KNOWLEDGE MANAGEMENT PRACTICES AND ORGANIZATIONAL PERFORMANCE

A THESIS

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By

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Executive Summary

Researchers, worldwide, have recognized that organizational performance is being increasingly related to knowledge-related factors. Knowledge and its management have become the focus of attention for organizations across the globe. The developed economies have long worked upon the generation, utilization and dissemination of organizational knowledge and have seemingly reaped benefits from it. For more than a decade now, organizations in the developing world have also woken up to this idea of knowledge management (KM) and are working hard on the generation of effective knowledge management processes and practices. Despite extensive research literature on both the issues and the relationship they share, some notable research gaps remain to be closed. In effect, within the knowledge management research is the lack of understanding related to its effects on specific measures of organizational performance (OP). Researchers have articulated a need to develop more fine-grained conceptual models to better gauge the key strategic value-creating resources of an organization.

In this research dissertation, KM practices are defined as planned, deliberately initiated managerial and organizational activities that help the organization build its knowledge resources and leverage them to achieve sustained competitive advantage. The objective of this research is to answer the research question 'What is the relationship between KM practices and organizational performance?' In order to meet this objective, KM literature was analyzed to identify the key KM practices and simultaneously establish how these concepts are linked to OP measures in the current set of papers. A decomposed model was developed to expound the effects of KM practices on the identified set of

performance measures, where individual relationships between KM practices and performance measures were studied with the help of a survey of a sample of 477 middle and top-level executives drawn from 'Fortune 500' Indian firms.

Four international publications have addressed the research questions using different approaches. The first research paper was a systematic literature review to study the extant empirical KM and OP research, which helped to establish the current state of understanding regarding the relationship between the two. The second paper helped to develop a deeper understanding of organizational performance measures and approaches, while the third one helped develop a scale for research. The fourth paper was one amongst the first to develop and study a decomposed relationship between individual KM practices and organizational performance measures.

Descriptive research design was employed and data was collected using non-random sampling techniques. Data was collected with the help of a self-administered questionnaire employing a seven-point Likert scale. A multi-staged analysis was conducted on the primary data beginning with Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis and finally testing the hypothesis with the help of Structural Equation Modelling (SEM).

EFA resulted in the establishment of 10 variable – six independent KM practices and four dependent OP measures. The factor structure was confirmed using CFA, reliability and validity was also put to check through Composite reliability (CR) and validity was established through SPSS and SEM and checking the model fit measures. The effect of six individual KM practices viz. Knowledge sharing culture (KSC), Knowledge-based leadership (KBL), Structure and Decentralization (SD),

Knowledge management strategy (KMS), Knowledge-based human resource management (KBHR) and Information and Communication Technology for KM (ICT) was analysed on each of the four OP measures viz. Learning and Growth (LG), Internal Process (IP), Customer Satisfaction (CS) and financial performance (FP).

The research results have thread bared individual relationships and shown that KM, when implemented in thought and spirit in organizations affects all the aspects of performance percolating down to FP also. An important understanding drawn from the decomposed model is that not all KM practices contribute directly to organizational performance measures. The two most significant KM practices that have emerged from this research are Knowledge sharing culture (KSC) and Knowledge-based human resource management (KBHR). These two KM practices have shown to have a direct positive and significant effect on learning and growth (LG) of an organization, internal process (IP), customer satisfaction (CS) and financial performance (FP) of an organization. KM literature has conceptualized their significance from time to time, the decomposed model has empirically proven the effect of these KM practices on performance measures. Knowledge Management Strategy (KMS) emerged as the next important KM practice directly affecting three out of four OP measures i.e. LG, IP and CS. This provides clarity on the significance KMS carries in an organization. The other important KM practices that have surfaced are Structure and decentralization (SD) and Knowledge-based leadership (KBL) followed by information and communication technology for KM (ICT). While KBL and SD both show a direct relationship with LG and IP, ICT does not affect any of the OP measures directly endorsing the view that technology acts a facilitator, a medium but the actual performance is a factor of other aspects, of which, culture and human resource are the most important.

Candidate's Declaration

I, hereby certify that the thesis titled "Knowledge Management Practices and Organizational Performance", submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy' is an authentic record of my research work carried out under the guidance of Dr Vikas Gupta. Any material borrowed or referred to is duly acknowledged.

The matter presented in this thesis has not been submitted elsewhere in part or entirely to any other university or institute for the award of any degree.

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Supervisor's Certificate

This is to certify that the thesis titled, "**Knowledge Management Practices and Organizational Performance**", submitted in fulfilment of the requirement for the award of the degree of Doctor of Philosophy is an original research work carried out by Ms Meenu Chopra, under my supervision. The matter presented in this thesis has not been submitted elsewhere in part or fully to any University or Institute for the award of any degree, to the best of our knowledge.

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I had the privilege of spending spend four years as a fulltime research scholar at Delhi Technological University, under the university fellowship, which gave me time and opportunity to learn and develop as a researcher, I will always be indebted to the university, my department and my guide for this.

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Finally, I can never thank my husband, Rakesh Chopra, enough for being my support system through this process. You became my strength during moments of weakness, made me see my goal when it became hazy, lifted my spirits when I felt low and gave me the faith because you believed. This work is as much your achievement as it is mine. No words can truly express my love and gratitude for you.

Delhi, June 2020

Meenu Chopra

Faith is my sword. Truth is my shield. Knowledge my armour."

~Stephen Strange, Doctor Strange (2016)

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List of Abbreviations

χ^2/df	–	Chi-square to degree of freedom
ASV	–	Average Squared Shared Variance
AVE	–	Average Variance Extracted
CFA	–	Confirmatory Factor Analysis
CMB	–	Common Method Bias
CR	–	Composite Reliability
Df	–	Degree of freedom
EFA	–	Exploratory Factor Analysis
GFI	–	Goodness-of-fit Index
i.e.	–	That is
ICT	–	Information and communication technology
KBHR	–	Knowledge-based Human resource management
KBL	–	Knowledge-based leadership
KM	–	Knowledge Management
KMO	–	Kaiser-Meyer-Olkin
KMS	–	Knowledge management strategy
KSC	–	Knowledge Sharing Culture
MSV	–	Maximum Squared Shared Variance
NFI	–	Normalised Fit Index
OP	–	Organizational Performance
PhD.	–	Doctor of Philosophy
RMSEA	–	Root Mean Square Error of Approximation
SD	–	Structure and Decentralization
SEM	–	Structural Equation Modelling
SPSS	–	Statistical Package for Social Sciences
VIF	–	Variance Inflation Factor
Viz.	–	Visualize

List of Publications

International Publications

- Gupta, V. and Chopra, M. (2018), "Gauging the impact of knowledge management practices on organizational performance – a balanced scorecard perspective", *VINE Journal of Information and Knowledge Management Systems*, Vol. 48 No. 1, pp. 21-46. https://doi.org/10.1108/VJIKMS-07-2016-0038

- Chopra, M., Gupta, V., & Chhabra, B. (2017), "Strategic Management Using Balanced Scorecard—A Case Study on Tata Power", *South Asian Journal of Business and Management Cases*, Vol 6 No 2, pp. 176–190. https://doi.org/ 10.1177/2277977917730446

- Chopra, M. and Gupta, V. (2019), "Linking knowledge management practices to organizational performance using the balanced scorecard approach", *Kybernetes*, Vol. 49 No. 1, pp. 88-115. https://doi.org/10.1108/K-04-2019-0295

- "An Effectiveness Measurement Model for Knowledge Management - A Balanced Scorecard Perspective" accepted for publication by *International Journal of Business and Globalization*, Inderscience Publications.

1. Introduction

In the 21st century, Knowledge Management (KM) is generally acknowledged as a means for sustaining a competitive edge. Developing and maintaining KM, it seems, is extremely important for an organization to survive and remain competitive for long. Organizations are implementing various KM practices to gain an advantage over competitors. Under conditions of fierce competition, globalization and rapid innovation, KM and its implications are vital for achieving success in business (Zack et al., 2009). KM, it is stated, has a profound effect on the various aspects of business performance. It is assumed that a large part of knowledge that exists in an organization is tacit and informal. This knowledge helps the organization to have business competitiveness and innovativeness. Hence, it becomes imperative to identify KM practices within an organization, which when followed, provide a competitive edge. Also, it is of importance to explore aspects of business impacted by the use of these KM practices.

Nonaka (1991) proposed that possession and proper utilization of organizational knowledge can act as the foundation for gaining a competitive edge that can last long. Major research studies in the area of KM and sustainable competitive advantage (Adams and Lamont, 200; Johannessen and Olsen, 2003; Goel et al., 2010; Sinha et al., 2012) have endorsed that organizational knowledge - what an organization knows, how is it put to use and how quickly it can upgrade its knowledge, is the most important source of competitive advantage.

KM is a widely used concept in business and management discussions; organizations across the globe understand and appreciate the importance of the concept.

The relationship between KM and OP has now been studied for a long time. Major research in the area has been theoretical and conceptual with most of the papers focusing on developing an understanding of the relationship between KM and OP through a case study approach (Nonaka and Takeuchi, 1995; Edvinsson and Malone, 1997; Akhavan et al., 2006; Leidner et al., 2006; Zaim et al., 2007; Pathirage et al., 2008). Recent researchers have tried to empirically assess association and effect of KM practices on performance of an organization (Lee and Choi, 2003; Gloet and Terziovski, 2004; Darroch, 2005; Tanriverdi, 2005; Daniel and Simon, 2006; Choi et al., 2008; Fugate and Mentzer, 2009; Zack et al., 2009; Mills and Smith, 2011; Kianto, 2011; Andreeva and Kianto, 2012; Zaied, 2012; Yazhou and Jian, 2013; Sinha et al., 2015, Valmohammadi and Ahmadi, 2015). This research body consists of insightful and valuable information on various frameworks and concepts that have developed KM as a discipline.

However, one notices that OP has been understood and gauged in various ways across existing studies, ranging from innovativeness (Darroch and McNaughton, 2003; Gloet and Terziovski, 2004; Kiessling et al., 2009; Kianto, 2011, Sinha et al., 2015), employee and product improvement (Kiessling et al., 2009), customer satisfaction, product leadership, customer satisfaction and operational excellence (Zack et al., 2009), competitive position (Lee and Choi, 2003) and financial outcomes (Tanriverdi, 2005; Darroch, 2005; Marqués and Simón, 2006; Zack et al., 2009; Andreeva and Kianto, 2012). The papers link KM with various outcomes, however, a more all-inclusive approach would help the new age managers to comprehend the impact of knowledge management practices on various business performance indicators in a better way. An attempt has been made to study relevant literature on knowledge management practices,

identify the significant KM practices in the Indian scenario and study effect on aspects of organizational performance.

This research examines the linkage between knowledge management practices and organizational performance. A decomposed model was created in order to uncover individual-level relationships between the two sets of variables which stands in stark comparison to the already existing models which lay focus on analyzing the overall effect. The research implications can be of significant value to organizations as they plan and implement their KM initiatives. The findings of the study could help organizations focus on the significant practices leading to optimal resource allocation and utilization.

With this backdrop, the first chapter of this study throws light on the concept of knowledge and other related topics relevant to the study followed by the motivation for undertaking this research. It starts with presenting a background of the problem followed by defining knowledge, KM. The chapter concludes with depiction of the structure and flow of this thesis.

1.1 Background of the problem

Gaining sustainable competitive advantage, in the current times, is based on the possession of knowledge by an organization, how this set of knowledge is put to use and how can the organization upgrade itself by learning something new (Grant, 1996; Spender & Grant, 1996; Roth, 1996; Prusak, 1996). Indeed, the most powerful way to succeed in the current times is the possession and timely use of organizational knowledge (Prahalad & Hamel, 1990). The focus has metamorphosized from ‘what an

organization owns' to 'what an organization knows' (Greco et. al., 2013; Spender, 1996; Conner and Prahlad, 1996; Wernerfrlft, 1984; Penrose, 1959).

According to Kianto et al. (2014) 'knowledge' is a core business activity for standing out in the global economy and is fast evolving as the major differentiator. According to Bennett & Gabriel (1999), "KM is capturing, storing, disseminating and using knowledge". "KM is the process that facilitates the creation and dissemination of knowledge for easy accessibility and use within organizations" (Darroch, 2003). Sabherwal & Fernandez (2010) define KM as doing what needs to be done to utilize an organization's knowledge resources optimally. According to 'American Productivity and Quality Centre (APQC)', 1999 KM is "the systematic process of identifying, capturing and transferring information and knowledge people can use to improve."

Knowledge resources in an organization may be of two types – tacit and explicit. While explicit knowledge can be captured, stored and retrieved for use in future, whereas tacit knowledge can neither be captured easily nor stored. It is inherently present in procedures/processes and it is generally not recognizable (Andreeva and Kianto, 2012). It can only be used when the individual possessing it chooses to do so and maybe completely lost with the employee moving to another organization.

Creation of KM practices in the organization that boosts knowledge creation and sharing, and helps retain these practices in the organization, even after employees, customers, suppliers, etc. are not associated with the organization, is the real challenge. Alongside creation and utilization, this knowledge has to be measured and stored in a manner that it is accessible, understandable and reusable by members of the organization in the future.

KM is strategically vital for any competitive organization and hence, it is imperative to align it with the overall business strategy. A pre-requisite for implementation of these practices is to gauge their effect through the use of an integrated system of measurement that possesses the capability to capture financial as well as non-financial aspects of performance.

Developing and maintaining knowledge, it seems, is extremely important for the long-term survival and success of an organization (Prusak, 1996; Prahalad and Hamel, 1990). Under conditions of fierce competition, globalization and rapid innovation, knowledge and its management are vital for achieving success in business (Davenport and Prusak, 1998; Daniel and Simon, 2006; Choi et al., 2008; Zack et al., 2009).

1.2 Knowledge

Researchers have discussed and defined knowledge in various perspectives (Hlupic et al., 2002). Varying with context, the definitions of knowledge have oscillated over a wide range starting from raw data to information or possession of expertise and experiences, intelligence, insights, skills, ideas etc. The discussion on the elucidation of knowledge is continuous; different researchers and academicians carry different opinions ontological and epistemological aspects and assumptions of the concept (Nonaka and Peltokorpi, 2006). According to Nonaka (1994) "knowledge is the justified true belief" following the epistemological approach. "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information." – given by Davenport and Prusak (1998). According to Sveiby (2001), "Knowledge is the ability of an individual to evaluate information around him and then act in an efficient manner." Myers (1996)

defined it as, "Knowledge is a natural human quality that is vested in living minds through which they identify, interpret and internalize information."

1.2.1 Types of knowledge

According to the ontological assumptions also, different typologies regarding the nature and kind of knowledge have been given. Theoretical developments in the discipline are influenced by the level of understanding of the different typologies of the concept (Alavi and Leidner, 2001). This is important for liking at different aspects and perspectives of the concept. In line with different types of knowledge are as mentioned:

Table 1.1: Types of knowledge

Types of knowledge	**Source**
Explicit knowledge and tacit knowledge	Tiwana, 2002
Diffused and undiffused knowledge, codified and un-codified knowledge	Boisot,1987
Structured, social and human knowledge	David and Fahey, 2000
Self-motivated creativity (care-why), systems understanding (know-why), advanced skill (know-how) and cognitive knowledge (know-what)	Quinn et al., 1998
Experiential knowledge (what-was), social knowledge (know-who), process(know-how), explanatory knowledge (know-why) and specified catalogue knowledge (know-what)	Miller, 1996
Encoded (formal or symbolic), embedded (systematized), en-cultured (social), embodied (perceptual) and embrained knowledge (cognitive)	Blackler, 1995

These different views and opinions have been presented here to show that there has been significant theoretical development in the field. However, the present study will focus on the most frequently used and adopted types of knowledge – tacit and explicit.

1.3 Knowledge creation cycle

Tacit and explicit knowledge can be created and transformed from one to another as they move from one person/ group to another within an organization. The knowledge creation cycle shows how knowledge moves from tacit to explicit and vice-versa through the four processes – socialization, externalization, combination and internalization (Figure 1.1).

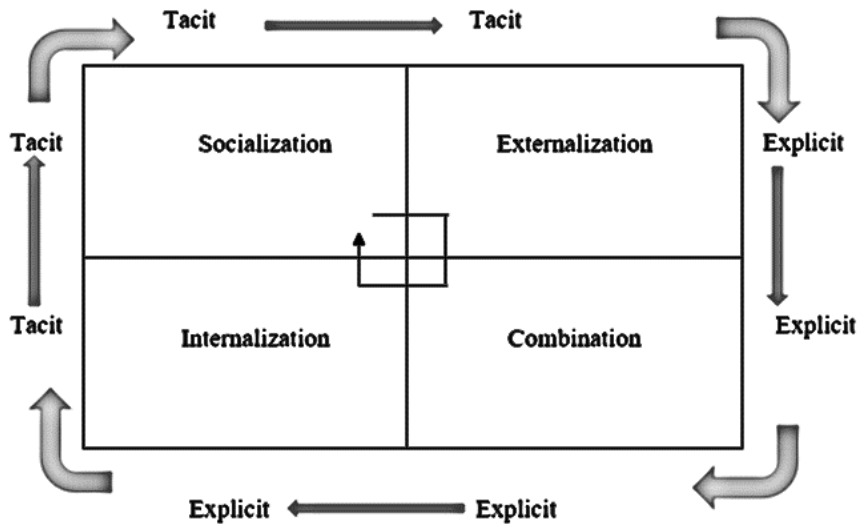

Figure 1.1: Knowledge creation cycle

(i) Socialization – (From tacit form to tacit form): This refers to the process of sharing of experiences amongst the employees of an organization. Knowledge sharing does take place but there is no explicit knowledge created during the process.

(ii) Externalization – (From tacit to explicit form): This process refers to the conversion or transformation of tacit knowledge to explicit knowledge. Employees are encouraged to externalize i.e. convert knowledge into a reusable, readable and understandable form by someone else at some point in time in the future.

(iii) Combination – (From explicit form to explicit form): The process of combination refers to systematization and combination of the discrete forms of explicit knowledge possessed by individual employees into organization-level knowledge repository. This knowledge is practical and usable for future requirements.

(iv) Internalization – (From explicit form to tacit from): The process of internalization refers to the identification of explicit knowledge and imbibing it so as to be able to use it in organizational procedures and processes. This knowledge helps employees to broaden and extend their tacit knowledge base.

1.4 Knowledge management

According to Darroch (2003), "KM is the process which is used within the organization to create, share, codify, disseminate and institutionalize tacit and explicit knowledge" Mc Campbell et al. (1999) report, "KM is an art that deals with the transformation of intellectual assets and information to create value for multiple stakeholders by deploying appropriate strategies and processes for the identification, acquisition, creation and sharing of knowledge in the organization". According to Davenport and Prusak (1998), "KM deals with tacit and explicit types of knowledge of both, organization as well as employees, through acquiring, organizing, sustaining, applying, sharing and renewing knowledge by deploying specific and systematic processes to improve OP." KM should help an organization to be more effective, efficient and innovative than the competition. Various disciplines ranging from philosophy, economics, computer science etc. have contributed to the epistemological and theoretical basis of KM. According to Gao et al. (2008), these perspectives can be broadly segregated into hard group and soft group. While hard group deals with the explicit form of knowledge and soft group deals with the tacit form. The hard group works on the assumption that knowledge comes from

information which is a result of data processing and data is obtained from events. According to the hard group, possession and use of infrastructure support systems in the form of databases, Management Information Systems (MIS), servers, knowledge repositories, etc. and usage of software like decision support systems, expert systems, data mining and warehousing are essential for effective KM (Boist 1995; Boist and Canals, 2004; Davenport and Prusak, 1997).

