group discussions. A total of four focus groups were conducted in Mumbai and Delhi with eight individuals in each group. These two cities constitute 80% of luxury brand sales in India (Amarnath, 2012).

4.1.3 Process of Conducting

Discussions were carried out at a central location in the city to facilitate respondents to reach the venue on time. Systematic biases were reduced by identifying neutral locations for the respondents. All the discussions were carried out for 90 minutes so that comprehensive views could be captured. The focus group discussions were conducted by the second author to maintain the quality of the data. A token of appreciation was given to all the respondents for sharing their views and perspectives.

4.2 Study 2:

In the second study, the second author conducted in-depth interviews, which helped in providing comprehensive information about a particular individual's thoughts and ideas. Additionally, the study aimed to understand the consumption pattern, purchase behaviour and purchase decision of individual consumers for luxury personal care brands. We also studied the role of country of origin on individual consumers' purchase decisions via in-depth interviews. Some of the issues that participants hesitated to discuss in Focus Group Discussions (FGD) could be discussed in in-depth interviews (Boyce & Neale, 2006). This technique was utilized as it encapsulated a vivid picture of the participant's perspective on the research topic. This study was carried out after Study 1 as the interview protocol was drafted after understanding the findings of the previous research.

4.2.1 Protocol

Interview guidelines were developed according to the research objective, existing literature and findings

from the FGDs. The questions were primarily on luxury personal care brands and specifically on country of origin and its role in purchase decisions of the consumers. Consumers were also asked to share their expectations about Indian luxury personal care products as it could generate deeper insight in the existing literature.

4.2.2 Sample Characteristics

Respondents were in the age of 18-30 years and interviews were conducted in Delhi and Mumbai as these two cities are the capital city and financial heart of the country respectively. A total of 20 in-depth interviews were conducted by the second author. We used the grounded theory approach (Glaser & Strauss, 1967) for this study. It helps in exploratory studies where data is gathered, codes are extracted from the text and are grouped together to formulate categories and theory. Furthermore, when the information gets saturated from the respondents, data collection is considered complete. After 20 interviews, the data collection process was completed as it was felt that there was data saturation. In a qualitative study, there is always a "diminishing return" point and a higher amount of data collection does not always produce a higher amount of information (Ritchie, Lewis & Elam, 2003).

4.2.3 Process of Conducting

All the interviews were conducted by the second author to maintain the quality and consistency in the data. Interviews were audio recorded with the due permission of the respondents. Interviews were conducted in three phases; 1. primary drivers for purchasing luxury personal care products; 2. role of country of origin and views; 3. perceptions and expectations of Indian luxury personal care products.

5. Empirical Results

The data was collected by conducting focus group discussions and in-depth interviews. All the discussions and interviews were audio taped and transcripts were developed for further analysis. The data were further analysed by thematic content analysis and open coding. Verbatim transcripts, notes and observations were analysed to address the research objectives. Authors carried out word-by-word analysis; categories, codes and themes were formulated after comparison and classifications (Strauss & Corbin, 1998). Authors developed it independently and subsequently it was compared and analysed to comprehend the consumer behaviour.

6. Thematic Content Analysis:

6.1 Definition of Luxury

Luxury was primarily related to good quality by all the respondents in the focus group and in in-depth interviews. All respondents believed that they expected a luxury brand to provide good quality and it should be offered beyond the brand promise. They mentioned that they trusted luxury brands to offer quality beyond the expectations of the consumers.

The consumers of luxury defined it as an experience and feeling of indulgence. They stated that the reason they used luxury was for self-indulgence and the experience of feeling special and exclusive. Luxury means classiness, elegance and exclusivity to them.

They believed that it would describe their identity and would grab the attention of other people. It will define and reflect their personality.

"It has a lot to do with indulgence and feel good factor" (23, Female, Delhi)

"It is something that promises quality and reflects my personality" (23, Female, Mumbai)

6.2 Characteristics associated with Luxury Brands

Respondents felt that luxury brands should be sophisticated, elegant, classy, expensive and artistic. However, the potential users considered it to be aspirational. A respondent from Mumbai stated, "*I think a luxury brand would be out of this world, something I aspire to own and something which no one else will have*." The respondents believed that luxury brands have a very high aspirational value and they would like to experience the exclusivity. Another respondent mentioned, "*The experience of a luxury brand should be an engrossing process; the more number of senses it touches, the better it is for me"* (Male, 24, Mumbai). Interestingly, many respondents expected a luxury brand to have a story or a heritage around it so that they could understand the product in an effective manner. They believed that luxury brands are exclusive and unique so heritage could add more value to the brand.

6.3 Image reflection through Luxury Brands

"It should be worth it if I am spending extra money on it," said a respondent (Female, 22, Delhi), who believes that despite the quality, experience and good packaging being the obvious characteristics and expectations from a luxury brand, it should be able to deliver what it promises and should provide value for money. The respondents would like to derive pleasure from luxury brands.

"It will give me a sense of accomplishment" (Male, 23, Delhi).

"It is something which differentiates me from the masses" (Female, 23,Mumbai).

The respondents stated that they feel good, elegant and classy. They also mentioned that they start believing in themselves while consuming luxury brands. There were some differences in responses from Delhi and Mumbai. Respondents from Delhi believed that luxury products would help them in conspicuous consumption and it would reflect their image to be exclusive and unique among their peers and friends. However, respondents from Mumbai stated that they would feel sophisticated and would associate a sense of accomplishment with themselves. They exclaimed that they would feel proud of themselves and would be happy with their identity.

Respondents perceived that people who consume luxury are classy, sophisticated, exclusive and elite. Respondents believed that they are respectable and trustworthy.

"It is a materialistic world; I would like to own a luxury brand and want people to look up to me." (Male, 24, Delhi)

6.4 Perception of Personal Care Luxury Brands

"Personal care luxury brands are sophisticated, classy, caressing and enriching. The thought of using these brands gives me an adrenaline rush" (23, Male, Delhi).

Most respondents believed that personal care luxury brands are very sophisticated, elegant, caring, authentic, and deliver their promise. There were many brands that they could recall as it was on the top of the mind such as Body Shop, Clinique, Forest Essentials, Lush, Neutrogena, Estee lauder and Mac.

All the respondents perceived personal care brands in the luxury segment to have high quality and long lasting effects based on the consumers' needs. A

respondent stated, "It was perfect how these brands targeted each problem separately; for example, different products for pimple care, and dry skin, which helped in keeping specific products for specific problems".

The respondents expected these brands to have exceptional technology in the products so that they would be able to deal with their personal problems. They mentioned that they believe in investing in personal care products because their personal hygiene and care are important to them.

Moreover, women knew more about personal care luxury brands than men. Interestingly, when projective techniques such as word association and image association were carried out to understand the sub-conscious level of the consumers, it was identified that women consumers were more aware about brands and the country of origin of luxury brands than men. Men were not aware about most brands and could not associate with them. For their grooming needs, they sought advice from women. To summarize, level of awareness of luxury personal care products is higher among women than men.

Proposition 1: Women are more aware about luxury personal care brands than men

6.5 Key Purchase Drivers

There were mainly two categories of drivers; extrinsic and intrinsic. Extrinsic elements comprise of brand promise and value, packaging, customization and country of origin. Intrinsic dimensions were quality where fragrance, colour, ingredients were important for the respondents to buy luxury personal care products (Refer Fig. 1).

6.5.1 Brand Promise and Value

Many respondents perceived brand promise and brand appeal as the important drivers in their purchase decision of a luxury personal care brand. They stated that the brand appeal and promise need to be connected with their lifestyle and should be credible and believable. Respondents stated that the endorsements undertaken by the brand may have an impact on the buying decisions.

6.5.2 Packaging

Packaging of the product is another factor that would be considered by the consumers for purchasing luxury personal care brands. Many respondents emphasized "elaborate" or "interesting" packaging, that would be really attractive as it could encourage them to buy the product.

"The aesthetics and outer beauty matter a lot and an interesting packaging would definitely attract me," stated a respondent (23, Female, Mumbai).

Respondents also stated that they would like the packaging of the product or the brand to be very exquisite and good as they would be proud of the product and they would be ready to explore it further.

6.5.3 Customization

All respondents mentioned that exclusivity was an important factor for luxury personal care products as they would like to feel unique and special. They mentioned that if the brand would be personalized or customized according to their needs and requirements, then it would be easier to purchase the products. Respondents stated that they do not want to use a brand which someone else uses as the 'special effect' does not exist. Personalization or customization plays an important role in developing exclusive and

unique feelings among the consumers.

It was also identified that women consumers are more involved in the process of buying a personal care luxury brand. They carry out thorough analysis of the brands and products. On the contrary, male consumers do not undertake evaluations and comparisons and put in less time and efforts for this products category. Hence, it can be stated that purchase behaviour of these products varies with gender.

Proposition 2: Personal care luxury purchase behaviour differs on the basis of gender

Furthermore, men use women's knowledge and expertise to buy these products as they are conscious about their personal grooming. It was also identified that men were influenced by women's knowledge of luxury personal care brands as it was comprehensive and up-to-date. They mentioned that they trust women and considered their choices in these categories. Therefore, it can be stated that women have a key role in affecting the purchase decision of men for luxury personal care products.

Proposition 3: Women have a significant role in influencing the purchase decision of men for luxury personal care products

6.5.4 Country of Origin

Country of origin for the brand was not an important factor in the purchase decision. Many respondents said that they were not aware of the country of origin of various brands. This may be due to lack of research by consumers. However, some respondents were aware of the country of origin of luxury personal care products but felt that it was not the deciding factor for purchase. They mentioned that country of origin adds an extra value to the brand appeal and its promise, and helps in understanding the product history and heritage. It also reflects the technology used by the brand. However, respondents would also consider a product from an unknown country if the brand has a global presence, is known in their peers groups and promises good quality and excellent brand appeal. Interestingly, respondents would also not make a conscious effort to go online to identify the country of origin. They would be happy if their peers accept the brand. Respondents are open to experimenting with new brands and are not concerned about the country of origin. To summarize, country of origin plays a small role in the purchase of luxury personal care by consumers.

Proposition 4: Country of origin is not a key driver in purchasing personal care luxury brands

6.5.5 Quality

The quality of the product is very crucial and for most respondents, it is the intrinsic key driver for purchase of luxury personal care products. Many respondents believed that as they have to pay a higher price for luxury products than for mass brands, they expect the product to be of high quality. Interestingly, respondents mentioned that they did not mind splurging on a personal care luxury product of supreme quality. They also perceived that these products use the latest technology to deliver superior quality. They associate personal care products at a very personal level; for instance, with their skin, hair, etc. Respondents also emphasised that good fragrance, attractive colour and ingredients are important elements that are considered while purchasing luxury personal care products.

6.6 Low Impact of Social Media

Respondents stated that they do not trust social media for luxury personal care products. They believe that digital platforms such as Facebook, Twitter, etc. do not have credibility for luxury personal care brands.

"Social Media influencing my purchase decision? Not really!" (23, Male, Delhi)

"I like to visit blogs and read user reviews but (they) do not act as a catalyst in my purchase decision."(24, Female, Delhi)

They believed that luxury personal care products are individualistic in nature and they cannot trust the views posted on these platforms as they are specific to individual requirements. Therefore, they want these brands to connect with consumers in an exclusive way.

"Using social media is too main stream. I would expect a personal care luxury brand to do something exclusive." (Female, 24, Delhi).

Respondents do not connect themselves with social media for luxury personal care products. However, they might read some blogs or user reviews to gather information. Hence, it can imply that social media usage as a promotional tool does not affect the purchase decision of consumers for luxury personal care products.

Proposition 5: Social media as a promotional tool plays a low role in influencing personal care luxury users

6.7 Preference of online forums

Respondents discussed that if personal care luxury brands had their exclusive websites and pages, it would engage them more and would be appreciated. Respondents visit websites or blogs to gather information about the brand and the products. They mentioned that they would love to know about the variants, ingredients and user reviews on the products and brands. They stated clearly that social media websites would not influence their purchase decision but the user reviews and blogs are an important source of information gathering.

All respondents felt that exclusive online forums for personal care luxury brands would enable the luxury personal care brands to maintain their exclusivity. Therefore, exclusive websites can be developed by luxury personal care products as they influence the purchase decision of the consumers.

Proposition 6: Exclusive websites of luxury personal care brands would affect consumers' purchase decisions

6.8 Indian Luxury Brands in Personal Care Segment for the Future

Respondents stated that there could be a few personal care luxury brands originating from India. They were ready to explore the Indian luxury personal care products. Many respondents mentioned that they would prefer new brands to capitalize on the heritage, exclusivity and specialty of India. They perceived that if the brand relates to India and its proposition as a country, then it would appeal to the consumers in its true sense. Respondents cited the example of Ayurveda and natural herbs. They all agreed that they prefer natural products as it would suit their skin in an effective way as compared to artificial ingredients.

The other factors they would prefer in an Indian brand would be its promise, proposition and appeal. They all responded that it is very important for these brands to market and communicate in a way that would appeal to the consumers. It is essential for the brands to have a global presence for these consumers. Moreover, respondents also emphasized the need for good quality in these product categories. Therefore, it was identified that Indian luxury brands in the personal care segment would be preferred by the respondents because they believe that the Indian brands would know their requirement in an effective way. However, there are pre-requisites such as quality and brand image that needs to be associated with these brands.

"India is famous for Ayurveda. I only prefer to use natural and herbal products and would not mind using an Indian brand which has a proposition of being natural and ayurvedic" (23, Female, Mumbai).

"India is famous for Ayurveda. A brand banking on Ayurveda and having a good proposition with natural products, I would not mind purchasing it" (23, Female, Mumbai).

"I would buy an Indian brand if it's marketed well, has an exclusive appeal and something which I can relate to. In fact, if it matches the level of luxury to other brands, I would prefer it, because being Indian, it will understand my Indian skin tone better" (23, Male, Delhi).

To summarize, Indian consumers would prefer luxury personal care products from their own country as the companies would understand the nuances and expectations of the individuals in a comprehensive manner.

Proposition 7: Indians would prefer brands originating from their own country in the luxury personal care segment in future.