In contrast to this, the soft group endorses the importance of tacit knowledge and focuses on people, communities of practice (COP's), focus on the development of knowledge sharing culture (Nonaka and Peltokorpi, 2006). This group works on the premise that knowledge resides in the human mind and is different from the concept of information. It endorses the importance of human interaction and believes that it can be shared and learned amongst employees, it also states that the role of IT is limited to being a facilitator in creation and dissemination of knowledge (Sveiby, 2001; Zack et al., 2009).

1.5 Research gaps addressed by the study

Although the current set of research papers on a knowledge-based view (KBV) demonstrates that possession of knowledge and its utilization are the key to develop competitive advantage, literature still talks about the lack of evidence on how these practices affect OP (Perez-Arrau et. al., 2014; Heisig,2014; Inkinen, et al., 2016) Secondly, although the overall conclusion from these research papers is that KM does impact some aspects of business performance, it seems all this information exists in bits and pieces and needs to be brought to one common platform for better understanding. There is a need for integration of the existing set of information and this integration is going to be useful in both theory and practice.

Another area to be addressed in KM literature is the unclear boundary between knowledge processes and practices, the literature is split between the two. While some researchers have included both, processes and practices, in one study, while some others have studied only processes. Recent literature has endeavoured to bring clarity and states that while KM processes can exist without any managerial intervention, KM practices are thoroughly planned and executed in order to generate the desired results. It is only in the recent literature that some clarity has emerged between the two (Andreeva and Kianto, 2012; Kianto, 2014; Inkinen et.al. 2014; Inkinen et.al., 2016). The earlier stream i.e. KM processes has not been able to categorically point out any specific managerial implications. While the association between KM practices and organizational performance is relatively recent and untapped.

Thirdly, one of the most important gaps in the literature is the lack of application of comprehensive measures to gauge the overall impact of KM on the performance of an organization. Since KM has a potential effect on all aspects of an organization, performance from both financial and non-financial perspectives should be measured.

Also, the current set of literature has measured the overall effect of KM processes or practices on the performance of an organization, the effect of individual KM practices and specific OP measures have not been analyzed. Although previous research has suggested that an organization's KM resources affect OP, Grant (1991) said that it is possible that only some of these resources and capabilities contribute to organizational performance. Prior research tends to bundle the KM capabilities into a single construct.

This approach offers the advantage of putting focus on the overall effect but doesn't leave any room for expounding the individual effects. This research is an endeavour to address this gap. It starts by integrating significant KM practices and measures of OP and creates a decomposed model wherein the effect of each KM practice is measured on each of the four OP measures. The study attempts to draw a picture of the magnitude and kind of effect each KM practice has on an organization.

This analysis carries significance for researchers, academicians and companies. The research is deeply rooted in the KM literature and provides structure and sense to the current set of literature for reference and research in the future. For organizations, it offers empirical evidence about the cause and effect relationships that exist between KM practices and OP measures.

1.6 Objectives of the research

The principal objective of this research is to study a decomposed model to examine the influence of the identified KM practices on OP measures. Lack of clarity and a dearth of empirical literature on the association between KM practices and performance of an organization, as indicated by KM experts (Perez-Arrau et. al., 2014; Heisig, 2014; Inkinen, et.al., 2016) remains the major motivator behind this study.

More specifically, the concept and application of KM practices and their effects on different facets of an organization's performance remain an underexplored area. Therefore, this research is focused on one major research objective:

'What is the relationship between KM practices and organizational performance?'

In order to meet this objective, the first step was to study and review the KM literature to identify the key KM practices and simultaneously establish how these concepts are linked to OP measures. To accomplish this objective, a systematic literature review was conducted that aimed at fulfilling the following objectives:

- Identification of the key KM practices
- Identification of the various financial and non-financial OP measures.

After performing a detailed literature review, the study moved on to develop a conceptual framework based on the information gathered which helps to fulfill the following objectives:

- To expound the effect of KM practices on measures of Organizational performance.

Now that a conceptual framework is prepared, empirical research is undertaken to test and validate the model. The hypotheses with regards to decomposed individual relationships between KM practices and OP measures are checked through this. Hence, the objectives fulfilled are:

- Rank KM practices in order of their effect on OP measures
- Provide a more fundamental understanding of the linkage between KM practices of an organization and its performance in order to enhance and improve the management decision-making process at the resource level.

1.7 Structure of the study

The study is structured in five chapters covering the various aspects of research.

Chapter 1: The introductory section of the study provides background information gathered through literature review and the process of undertaking this research, the relevant topics are explained in brief in this section and the objectives of the research are clearly presented.

Chapter 2: In the second chapter a theoretical justification for undertaking the said research is presented based on a thorough and detailed literature review. It helps identify the important KM practices and OP measures, while providing a snapshot of the relationship equation between them. This chapter also throws light on points of departure of this study from the existing set of literature.

Chapter 3: The third chapter discusses the research design and methodological issues while providing justification for the choices made for this study. The focus is on providing an explanation of data analysis techniques employed for the study.

Chapter 4: In the fourth chapter, the objectives and results of the research are discussed one by one, followed by a presentation of a summary of all results.

Chapter 5: Finally, the fifth chapter discusses the contribution of the results with regard to all research questions. The research implications for theory and practice are also discussed followed by conclusion.

2. Literature Review

Gaining sustainable competitive advantage is based on the possession of organizational knowledge, how this set of knowledge is put to use and how quickly can it upgrade itself by learning something new (Grant, 1996; Spender & Grant, 1996; Roth, 1996; Prusak, 1996). Indeed, the most powerful way to succeed in the current times is the possession and timely use of organizational knowledge (Prahalad & Hamel, 1990). The focus has metamorphosized from 'what an organization owns' to 'what an organization knows' (Vătămănescu et al., 2016; Greco et al., 2013). According to Kianto et al. (2014) 'knowledge' is a core business activity for standing out in the global economy and is fast evolving as the major differentiator.

2.1 Research Perspectives on KM

KM as a concept has been there for ages. As Hansen et al. (1999) has put it – 'knowledge has existed for a long time, businessmen have taught commercial skills to their heirs, craftsmen and workers pass on their skill set to apprentices too. From an organizational context, Grant (1996) proposed the knowledge-based view of the firm according to which performance of a firm depends on stocks of knowledge the firm has accumulated and its capability to use these stocks from time to time. KM starts with the development of a business vision about what an organization wishes to achieve in the long run, it adopts an integrated approach to identify, capture, evaluate, store and retrieve information assets of an organization.

Bennett & Gabriel (1999) state that KM is capturing, storing, disseminating and using knowledge. KM is the process that facilitates the creation and dissemination

of knowledge for easy accessibility and use within organizations (Darroch, 2003). Sabherwal & Fernandez (2010) define KM as doing what needs to be done to utilize an organization's knowledge resources optimally. According to American Productivity and Quality Centre (APQC), 1999 KM is "the systematic process of identifying, capturing and transferring information and knowledge people can use to improve."

Knowledge resources in an organization may be classified as explicit or tacit. Explicit knowledge can be captured, stored and retrieved for future use, whereas tacit knowledge can neither be captured easily nor stored. It is inherently present in procedures/processes and it is generally not recognizable (Andreeva and Kianto, 2012). It can only be used when the individual possessing it chooses to do so and maybe completely lost with the employee moving to another organization.

2.2 Knowledge management practices

Creation of KM practices in the organization that boosts knowledge creation and sharing, and helps retain these practices in the organization, even after employees, customers, suppliers, etc. are not associated with the organization, is the real challenge. Alongside creation and utilization, this knowledge has to be measured and stored in a manner that it is accessible, understandable and reusable by members of the organization in the future.

KM is strategically vital for any competitive organization and hence, it is imperative to align it with the overall business strategy. A pre-requisite for implementation of these practices is to gauge their effect through the use of an integrated system of measurement that possesses the capability to capture financial as well as non-financial aspects of performance.

2.3 Organizational performance

One of the pioneering studies that measured the effect of KM on various aspects of performance of an organization was Gold et al. (2001) which concluded that management of knowledge assets positively affects innovation, opportunity identification, helps in coordinating efforts of different units, adapting to unanticipated changes and become responsive to new market demands. Since then, the study on KM has come a long way. The knowledge possessed by an organization, its management, and its effects on performance has been under study for quite some time. Empirical research on the link between KM and OP has developed along two lines - KM processes and KM practices. Literature on KM processes and OP discusses the role of knowledge processes such as acquisition, utilization and sharing on performance, these processes are broad knowledge-based activities in an organization and exist without active managerial control (Hussinki et al., 2017), while Andreeva and Kianto (2012) defined KM practices as a set of thoughtfully undertaken management processes and activities that are instrumental in enhancing the overall effectiveness of knowledge resources of the organization. These practices have been addressed as critical success factors, enablers or initiatives for KM and research has shown that their implementation affects various aspects of OP.

To ascertain success in the implementation of KM practices, continuous monitoring of performance-related measures is essential. A number of research studies have tried to analyze the effects of KM on various OP measures. Some of them are stated below.

- competitiveness (Allard and Holaspple, 2002; Perez and Pablos, 2003; Chong, 2006; Wang et al., 2012);

- market share (Andreeva and Kianto, 2012; Zheng et al. 2010; Lee and Choi, 2003)
- growth rate (Andreeva and Kianto, 2012; Lee and Choi, 2003)
- innovativeness (Sinha et al., 2015; Zheng et al. 2010; Zack et al. 2009; Lu et al., 2008; Chong, 2006; Darroch, J.2005; Gloet and Terziovski, 2004);
- profitability (Andreeva and Kianto, 2012; Zheng et al. 2010; Zack et al. 2009; Lee and Choi, 2003)
- research and development performance (Lee et al., 2005):
- better training (Chong 2006);
- enhanced OP (Wu and Chen, 2014; Wang et al., 2012; Mills and Smith, 2011; Starns and Odom, 2006);
- customer performance (Lee and Lee, 2007; Anantamula, 2007; Zack et al. 2009, Wu and Chen, 2014, Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002);
- financial performance (Jain and Moreno, 2015; Wu and Chen, 2014; Andreeva and Kianto, 2012; Vaccaro et al., 2010; Zack et al. 2009; Lee and Lee, 2007, (Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002)
- employee creativity (Kianto, 2011, Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002);
- commercialization of creative ideas (Kianto, 2011)
- Learning and growth (Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002).

Table 2.1: Linking Knowledge Management Practices and Organizational Performance Measures

Knowledge Management Practices (independent variable)	Effect on Business (dependent variable)	Literature Support
•Technology •Structure •Culture •KM processes	Organizational effectiveness: measures •Innovate new products/services •Identify new opportunities •Coordinate the development efforts of different units •Anticipate market opportunities •Rapidly commercialize innovations •Adapt quickly to unanticipated changes •Anticipate crises and surprises •Quickly adapt its goals and objectives •React to new information •Be responsive to new market demands •Streamlining internal processes •Coordinate the development efforts of different units	Gold, A.H., Malhotra, A. and Segars, A.H (2001)
•Knowledge Processes •KM leadership •Assessment of knowledge initiatives •Knowledge integration	•Organizational competitiveness	Allard, S. and Holsapple, C.W(2002)
•Knowledge Processes	•Innovation	Darroch, J. and McNaughton, R. (2002)
•Knowledge Processes	•Innovation •Compared with industry average, company is more profitable •Increased market share and sales growth	Darroch, J. and McNaughton, R. (2003)
•Technology •Structure •Culture •People – Integration of HRM and KM	•Positively affect knowledge creation •Knowledge creation positively affects OP in terms of: •Market Share •Profitability •Growth rate •Innovativeness •Successfulness •Increased size of business in comparison to competitors	Lee, H., & Choi, B (2003)
•People – Integration of HRM and KM	•Competitiveness	Jesus Rodriguez Perez, Patricia Ordóñez de Pablos, (2003)
•Technology •People – Integration of HRM and KM	•Positively affects Innovation performance •Better performance of an organization	Gloet, M; Terziovski, M, (2004)

Knowledge Management Practices (independent variable)	Effect on Business (dependent variable)	Literature Support
•Knowledge Processes	•Improved ability to sustain the competitive advantage of an organization •Immediate results in solving •Improved organizational productivity in delivering services to clients •Development and constant improvement of competitive long-range service and technology strategies •Improvements in the quality of an organization's workforce, through capacity building and upskilling •Stimulation and motivation of employees •Formalized knowledge transfer system •Improved knowledge acquisition and absorption from sources outside the firm •Improved integration of knowledge within the firm •Better on-the-job training of employees •Enhanced client relations – better client interaction •Development of culture for organizational growth and success •Improved employee retention •Enhanced business development and the creation of opportunities for organizations •Enhanced and streamlined internal administrative processes	Charles O. Egbu, Subashini Hari, Suresh H. Renukappa, (2005)
•Knowledge Processes	•Stock price •R&D expenditure •Performance	K. Chang Lee et.al. (2005)
•Knowledge Processes	•Innovation •Profitability •Better knowledge dissemination •Better knowledge responsiveness •Greater market share •More growth •Better performance •Better achievement of objectives	Darroch, J. (2005)
•Knowledge Processes •Culture •People – Integration of HRM and KM •KM strategy	•Capital profitability •Growth •Operational and financial efficiency •Stakeholder satisfaction •Competitive position	Marqués, D. and Simón, F. (2006)

Knowledge Management Practices (independent variable)	**Effect on Business (dependent variable)**	**Literature Support**
Degree of importance and implementation of: •Leadership and policy •Performance measurement •Knowledge sharing and acquisition •Information systems infrastructure •Benchmarking and training •Teamworking and environment	•Knowledge management competitiveness •Better on-the-job training for employees •Enhanced company innovation and creativity •Means to identify industry best practices •Enhance client interaction – better client interaction •Development of business strategies •Improve employee retention •Overall company performance	Siong Choy Chong (2006)
•Technology •Structure •Culture •Resources for KM	•Enhanced organizational performance	Starns, J., Odom, C. (2006)
•People •Structure •Culture •Information technology •KM Process	•Customer performance •Financial performance	Young-Chan Lee Sun-Kyu Lee (2007)
•KM leadership •Knowledge from, about and for the customer	•Learning environment •Employee development (Effective communication tools and KM tools) •Critical process skills •Customer service through new products and services •Customer Service through enhanced product/service Quality	Anantatmula, V. S. (2007)
•Human Issue •Process Issue •Structural Issue – Infrastructure •Leadership	•Innovation	Yuan Lu, Eric.K. Tsang, Mike W. Peng (2008)
•KM processes •People – Integration of HRM and KM •KM strategy •KM leadership •Assessment of knowledge initiatives	•Organizational performance •Product leadership •Innovation •Quality •Customer satisfaction •Customer retention •Operational excellence •Operating costs •Financial performance •ROA/ROE •Profitability	Zack, M., McKeen, J., & Singh, S. (2009)

Knowledge Management Practices (independent variable)	**Effect on Business (dependent variable)**	**Literature Support**
KM •Knowledge generation •Knowledge sharing •Knowledge utilization Organizational culture •Adaptability •Consistency •Mission •Involvement Organizational structure •Centralization Organizational strategy •Analysis •Defensiveness •Futurity •Proactiveness	Knowledge management effectiveness •Acquiring, •Creating, •Storing, •Sharing, •Diffusing, •Developing, •Deploying Organizational effectiveness •Overall success, •Market share, •Profitability, •Growth rate, and •Innovativeness	Wei Zheng, Baiyin Yang, Gary N. McLean (2010)
Knowledge infrastructure capability •Technology •Culture •Structure KM Processes	Organizational performance	Annette M. Mills and Trevor A. Smith (2011)
•Knowledge Processes	•Employee creativity •Commercialization of creative ideas (innovation) •Strategic flexibility	Kianto, A. (2011)
•Technology •People – Integration of HRM and KM	•Greater market share •Growing faster •Innovative •More profitable •Better financial performance	Andreeva, T. and Kianto, A. (2012)
•Knowledge acquisition •Knowledge creation •Knowledge dissemination •Knowledge accumulation	•Competitive advantage •Enhanced organizational performance	Wang, K. L., Chiang, C., & Tung, C. M. (2012)
•Technology •Culture •People •Knowledge Processes	•OP in terms of financial and non-financial measures	Rašula, J., Vukšić, V. B., & Štemberger, M. I. (2012)
•Knowledge from, about and for the customer	•Innovation speed •Innovation quality which leads to business performance •Operational performance •Financial performance	Taherparvar, N., Esmaeilpour, R. and Dostar, M. (2014)

Knowledge Management Practices (independent variable)	Effect on Business (dependent variable)	Literature Support
•Technology •Culture •Structure •People •Network and alliances •Knowledge from, about and for the customer •Knowledge Processes	•Operational excellence •Customer satisfaction •Product leadership •Financial achievement	Wu, I. L., & Chen, J. L. (2014)
•Knowledge Processes	•Positive effect on the four BSC measures •Higher KMO-enabled learning and growth •Drives higher internal process •Customer satisfaction •Financial performance (indirect effect)	Lin, H. F. (2015)
•Technology •Structure •Culture •People •KM strategy •KM leadership •Network and alliances •Assessment of knowledge initiatives •Knowledge Processes	•Innovation	Sinha, N., Kakkar, N.K.and Gupta, V. (2015)
•Technology •Culture •People •KM strategy •KM leadership •Resources for KM •Knowledge Processes	•Strongly affects learning and growth •Effect on internal process •Customer perspective •Financial perspective	Valmohammadi, C., & Ahmadi, M. (2015).
•Knowledge Processes	•Financial measures •Customer/market measures •Process measures •People development measures •Preparing for future measures	Tubigi, M., Alshawi, S. (2015)
•Technology •Culture •People •Network and alliances •Knowledge from, about and for the customer •Knowledge Processes	•Better communication and participation •Increased customer satisfaction •Improved efficiency •Improved effectiveness •Increased sales •Increased share price •Improvement of strategy quality •Better decision-making •Shorter problem-solving time •Increased innovation •Fewer mistakes •Rework reduction •Improved business processes •Improved ability to sustain the competitive advantage of an organization	Yahyapour, S; Shamizanjani, M; Mosakhani, M. (2015)

Knowledge Management Practices (independent variable)	**Effect on Business (dependent variable)**	**Literature Support**
Organizational Learning •Collaboration and team working, •Performance management, •Autonomy and freedom •Reward and recognition, •Achievement orientation	•Knowledge creation •Financial performance •Km process and leadership •KM technology and measurement •KM culture	Ajay K. Jain, Ana Moreno (2015)
KM practices •Knowledge maintenance and protection •External knowledge capturing •Knowledge codification •Knowledge practices focused on the human factor. IT infrastructure •Communication and collaboration technologies •Business intelligence applications	•Innovation •Productivity •Competitive position •Profitability •Revenues •Overall performance •Financial performance •Sales growth •Profitability	Roldán, J.L., Real, J.C. and Ceballos, S.S (2018)
Knowledge creation process •Socialization •Combination •Internalization •Externalization	Human capital •Innovation and creativity •Experience and expertise •Learning and education Structural capital •Systems and programs •Research and development •IPR Relational capital BSC •Financial performance •Customer perspective •Internal process perspective •Learning and growth	Gholamhossein Mehralian, Jamal A. Nazari, Peivand Ghasemzadeh (2018)
•Transformational leadership •Transactional leadership	•Exploratory innovation •Exploitative innovation	Sarra Berraires, Syrine Zine El Abidine (2019)
•KM Process •KM Technology •KM Culture •Leadership in KM •Structure	•Organizational Performance •Financial Performance	Joshi and Chawla, 2019
•Perceived learning environment •Perceived organizational innovation •Knowledge Sharing •IT infrastructure •Perceived social identification	•Individual knowledge •Organizational knowledge •Organizational innovation	Lartey, P.Y., Kong, Y., Afriyie, S.O., Santosh, R.J. and Bah, F.B.M., 2019

2.4 Research gap

Despite the presence of a large number of studies on KM, a cross country study, conducted on more than 200 KM experts, concluded that one of the major shortages in KM literature is the lack of understanding about the linkage between KM and performance of an organization (Perez-Arrau et al., 2014; Heisig, 2014). Also, the current set of literature has measured the overall effect of KM processes or practices on the performance of an organization, the effect of individual KM practices and specific OP measures have not been analyzed. Although previous research has suggested that an organization's KM resources affect OP, Grant (1991) said that it is possible that only some of these resources and capabilities contribute to OP. Prior research tends to bundle the KM capabilities into a single construct. This approach offers the advantage of putting focus on the overall effect but doesn't leave any room for expounding the individual effects. This research is an endeavour to address this gap. It starts by integrating significant KM practices and measures of OP and creates a decomposed model wherein the effect of each KM practice is measured on each of the four OP measures. The study attempts to draw a picture of the magnitude and type of effects each KM practice has on an organization. This analysis carries significance for researchers, academicians and companies. The research is deeply rooted in the KM literature and provides structure and sense to the current set of literature for reference and research in the future. For organizations, it offers empirical evidence about the cause and effect relationships that exist between KM practices and OP measures.

2.5 Hypothesis development

While exploring literature on KM practices and OP, generally studies have found that KM positively affects performance (Gold et al., 2001; Lee and Choi, 2003; Marqués and Simon, 2006; Rasula et al., 2012; Jain and Moreno, 2015), though some could not establish a significant direct relationship between the two (Mills and Smith, 2011; Abualoush et al., 2018). This research is an endeavour to take this forward and explore the effect of six KM practices that have achieved notable support theoretically and empirically viz. knowledge sharing culture (KSC), knowledge-based leadership (KBL), structure and decentralization (SD), Knowledge management strategy (KMS), knowledge-based human resource management (KBHR), information and communication technology for Knowledge management (ICT) on the four organizational performance measures viz. learning and growth (LG), internal process (IP), customer satisfaction (CS) and financial performance (FP) in a decomposed model. These measures focus on specific performance metrics and can be briefly explained as:

L&G – studies the effect on an organization's intangible assets like employee skillset and competencies for an organization's overall development;

IP – analyses the organizational operations and processes that help in creation and delivery of customer value;

CS – focusses on the value of relationship and in-time service delivery to the customer;

FP – focuses on the more tangible aspects such as an increase in market share, return on investment.

2.5.1 Knowledge sharing culture

Culture refers to the values and norms existing in an organization, which have been developed, shared and passed on from one to another (Davenport and Klahr, 1998). Research has proven time and again that creating a knowledge-friendly culture is imperative for smooth flow of information essential for knowledge-based value creation (Moffett et al., 2003; Lee & Choi, 2003; Wong & Aspinwall,2005; Hung et al.,2005; Al-Busaidi and Olfman, 2005; Akhavan and Jafari, 2006; Chong, 2006; du Plessis, 2007; Bozbura, 2007; Basu & Ray, 2014; Marqués and Simon, 2006; Zaim et al., 2007; Valmohammadi and Ahmadi, 2015; Appelbaum et al., 2014; Vanhala & Ritala, 2016; Lee et al., 2016, Gupta and Chopra, 2018). Development of an environment of mutual trust and collaboration positively affects inter-personal interaction, facilitates knowledge sharing, leading to better yielding knowledge processes and organizational effort. No organization can create 'knowledge workers' in the true sense of the word until the organization has been successful in creating an environment of support and collaboration. Existence of a culture of mutual trust, free flow of information and a clear focus on learning and innovation are requisites for promoting effective KM in the organization.

2.5.2 Knowledge-based leadership

Effective leadership is key to set up the right environment for KM in an organization. Empirical research has proven that good leaders and managers who participate, inspire and support their team members are invariably able to produce better results (Holsapple & Joshi, 2000;Civi, 2000; Choi, 2000; Ryan & Prybutok, 2001; Pemberton et al., 2002; Kalling, 2003; Moffett et al., 2003; Ribiere & Sitar, 2003; Chong & Choi, 2005; Hung

et al, 2005; Wong & Aspinwall, 2005; Al-Busaidi & Olfman, 2005; Akhavan & Jafari, 2006; du Plessis, 2007; Chong, 2006; Anantatmula, 2007; Valmohammadi & Ahmadi (2015); Birasnav, 2014; Donate & Pablo, 2015). Leaders have a strong influence on the organization as they create, communicate and build the knowledge vision of the organization,that determines the treatment of data, information and knowledge as assets in the organization. They are the ones responsible for creating an atmosphere of mutual trust and cooperation and motivate employees to tread new paths and reach higher levels of excellence. Establishing a vision and taking the organization in the desired direction by listening, learning, teaching and sharing knowledge is a leader's task (Holsapple & Singh 2000).

2.5.3 Structure and decentralization

Organizational structure refers to a relatively fixed set of tasks and activities (Zheng, 2010; Skivington and Daft, 1991). According to Dekoulou and Trivellas (2017), the organizational structure has three dimensions – formalization, centralization/ decentralization and specialization. Formalization refers to "the degree to which decisions, work relationships and operational routines are governed by specific standard rules, regulations, policies and procedures". Centralization refers to "the extent to which decision-making power is concentrated at the top level of an organization". Centralization assesses the structure and location of authority, strategy and resource allocation. Specialization refers to how employees or teams in the organization do their duties and how tasks are distributed across the organization. Majorly studies have shown that decentralization i.e. distribution of power positively affects an organization's performance (Rapert and Wren, 1998; Schiminke et al.,

2000). Effective KM can be inhibited by a formal organizational structure (Dekoulou and Trivellas, 2017). A decentralized structure encourages communication within the organization and enhances employee satisfaction. It also provides an opportunity to subject experts to have a say in decision-making rather than focusing all powers on one individual. This makes organizations more effective and better responsive to changes in the environment. It allows easy and quick access to the knowledge possessed by employees at all levels, enhancing the adoption of new ideas, positively affecting innovation and promoting creativity (Gold et al., 2001; Lee and Choi, 2003, Mills and Smith, 2011). Specialization refers to the extent to which employees of an organization are involved in the performance of a limited set of processes. Horizontal specialization has been found to be favourably associated with knowledge creation and application (Lee et al., 2008), while Garicano (2000) and Ho and Wong (2009) have found that specialization is positively associated with innovation performance of an organization.

2.5.4 Knowledge management strategy

Knowledge Management Strategy refers to the identification of knowledge resources of an organization in order to measure and monitor them. It can be defined as the strategic planning and implementation of activities related to knowledge-based assets of an organization (Kianto et al., 2012) KMS aims to identify key strategic knowledge possessed by an organization in order to build a knowledge-based strategy.so as to identify the development needs with respect to the ever changing and dynamic business environment (Skyrme and Amidon, 1997; Zack 1999a, McKeen et al., 2005). Implementation of KM practices in the organization and continuously updating them in

line with the organization's mission and vision will provide a strategic advantage not easily imitable by competition. This strategic advantage can be leveraged in numerous ways by the organization (Barney, 1991; Conner and Prahalad, 1996; Grant, 1996; Skyrme and Amidon, 1997; Zack, 1999a; McKeen et al., 2006; Dalkir, 2005).

Recognizing and updating KM practices at regular intervals keeps the firm abreast of its knowledge resources and helps in timely allocation and utilization in line with the firm's overall strategy (VonKrogh et al., 2001).

2.5.5 Knowledge-based human resource management

People i.e. human resource is the fulcrum for all KM activity in an organization since it is this resource which is going to use and implement all these practices. HRM includes important people functions like recruitment, compensation, training and development. The aim is to hire talented people, train and develop them and enable them to reach their potential. The interaction of HRM and KM has been analyzed by practitioners and researchers (Yahya & Goh 2002; Hwang, 2003; Moffett et al., 2003; Hung et al., 2005; Chong & Choi, 2005; Wong & Aspinwall 2005; Akhavan et al. 2006; Chong 2006; Soto-Acosta et al., 2014; Jain & Moreno, 2015; Inkinen.,2015; Hussinki et al., 2017; Ardito & Petruzzelli, 2017, Gupta and Chopra, 2018). It is well established that on one hand where technology can provide an impetus to KM, it cannot replace human contribution in the process. Empirical research points out that technology is weak in interpreting information (knowledge), which is the keystone of knowledge creation, whereas, high-level communication amongst individuals leads to transfer of knowledge and information (Yahya & Goh 2002). The 'people' factor in an organization is the

major force of KM (Gooijer, 2000) and has been identified to play an important role in creation of a culture where it is understood that the use and implementation of KM practices can act as a pivotal tool and provide a foundation of competitive advantage (Singh & Soltani, 2010).

2.5.6 Information and communication technology for KM

The use of technology in the spread and use of knowledge is important to appreciate in an intra-organizational setup. If organizations have to be benefitted and become more effective, a very important contributing factor will be setting up of solid technological information infrastructure capable of knowledge sharing. Organizations have been keen on developing systems and technologies to capture and use internal and external knowledge strategically (Giudice & Peruta, 2016). There is a clear focus on ICT practices in organizations (Davenport & Klahr, 1998; Choi, 2000; Gold et al, 2001; Hsieh et al., 2002; Lee & Choi, 2003; Moffett et al., 2003; Chong & Choi, 2005; Wong & Aspinwall, 2005; Zaim et al., 2007; Valmohammadi & Ahmadi (2015); Andreeva & Kianto, 2012; Cohen & Olsen, 2015; Hussinki et al. 2017; Sumbal et al. 2017; Inkinen et al., 2017, Gupta and Chopra, 2018). Use of ICT for gathering internal and external information and using this information for creating seamless communication systems and making better decisions is a significant practice which helps leverage other KM resources optimally. Proper and smooth functioning requires identification, codification and communication of knowledge workers spread across different locations (Zack et al., 2009). Managers need to easily manageable information that assists in decision making (Walsh & Ungson, 1991).

2.6 Framework of the study

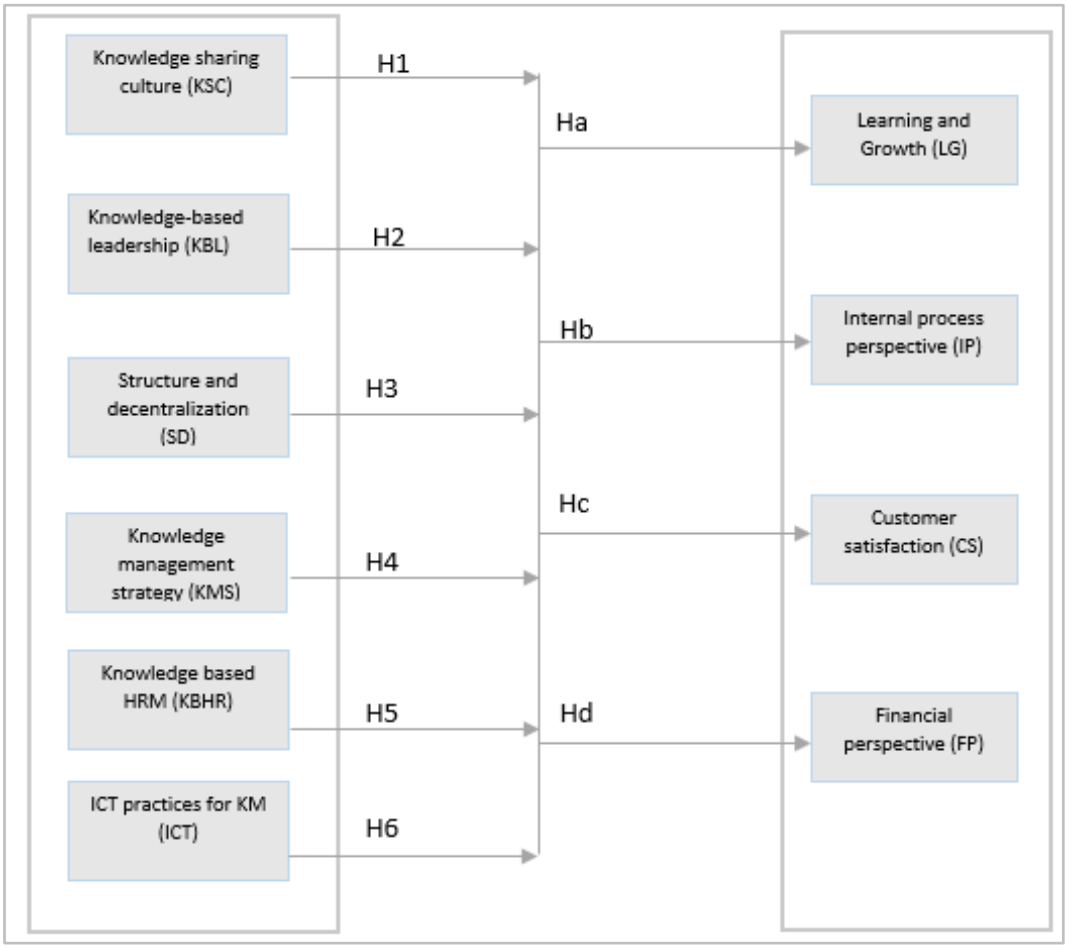

Figure 2.1: Proposed framework for the study

On the basis of the discussion presented above, the proposed hypotheses are as follows:

HA1: Knowledge Sharing Culture (KSC) has a positive and significant effect on

a. Learning and growth of the organization.

b. Internal process perspective

c. Customer satisfaction perspective

d. Financial perspective

HA2: Knowledge-Based Leadership (KBL) has a positive and significant effect on

a. Learning & Growth of an organization

b. Internal process perspective

c. Customer service perspective

d. Financial performance perspective

HA3: Structure and Decentralization (SD) has a positive and significant effect on

a. Learning & Growth of an organization

b. Internal process perspective

c. Customer service perspective

d. Financial performance perspective

HA4: Knowledge Management Strategy (KMS) has a positive and significant effect on

a. Learning & Growth of an organization

b. Internal process perspective

c. Customer service perspective

d. Financial performance perspective

HA5: Knowledge-Based Human Resource Management (KBHR) has a positive and significant effect on

a. Learning and growth of the organization.

b. Internal process perspective

c. Customer service perspective

d. Financial performance perspective

HA6: Information and Communication Technology for Knowledge Management (ICT) has a positive and significant effect on

a. Learning & Growth of an organization

b. Internal process perspective

c. Customer service perspective

d. Financial performance perspective

3. Research Design and Methodology

A research design is a framework or blueprint of research prepared at the planning stage. According to De Vaus, 2001(pp.9), the main purpose of research is to 'ensure that the evidence obtained enables us to answer the research questions as unambiguously as possible'. In light of the above, this chapter presents a detailed view of the methodology applied to understand the effect of KM practices in organizations on their performance. This chapter starts by giving an explanation of the research philosophy followed by research design, the respondents of the survey, construct measurement, data collection instrument, sampling techniques, technique of data collection, and culminates with details of data analysis techniques utilized to analyze the data collected.

3.1 Research philosophy

According to Johnson and Clark (2006), choosing the correct research philosophy deals with evaluating different methodologies and either adopting or adapting methods that have been previously used. This step is important as it sets the overall research strategy that the researcher is going to follow. Additionally, a research paradigm refers to a thought process based on some shared assumptions and values. According to Mcnabb (2008), there are three types of research paradigms - positivism, interpretivism and realimcsm. These approaches help a researcher in developing a deeper understanding of the topic of research.

Positivism research philosophy – given by Creswell (2009) has been adopted for the current research. This philosophy is based on a rational and empirical thought,

through the use of which, causes help to determine outcomes. According to Creswell, this methodology can be applied to social problems as he believed that the social world in many ways is similar to the natural world which is based on rationality. This explains relationships as it helps to identify causes that affect outcomes providing a basis for being able to predict and generalize.

The present study attempts to offer an explanation regarding the relationship between KM practices and organizational performance based on the utilization of quantitative and qualitative data and formulating a set of recommendations. Though this approach is commonly aligned with the use of quantitative data, qualitative data can also be utilized.

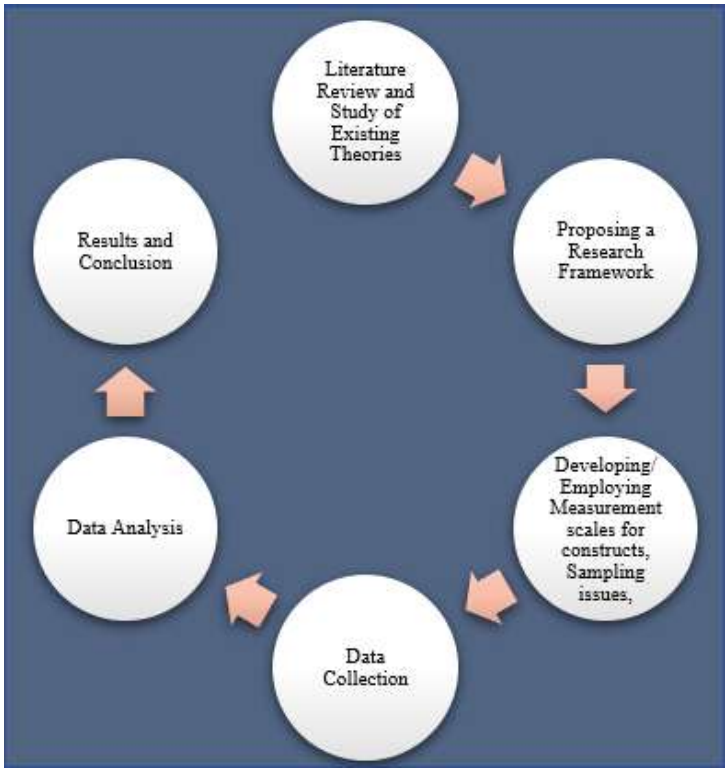

Figure 3.1: Research design

3.2 Research design

Research design can be categorized as exploratory, descriptive and conclusive (Malhotra and Dash, 2011). While exploratory research aims to explore by asking questions and gauging processes in a new light, descriptive research aims to provide an accurate portrayal of people, processes and situations.

This research utilizes exploratory research design by the use of a case study method followed by descriptive with the help of a cross-sectional survey design. Descriptive studies help establish causal relationships between variables. The cross-sectional study seeks to measure the relationships between variables at a specified time in order to study how these variables are related.

The purpose of the study is to understand the effect of the implementation of KM practices on the performance of an organization. Exploratory and descriptive research design has been employed in order to meet the desired research objectives (as discussed in Section 4.1).

Exploratory research was carried out to develop a theoretical model by identification of KM practices that have garnered theoretical and practical significance. A systematic literature review was conducted to identify and understand these KM practices and measures of OP. Special focus was laid on developing a deeper understanding of KM practices in Indian organizations. This helped achieve the first objective of the study.

During the second phase of this research, the various dimensions of the identified factors were explored. It is in this phase that the scale for measurement of

these constructs was also developed and data was collected. Both primary and secondary sources of data were exploited for expounding the effect of KM practices on performance measures. With the use of various qualitative and quantitative techniques, the inter-relationships were examined and hypotheses were put to test. This led to the fulfilment of the second objective.

The third and final phase focussed on discussing the findings and results of the empirical analysis of data collected and analyzed in the second phase. Presentation of a detailed discussion based on this analysis is the main component of this phase. Research implications for academicians and practitioners are an important component of this phase.