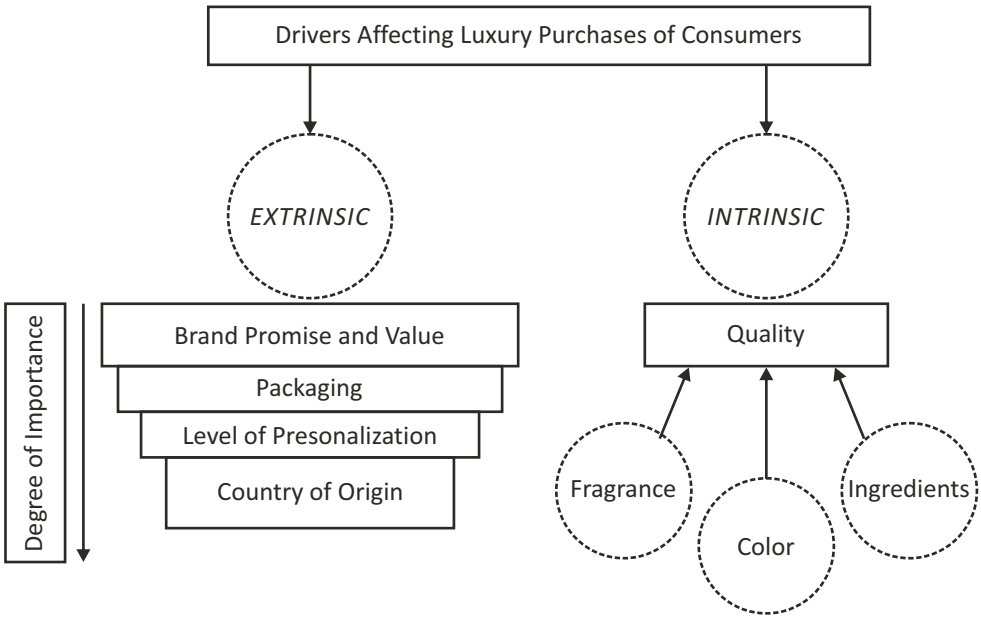

Fig 1: Drivers affecting purchase of luxury personal care products

7. Discussion

The present study found that consumers believe that luxury is about good quality, beyond promise, elegance, exclusive and feeling of indulgence. These elements match with the literature (Wong & Ahuvia, 1998) as these are the basic traits of luxury products. However, the present study adds a new dimension towards the perception of luxury. This study found that luxury describes the identity of the individual, reflects the personality and image of the person. This change has taken place because consumers are particular about their image and relate it with the brands and products they use, and Indian consumers have moved from conspicuous consumption to individualism (Jain et al., 2012) and the theory of impression management (O'Cass & Frost, 2002) does not hold for consumers for luxury personal care products. Moreover, luxury personal care products were related to sophistication and classiness as these categories intimate to the consumers. This purchase is more related to personal orientation and self-directed hedonic pleasure (Coulter et al., 2003). These consumers are more quality conscious and believers of perfectionism (Hafstrom, Chae, & Chung, 1992).

The present study has extended the cue utilization theory (Campbell & Keller, 2003) by adding more elements to extrinsic and intrinsic elements. The key drivers of purchasing luxury personal care products were extrinsic such as brand value, packaging, customization and country of origin, and the intrinsic element included quality. This study found that there is less influence of country of origin and social media on consumers when they buy luxury personal care products. This finding contradicts with the literature of country of origin that mentioned that country of origin is related to the product quality (Maheswaran, 1994), perception (Busacca, Bertoli & Molteni, 2006) product evaluation (Verlegh & Steenkamp, 1999) and purchase (Agrawal & Kamakura, 1999). Consumers are more concerned about the value that the product delivers and its acceptance in their peer groups as they more educated and learned. Additionally, this study found that consumers would need exclusive websites of luxury personal care products as they carry out extensive analysis of brands. Furthermore, this study found that women are more aware of luxury personal care products and play a leading role in developing purchase decisions of men to buy these products.

Lastly, the present study found that Indian consumers are open to luxury personal care products from their own country in future. However, they would need natural ingredients, good quality, global presence and high acceptance in their peer groups. It implies that Indian consumers are non-ethnocentric and do not evaluate products on the basis of country of origin (Lee et al., 2013).

8. Implications

8.1 Managerial Implications

The present study found that consumers emphasize on projection of image, identity and personality while using luxury brands. These elements can be added to the branding approach along with elegance, exclusivity and classiness while developing campaigns. Different story boards can be developed that can project the image of users. The present study found that brand promise and value, packaging and customization are important for the consumers. These elements can become appeals of advertising campaigns for these products as consumers would like it. Additionally, the present study found that quality - primarily fragrance, colour and ingredients - are important for the consumers. These elements need to be used by luxury personal care brands and could be communicated by

advertising campaigns. However, this study found that country of origin is not an important dimension for consumers as they prefer a good product irrespective of its origin. These findings are important for brand managers as they can draft the branding and communication strategies accordingly. Moreover, this study found that women prefer beauty and elegance in the products so exclusive campaigns can be developed with aesthetic appeal to target this segment. This study found that women also play a crucial role in influencing the purchase decisions of men. Advertising campaigns can be developed where women's smartness and knowledge of these products could be reflected. This study found that awareness about luxury personal care brands is less among men as compared to women. Campaigns can be developed to increase the awareness about these brands among men by making more involving and engaging ads. Additionally, this study found that consumers would need exclusive websites for these products that could be more detailed and comprehensive. Interestingly, this study found that influence of social media would be less on consumers for luxury personal care products and therefore, these platforms can be used for developing a relationship with the consumers and not for marketing the brands. Lastly, Indian consumers are open to luxury personal care products of their own country and this is an excellent opportunity for companies. However, they would like good quality, global appeal and acceptance in their peer groups. Luxury personal care products could be developed from India with natural ingredients; they can expand their presence to a global level through digital media and can be connected and engaged with the networks of individual consumers to have a better impact.

8.2 Scholarly Implications

This study helps different scholars to work on cue utilization framework for various products and services such as apparels, automobiles, hotels and spas. This framework would help in understanding the effect of country of origin on consumers. Scholars can also develop individual studies on different elements that have emerged from this study such as brand promise, packaging, personalisation and quality. Moreover, there could be a study on effect of image and identity of the consumers on their purchase decisions as this research identified that these are important elements for the consumers. Scholars can also develop exclusive studies of men and women as their awareness levels and orientation for luxury personal care brands are different. Scholars can study the usage of social media and digital platforms for luxury personal brands as the present research found they do not like social media but would need exclusive websites. Lastly, an exclusive scholarly study can be developed for Indian luxury personal care products where consumers and the industry perspective can be undertaken as this research found that respondents are eager to experiment with these brands.

9. Limitations and Scope for Future Research

This research forms the starting point of future studies on personal care luxury brands as the dimensions, drivers and propositions were derived from qualitative research. Future studies can be developed to test these elements quantitatively. This study was carried out on luxury consumers of personal care products who were in the age group of 18-30 years. This study can be extended to an older age group and a comparative study would help to understand the differences and similarities in both age groups. The present study focused on only two Indian metro cities. A similar study can be conducted in other metro and

non-metro cities to generate a deeper understating about the domain.

It can be further extended to luxury services such as hotels and spas. Furthermore, this study found that there is a key influence of reference groups on the purchase decisions so exclusive studies can be undertaken to understand this effect and how it works and develops the networks as it would help the brands to engage well with the consumers. Additionally, this study found that there was low impact of social media but consumers would need exclusive websites for luxury personal care products. It would be interesting to understand the media consumption habits of the luxury consumers as their usage pattern would help the marketers to develop the strategies accordingly.

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"An Empirical Study on Employees' Perception towards Learning and Development: A Self-Learning Perspective"

Kunjal Sinha

Stuti Trivedi

Abstract

Organizations seek to become learning, innovative and high performing organizations. Yet, implementation is elusive and is not often based on research about what constitutes a learning, innovative and high performing culture. However, organizations wanted a way to diagnose their current status and guide change, and to explore whether self-learning develops innovative, learning organizational culture and whether it leads to improved bottom line of the firm.

The study is an empirical study with primary data collected from employees of petrochemicals, fertilizer and engineering industries in central Gujarat. The researchers were able to extract three factors which are named as 1. reward and positive interpersonal relationships; 2. positive and directed/focused change; and 3. open discussion of mistakes. It is also found that the most important benefit of self-learning is that it improves the bottom line and operational profits of the organization. Analysis of Variance ANOVA reveals that there exists a relationship between the perception for self-learning statements (seven out of ten statements) and age.

Keywords: *Learning; Self-learning; Employee Perception; Improving Bottom line*

1. Introduction

Workplaces—their psychological contract and the demands they place on employees at all levels to learn and work faster—are changing at exponential rates. Organizations often expect that learning and knowledge creation will take place continuously for individuals and that they will share what they know in ways that promote learning in groups and throughout the organization.

The current research work is based on the premise that human resource developers must redefine their relationships to leaders if they wish to influence the conversation taking place among senior leaders about the need to cultivate strategic/informal learning to improve performance and reach strategic goals. Human resource development (HRD) has some opportunity to proactively influence the direction, pace and salience of learning in workplaces. To best play that role, we have argued for a model of change guided by organizational learning diagnostics that are used to assess gaps, guide interventions, and subsequently measure changes (Gephart, Marsick, Van Buren, & Spiro, 1996; Marsick & Watkins, 1999).