3.3 Systematic literature review

In order to answer the first two research questions, relevant literature on KM and organizational performance was studied. This study performs a detailed analysis of KM literature that has helped develop a deeper understanding of the concept and its relationship with the performance of an organization. A systematic review of the literature was performed as the approach to recap the literature, as it is transparent and provides a clear structure for the literature selection process. The literature selection process involved several stages.

The first stage was running a search on the social sciences databases. Searches for peer-reviewed journal articles were conducted using four online databases i.e. EBSCO host, Emerald, ProQuest, and Inderscience were searched for publications. The initial search for literature was undertaken in April 2016. Academic databases are often

constrained by the keywords used; coverage of the database and journals included in it. Hence, searches were also run on Google Scholar for other relevant pieces of information which weren't available in the databases. Reasons for inclusion included a set of selection criteria.

a. The papers were taken from peer-reviewed journals which guarantees the minimum quality of the relevant studies.
b. Articles were written in English which adds to the transparency and replicability of the review
c. The inclusion of the article was based on a "well-specified subject", i.e. the influence of KM practices on OP.
d. The literature from business, management and accounting was selected as this focus area has the highest probability for managerial contribution.

Taking into account all the predetermined criteria, the first search produced 3145 articles. In the second stage of the literature selection process, the articles were screened by title. For better clarification of the concept, the research papers included in the study used the term 'knowledge management' and 'organizational performance' in their title. Those that did not fulfil the pre-defined inclusion criteria were eliminated from further stages. After the article title limitation, the number of potentially relevant articles was reduced to 536.

In the third stage, abstracts of these papers were examined for relevance according to the topic of study, and the number was reduced to 313.

The next step was a thorough examination of the research papers. The articles and research papers were read and analyzed from the perspective of the theme of the paper. If they did not provide pertinent information, they were excluded from the study. Research pertaining to OP was also studied in order to develop a deeper understanding of the concept and its application. These were then grouped, summarized and critically analyzed.

During the next stage, full text of the article was read and finally 56 articles selected for the study. Further, references of all selected papers were scanned to find relevant research on the topic and the number of articles increased to 61.

After conducting the aforesaid process, various KM practices were identified. These KM practices were then subjected to second level scan so as to group similar practices and processes under one broad head. In this research, this broad head is referred to as one KM practice. Hence, each KM practice is a group of various processes/activities that lead to effective employment of the said practice. 11 such KM practices were finally considered for the study at hand. Also, four OP measures were identified viz. learning and growth perspective, internal process perspective, customer satisfaction perspective and financial perspective were, on the basis of literature, subdivided into smaller and specific indicators to take note of those phenomena, which are resultants of adoption of KM practices and positively contribute to a performance measure. Theoretical and empirical findings from previous literature have been reviewed to support the linkages and to conceptualize the proposed framework.

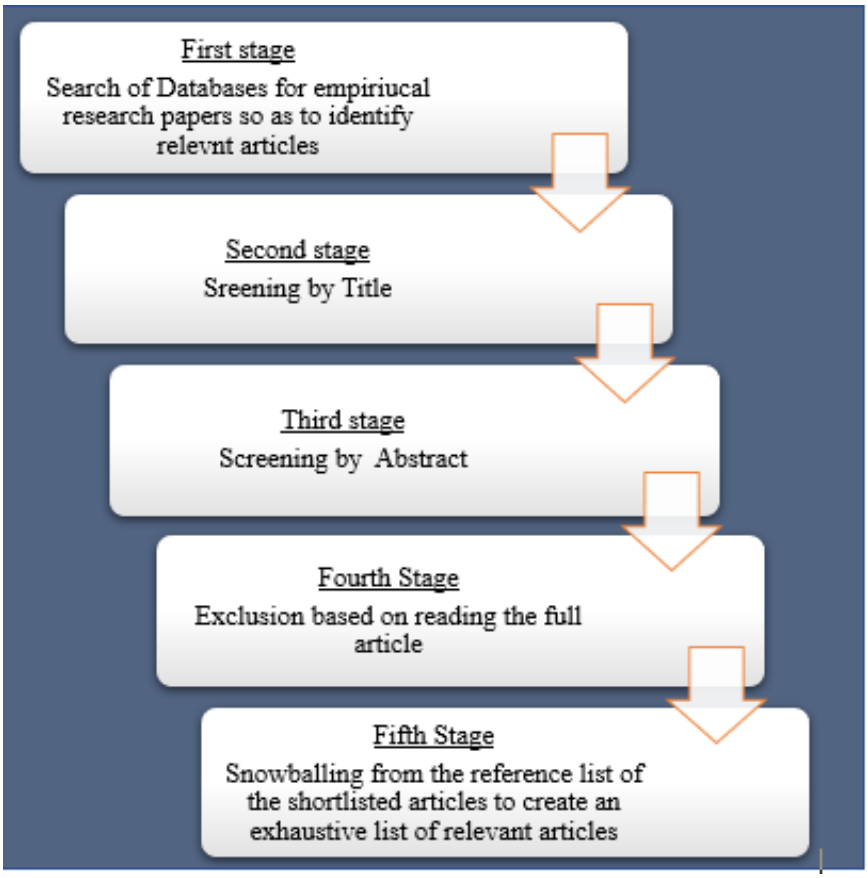

Figure 3.2: The systematic literature selection process

3.3.1 Reliability and validity

The reliability and validity of data have to be ensured. In the process of literature review, the existence of bias can be a potential threat to reliability and validity. In order to ensure reliability, the process has been conducted extremely transparently. High-quality research from peer-reviewed, highly cited journal publications were included in the study. Also, a large number of papers were included so as to have good representation in the study. All these factors contribute positively to the quality of research.

3.3.2 Methodological issues

Even though a systematic literature review is based on a standard procedure and articles are also chosen according to a pre-decided criterion, there is room for the

reviewer's personal choices and preferences. Starting from the first step of developing a search criterion, the reviewer has a number of options available and the entire process of selecting and screening of articles to be included in the study are a result of a large number of filters that are decided individually. Hence, any two reviewers would land up with different sets of research articles, even when their area of work, databases used for selecting and downloading relevant research items, is the same.

3.4 Survey research

Survey research, a quantitative research method, was thought to be most suitable for empirically testing the developed model. The articles referred for the study have also based their research and model testing on the development of hypotheses, solid construct measurement and empirical testing through quantitative research methods.

3.4.1 Construct measurement

Whenever applicable, standard, previously validated measures for theoretical constructs from existing literature, were adopted for the current study. Preference was given to entire validated and tested scales, at the same time individual items were also adopted. The advantage of using standard validated scales is the high chance of being able to collect high-quality data. Also, the usage of such measures would contribute to the existing literature due to uniformity and comparability. The measures consisted of multi-item constructs from a range of studies adapted according to the need of the current study (Table 3.1).

Table 3.1: Measures

Construct	References
Knowledge sharing culture	Lee and Choi, 2003; Wong and Aspinwall, 2005; Al-Busaidi and Olfman, 2005; Hung et al., 2005; Akhavan et al., 2006; Chong, 2006; Bozbura, 2007; du Plessis, 2007; Anantamulla, 2007; Basu and Ray, 2014; Appelbaum et al. , 2014, Jain and Moreno, 2015, Lee, Shiue and Chen, 2016
The members of the organization are willing to cooperate with each other	
The members of the organization are supportive for each other	
Different units in our organization work in a cooperative way to accomplish a task	
The members of our organization treat each other honestly and truthfully	
The members of our organization have trust in each other's capability to perform tasks.	
The members of our organization believe that all decisions are made for the benefit of the entire organization not individuals	
Relationships between members of our organization are based on mutual trust	
In our organization, there is a continuous effort to enhance organizational knowledge through knowledge exchange programs.	
In our organization, members are generally satisfied with education and career development programs.	
KM leadership	Bollinger and Smith, 2001; Roth, 2003, Chong and Choi, 2005; Hung et al, 2005; Wong and Aspinwall, 2005; Al-Busaidi and Olfman, 2005; Chong, 2006; Akhavan and Jafari, 2006; Akhavan et al., 2006; Jafari et al. ,2007; du Plessis, 2007; Chong, 2006; Anantamulla, 2007; Donate and Pablo, 2014
Top management of our organization understands the value of knowledge management	
Top management of our organization is well aware about the concepts of knowledge management	
Top management of our organization provides adequate financial resources for knowledge management	
Top management of our organization provides adequate human resources for knowledge management	
Top management of our organization lays stress on the importance of knowledge management for achieving excellence in organizational activities	
Structure and Decentralization	Skivington and Daft, 1991; Rapert and Wren, 1998; Schiminke et.al., 2000; Gold et.al., 2001; Lee and Choi, 2003; Starns and Odom, 2006; Zheng 2010; Mills and Smith, 2011; Sinha et.al., 2015
In our organization, employees at all levels provide input in everyday decision-making	
In our organization, employees can make their own decisions while performing tasks	
In our organization, employees have freedom in how they do their work	
In our organization, job behaviours are relatively unstructured	

Construct	References
In our organization, members are allowed to use discretion while performing tasks	
Strategic KM practices	Zack, 1999; McKeen et al. (2005); Zack et. al., 2009; Boumarafi and Jabnoun (2008), Kianto et al. (2014); Valmohammadi, C., & Ahmadi, M. (2015).
Knowledge is recognized as a key resource in the organization.	
The organization has a common vision for KM that people at all levels support	
The organization has clear objectives for KM	
The organization's knowledge and competence strategy are clearly stated at all levels of the organization	
There is high degree of alignment of KM strategy with organizational strategy	
There is clear identification of the potential value to be achieved from KM	
Knowledge based HRM	Bontis and Giradi, 2000; Garavan et al., 2007; Mentzas et al., 2001; Horak, 2001; Goh, 2002; Yahya and Goh 2002; Hwang, 2003; Moffett et al., 2003; Hung et al., 2005; ; Chong and Choi, 2005; Wong and Aspinwall 2005; Akhavan et al. 2006; Chong 2006; Akhavan and Jafari 2006; Bozbura 2007; du Plessis, 2007; Jafari et al. 2007; Priesto -Pastor et al, 2010; Andreeva and Kianto, 2012
Our organization lays a lot of stress on recruitment practices and policies	
There is a system of mentoring and training in the organization	
Our organization rewards knowledge creation with incentives	
Our organization rewards knowledge sharing with incentives	
Our organization provides opportunities for training and skill development as incentives for knowledge sharing	
Information and Communication Technology	Davenport and Klahr, 1998; Greco, 1999; Wenger and Snyder, 2000; Choi, 2000; Alavi and Leidner (2001),Gold et al, 2001; Hsieh et al., 2002; Lee and Choi, 2003; Moffett et al., 2003; Chong and Choi, 2005; Wong and Aspinwall, 2005; Andreeva and Kianto, 2012
ICT in our organization is utilized to gather information about internal and external stakeholders	
ICT in our organization facilitates systematic processing of useful information and provides unrestrained access to this information independent of time and location	
Our organization's ICT architecture is capable of timely sharing of information with all stakeholders in the organization	
ICT in our organization supports various software tools for managerial decision making	
Learning and growth	
Professional ability of employees	
Productivity of employees	
Knowledge sharing behaviour of employees	
Ability of the employees to handle emergency situations	
Ability of the employees to effectively use an organization's IT	

Construct	References
resources	Kaplan, R.S. and Norton, D.P., 1996; Kaplan, R. S., 2009; M. Punniyamoorthy R. Murali, 2008; Chen, M.Y., Huang, M.J. and Cheng, Y.C., 2009; Chen, F.H., Hsu, T.S. and Tzeng, G.H., 2011.
Internal process	
Time reduction in handling customer inquiries and complaints	
Time reduction in commercializing innovations	
Effective problem-solving percentage	
Customer perspective	
Better customer service through new products and services	
Increase in market share	
Increased customer retention	
Increase in rate of acquisition of new customers	
Financial perspective	
Increase in size of business	
Positive effect on return on investment	
Positive effect on return on assets	
Positive effect on average profit	
Positive effect on revenue growth rate	

3.4.2 Research instrument

A questionnaire containing two separate sections was prepared to collect primary data from the target respondent group. The first section of the questionnaire was focused on collecting demographic data such as education, overall experience, experience with the current organization, managerial position etc. Six independent variables i.e. implementation of KM practices in organizations was measured in the second section and the final section consisted of the four dependent variables i.e. organizational performance-based. As mentioned earlier, seven-point Likert scale was employed on each variable to measure the effect of the independent variables on the dependent ones. The questionnaire, thus prepared, was pilot tested on 62 respondents to check for primary scale characteristics followed by checks on

reliability and validity (The iterative process of finalizing the questionnaire is explained in detail in the next chapter.). A 50 item five-point Likert scale final questionnaire was generated and presented to respondents who were asked to rate the implementation of KM practices and measures used to gauge the effect of these KM practices in their organization.

3.4.3 Reliability and validity

The data were collected through self-report measures, therefore the chances of occurrence of Common method bias (CMB) increase in the data. According to Spector and Brannick (2009) CMB can be a serious concern when the same respondent answers questions for independent and dependent variables in the same questionnaire. The following measures were taken in order to reduce the risk of CMB. According to Rindfleisch et.al. (2008), the first step taken was to ensure the respondents of complete confidentiality in design and administration so as to reduce the chances of alteration in answers based on others expectations.

According to MacKenzie and Podsakoff, 2012, a lot of effort was put in to create a good quality and compact survey instrument after several rounds of discussion with managers and experts.

After the process of data collection was over, the risk of CMB was calculated by applying Harman's one-factor test. Exploratory factor analysis with Principal component analysis was run on the data, to determine the total number of factors and also measure the total variance accounted for by these factors The six factors related to KM accounted for 68.32 percent of variance, out of which 33.87percent was the contribution of the first factor, thus CMB was not a concern for this data.

The questionnaire reliability was checked by measuring the value of Cronbach alpha with the help of IBM SPSS. All values exceeded the threshold value of 0.7(Hair et al., 2006) demonstrating that the resultant questionnaire is reliable.

3.4.4 Methodological issues

While employing this methodology of employing self-reporting measures, it is advisable to use multiple responses per organization. Although the research has tried to put this in practice i.e. the number of responses were obtained from each participating organization, it would have added more value to collect financial data from finance managers. However, this approach could not be followed as the focus was on collecting as much data as possible from each firm. There was already a constraint of including only middle and higher-level managers in the sample, one more constraint would have highly restricted the data collection exercise. Another option was to collect organization-level data from company secondary sources such as annual reports and publications. However, with the use of performance measures like innovation and market performance, many barriers come into the picture. First and foremost, it is extremely difficult to get reliable innovation data. Many-a-times, the number of patents is considered as the benchmark, but this measure is not valid for all the industry sectors under study. At the same time, use of subjective measures has been proposed and endorsed by previous researchers for producing data in line with objective data (e.g. Delaney and Hsuselid, 1996; Dess and Robinson, 1984), thus even if Delaney and Huselid, 1996, say that the use of subjective data increases biases in the dataset, it is considered as a viable option for use and research when coupled with a sound research design.

Another issue related to survey research design is, it uses may not always be the best research design to capture KM practices. Since the focus of this research is to measure KM practices, both the explicit and tacit forms, the survey method is appropriate for the former - wherein the codified part of knowledge i.e. explicit knowledge can be measured. Since, it is the tacit form – which can't be codified (Polanyi, 1966) or only marginally codified (Nonaka and Takeuchi, 1995), and is a major component and differentiator (Barney, 1991), has to be gauged too for capturing the complete picture, researchers have widely used survey research design or face to face interviews to measure it. While survey research does throw light on the more general aspects, face to face interviews can uncover deeper areas (Denzin and Lincoln, 2011) and is often preferred over the former design for the said purpose. Therefore, the inability to use interview data as a supplement to survey design is a shortcoming or limitation of this research.

3.4.5 Sampling and data collection

The data was collected from a sample of cross-industrial Indian firms from the month of August 2018 to January 2019. Since the main focus of this research is to analyze the effect of KM practices on OP measures, the firms that qualify for the study have to be essentially focused on the development of KM infrastructure and possess rich experience in KM projects. Assuming that knowledge is an inevitable resource for any large and successful business organization, the Fortune India 500, a list of top 500 Indian companies, compiled annually by Fortune magazine, on the basis of sales and gross revenue figures, were considered for the study. Data was collected by administering questionnaires both in online and offline mode. For some organizations with offices in Delhi-NCR, data was collected personally by visiting with prior appointment. For others, participants were invited via e-mail by including

the link to a web-based survey designed through Google form. Approximately 1474 questionnaires were distributed and 491 responses were received, out of which 477 were used for the study, 14 could not be used as they were found to be incomplete (response rate – 33.31%). The names of the said organizations are not disclosed in the document in the light of confidentiality requirement which was a condition put by these organizations before they divulged details of their KM practices. According to Bentler and Chou (1987) and Hair et al., (2010), a ratio of 5 respondents to 1 item is believed to be sufficient. With 50 items being used for the current study, a sample of 250 would be acceptable, instead, a larger sample size of 477 has been used for the study.

The survey aimed at focusing on middle and higher-level managers in organizations and was successful in garnering this response majorly through personal networks. 43.2% of respondents were graduates, 56% were postgraduates and 4 people from 477 i.e. 0.8% were doctorates. The study aimed at collecting data from middle and senior-level managers, accordingly 78.6 percent of the sample belonged to middle-level managers and 21.4 percent were from a senior level. All the respondents were experienced with a minimum experience of 5-10 years constituting 9.4 percent of the sample, 56 percent were from the 11-20 years' experience bracket and 32.1 percent belonged to 21-30 years and 2.5 percent were the most experienced with more than 31 years of experience. From amongst these people, nearly 15 percent were engaged with the same organization for less than 5 years, 49.5 percent were working with the same organization for five to ten years and 35 percent people belonged to the 'more than 10 years bracket.

3.5 Statistical tools used for data analysis

The proposed research framework was tested through a multi-staged analysis. Factor analysis and Structural Equation Modelling (SEM) was applied for the purpose. Starting from the beginning, MS excel 2016 was employed in the initial stage for data compilation and screening MS Excel helped in the data cleaning process. The first step in conducting the analysis was achieved with the help of this software. IBM SPSS Statistical package (version 22) was used to run the Exploratory factor analysis in order to check the factor structure. SEM was used for hypothesis testing.

The measurement model was assessed from two aspects – internal consistency and discriminant validity. There are two measures for gauging Internal consistency - construct reliability (CR) and convergent validity. According to Bagozzi and Yi, 1991, the value of CR for each construct should be more than 0.7. Convergent validity is measured by examining the following values – CR, factor loadings and average variance extracted (AVE). As mentioned earlier, CR should be higher than 0.7 for each construct; factor loadings for each item should be significantly high – which depicts that the items belong to the construct they have been put under and lastly, the value of AVE should be higher than 0.5 (Fornell and Larcker, 1981). Discriminant validity was also calculated by observing the value of Maximum Shared Variance (MSV) which should be less than Average Variance extracted (AVE) and the value of Average Shared Variance (ASV) should be less than Average Variance extracted (AVE). The values and details of the above for the current study are presented in the following sections.

AMOS SEM was employed for assessing the quality of the proposed factor structure by testing the significance of the model statistically and loadings of each item

on the factors through the use of Confirmatory factor analysis (CFA). This technique is used to check the level of fit between the proposed model and collected empirical data (Hair et al. 2006). As the name suggests, CFA is a confirmation and validation tool as it helps in clearly checking the theorized concepts (Brown, 2015).

The proposed causal relationships between constructs hypothesized in the current study were assessed by means of SEM. This tool was employed for analysis as it has the ability to provide support and evidence of systematic co-variation and capacity to show that a relationship is real and not spurious (Hair et al. 2006). It must be noted that SEM is a confirmatory method and helps to assess the theorized model for its fit to empirical data, hence it is imperative to apply SEM only after a theory has been established. SEM will help find if the theory is a good fit or not.