2. Literature Review

Wang and Ahmed, (2003) in their research work mentioned the importance of knowledge management in organizational learning, particularly that knowledge which is stored in individuals in the form of skills, experience and personal capability.

Initially, the terms "organizational learning" and "learning organization" were used interchangeably, but now there are clear distinctions between the two concepts. According to Marshall, Smith and Buxton (2009) organizational learning was first used as a concept by Cyert and March in the early 60's although the interest in this concept dates back to more recent times, in the early 1990s.

According to Earterby-Smith, Crossan and Niccolini, (2000), despite the many definitions that the concept of "organizational learning" had, it is now generally accepted that learning can be defined as a change in beliefs, in cognitions or in the way of acting, or behaving.

The model of organizational learning by Crossan, Lane and White (1999) is well-known and often used in academic contexts. The value of the proposal lies in its integration of three levels of learning into the same model, namely individual, group and organizational learning, and of two routes of learning: from the individual to the organization and from the organization to the individual. This model identifies four processes of learning: intuiting, interpreting, integrating and institutionalizing (see figure 1). The first process, intuiting, takes place at the individual level. The second process, interpretation, occurs at the individual and group levels. The third process is integrating, defined as "the process of developing shared understanding among individuals and of taking coordinated action through mutual adjustment. The fourth concept, institutionalizing, "is the process of ensuring that routinized actions occur. This is the process of embedding learning that has occurred by individuals and groups into the organization and it includes systems, structures, procedures and strategy" (Crossan, et al., 1999).

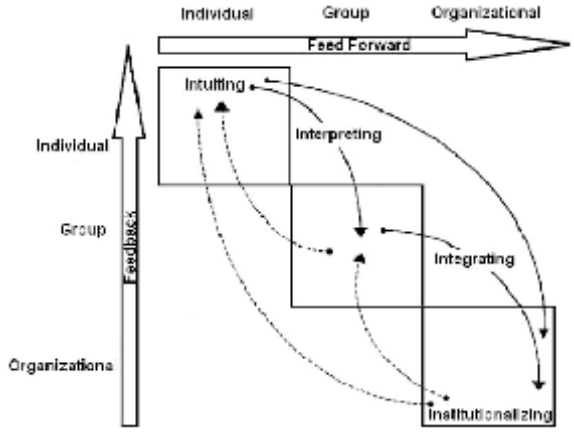

Figure 1. Crossan, Lane and White Model (1999) of Organizational Learning

The processes of group and organizational levels will not be discussed in this paper; instead, it will be taken up by the researchers in future empirical studies, as mentioned in the research section of this paper.

3. Self-Learning (Learning at Individual Level)

The link between individual learning and organizational learning is a controversial one and also one of the most debated subjects in the literature on organizational learning. Some authors claim that "organizational learning is the product of individuals' learning" (Argyris and Schon, 1978; Fiol and Lyles, 1985; Antonacopoulou, 2006) while other authors appreciate the fact that organizational learning is more than the sum of the members' individual learning in an organization (Crossan, Lane and White, 1999; Casey, 2005). Ameli and Kayes, (2011) considered that organizational learning is more than the sum of the members' individual learning in an organization and thus agreed with the idea that "the whole is more than the sum of the single parties". Chiva, Grandío and Alegre, (2010) argued that although employees may leave an organization at some point, what they have learned at the individual or team level does not necessarily leave as they leave the organization. This is because a part of what they have learned may be embedded in systems, routines or strategies in organizations.

According to Akgün, Lynn and Byrne, (2003), organizational learning is a social process and if social cognition studies know that individual cognition is influenced by interaction with other individuals and by organizational norms, routines and culture (Virkunnen and Kuuiti, 2000), then it is possible to integrate cognition and social interaction into the study of organizational learning (Alllard-Poesi, 1998).

As per Alexandra Luciana Guţă (2012) in his work titled "The Learning Organization - An answer to the challenges of the actual business environment", in a knowledge society and a knowledge economy, organizations need to have sustainable competitive advantages against their competitors; they need to innovate and to have performance. Organizational learning is a way to achieve these features, because, through organizational learning, the intellectual capital of an organization can be developed. The learning organization is an ideal type of organization that learns. After briefly presenting the concepts of "learning organization", "organizational learning", "individual learning", and classifications of types of learning from different perspectives, their work presents managerial adaptations, starting from the actions that an organization has to undertake in order to become a learning organization. Then, it emphasizes on the outcome that the learning organization is an ideal type of organization, thus managers should first make efforts in the sense of creating conditions that could enable organizational learning and then for turning the organization into a learning organization.

Anita L. Tucker, Ingrid M. Nembhard, Amy C. Edmondson (2006), in their work "Implementing New Practices: An Empirical Study of Organizational Learning in Hospital Intensive Care Units" contribute to research on organizational learning by investigating specific learning activities undertaken by improvement project teams in hospital intensive care units and proposing an integrative model to explain implementation success by testing the model's hypothesis. They collected data from 23 neonatal intensive care units seeking to implement new or improved practices by analyzing the frequency of specific learning activities reported by improvement project participants and discovered two distinct factors: learn-what (activities that identify current best practices) and learn-how (activities that operationalize practices in a given setting) through general linear model analysis and found support for three of our four hypotheses.

Iacques Barrette, Louise Lemyre, Wayne Corneil, Nancy Beauregard (2007), in their work titled "Organizational learning among senior public-service executives: An empirical investigation of culture, decisional latitude and supportive communication" studied that for several years, organizational learning has been a concept of interest in the search for efficiency, innovation, and knowledge management in both the private and public sectors. By identifying three major determinants of organizational learning i.e. 1. the organizational learning culture as a major determinant; 2. the control or decisional latitude that individual employees have over their work, and 3. the impact of supportive supervisor communication. They surveyed a sample of 1,822 public service executives and their results showed that organizational learning culture and decisional latitude played an important role in the acquisition of organizational learner attitudes and behaviour. Their research work also supported the premise that supervisor communication was not significantly related to individual organizational learning.

4. Self-Learning and Age

The study by Soud Almahamid and Arthur C. McAdams (2010) titled "The Relationships among Organizational Knowledge Sharing Practices, Employees' Learning Commitments, Employees' Adaptability, and Employees' Job Satisfaction: An Empirical Investigation of the Listed Manufacturing Companies in Jordan" indicate that there is no difference in the evaluation of organizational knowledge sharing practices in terms of demographic variables such as gender, age and level of education.

The way people act, interact, and make decisions is basically influenced by their personal characteristics (Hirsh & Kummerow, 1990). This issue could be approached from a developmental perspective. However, tackling the topic from this standpoint might be unfeasible due to the great complexity of the domain. It is important nevertheless, to clearly state that most of the research that has been done in the field points out that throughout most of the employable lifespan of a person, his/her cognitive abilities remain mostly unaltered (Mast, Zimmerman & Rowe, 2008). Proof of this is in several studies including the Seattle Longitudinal Study (SLS), which indicates that many basic intellectual abilities continue to improve or remain stable over the lifetime until at least age sixty, and that when abilities begin to show decline, these are somewhat modest until the eighties (Schaie,!2005).

J.O. Arenas Valladares (2011) in his study on factors that affect employees' engagement in informal

learning activities, examined whether there is a relationship between age and the degree of engagement of employees in informal learning activities. Exploring the relationship between employees' age and their degree of engagement in informal learning activities was also an important aim of this study. The results obtained from the analysis indicate that there is no significant relationship between the two variables. This implies that, no matter what the age, employees engage equally in informal learning activities. From the results obtained from the informal learning activities descriptive, we noticed that, aside from researching on the Internet and intranet, and interacting with other people at work via email, the most used activities comprise no technology usage.