4. Data Analysis and Results

4.1 Overview of data analysis and results

The data collected for the survey was analyzed to test the theorized framework and the proposed relationships. The process of data analysis is a multi-staged one. It starts with the compilation and cleaning of data, followed by pilot testing on a small sample. After thus, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) is conducted. The last and most important step is conducting multiple regression analysis. While the first part was done on MS Excel, Pilot testing and EFA was run on IBM SPSS version 22. Finally, CFA and multiple regression were done with the help of AMOS SEM. The research instrument was prepared with the help of thorough reference to the KM and OP literature and iterated through a series of steps including pilot testing to achieve its final shape. The pilot test was conducted on 62 respondents. After the requisite modifications were incorporated, the final survey was undertaken with a sample size of 477 respondents. The step by step procedure to conduct data analysis along with the results is presented in the following sections. Figure 4.1 provides a detailed depiction of the entire process of data analysis along with various data analysis tools and techniques used at different stages of the research process.

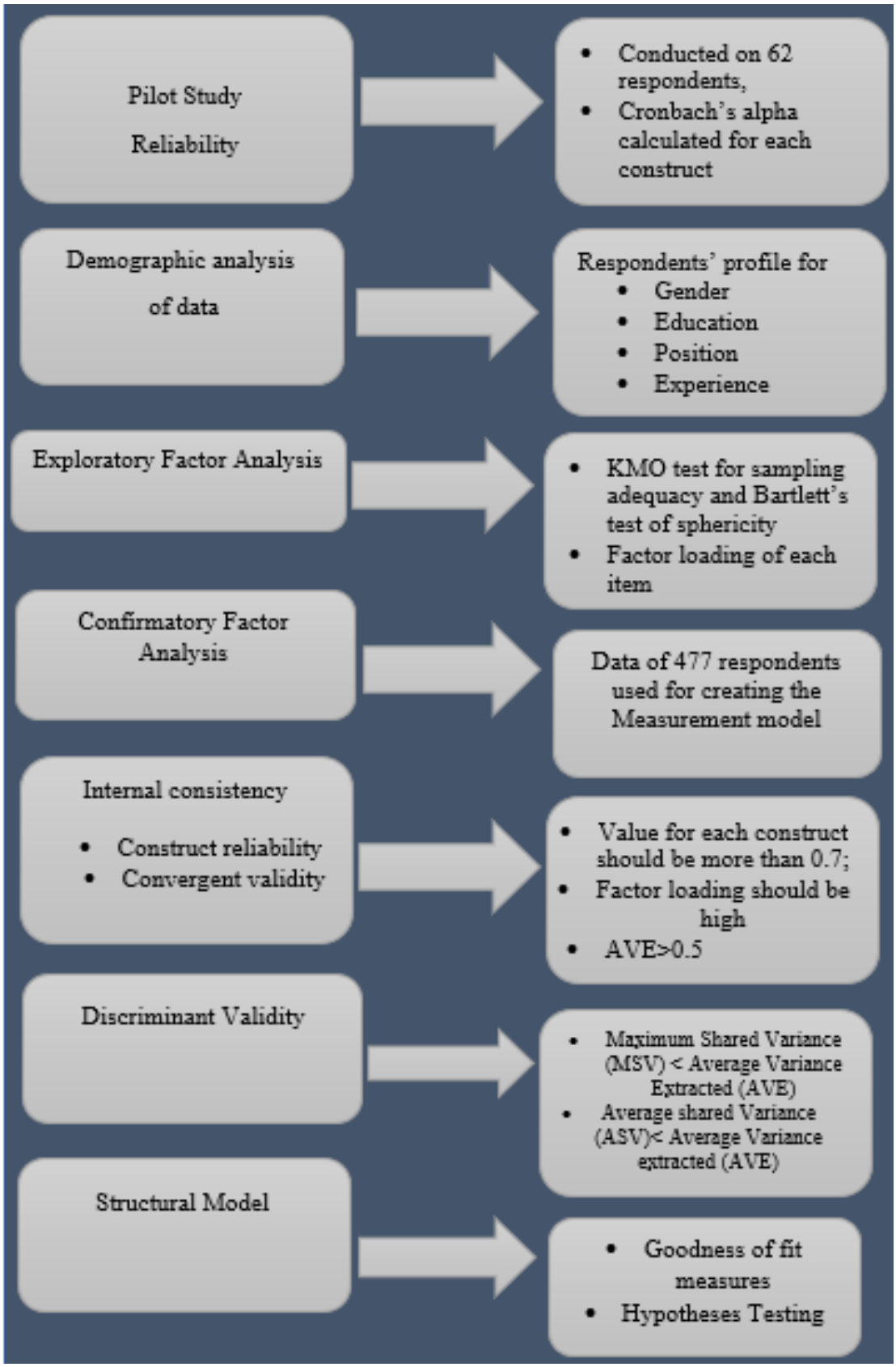

Figure 4.1: Process of data analysis

4.2 Pilot study

A pilot study is undertaken as a preliminary step to check the operational issues of a research project. It helps to define the research question and puts the proposed research design to test. A pilot study is also helpful in checking the feasibility of the study in terms of time and cost. As a popular proverb says,

'You never check the depth of a river with both your feet"

Conducting a pilot study does not ensure the success of the research project, but it surely helps the researcher assess the approach and practice the required techniques. It contributes by refining the questionnaire in terms of understandability and interpretation.

Keeping the above in mind, a pilot study was conducted for the current study. A sample of 135 was targeted from students pursuing the Executive MBA program from the university. Since the selection criteria for EMBA mandates a minimum of two years of corporate experience, this group of people was eligible and well suited for the current study. A 52 item five-point Likert scale was generated and presented to 135 respondents who were asked to rate implementation of KM practices and measures used to gauge the effect of these KM practices in their organization on a scale of 1 to 7 where 1 stood for "strongly disagree" to 7 for "strongly agree". Out of these 135, 62 responses were received. These responses were from the IT industry, banking sector and power sector.

The questionnaire reliability was checked by measuring the value of Cronbach alpha with the help of IBM SPSS. As seen in Table 4.1, all values exceed the threshold value of 0.7 (Hair et al., 2006) demonstrating that the resultant questionnaire is reliable.

Table 4.1: Reliability statistics

S. No.	Construct	Cronbach's Alpha	No. of Items
1	Knowledge Sharing culture (KSC)	.862	9
2	Knowledge-based leadership (KBL)	0.798	4
3	Structure and decentralization (SD)	0.778	5
4	Knowledge Management Strategy (KMS)	0.809	6
5	Knowledge-based HRM (KBHR)	0.742	5
6	ICT practices for KM (ICT)	0.731	4
7	Leaning and Growth (LG)	0.826	5
8	Internal process perspective (IP)	0.851	3
9	Customer service (CS)	0.835	4
10	Financial perspective (FP)	0.757	5

Based on the suggestions provided by respondents of the pilot survey, several changes were made to the questionnaire so as to make it more comprehensive and relevant. Two items in this scale were thought to be overlapping some of the other items, after discussion with experts these two items were removed from the final questionnaire. In addition to this, there were two instances where the question was misinterpreted by the respondents, hence the language of two these items was modified in order to make it more comprehensible. Table 4.2 states the questionnaire items used in the pilot study.

Table 4.2: Questionnaire items used in the pilot study

S. No.	Name of the Variable	Items
ID1	Knowledge Sharing Culture (KSC)	The members of the organization are willing to cooperate with each other
		The members of the organization are supportive of each other
		Different units in our organization work in a cooperative way to accomplish a task
		The members of our organization treat each other honestly and truthfully
		The members of our organization have trust in each other's capability to perform tasks.
		The members of our organization believe that all decisions are made for the benefit of the entire organization, not individuals
		Relationships between members of our organization are based on mutual trust
		In our organization, there is a continuous effort to enhance organizational knowledge through knowledge exchange programs.
		In our organization, members are generally satisfied with education and career development programs.
ID2	Knowledge-based Leadership	Top management of our organization understands the value of knowledge management
		Top management of our organization provides adequate financial resources for knowledge management
		Top management of our organization provides adequate human resources for knowledge management
		Top management of our organization lays stress on the importance of knowledge management for achieving excellence in organizational activities
		Top management of our organization is well aware of the concepts of knowledge management

S. No.	Name of the Variable	Items
ID3	Structure and Decentralization	In our organization, employees can make their own decisions while performing tasks
		In our organization, employees at all levels provide input in everyday decision-making
		In our organization, employees have freedom in how they do their work
		In our organization, job behaviours are relatively unstructured
		In our organization, employees are allowed to use discretion while performing tasks
ID4	Knowledge Management Strategy	Knowledge is recognized as a key resource in the organization.
		The organization has a common vision for KM that people at all levels support
		The organization has clear objectives for KM
		The organization's knowledge and competence strategy are clearly stated at all levels of the organization.
		There is a high degree of alignment of KM strategy with organizational strategy.
		There is clear identification of the potential value to be achieved from KM
ID5	Knowledge-based HRM (KBHR)	Our organization lays a lot of stress on recruitment practices and policies
		There is a system of mentoring and training in the organization
		Our organization rewards knowledge creation with incentives
		Our organization rewards knowledge sharing with incentives
		Our organization provides opportunities for training and skill development as incentives for knowledge sharing
ID6	Information and Communication Technology (ICT)	ICT in our organization is utilized to gather information about internal and external stakeholders.
		ICT in our organization facilitates systematic processing of useful information and provides unrestrained access to this information independent of time and location.
		Our organization's ICT architecture is capable of timely sharing of information with all stakeholders in the organization
		ICT in our organization supports various software tools for managerial decision making

S. No.	Name of the Variable	Items
D1	Learning and growth	Professional ability of employees
		Productivity of employees
		Knowledge sharing behaviour of employees
		The ability of the employees to handle emergency situations
		The ability of the employees to effectively use an organization's IT resources
D2	Internal process	Time reduction in handling customer inquiries and complaints
		Time reduction in commercializing innovations
		Effective problem-solving percentage
		Rework reduction
D3	Customer perspective	Better customer service through new products and services
		Increase in market share
		Increased customer retention
		Increase in rate of acquisition of new customers
D4	Financial perspective	Increase in size of business
		Positive effect on return on investment
		Positive effect on return on assets
		Positive effect on average profit
		Positive effect on the revenue growth rate

4.3 Exploratory factor analysis

After analyzing the findings of the pilot test and modifying the questionnaire in accordance with the results, the modified questionnaire was then circulated to more than 1470 potential respondents belonging to different demographic profiles and employed in different organizations. The response rate was 33.31% with 491 received

responses. Out of these, 477 could be used for the study as there were some with incomplete responses, hence were rejected. This data was further analyzed in accordance with the objectives of the study. In the initial phase of analysis, Exploratory factor analysis was conducted on the 50 statements using principal-component factor analysis with varimax rotation.

A sequence of validated tools and procedures were employed to analyze the collected data. Kaiser-Meyer-Olkin (KMO) statistic along with Bartlett's test of sphericity was used to check the appropriateness of the test. The threshold value for KMO statistic is 0.6 (Kaiser & Rice, 1974). The obtained value of KMO test is 0.776 along with Bartlett's test of sphericity value of 6719.779 and p-value of 0.000 which are all in the acceptable range ensuring correctness and appropriateness of data for EFA. (As depicted in Table 4.3)

Table 4.3: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.776
Bartlett's Test of Sphericity	Approx. Chi-Square	6716.799
	df	1378
	Sig.	0.000

The factor loadings of each item on its respective factors are presented in Table 4.4. All 50 items loaded onto their respective factors with each item possessing a loading of more than 0.50, also no cross-loadings exceeding a value of 0.40 appeared in the result. Eventually, the questionnaire was finalized with 50 items, 33 of which belonged to KM practices and 17 were OP measures.

Table 4.4: Factor loading of items

S. No.	Name of the variable	Items	
ID1	Knowledge Sharing Culture (KSC)	The members of the organization are willing to cooperate with each other	.737
		The members of the organization are supportive of each other	.850
		Different units in our organization work in a cooperative way to accomplish a task	.753
		The members of our organization treat each other honestly and truthfully	.618
		The members of our organization have trust in each other's capability to perform tasks.	.745
		The members of our organization believe that all decisions are made for the benefit of the entire organization, not individuals	.659
		Relationships between members of our organization are based on mutual trust	.744
		In our organization, there is a continuous effort to enhance organizational knowledge through knowledge exchange programs.	.796
		In our organization, members are generally satisfied with education and career development programs.	.720
ID2	Knowledge-based Leadership	Top management of our organization understands the value of knowledge management	.764
		Top management of our organization provides adequate financial resources for knowledge management	.728
		Top management of our organization provides adequate human resources for knowledge management	.783
		Top management of our organization lays stress on the importance of knowledge management for achieving excellence in organizational activities	.651
ID3	Structure and Decentralization	In our organization, employees can make their own decisions while performing tasks	.858
		In our organization, employees at all levels provide input in everyday decision-making	.770
		In our organization, employees have freedom in how they do their work	.871
		In our organization, job behaviours are relatively unstructured	.785
		In our organization, employees are allowed to use discretion while performing tasks	.888

S. No.	Name of the variable	Items	
ID4	Knowledge Management Strategy	Knowledge is recognized as a key resource in the organization.	.882
		The organization has a common vision for KM that people at all levels support	.877
		The organization has clear objectives for KM	.872
		The organization's knowledge and competence strategy are clearly stated at all levels of the organization.	.768
		There is a high degree of alignment of KM strategy with organizational strategy.	.944
		There is clear identification of the potential value to be achieved from KM	.835
ID5	Knowledge-based HRM (KBHR)	Our organization lays a lot of stress on recruitment practices and policies	.762
		There is a system of mentoring and training in the organization	.775
		Our organization rewards knowledge creation with incentives	.773
		Our organization rewards knowledge sharing with incentives	.748
		Our organization provides opportunities for training and skill development as incentives for knowledge sharing	.752
ID6	Information and Communication Technology (ICT)	ICT in our organization is utilized to gather information about internal and external stakeholders.	.471
		ICT in our organization facilitates systematic processing of useful information and provides unrestrained access to this information independent of time and location.	.828
		Our organization’s ICT architecture is capable of timely sharing of information with all stakeholders in the organization	.853
		ICT in our organization supports various software tools for managerial decision making	.824
D1	Learning and Growth	Professional ability of employees	.652
		Productivity of employees	.799
		Knowledge sharing behaviour of employees	.462
		The ability of the employees to handle emergency situations	.731
		The ability of the employees to effectively use an organization's IT resources	.637

S. No.	Name of the variable	Items	
D2	Internal Process	Time reduction in handling customer inquiries and complaints	.699
		Time reduction in commercializing innovations	.562
		Effective problem-solving percentage	.526
D3	Customer Perspective	Better customer service through new products and services	.562
		Increase in market share	.761
		Increased customer retention	.834
		Increase in rate of acquisition of new customers	.680
D4	Financial Perspective	Increase in size of business	.882
		Positive effect on return on investment	.757
		Positive effect on return on assets	.708
		Positive effect on average profit	.878
		Positive effect on the revenue growth rate	.627

4.4 Composite Reliability of Variables

In order to confirm the reliability of data collected, Composite reliability (CR) was calculated in AMOS. It is widely accepted that the value of CR for each factor should exceed 0.7 (Hair et al., 1998). Table 4.5 depicts the calculated value of each factor and it is clear that the reliability of the data was ascertained as the criteria of 0.7 were being fulfilled. (CR values for the current data range between 0.830 and 0.949)

Table 4.5: Composite reliability of variables

Factor No.	Variable Name	CR
ID1	Knowledge Sharing Culture	0.940
ID2	Knowledge-Based Leadership	0.884
ID3	Structure and Decentralisation	0.927
ID4	Knowledge Management Strategy	0.949
ID5	Knowledge-based Human Resource Management	0.930
ID6	Information and Communication Technology	0.908
D1	Learning and Growth	0.884
D2	Internal Process Perspective	0.830
D3	Customer Satisfaction	0.879
D4	Financial Performance	0.887

4.5 Demographic profile of the respondents

In order to develop an understanding of employees with different levels of experience and working at various positions in an organization, some demographic variables like education, experience and position were captured from the entire set of 477 employees.

4.5.1 Respondent profile – Gender

The first demographic variable to be captured was gender. The respondent profile was a mix of male and female. The proportion of males was more in comparison to females. Out of the total respondents, close to 74 per cent were males and 26 per cent were females. Table 4.6 presents the complete respondent profile.

Table 4.6: Respondent profile

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Gender				
Male	352	73.8	73.8	73.8
Female	125	26.2	26.2	100
	477	100	100	
Educational qualification				
Graduate	206	43.2	43.2	43.2
Post graduate	267	56.0	56.0	99
PhD	4	0.8	0.8	100
	477	100	100.0	
Position				
Entry level	0	0	0	0
Middle level	375	78.6	78.6	78.6
Senior level	102	21.4	21.4	100
	477	100	100	
Total experience				
5-10 years	45	9.4	9.4	9.4
11-20 years	267	56.0	56.0	65.4
21-30years	153	32.1	32.1	97.5
31 years and above	12	2.5	2.5	100
	477	100	100.0	
Experience with the existing organization				
Less than 5 years	72	15.1	15.1	15.1
5-10 years	236	49.5	49.5	64.6
More than 10 years	169	35.4	35.4	100
	477	100.0	100.0	

4.5.2 Respondent profile – Education

Education has also been taken into consideration for gauging the effect of KM practices. The educational profile of respondents was mapped for the study. From the total number of 477, 206 respondents were graduates i.e. 43.2 per cent; 267 respondents were post-graduates which accounted for 56 per cent. and 4, which was 0.8 per cent of the total were doctorates. These people belong to the very senior levels in the 'learning and development' department in big corporates houses. These organizations are highly focused on honing the skill set of their human resource. In fact, a large number of organizations in the sample have employee development programs and are associated with universities and institutes for providing avenues of higher education to their staff. Good performance of employees is rewarded by giving them the opportunity to pursue higher education programs, post-graduation, even doctorates, depending on their position, experience, performance and interest.

4.5.3 Respondent profile – Position

The position on which an employee is functioning in an organization is instrumental in a number of factors that may have a bearing on the study. The position of an employee not only affects the amount and level of resources he has access to but people occupying the higher ladders play an important role in policymaking and possess the capability to affect the provision of these resources to others in the organization. Hence it is significant to decode the sample on the basis of position. The sample constitutes middle and higher-level managers from Fortune 500 companies in India. While middle-level managers constitute 78.6 per cent of the entire sample, senior-level managers have a 21 per cent representation in the sample.

4.5.4 Respondent profile – Total Experience

The total experience of an individual, over his entire career would affect his perspective about KM and its implementation in organizations. Although, the younger set of employees is better adept with newer technology yet experience has its own set of learnings. It is the higher-level managers who are responsible for creating a learning culture where knowledge is valued and its exchange is smooth. In this light, the total experience of the respondents was asked during the process of data collection. It is 'experience' broadens and widens the horizons of thought of an individual since the purpose of this research is gauging the overall effect of KM practices on an organization's performance, people with higher experience would be a in apposition to provide better information.

In this dataset, 45 respondents i.e. 9.4 per cent belonged to the lowest experience bracket of 5-10 years, 65 per cent respondents belonged to 11-20 years' experience bracket, 32 per cent respondents were formed 21-30 years' experience and the rest 2.5 per cent belonged to the maximum experience group of more than 31 years.

4.5.5 Respondent profile – Experience with the current organization

While total experience is significant to gauge an individual's overall knowledge, measuring the association with one organization throws light on a different set of variables. With association comes acquaintance, the longer the former better will be the latter. Understanding of an organization's processes, procedures and practices develop over a period of time. People who have been working in an organization for long not only have a deeper understanding of the above but also possess tacit knowledge which may not be visible unless explicitly asked.

The current data set has a mix of employees belonging to three categories– less than 5 years', 5-10 years and more than 10 years. As shown in the table, 15 per cent belonged to the first category; the maximum percentage of 49.5% belonged to the second category of 5-10 years' experience and 35 per cent belonged to the last group of more than 10 years of experience in the same organization.

4.6 Assumptions of multivariate analysis

In the later stages of data analysis, multivariate techniques will be employed. However, before we proceed to the actual application and analysis, it is important to ascertain that the data at hand meets the requirements for the application of these techniques. The following section focuses on ascertaining if these conditions are met.

4.6.1 Linearity

Structural Equation Modelling (SEM) can measure only linear relationships, so we assume variables to be only linearly correlated with each other. In order to proceed with the analysis, linearity of the proposed relationships has to be ensured.

This assumption is tested with the help of IBM SPSS. The test is conducted for checking all kinds of relationships, if any, between the variables, ranging from linear, cubic, quadratic, exponential, growth, inverse, compound and logistic using curve estimation. The results of the analysis for linear relationships are depicted in Table 4.7 for LG, IP, CS and FP. The values of R-square and p clearly show that the variables are linearly correlated (All p-values are less than 0.05). According to the data, SEM can be employed as far as the condition of linearity is concerned.

Table 4.7: Assumption of linearity

		R- square	Sig.
LG	KSC	.289	.000
	KBL	.120	.012
	SD	.203	.002
	KMS	.185	.003
	KBHR	.275	.000
	ICT	.330	.000
IP	KSC	.107	.006
	KBL	.222	.001
	SD	.101	.004
	KMS	.002	.004
	KBHR	.196	.002
	ICT	.319	.000
CS	KSC	.011	.000
	KBL	.287	.005
	SD	.271	.000
	KMS	.094	.000
	KBHR	.027	.008
	ICT	.295	.002
FP	KSC	.061	.008
	KBL	.073	.005
	SD	.012	.002
	KMS	.067	.005
	KBHR	.236	.001
	ICT	.278	.000

4.6.2 Normality

Another condition for the application of Multivariate analysis is the normality of data. In order to ensure normality of the current data set, kurtosis and skewness were calculated. These values can be obtained from the structural model of SEM. The reference values for these measures is a range of -1 to +1 (Hair et al., 2010)

Table 4.8: Assumption of normality

Name of the construct	Variable	Skewness	Kurtosis
KSC	KSC9	-.719	.405
	KSC8	-.019	.223
	KSC7	-.844	.765
	KSC6	-.957	.691
	KSC5	-.883	.435
	KSC4	-.668	.153
	KSC3	-.985	.457
	KSC2	-.042	.715
	KSC1	-.197	.382
KBL	KBL4	-.307	-.459
	KBL3	-.234	-.483
	KBL2	.009	-.676
	KBL1	-.248	-.528
SD	SD5	-.106	-.494
	SD4	.048	-.842
	SD3	.075	-.955
	SD2	-.007	-.733
	SD1	.213	-.200
KMS	KMS6	-.176	-.965
	KMS5	-.181	-.022
	KMS4	-.072	-.031
	KMS3	-.453	-.393
	KMS2	-.513	-.471
KBHR	KBHR5	-.601	-.555
	KBHR4	-.576	-.022
	KBHR3	-.639	-.661
	KBHR2	-.631	-.487
	KBHR1	-.406	-.308
ICT	ICT4	-.889	-.111
	ICT3	-.822	.060
	ICT2	-.843	-.051
	ICT1	-.655	-.533

Name of the construct	Variable	Skewness	Kurtosis
LG	LG5	-.311	-.371
	LG4	-.352	-.393
	LG3	-.436	-.242
	LG2	-.475	-.118
	LG1	-.735	.213
	IP1	-.486	-.851
	IP2	-.636	-.856
	IP3	-.071	-.163
	CS4	-.594	.204
	CS3	-.022	-.086
	CS2	-.051	-.023
	CS1	-.296	-.493
	FP5	-.392	-.871
	FP4	-.377	-.755
	FP3	-.240	-.953
	FP2	-.382	-.554
	FP1	-.065	-.843

The values of skewness and kurtosis were calculated for 50 variables under study and are tabulated in table 4.8. It can be observed that the calculated values for each of the variables fall within the reference range, proving another assumption for the application of multivariate analysis to be true. So, according to the condition of normality also, we can proceed with the analysis.

4.6.3 Multi-collinearity

If the items of one construct are highly correlated with the items of another construct, multivariate analysis cannot be run. It is under this presumption that there is no or very little correlation between the two that we move to calculate the relationships between constructs. The check for multi-collinearity is run for variable occurring at the same

level, hence Knowledge sharing culture (KSC), Knowledge-based leadership (KBL), Structure and decentralization (SD), Knowledge management strategy (KMS), Knowledge-based human resource management (KBHR) and Information and communication technology for KM (ICT) were analyzed. VIF values were generated by inserting one of the variables as independent and others as dependent and this was done for each variable one by one. The reference range for VIF is less than -3. The values of VIF for these variables are tabulated in table 4.9.

Table 4.9: Assumption of the absence of multi-collinearity

Model with KSC as the dependent variable	Collinearity statistics	
	Tolerance	VIF
KBL	.562	1.779
SD	.787	1.270
KMS	.884	1.131
KBHR	.626	1.597
ICT	.545	1.835
LG	.755	1.325
IP	.557	1.797
CS	.560	1.785
FP	.722	1.384

As we can notice, the tabulated value of VIF for each variable is less than the reference range, the condition of multicollinearity is also met i.e. there is little or no correlation between the items of two different constructs.

4.6.4 Homoscedasticity

Homoscedasticity is also called Homogeneity of variances. Homoscedasticity is defined as, “A situation where the random disturbances between the relationships of

independent and dependent variables, also known as a random error, are equidistant from the regression line across all values of the independent variable" (Tabachnick and Fidell, 2001). Scatter plots for each independent variable in relation to the dependent variable are drawn in IBM SPSS with the predicted variable on one axis and the residual values (the difference between the values obtained for the dependent variable and its predicted values) on the other. Figure 4.2 to 4.25 depict the scatter plots for all the variables

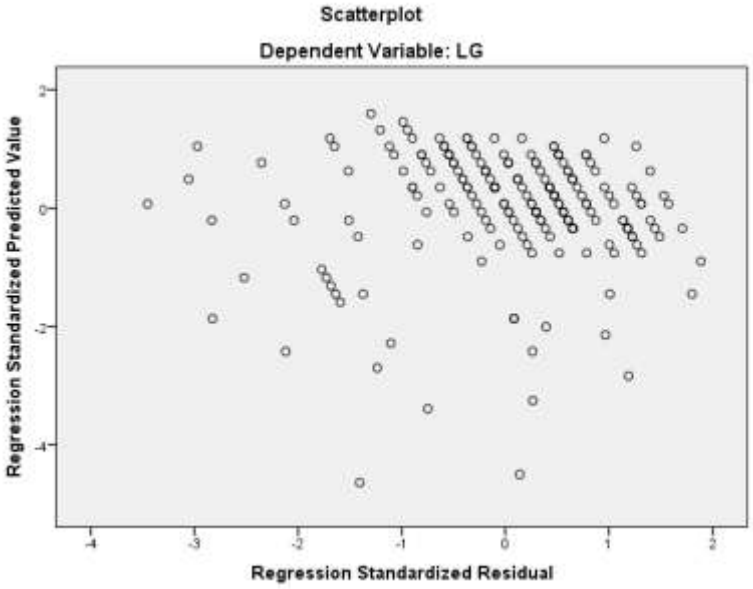

Figure 4.2: Assumption of homoscedasticity for KSC – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.2 that the random disturbances between the independent variable KSC and dependent variable LG are equidistant from the regression line across all values of LG. There is no specific pattern visible in the figure, instead, a near rectangular shape has emerged, meeting the condition of homoscedasticity.

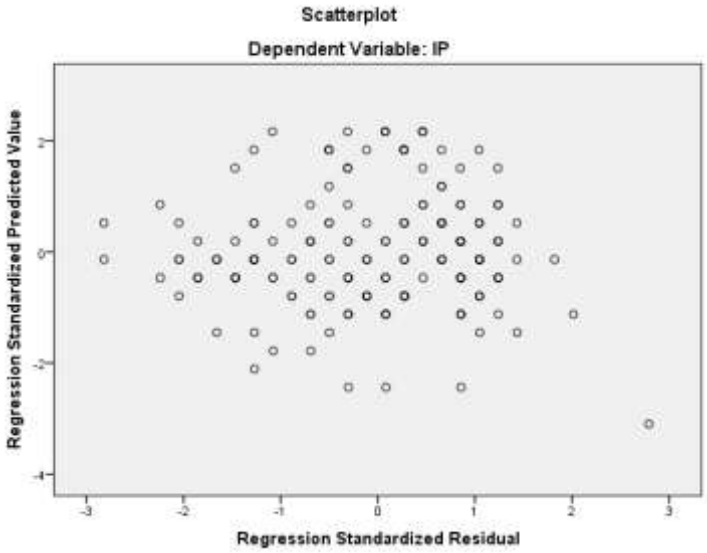

Figure 4.3: Assumption of homoscedasticity for KSC – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.3 that the random disturbances between the independent variable KSC and dependent variable IP are equidistant from the regression line across all values of KSC. There is no specific pattern visible in the figure, instead, a near rectangular shape has emerged, meeting the condition of homoscedasticity.

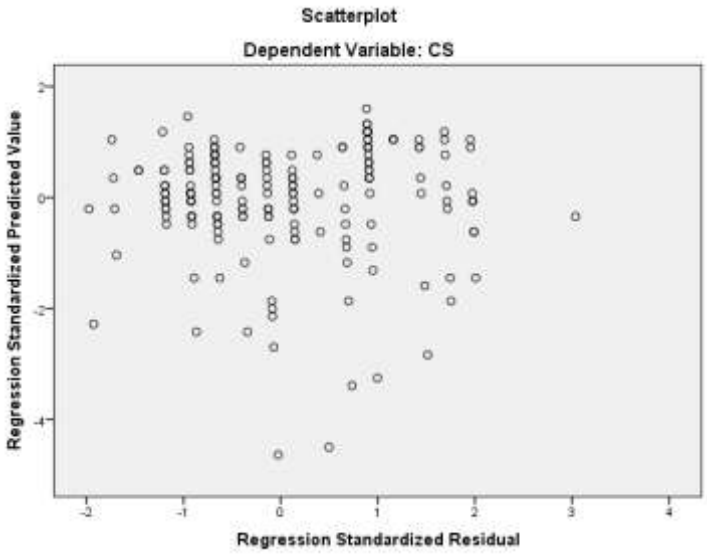

Figure 4.4: Assumption of homoscedasticity for KSC – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.4 that the random disturbances between the independent variable KSC and dependent variable CS are equidistant from the regression line across all values of KSC. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

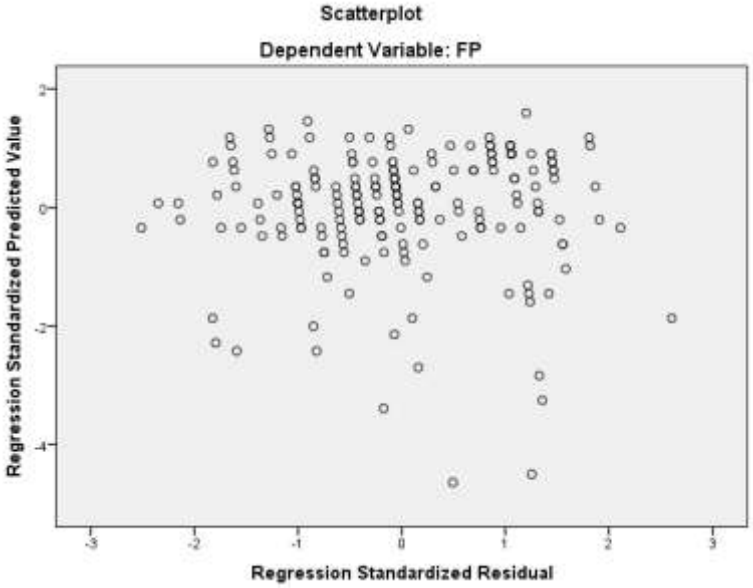

Figure 4.5: Assumption of homoscedasticity for KSC – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.5 that the random disturbances between the independent variable KSC and dependent variable FP are equidistant from the regression line across all values of KSC. There is no specific pattern visible in the figure, instead, a near rectangular shape has emerged, meeting the condition of homoscedasticity.

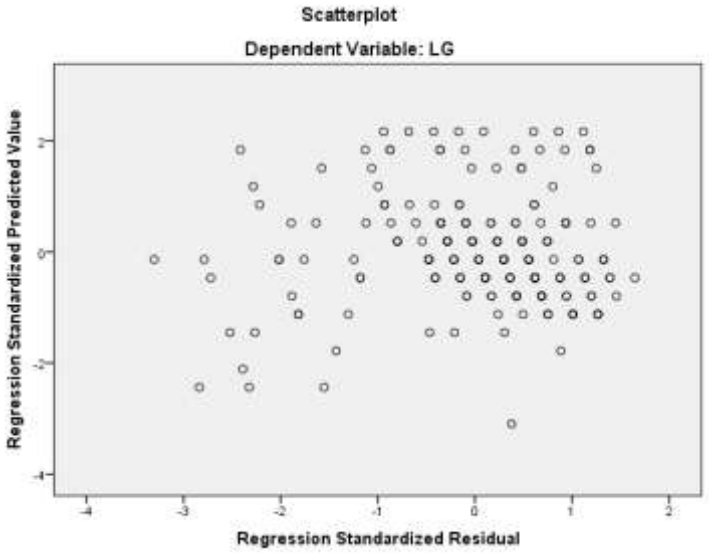

Figure 4.6: Assumption of homoscedasticity for KBL – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.6 that the random disturbances between the independent variable KBL and dependent variable LG are equidistant from the regression line across all values of KBL. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

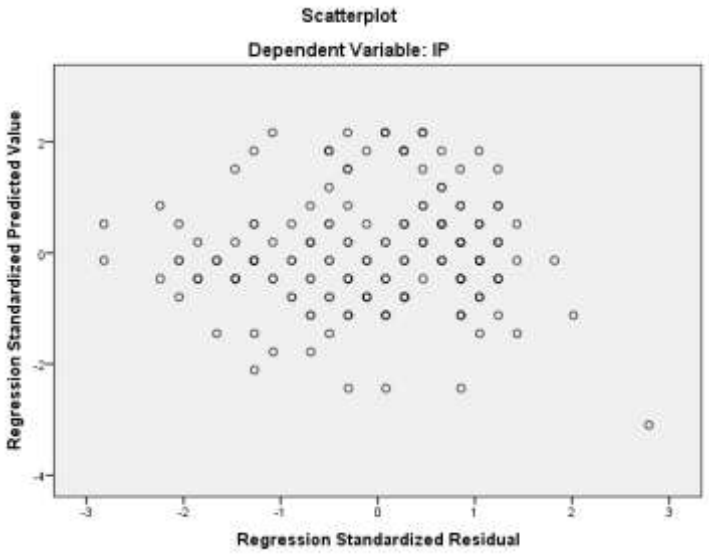

Figure 4.7: Assumption of homoscedasticity for KBL – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.7 that the random disturbances between the independent variable KBL and dependent variable IP are equidistant from the regression line across all values of KBL. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

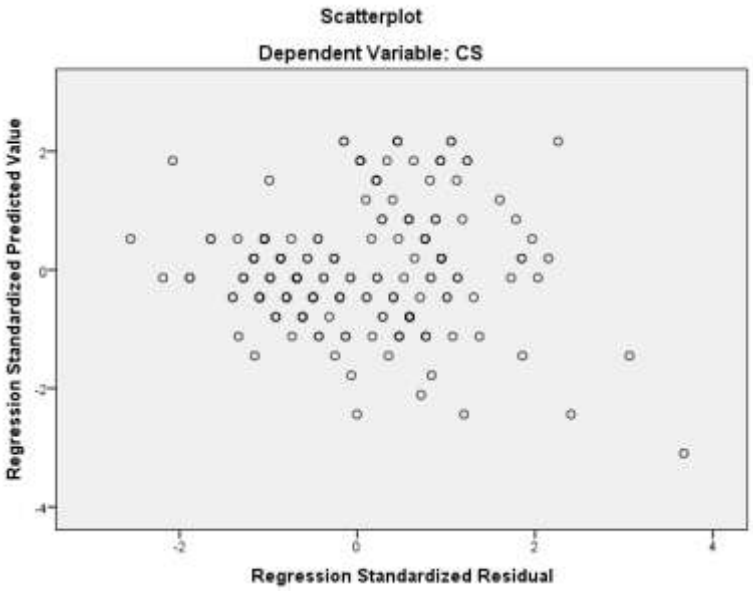

Figure 4.8: Assumption of homoscedasticity for KBL – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.8 that the random disturbances between the independent variable KBL and dependent variable CS are equidistant from the regression line across all values of KBL. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

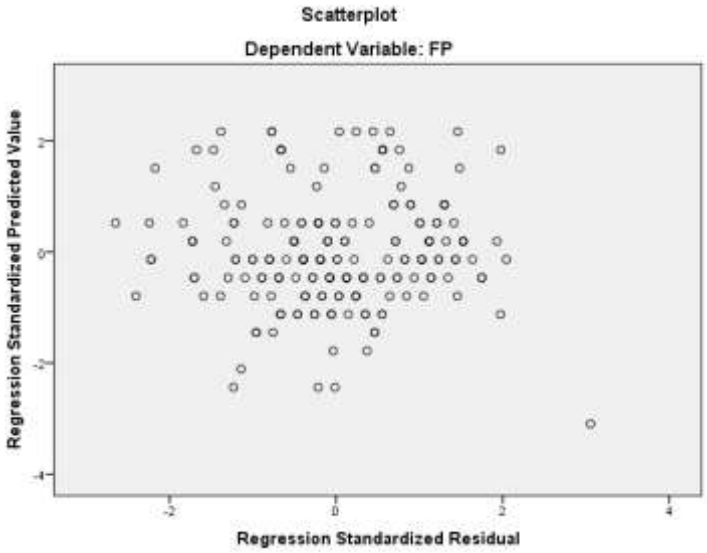

Figure 4.9: Assumption of homoscedasticity for KBL – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.9 that the random disturbances between the independent variable KBL and dependent variable FP are equidistant from the regression line across all values of KBL. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

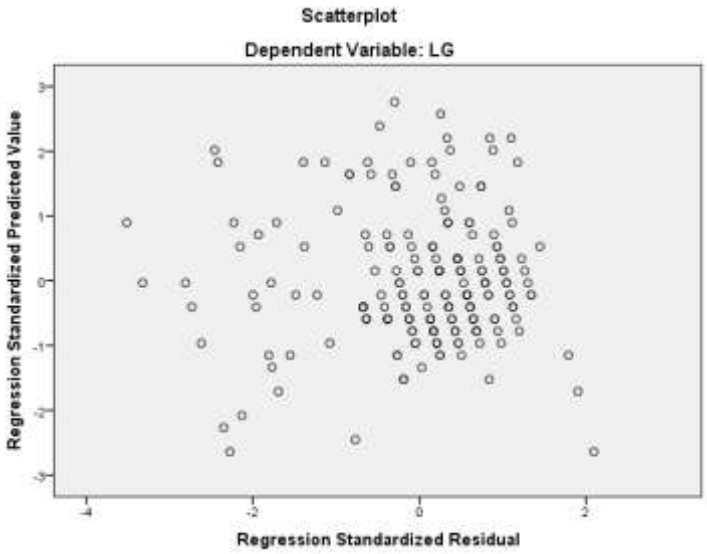

Figure 4.10: Assumption of homoscedasticity for SD – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.10 that the random disturbances between the independent variable SD and dependent variable LG are equidistant from the regression line across all values of SD. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