With the imperatives learnt from the literature review and to understand the association between the perception of employees towards self-learning and their age, the following hypothesis is framed:

Ho: There is no relationship between the perception of employees towards self-learning and their age.

H1: There is a relationship between the perception of employees towards self-learning and their age.

3. Objectives of the Study

1. To understand various factors of self-learning that helps improve bottom line.
2. To find the relationship between statements of self-learning and their age groups.

4. Research Methodology

The learning culture in the organization can be measured at all three levels viz., individual, group and organization, which, in turn, helps the organization to improve its bottom line. The current study is a descriptive study for understanding the learning culture in the organization at the individual level. For this, primary data is collected and the data collection method used is the personal survey method. The data is collected through a structured questionnaire. The sampling technique adopted for the survey is the non-probability convenience sampling technique. The total samples size is 120 employees (middle-level employees) which are collected from the following companies located in Vadodara-Anand region of Gujarat state, India:

Table 1: Sample Size

Industry	Company	Sample size
Petrochemicals/Fertilizer	ONGC	20
	GSFC	25
Engineering	FAG	25
	Jyoti Ltd.	25
	Elecon	25
Total Sample Size		**120**

5. Data Analysis

Table 2 indicates the demographic profile of the respondents.

Table 2: Demographic Profile of the Respondents

Particulars	Frequency	Percentage
Age		
Below 30	37	30.8
31 to 40	30	25.0
41 and Above	53	44.2
Gender		
Male	104	86.7
Female	16	13.3
Education		
HSC	11	9.2
Graduate	35	29.2
Post Graduate	65	54.2
Others	9	7.5
Category		
Technical	24	20.0
Non-Technical	96	80.0
Experience (In Years)		
Less than 5	33	27.5
6 to 10	20	16.7
11 to 15	13	10.8
More than 15	54	45.0

For the present study, factor analysis is performed on the 10 statements of self-learning (learning at the individual level) of the employees in industries like Petrochemicals/Fertilizer and Engineering. These statements cover the perception of individuals about their efforts towards self-learning in their organizations. These statements were measured on a continuum ranging from one to three (1 –Disagree to 3 - Agree). Table 3 gives the reliability statistics of the 10 statements of self-learning. The Cronbach's Alpha statistic is 0.805 which indicates strong reliability of the measurement used.

Table 3: Reliability Statistics	
Cronbach's Alpha	No. of Items
.805	10

Bartlett's Test of Sphericity: As shown in Table 4, the significance value of Bartlett's Test is 0.000; this leads to rejection of the idea that the correlation matrix is the identity matrix.

Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy: Small values of the KMO Statistic indicate that correlations between a pair of variables cannot be explained by other variables, and hence, factor analysis is not suitable. The data has a KMO statistic of 0.801 (Table 4), which is greater than 0.5. Hence, this value is acceptable and justifies the appropriateness of factor analysis.

Table 4: KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	415.459
	df	45
	Sig.	.000

Variance explained

Table 6 shows the Eigen values of all the components that can be extracted and the cumulative variance. However, it is required that the maximum amount of variance should be explained in a minimum number of components; for this reason extraction of the components is required. Only those factors are extracted for which the Eigen values are greater than one. These factors are three in number and together contribute 66.327% of the total variance. This is a fair percentage of variance to be explained and assumes that factor analysis is appropriate. Thus extracting three factors from a total of 10 statements for measuring employee perception towards self-learning is good by all means.

Further, Table 6 shows the extraction sum of square loadings for the scale for measuring the perception of employees towards self-learning. However, a careful look at Table 6 shows that 66.327% variance is not uniformly distributed across all components where only the first component accounts for 38.453% of the variance. Thus, in order for the variance to be uniformly distributed across all the components, a rotation of the components matrix is required. A components matrix is the loadings of various variables to the extracted components.

Table 5: Communalities		
Statements	**Initial**	**Extraction**
People openly discuss mistakes in order to learn from them	1.000	.875
People help each other learn	1.000	.571
People can get money and other resources to support their learning (like for further education, for free net access, etc.)	1.000	.444
People are given time to support learning (can ask questions to superiors any time)	1.000	.571
People are rewarded for learning	1.000	.736
People listen to others' views before speaking	1.000	.678
People give open and honest feedback to each oth er	1.000	.592
People are encouraged to ask "why" regardless of rank	1.000	.637
Individuals are able to break out of traditional mind -sets to see things in new and different ways	1.000	.766
Individuals have a clear sense of direction in their work	1.000	.763
Extraction Method: Principal Component Analysis.		

Table 6: Total Variance Explained									
	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Compo nent	Total	% of Variance	Cumula tive %	Total	% of Variance	Cumula tive %	Total	% of Variance	Cumula tive %
1	3.845	38.453	38.453	3.845	38.453	38.453	3.529	35.286	35.286
2	1.722	17.224	55.677	1.722	17.224	55.677	1.936	19.356	54.641
3	1.065	10.650	66.327	1.065	10.650	66.327	1.169	11.685	66.327
4	.821	8.209	74.535						
5	.626	6.256	80.791						
6	.502	5.021	85.813						
7	.473	4.735	90.547						
8	.327	3.265	93.813						
9	.326	3.256	97.069						
10	.293	2.931	100.00						

Although the initial or unrotated matrix indicates the relationship between the factors and individual variables, it seldom results in factors that can be interpreted, because the factors are correlated with many variables. In such a complex matrix, it is difficult to interpret the factors. Therefore, through rotation, the factor matrix is transformed into a simpler one that is easier to interpret. The method of rotation used for this analysis is VARIMAX, which is the most commonly used rotation method. The variance explained by each component after the rotation method is shown in Table 6. It is visible from this table that the variance is now evenly distributed in a range of 35.286% – 11.685%, which was 38.453% - 10.650% before rotation.

Rotated Factor Matrix: An analysis of factor loadings in the rotated factor matrix helps in interpreting and naming the three factors that have been extracted in the earlier section. Interpretation is done by identifying the statements that have very high loadings on the same component. These factors can then be interpreted in terms of the statements that load highly on it.

Under Varimax rotation, 7 out of 10 statements have factor loadings ≥0.550 in case of Factor 1. This reveals that 70% of the statements are clubbed into Factor 1. In the similar way, 2 out of 10 statements have factor loading ≥0.550 in case of Factor 2. This reveals that 20% of the statements are clubbed into Factor 2. Likewise only 1 out of 10 statements have factor loading ≥0.550 in case of Factor 3. This reveals that 10% of the statements are coming in Factor 3. On the basis of Varimax rotation with Kaiser Normalization, 3 factors have emerged.

Table 7: Grouping of Key Statements Based on Factor Loadings

Statements	Factor1	Factor 2	Factor 3
People are rewarded for learning	.823		
People listen to others' views before speaking	.782		
People are encouraged to ask "why" regardless of rank	.751		
People give open and honest feedback to each other	.745		
People are given time to support learning (can ask questions to superiors any time)	.670		
People help each other learn	.626		
People can get money and other resources to support their learning (like for further education, for free net access, etc.)	.535		
Individuals are able to break out of traditional mind -sets to see things in new and different ways		.834	
Individuals have a clear sense of direction in their work		.766	
People openly discuss mistakes in order to learn from them			.881

Naming of the Factors

Table 7 indicates the grouping of statements under each factor as per factor loadings. The names given to the three factors are as under:

1. **Reward and Positive Interpersonal Relationship:** There are seven statements in this factor. These statements indicate that employees in the organization have a good interpersonal relationship with their subordinates and superiors. This free flow and open communication amongst themselves creates a positive culture towards self-learning. These statements also indicate that monetary and non-monetary rewards and recognition motivates them towards self-learning.
2. **Positive and Directed/Focused Change:** There are two statements in this factor. These statements reveal that employees in the organization are open-minded and accept positive change due to their continuous self-learning process. Thus, the advantage of self-learning is that people start accepting new things by coming out of the traditional mind-set and hence, these employees become change agents in the organization. They do so with a view of achieving some future benefits (monetary or non-monetary) for which they have a clear focus and direction in advance.
3. **Open discussion on Mistakes:** There is only one statement under this factor which is, people openly discuss mistakes in order to learn from them. This indicates that employees openly discuss their mistakes without hesitation with their colleagues and learn from those mistakes.