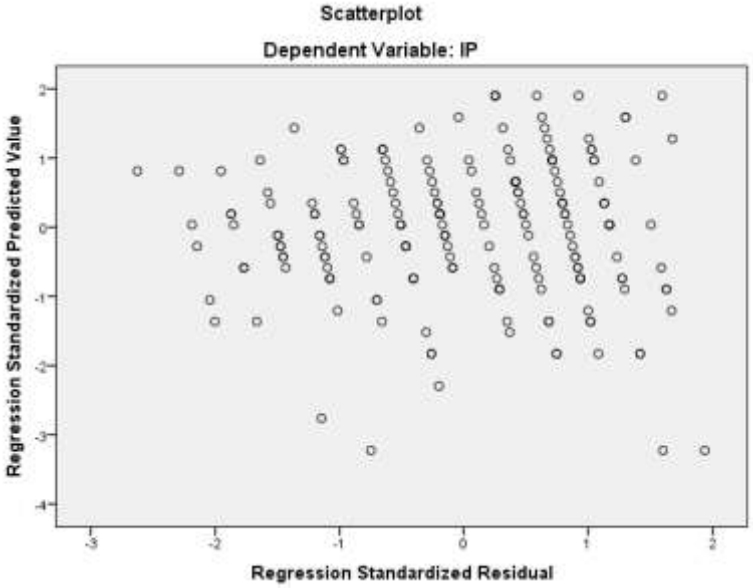

Figure 4.11: Assumption of homoscedasticity for SD – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.11 that the random disturbances between the independent variable SD and dependent variable IP are equidistant from the regression line across all values of SD. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

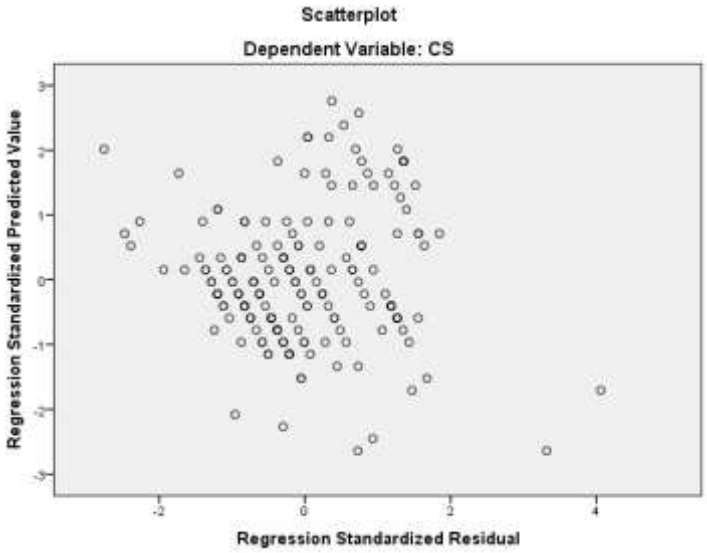

Figure 4.12: Assumption of homoscedasticity for SD – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.12 that the random disturbances between the independent variable SD and dependent variable CS are equidistant from the regression line across all values of SD. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

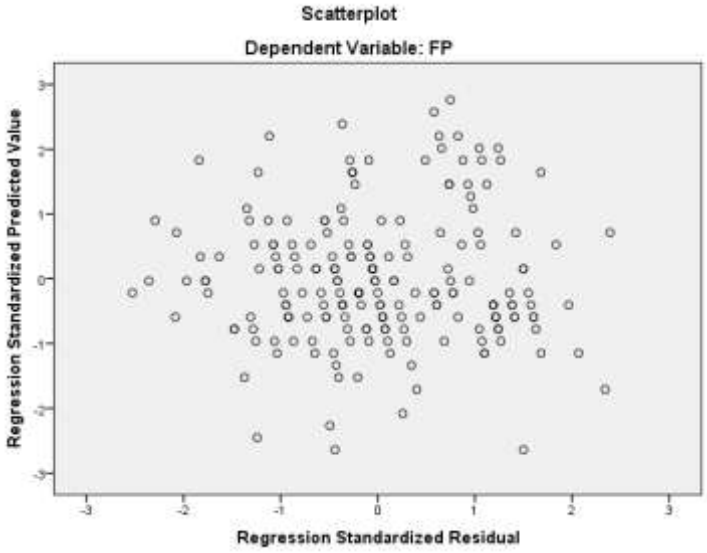

Figure 4.13: Assumption of homoscedasticity for SD – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.13 that the random disturbances between the independent variable SD and dependent variable FP are equidistant from the regression line across all values of SD. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

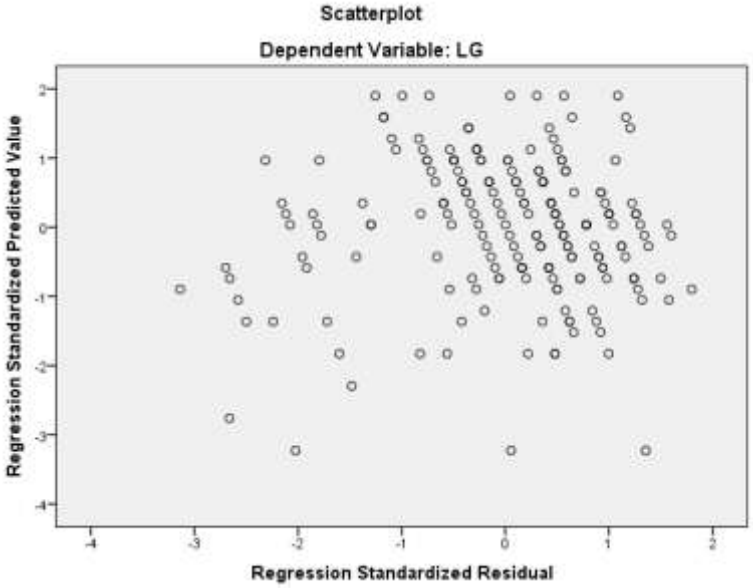

Figure 4.14: Assumption of homoscedasticity for KMS – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.14 that the random disturbances between the independent variable KMS and dependent variable LG are equidistant from the regression line across all values of KMS. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

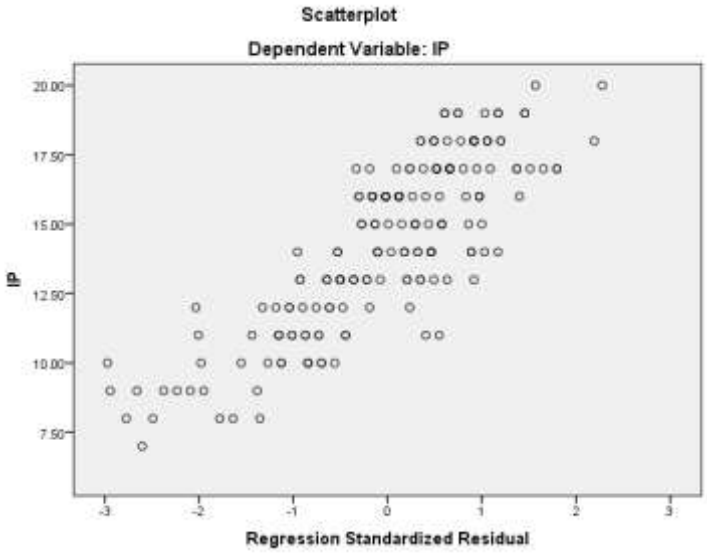

Figure 4.15: Assumption of homoscedasticity for KMS – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.15 that the random disturbances between the independent variable KMS and dependent variable IP are equidistant from the regression line across all values of IP. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

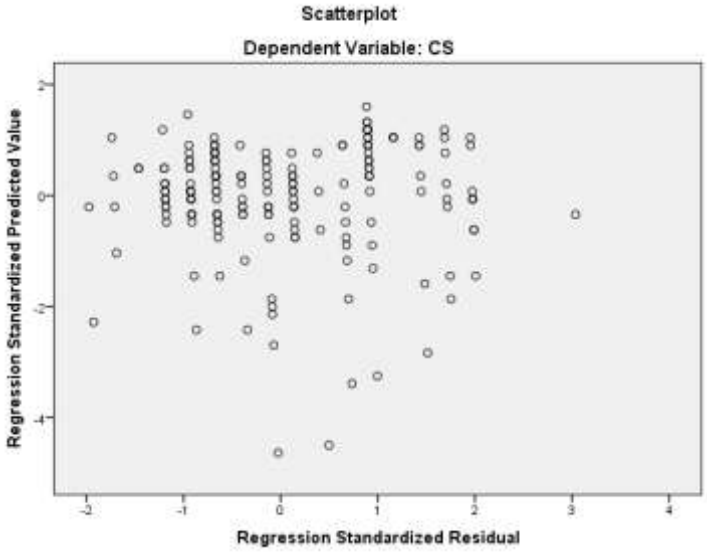

Figure 4.16: Assumption of homoscedasticity for KMS – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.16 that the random disturbances between the independent variable ICT and dependent variable FP are equidistant from the regression line across all values of ICT. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

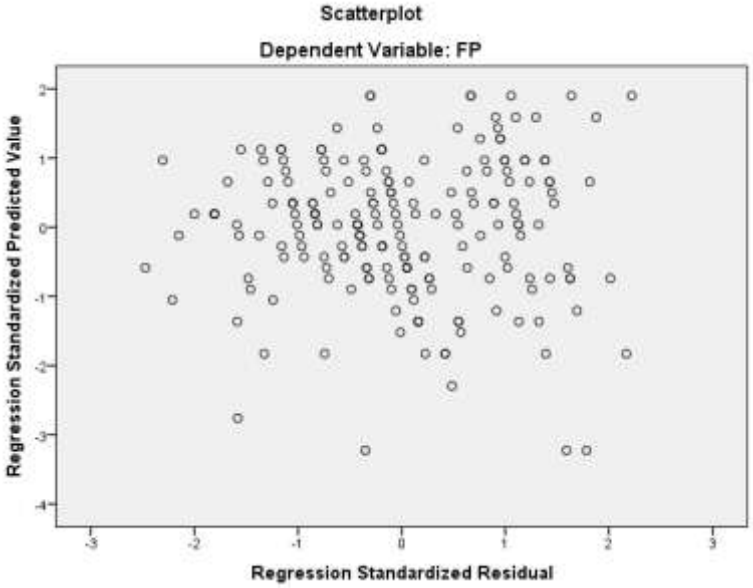

Figure 4.17: Assumption of homoscedasticity for KMS – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.17 that the random disturbances between the independent variable KMS and dependent variable FP are equidistant from the regression line across all values of FP. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

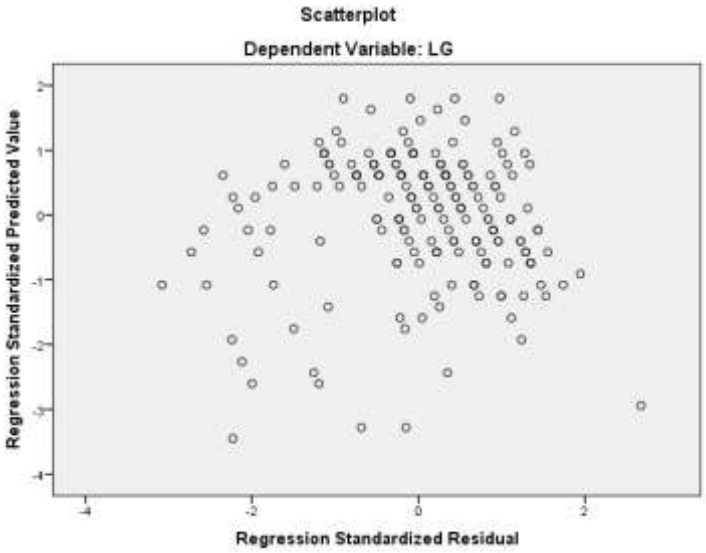

Figure 4.18: Assumption of homoscedasticity for KBHR – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.18 that the random disturbances between the independent variable KBHR and dependent variable LG are equidistant from the regression line across all values of KBHR. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

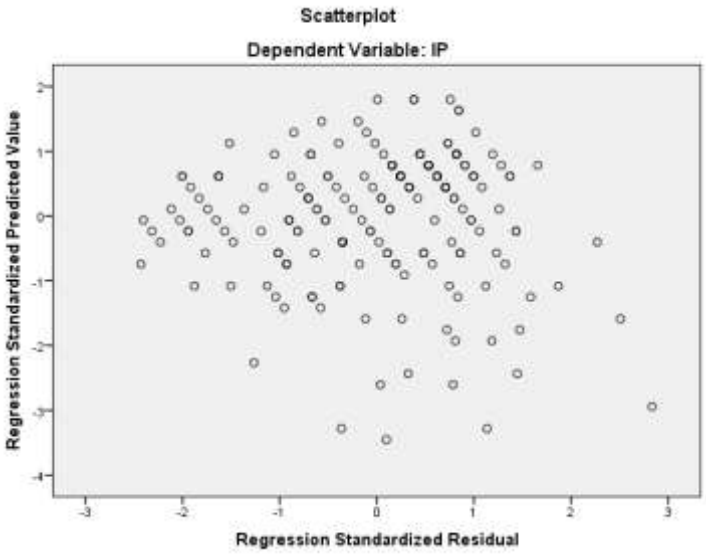

Figure 4.19: Assumption of homoscedasticity for KBHR – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.19 that the random disturbances between the independent variable KBHR and dependent variable IP are equidistant from the regression line across all values of IP. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

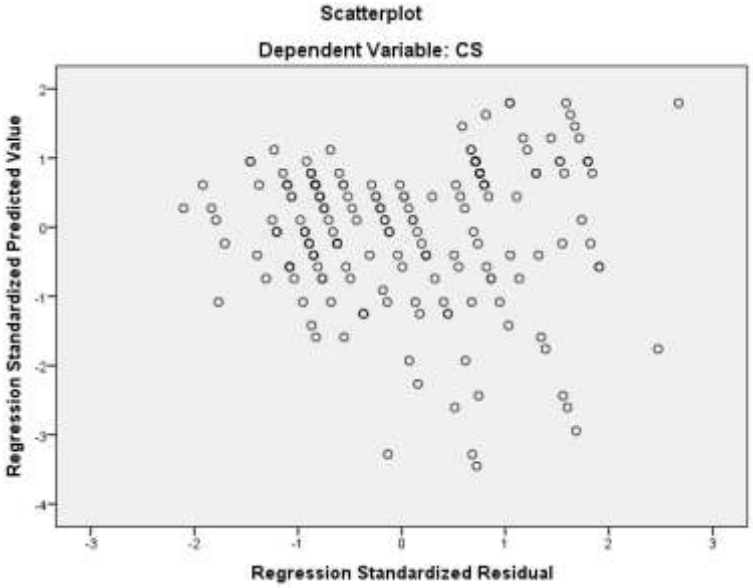

Figure 4.20: Assumption of homoscedasticity for KBHR – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.20 that the random disturbances between the independent variable KBHR and dependent variable CS are equidistant from the regression line across all values of KBHR. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

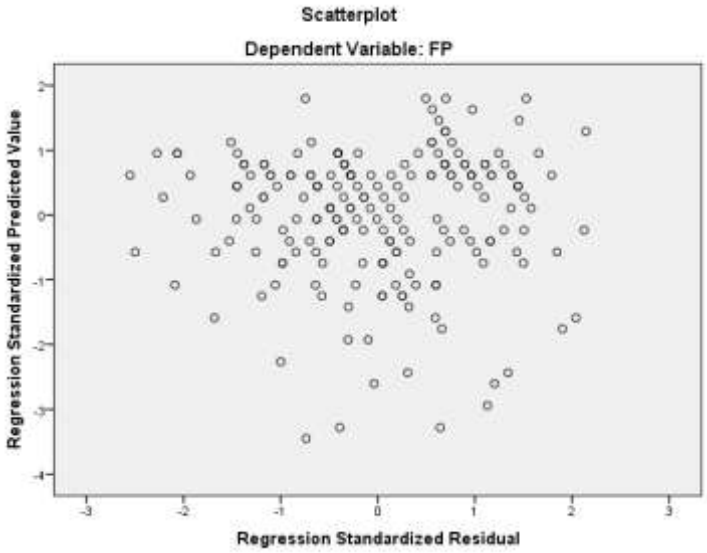

Figure 4.21: Assumption of homoscedasticity for KBHR – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.21 that the random disturbances between the independent variable KBHR and dependent variable FP are equidistant from the regression line across all values of FP. There is no specific pattern visible in the figure, instead, a near rectangular shape has emerged, meeting the condition of homoscedasticity.