Data was also collected from employees regarding their perception on different ways employees' self-learning benefits the organization. The following table indicates the ranks given by the employees by prioritizing the three benefits as 1 most important and 3 least important.

Table 8 indicates the benefits of self-learning in an organization. The weights indicate that self-learning in its foremost position helps improve bottom line/ operational profits with the highest weight of 251; this is followed by developing a learning organizational culture with the weight of 245 and lastly, helps in developing innovating organizational culture with the weight of 224.

Table 8: Benefits of Self-Learning

Benefits of Self-Learning	Rank 1	Rank 2	Rank 3	W1	W2	W3	Total Weights	Rank
Improves bottom line/operational profits	44	42	35	132	84	35	251	1
Develops innovative organizational culture	25	55	39	75	110	39	224	3
Develops learning organizational culture	51	23	46	153	46	46	245	2

For the present study, Analysis of Variance is also performed with an objective to understand the association between the perception of employees towards self-learning and their age. For the same, the following hypothesis was framed:

Ho: There is no relationship between the perception of employees towards self-learning and their age.

H1: There is a relationship between the perception of employees towards self-learning and their age.

Table 9 indicates the analysis of variance for age of the respondents and perception of employees towards self-learning. As seen in Table 9, the significance values of seven statements out of 10 are statistically significant i.e. are either 0.50 or less than 0.50. Hence, for all these statements, the null hypothesis cannot be accepted. This means that for these statements, there is a relationship between the perception of employees towards self-learning and age.

6. Empirical Results

Empirical research study on understanding the employees' perception towards self-learning and its impact on improving the bottom lines reveals that the organization has to focus on three self-learning aspects viz., 1. reward and positive interpersonal relationships; 2. positive and directed/focused change; and 3. open discussion of mistakes, which will, in turn, help them to improve the bottom line. The study also revealed that employees' perception towards self-learning also helps develop a learning and innovative organizational culture. This means that those organizations which support individuals to spare time in self-learning and also reward and recognize their earning efforts have better chances to improve their operational profits and also develop a holistic organizational culture in terms of learning and innovation.

Further, the study indicates that a majority of the self-learning statements have a relationship with age. This means that self-learning is an age specific activity. Those organizations which are able to motivate self-learning among all age groups will have all advantages of a learning organization.

Table 9: ANOVA - Perception of employees towards self-learning and their age

		Sum of Squares	d.f.	Mean Square	F	Sig.
People openly discuss mistakes in order to learn from them	Between Groups	.349	2	.175	.533	.588
	Within Groups	38.317	117	.327		
	Total	38.667	119			
People help each other learn	Between Groups	6.072	2	3.036	10.897	.000*
	Within Groups	32.595	117	.279		
	Total	38.667	119			
People can get money and other resources to support their learning (like for further education, for free net access, etc.)	Between Groups	5.582	2	2.791	13.104	.000*
	Within Groups	24.918	117	.213		
	Total	30.500	119			
People are given time to support learning (can ask questions to superiors any time)	Between Groups	5.361	2	2.680	9.381	.000*
	Within Groups	33.431	117	.286		
	Total	38.792	119			
People are rewarded for learning	Between Groups	18.952	2	9.476	28.613	.000*
	Within Groups	38.748	117	.331		
	Total	57.700	119			
People listen to others' views before speaking	Between Groups	6.960	2	3.480	8.680	.000*
	Within Groups	46.907	117	.401		
	Total	53.867	119			
People give open and honest feedback to each other	Between Groups	4.756	2	2.378	6.478	.002*
	Within Groups	42.944	117	.367		
	Total	47.700	119			

		Sum of Squares	d.f.	Mean Square	F	Sig.
People are encouraged to ask "why" regardless of rank	Between Groups	6.818	2	3.409	9.244	.000*
	Within Groups	43.148	117	.369		
	Total	49.967	119			
Individuals are able to break out of traditional mind-sets to see things in new and different ways	Between Groups	.034	2	.017	.038	.963
	Within Groups	52.091	117	.445		
	Total	52.125	119			
Individuals have a clear sense of direction in their work	Between Groups	.549	2	.275	.907	.406
	Within Groups	35.417	117	.303		
	Total	35.967	119			

***Statements which are statistically significant at 5% level of significance**

7. Limitations of the study

The current study is limited to companies in the state of Gujarat. Also, there are only three sectors considered for analysis viz: Engineering, Fertilizer and Petrochemicals. The analysis is limited to a sample size of 120 respondents. The researchers wish to address these limitations in their future work as mentioned in the next section.

8. Further Work

There will be a lot of scope for further work in the area of Leaning and Development as mentioned below:

1. Comparative Analysis of Learning and Development at various levels viz: Individual, Group and Organizational – Data is being collected related to all the three levels of L&D viz: Individual Level, Group Level and Organizational Level.
2. Comparative Analysis of Learning and Development practices between various related sectors – Data is also being collected from other sectors like Banking, Retail, Pharmaceutical, FMCG, IT-ES, Chemicals and Textile.
3. Similar kinds of studies can be undertaken in states other than Gujarat.
4. Comparative Analysis of Learning and Development practices between companies (sector-wise) based at different states.

9. Managerial Implications

The current study will be of great help to Engineering, Fertilizer and Petrochemicals organizations. The organizations get an idea that self-learning is an age specific activity. Those organizations that are able to motivate self-learning among all age groups will have

all advantages of a learning organization. Mainly there are three takeaways for an organization from this research paper. They are 1) Reward and Positive Interpersonal Relationship, 2) Positive and Directed/Focused Change and 3) Open discussion on Mistakes. If these three practices are followed by an organization then, they will be able to increase and improve self-learning in their organization. This, in turn, will help them to improve their bottom line.

"Self-education is, I firmly believe, the only kind of education there is."

- Isaac Asimov

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Customers' Preference Towards Functional Benefits Versus Experiential Benefits from Bank Brands

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Abstract

The Indian banking industry has been a witness and a party to an important transition. Gone are the days when banks were operating in a sellers' market and could take advantage of it. They could afford being dingy, shabby places ruled by snob officers who took advantage of customers' weak position and could thrive by merely offering functional benefits. Now, because of the immense competition, players in the banking industry find themselves operating in a customer driven market. Customers now have more choices and banks have to cater to more evolved needs of the customers, like experiential benefits, in order to retain the existing customers and to attract new ones.

Customers derive functional, symbolic and experiential benefits from brands. The value that customers derive out of a service brand comes out of either of these or a combination of all of these, depending on the context in which the service brand operates. This study deals with the question of whether Indian customers have evolved to a level where they also seek experiential benefits from bank brands along with functional benefits, and if they do, how important are either of these benefits for a bank's customer. It is worth mentioning that symbolic benefits are not considered under this study.

This study takes into consideration both rural and urban customers' preferences as well as the attitude of existing and potential bank customers. A survey on 240 respondents consisting of the aforementioned categories of bank customers has been conducted to identify whether functional benefits are preferred over experiential benefits or vice versa. An impact of these benefits on customer loyalty has also been examined. The results are expected to help banks in devising strategies to improve overall customer satisfaction.

Keywords: *Consumer Behaviour, Bank Brands, Services Marketing, Brand Benefits, Functional Benefits, Experiential Benefits*

Introduction

Contribution of banks is vital for the economic health of any country, and India is no exception. Across the globe, and in India too, banks play a dual role - one, as mobilizer of public savings and two, in directing the flow of funds for constructive purposes. Considering the critical role of banks, from time to time, the Government of India has taken strategic initiatives depending on the role it expects banks to play. Some such initiatives are nationalizing the banks in 1969 and 1980, and then opening the industry for private players in 2013.

The Government of India nationalized a total of 20 banks - 14 in 1969 and 6 in 1980 - by substituting private ownership with public ownership. Nationalization of banks made possible the transformation from class banking to mass banking. Branch expansion programmes under the aegis of Reserve Bank of India tried to make available the necessary banking facilities in all parts of the country especially the untapped rural and semi urban areas. This has been considered as a seminal step towards implementation of projects meant for rural development and upliftment of economically weaker sections. The consequence to this effort is a gradual increase in the usage of banking facilities even in the remotest of areas. On another front, with their credit schemes, banks played a decisive role in improving the health of sick industrial units and thereby prevented unemployment. The 'priority sectors' that were neglected initially got a new life with an increased flow of credit. The reform process that started in the 90's has provided a pool of opportunities to the financial sector. From here on, identification of growth opportunities and formulating strategies to exploit them has been considered as the key to success.

Presently, the Indian banking industry is passing through a phase of transition from being in a powerful sellers' market to operating in a customer driven market. The customers now have more choices in terms of choosing one bank over another. Competition amongst banks is getting fiercer with every passing day through the addition of unique service offerings to enhance customer satisfaction. For a bank, a customer can be defined as a user or potential user of banking services. It would also include an account holder, a representative, or a person carrying out casual business transactions with a bank, or a person who, on his own initiative, may come within the banking fold (Talwar Committee Report, 1976). The efficiency of a bank can be measured in terms of service delivery to its target customers. For survival, growth, and continuous customer satisfaction, it has become imperative for banks to introduce new and better services in addition to the existing services. The globalization of the Indian economy has truly called for a much more careful approach on the part of the Indian banking sector to improve the overall quality of customer services through, for example, the smart use of technology. Adding new customers and retaining existing ones have become crucial for competing. Excellent service also entails employee engagement with customers. Such behaviours would affect customer satisfaction, which in turn, affects the profitability of banks. Satisfaction is related to the perception a customer holds about a brand and the eventual value provided by it. The value for banking services to a customer can be in the form of perceived functional benefits such as interest rates, number of branches, number of ATMs, etc. and/ or through experiential benefits that include employee behaviour, ambience, infrastructure, etc. The relevance of brand image and its associated value provides an impetus to further explore the field and

examine whether customers give preference to functional benefits over experiential benefits or vice versa, whether the preference changes when existing and potential customers are compared, and whether there is any impact of the urban and rural area parameter on such preferences. The present study is an attempt to find an answer to the issues raised.

Theoretical Frameworks and Review of Literature

Service quality is the result of the comparison that customers make between their expectations about a service and their perception of the way the service has been performed (Parasuraman, Berry and Zeithaml, 1985; 1988). Another understanding of service quality indicates that it is the overall evaluation of a specific service firm that results from comparing that firm's performance with the customer's general expectations of how firms in that industry should perform (Cronin and Taylor, 1992; Parasuraman et al., 1985; 1988). There are two aspects associated with the measurement of service quality namely the number of dimensions that constitute service quality and the operationalization of the measurement.

Bhatta (2010) in a study on service quality found that employee behaviour is an important parameter for choosing a bank, followed by functional benefits like number of branches. It has been further suggested that augmentation in functional benefits supported by pleasant employee behaviour may contribute towards client retention. The study also indicated the adoption of convenient banking products and practices by young customers. It has been proposed that such a trend will increase in future in the urban areas and banks should also provide services like ATM-cum-Debit Cards for competitive necessity.

Perceptions about the dimensions of service quality are viewed to be a function of a customer's prior expectations of what will and what should transpire during a service encounter, as well as the customer's most recent contact with the service delivery system. These perceptions of quality dimensions form the basis for a person's overall quality perception, which in turn, predicts the person's intended behaviours (Boulding et al., 1993).

Understanding of *Customer Satisfaction* in services states that perceived service quality is a global judgment or attitude relating to the superiority of the service, whereas satisfaction is related to a specific transaction (Parasuraman et al., 1988). There is a significant positive relationship between customer satisfaction and customer loyalty. In fact, customer satisfaction is one of the leading determinants of customer loyalty (Kheng, Mahamad, Mosahab and Ramayah, 2010).

Initially, Parasuraman, Zeithaml, and Berry (1985, 1988) proposed that higher levels of perceived service quality result in increased consumer satisfaction, but later studies revealed that satisfaction is an antecedent of service quality (Bolton and Drew 1991). Bolton and Drew (1991) used a common assumption that service quality is similar to an attitude as a basis to suggest that satisfaction is an antecedent of service quality.

Aaker (2009) stated that functional benefits can't be ignored but customers perceive this fact in a different manner. According to customers, these benefits do not represent a convincing reason to go for a brand as these benefits may not represent a basis for a strong long-term relationship due to lack of emotional attachment. Finally, a strong functional association

confines the brand, especially when it comes to responding to changing markets or exploring brand extensions. Thus, it makes sense to move beyond functional benefits and consider emotional, self-expressive and social benefits as a basis for the value proposition. Branch staff can make the greatest impact on quality of services delivery and customer experience in a bank (Padhee, 2011). It has been found that people clearly want convenience and security in their choice of banking channels (Srivatsa and Srinivasan, 2007). Banks have realized that customers want choice in the way they interact with the bank. Thus, banks decided to welcome customers back into the branch and make their experience as pleasant, meaningful and productive as possible (Miller, 2004).

Research Design and Methodology

A descriptive research has been conducted to gain an insight into the consumer's perception of experiential and functional benefits as offered by banks. Primary data has been collected for the research by means of a structured questionnaire (Parasuraman et. al., 1985). A five-point Likert scale has been used for collecting the data where the respondents have to rate the given statements ranging from "Most Important" (5 points are given) to "Least Important" (1 point is given). The questionnaire was administered personally for better understanding.

A total of 240 respondents were taken as sample for the study. Through convenient sampling, 30 respondents were chosen from each of the rural and urban areas for a better comparison. Respondents pertaining to rural areas were chosen from Neemrana, Behror and Chomu villages of Rajasthan. Similarly, respondents for urban areas were chosen from New Delhi, Jaipur, Jamnagar and Mumbai. Half of the total respondents were bank account holders. This composition was expected to reveal valuable insights and test the hypotheses. The test of difference between means, One-way Anova and confirmatory tests have been carried out to test the hypotheses.

Pilot Study

A pilot study has been conducted on 19 respondents and Cronbach Alpha test performed to check the reliability of the items included in the questionnaire. The results of the test indicate the Cronbach Alpha score of 0.965. This signifies that most of the items in the questionnaire are reliable for conducting the study. A clear understanding of the pilot study is presented in Table 1.

Table 1: Statistics Depicting Scale Reliability

Reliability Statistics	
Cronbach's Alpha	Number of Items
.965	29

Item Statistics						
	Mean	SD	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Clean Facility	3.53	1.349	95.58	551.924	.716	.964
Well dressed Staff	3.74	1.195	95.37	563.801	.597	.964
Attractive décor	3.21	1.316	95.89	551.655	.740	.963
Amenities	2.89	1.370	96.21	547.175	.781	.963
A C	3.47	1.219	95.63	557.579	.696	.964
Display of notice	3.42	1.346	95.68	548.895	.767	.963
Long Queue	3.00	1.155	96.11	579.433	.330	.966
Information brochure	2.84	1.259	96.26	550.538	.795	.963
Ease of movement	3.32	1.108	95.79	565.953	.605	.964
Counter design	3.16	1.214	95.95	550.053	.835	.963
ATM inside/close to branch	3.68	1.204	95.42	562.146	.622	.964
Parking Facility	2.79	1.437	96.32	548.784	.717	.964
Inquiry Desk	3.32	1.157	95.79	556.175	.762	.963
Friendly Behaviour	3.37	1.116	95.74	556.427	.787	.963
Employee knowledge	3.58	1.017	95.53	563.485	.716	.964
Willingness to listen	3.63	1.012	95.47	557.930	.840	.963
Explanation of process	3.26	1.408	95.84	543.807	.812	.963
Accessibility of bank employee	3.53	.905	95.58	568.146	.699	.964
Alertness of security	3.63	.955	95.47	569.930	.620	.964
Interest Rate	3.47	1.124	95.63	552.690	.854	.963
Ease of Account opening	3.21	1.398	95.89	544.322	.810	.963
Number of ATMs	3.89	.875	95.21	577.287	.500	.965
Network of branches	3.53	1.307	95.58	552.591	.729	.963
Opening and closing time	3.63	1.212	95.47	557.041	.710	.964
Availability of products	3.89	.875	95.21	581.953	.388	.965
Online/mobile banking	4.05	1.079	95.05	563.386	.675	.964
Time taken for routine activities	3.00	1.247	96.11	584.433	.217	.967
User friendly software applications	3.74	1.098	95.37	558.690	.756	.963
Other services	3.32	1.204	95.79	550.398	.836	.963

Empirical Results

In order to examine the effectiveness of functional benefits versus experiential benefits, the Test of differences between Means has been used. Also, Regression and Gap Analysis have been used to find a causal relationship among loyalty of customers towards a bank as a dependent variable and experiential benefits (comprising grand mean of perception score) and functional benefits (comprising grand mean of perception score) offered by various bank brands. Various hypotheses for examining the above claim have been stated and tested.

Hypothesis I:

H_0: Experiential benefits hold equal importance for account holders and non-account holders.

H_1: Experiential benefits do not hold equal importance for account holders and non-account holders.

Table 2: Mean Differences on Customer Status for Experiential Benefits

	Account Holders	Non-Account Holders
Standard Deviation	0.767	0.795
Mean	3.459	3.381
Standard Error	0.108	
Z (calc.)	0.725	

The result from Table 2 indicates that there is no significant difference in the importance of experiential benefits for account holders and non-account holders.

Hypothesis II:

H_0: Functional benefits hold equal importance for account holders and non-account holders.

H_1: Functional benefits do not hold equal importance for account holders and non-account holders.

Table 3: Mean Differences on Customer Status for Functional Benefits

	Account Holders	Non-Account Holders
Standard Deviation	0.851	0.831
Mean	3.487	3.483
Standard Error	0.115	
Z (calc.)	0.031	

The test of difference of means in Table 3 shows that there is no significant difference in the importance of functional benefits for account holders as well as non-account holders.

Hypothesis III:

H_0: Experiential benefits hold equal importance for rural and urban customers.

H_1: Experiential benefits do not hold equal importance for rural and urban customers.

Table 4: Mean Differences on Customer Location for Experiential Benefits

	Rural	Urban
Standard Deviation	0.789	0.736
Mean	3.417	3.530
Standard Error	0.103	
Z (calc.)	-1.091	

The result from Table 4 depicts that there is no significant difference in the importance of experiential benefits for rural and urban customers.

Hypothesis IV:

H_0: Functional benefits hold equal importance for rural and urban customers.

H_1: Functional benefits do not hold equal importance for rural and urban customers.

Table 5: Mean Differences on Customer Location for Experiential Benefits

	Rural	Urban
Standard Deviation	0.867	0.779
Mean	3.449	3.622
Standard Error	0.111	
Z (calc.)	-1.565	

The result from Table 5 depicts that there is no significant difference in the importance of functional benefits for rural and urban customers. For examining the strength of relationship between dependent variable (Customer Loyalty) and the independent variables related to benefits, a regression analysis has been conducted and outputs are presented in Table 6.

Table 6: Regression Statistics

Multiple R					0.478
R Square					0.228
Adjusted R Square					0.223
Standard Error					0.797
Observations					270.000
ANOVA					
	Df	SS	MS	F	Sig. F
Regression	2.00	50.22	25.11	39.52	0.00
Residual	267.00	169.66	0.64		
Total	269.00	219.89			
	Coefficients	Std. Error	t Stat	P-value	Lower 95%
Intercept	1.136	0.233	4.869	0.000	0.677
Experiential Benefits	0.405	0.085	4.744	0.000	0.237
Functional Benefits	0.181	0.078	2.314	0.021	0.027

After conducting the regression analysis on loyalty considering the functional and experiential benefits, resultant Multiple R of 0.478 corroborates a moderately strong relationship between the dependent and independent variables. The goodness of fit is denoted by Adjusted R Square value of 0.223.The multiple regression equation is given by

Loyalty = 1.136+ 0.405 (ExpBen) + 0.181(FunBen)

Based on the analysis of the data collected, it can be stated that experiential benefits are more important determinants than functional benefits when it comes to customer loyalty.

For strengthening the study further, a simple Gap Analysis based on perceived mean scores has been conducted.

Table 7: Gap Analysis based on Perceived Mean Scores of Respondents

Benefit Type	Mean Score for All Respondents	Mean Score for Account Holders	Mean Score for Non-Account Holders
Experiential Benefits	1.215	1.193	1.276
Ambience	1.058	1.047	1.088
Infrastructure	1.477	1.458	1.528
Employee Behaviour	1.111	1.074	1.212
Functional Benefits	0.714	0.713	0.717

From Table 7 on Gap Analysis, it is evident that the gap perceived by the customers in experiential benefits is more than the gap perceived in functional benefits. Similar results have been found for both account and non-account holders. Individually, an experiential benefit such as Infrastructure has emerged where the maximum gap exists. Thus, banks need to devise ways to bridge these gaps.

Managerial Implications

This study will be of importance to the banking industry since it will help banks understand consumers in a better manner. It will also help banks to decide about the right kind of offerings/benefits in order to be more effective in attracting and retaining customers. It will help banks to channelize their efforts in the right direction for maximization of profits through the generation of loyal customers.

On the basis of the study, it can be clearly stated that irrespective of location (rural/urban) or customer account holding status, experiential benefits score high over functional benefits. Hence, as a strategy to attract new customers or retain and strengthen the loyalty of existing customers, banks should focus more on offering experiential benefits preferably in the sequence of their importance i.e. infrastructure, employee behaviour and ambience.

Infrastructure being one of the most prominent factors in experiential benefits, marketers can focus on improving banks' infrastructure. Necessary changes can be made to the infrastructure to improve it to meet the expected level of customers. Some suggested changes include having an ATM inside or close to the bank, parking facilities for vehicles and reducing long queues by incorporating efficiency in operations and using appropriate technology. With these facilities in place, the consumer's behaviour and loyalty towards the bank will be more favourable and positive.

While improving the experience of employee interaction with the customer, various factors can be instrumental. For example, training imparted to the staff to handle consumers more effectively would empower them to handle delicate or challenging situations more efficiently. All those factors that keep the staff motivated can play a significant role. Incentives in the form of gift vouchers can be provided to the staff to augment their motivation level towards customer servicing. Various activities can be initiated to enhance customer interaction with employees that

would strengthen the bond between these two parties thereby improving the banking experience and consumer satisfaction.

While working on the ambience side of the bank, care must be taken to increase the hygiene level in the bank and maintain clean and well cared for facilities. Spacious seating arrangements, amenities in the seating area like water cooler, TV, newspapers, magazines and well dressed staff also add to the ambience of the bank.

Once these factors are worked on, perception and expectation would meet each other. Marketers can promote these features to both existing and potential banks. This would help garner business and fortify loyalty of the customers.

Limitations of the Research and Future Work

Although the present study is useful in many ways, its versatility has a few limitations. The study was restricted to some specific rural areas of Rajasthan and a few urban areas. The area of study can be expanded in future to increase the generalization of results. Similar studies can also be conducted for other service sector organizations, especially those dealing in insurance. A comparison between customer perception about functional and experiential benefits can be conducted across other demographic and psychographic variables. The present study can also be extended to a comparison between public and private sector banks.

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