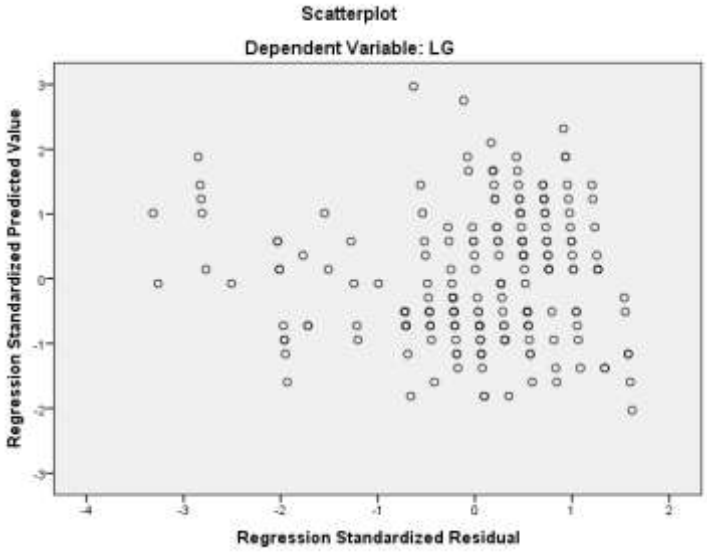

Figure 4.22: Assumption of homoscedasticity for ICT – Dependent: LG

It can be clearly seen in the scatter plot diagram Figure 4.22 that the random disturbances between the independent variable ICT and dependent variable LG are equidistant from the regression line across all values of ICT. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

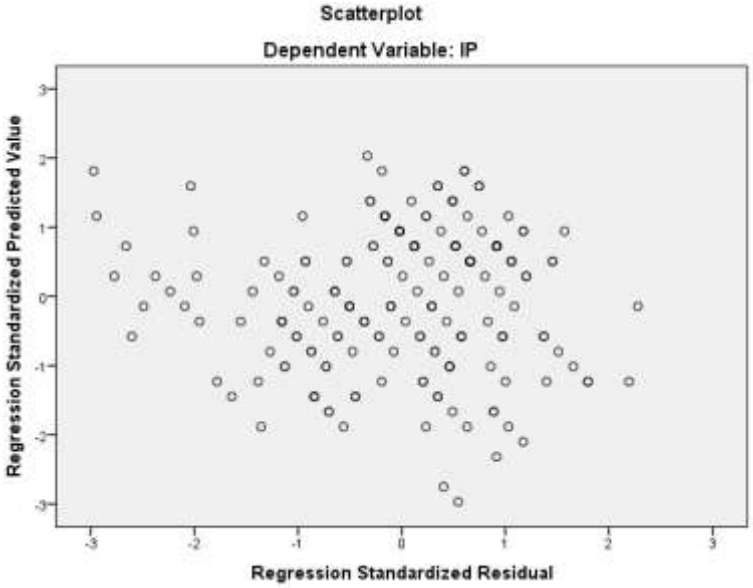

Figure 4.23: Assumption of homoscedasticity for ICT – Dependent: IP

It can be clearly seen in the scatter plot diagram Figure 4.23 that the random disturbances between the independent variable ICT and dependent variable IP are equidistant from the regression line across all values of ICT. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

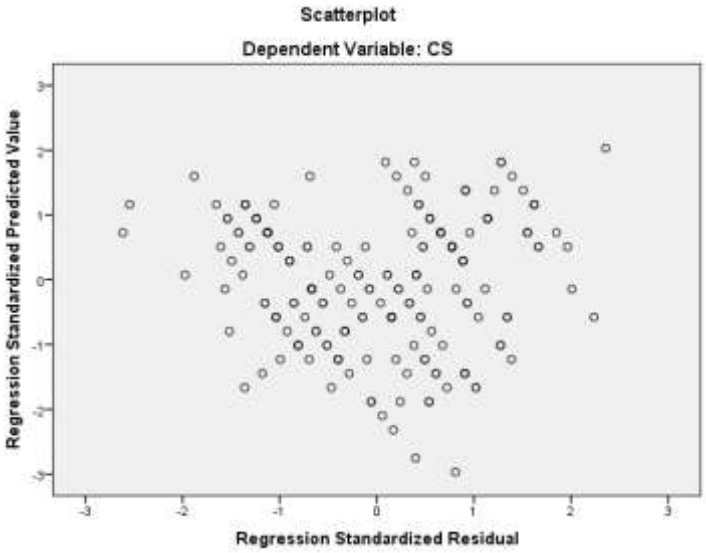

Figure 4.24: Assumption of homoscedasticity for ICT – Dependent: CS

It can be clearly seen in the scatter plot diagram Figure 4.24 that the random disturbances between the independent variable ICT and dependent variable CS are equidistant from the regression line across all values of ICT. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

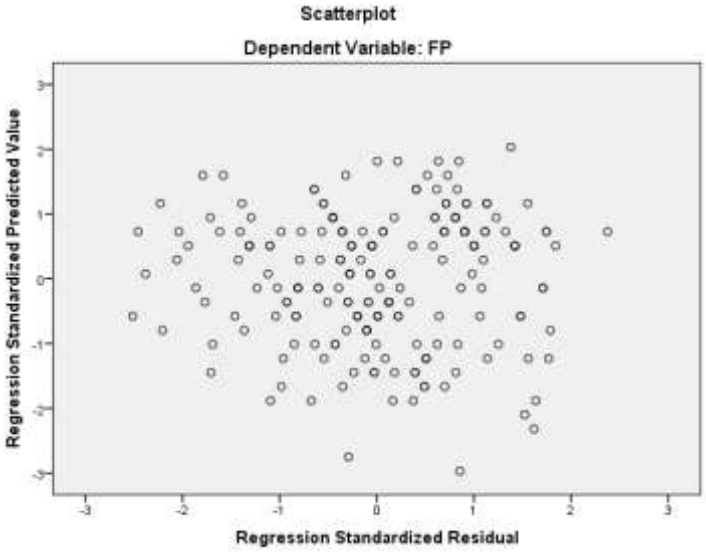

Figure 4.25: Assumption of homoscedasticity for ICT – Dependent: FP

It can be clearly seen in the scatter plot diagram Figure 4.25 that the random disturbances between the independent variable ICT and dependent variable FP are equidistant from the regression line across all values of ICT. There is no specific pattern visible in the figure, instead a near rectangular shape has emerged, meeting the condition of homoscedasticity.

4.7 Confirmatory factor analysis

Now this research enters the second phase of analysis with Confirmatory factor analysis (CFA) which was run on IBM SPSS Version 22. The first step in CFA is the calculation and confirmation of convergent and discriminant validity.

4.7.1 Convergent and discriminant validity

It is essential for the data set to confirm to both kinds of validity; while convergent validity is evaluated by the calculation of Average Variance Extracted (AVE) scores, discriminant validity is evaluated by the calculation of Maximum Shared Variance (MSV).

Convergent validity is obtained when the value of AVE is equal to or greater than 0.5 and lower than Composite reliability (CR) (Fornell and Larcker, 1981; Hair et al., 2006), which is true in this case.

The condition for obtaining Discriminant validity is that the AVE is greater than the maximum shared variance (MSV) or the average shared squared variance (ASV).

Table 4.10 depicts the values of AVE, MSV and Max Reliability and clearly shows that all the above-stated conditions are being met by the data at hand.

Table 4.10: Convergent and discriminant validity

	AVE	MSV	MaxR(H)	KSC	KMS	CS	SD	KMHR	FP	ICT	KBL	LG	IP
KSC	0.636	0.378	0.944	**0.797**									
KMS	0.757	0.166	0.961	0.407***	**0.870**								
CS	0.647	0.402	0.905	0.332**	0.168	**0.804**							
SD	0.719	0.303	0.937	0.258*	0.080	0.550***	**0.848**						
KMHR	0.726	0.398	0.937	0.612***	0.200†	0.359**	0.159	**0.852**					
FP	0.616	0.171	0.923	0.377***	0.196†	0.304**	0.214*	0.413***	**0.785**				
ICT	0.714	0.343	0.932	0.586***	0.283**	0.346**	0.208*	0.522***	0.375**	**0.845**			
KBL	0.607	0.492	0.896	0.502***	0.306**	0.582***	0.394***	0.549***	0.330**	0.514***	**0.779**		
LG	0.605	0.410	0.899	0.611***	0.394***	0.514***	0.261*	0.631***	0.323**	0.553***	0.600***	**0.778**	
IP	0.632	0.492	0.943	0.614***	0.310**	0.634***	0.379**	0.543***	0.277*	0.551***	0.701***	0.640***	**0.795**

4.7.2 Measurement model

After establishing the convergent and discriminant validity of the data, the measurement model was analyzed for the model fit measures. The four absolute fit measures i.e. Comparative fit index (CFI), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA) and PClose were used to check the model fit. The first and the most important measure of model fit is CFI. The recommended value of CFI is equal to or more than 0.90 (Baumgartner and Hombur, 1996) while the calculated value is 0.882 which is very close to the 0.90 threshold hence it is acceptable. The next measure is SRMR and as can be seen from the table, the calculated value of 0.076 is below the threshold value of 0.08, and thus acceptable. RMSEA and PClose are the next two indices used to check the model fit. The calculated value of RMSEA is 0.055 which is less than the recommended value of 0.06; and the final measure used is PClose, the calculated value of which is 0.032 well within the recommended range of 0.05. The values of these four indices are provided in Table 4.11.and it can be clearly seen that they fall in the recommended range, proving the appropriate model fit. Figure 4.26 shows the measurement model run om AMOS SEM.

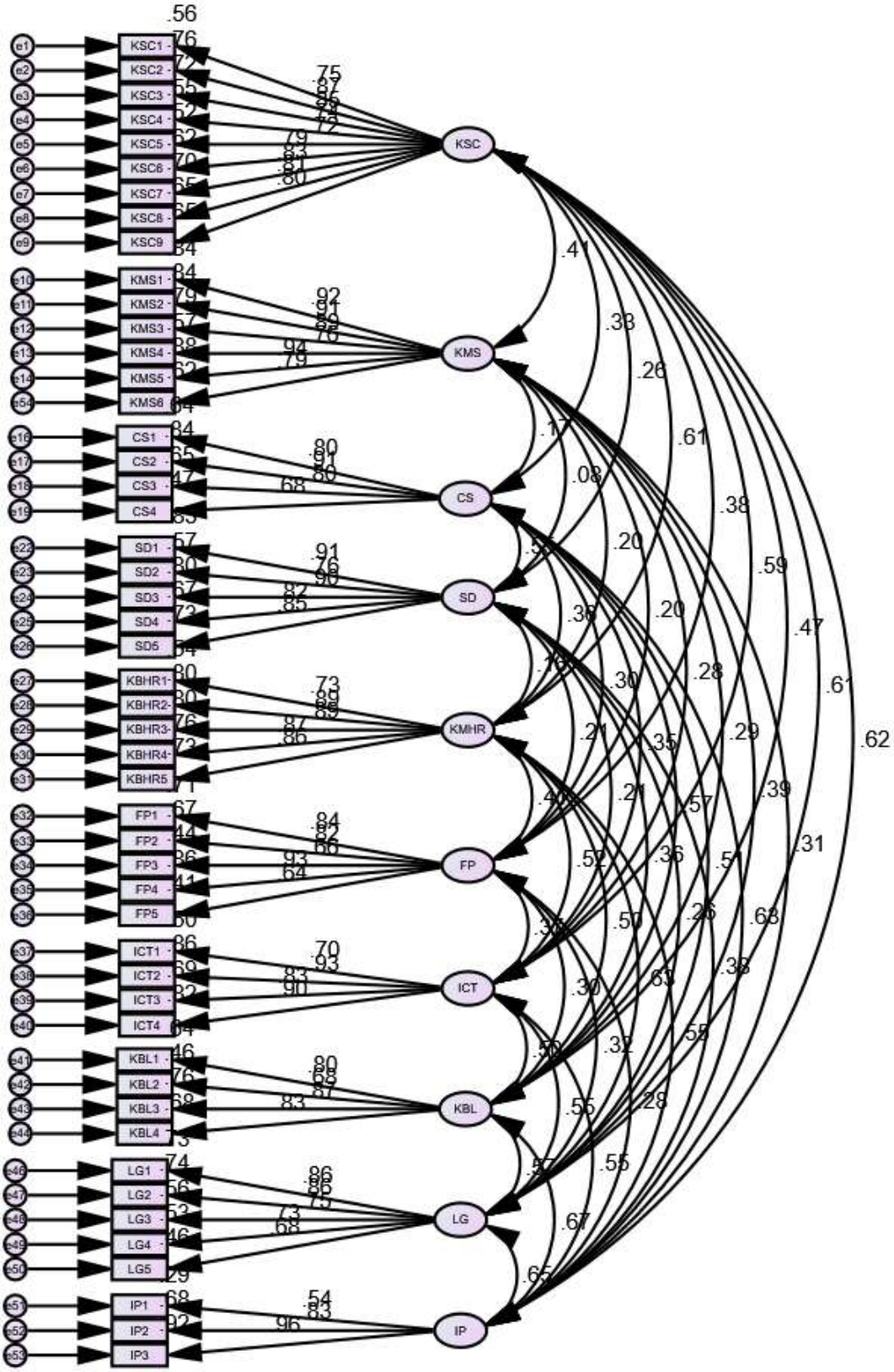

Figure 4.26: Measurement model

Table 4.11: Model fit of measurement model

Type	Index	Measurement model	Recommended value for satisfactory fit for a model to data
χ^2 test	χ^2	2386.688	
	df	1492	
	χ^2 / df	1.599	Between 1 and 3
Absolute fit index	CFI	0.882	>0.90
	SRMR	0.076	<0.08
	RMSEA	0.055	<0.06
	PClose	0.032	>0.05

Source: Hu and Bentler (1999); Gaskin and Lim, (2016a, b)

4.7.3 Structural model

While the measurement model is analyzed for confirming the reliability and validity of the data, the next logical progression is moving towards the Structural model. Structural equation modeling (SEM) is a multivariate technique that allows all the variables in the model to be analyzed simultaneously. The Structural model helps the researcher in testing the hypotheses as it not only provides the coefficient for the quantum of effect of the independent variable on the dependent variable but it also provides the significance level. The proportion of the variance explained by the independent variable in the dependent variable is the coefficient of multiple determination; we can also interpret R square as the proportionate reduction in error in the process of estimation of the dependent variable from the independent variables.

Table 4.12: Model fit of structural model

Type	Index	Measurement model	Recommended value for satisfactory fit for a model to data
χ^2 test	χ^2	2096.54	
	df	1329	
	χ^2 / df	1.578	Between 1 and 3
Absolute fit index	CFI	0.824	>0.90
	SRMR	0.074	<0.08
	RMSEA	0.054	<0.06
	PClose	0.087	>0.05

After the second phase of analysis was completed, the research hypotheses i.e. hypothesized relationships were tested with the help structural model employing AMOS. The model fit indices are presented in table 4.12. As shown in the table the value of CFI is 0.824 which is very close to the recommended value of.090; the value of SRMR stands at 0.074 which is less than 0.08 as is recommended; the third indicator RMSEA has a value of 0.054 which is less than the recommended value of 0.06 and the last indicator PClose has a tabulated value of 0.087 which also falls in the recommended range of greater than 0.05.

According to these indices, the structural model is a good fit for the data at hand. Hence, the analysis can proceed to study hypothesized relationships. The R square values i.e. the standardized beta values and the significance levels are calculated and analyzed. While the beta values show the effect of independent variables on the dependent ones, the significance level help to gauge if these relationships are significant or not.

Table 4.13: Path analysis and verification of the research hypothesis

Hypothesis			β	t	P	Supported
H1a	Knowledge Sharing Culture	Learning and growth	0.48	8.911	***	S
H1b		Internal process	0.363	8.975	***	S
H1c		Customer satisfaction	0.391	8.819	***	S
H1d		Financial performance	0.214	4.856	***	S
H2a	Knowledge-based Leadership	Learning and growth	0.393	5.215	***	S
H2b		Internal process	0.251	2.664	0.008	S
H2c		Customer satisfaction	0.107	0.542	0.588	NS
H2d		Financial performance	0.211	1.637	0.102	NS
H3a	Structure and Decentralization	Learning and growth	0.211	6.522	***	S
H3b		Internal process	0.105	3.562	***	S
H3c		Customer satisfaction	0.025	0.575	0.565	NS
H3d		Financial performance	0.031	0.055	0.956	NS
H4a	Knowledge Management Strategy	Learning and growth	0.221	5.037	***	S
H4b		Internal process	0.128	2.232	0.026	S
H4c		Customer satisfaction	0.103	3.295	***	S
H4d		Financial performance	0.026	0.962	0.336	NS
H5a	Knowledge-based Human Resource	Learning and growth	0.391	7.174	***	S
H5b		Internal process	0.292	7.025	***	S
H5c		Customer satisfaction	0.253	5.372	***	S
H5d		Financial performance	0.172	3.676	***	S
H6a	Information and Communication Technology for KM	Learning and growth	0.076	0.502	0.685	NS
H6b		Internal process	0.314	0.796	0.532	NS
H6c		Customer satisfaction	0.272	0.647	0.517	NS
H6d		Financial performance	0.048	0.944	0.345	NS

Note: Significant at $p<0.05$

Table 4.13 depicts the standardized regression weights and the p-values for each proposed relationship. Out of a total of 24 hypothesized relationships, 15 relationships are positive and significant whereas 9 out of these 24 are positive but insignificant. A p-value of less than 0.05 depicts that the alternate hypothesis is accepted and vice-versa i.e. a p-value of more than 0.05 depicts that the null hypothesis is accepted proving that there is no effect of the independent variable on the dependent variable. According to this H1a, H1b, H1c, H1d, H2a, H2b, H3a, H3b, H4a, H4b, H4c, H5a, H5b, H5c and H5d are positive and statistically significant and thus accepted; whereas H2c, H2d, H3c, H3d, H4d, H6a, H6b, H6c and H6d are positive but not statistically significant, hence the alternate hypothesis in these cases is rejected and the null hypothesis is accepted.

The above table also shows that Knowledge sharing culture (KSC) and Knowledge-based Human Resource management (KBHR) are the two most important predictors of overall OP as they affect all four measures i.e. LG, IP, CS and FP positively and significantly. The structural model along with the standardized regression weights for each variable is represented in figure 4.27.

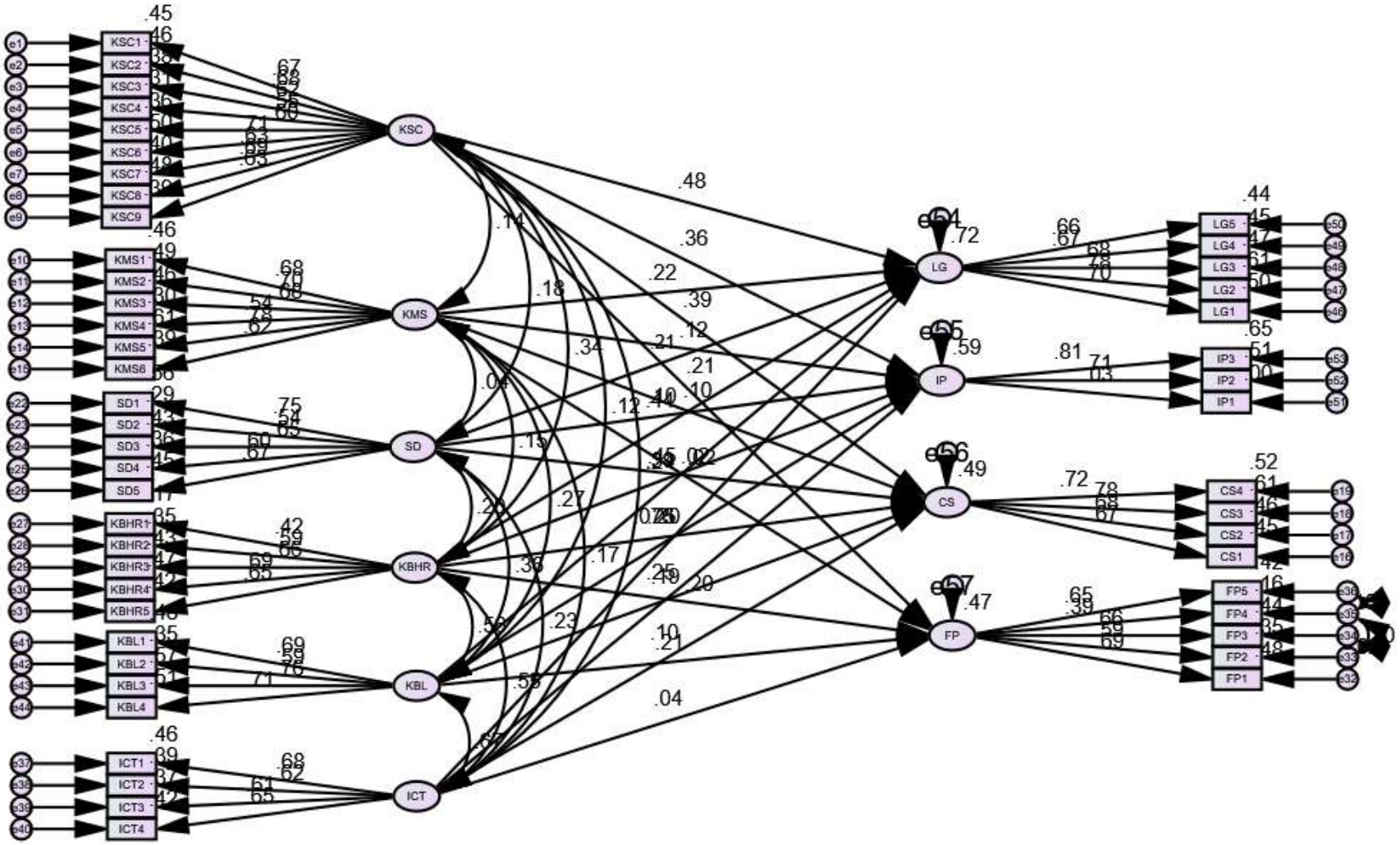

Figure 4.27: Structural model

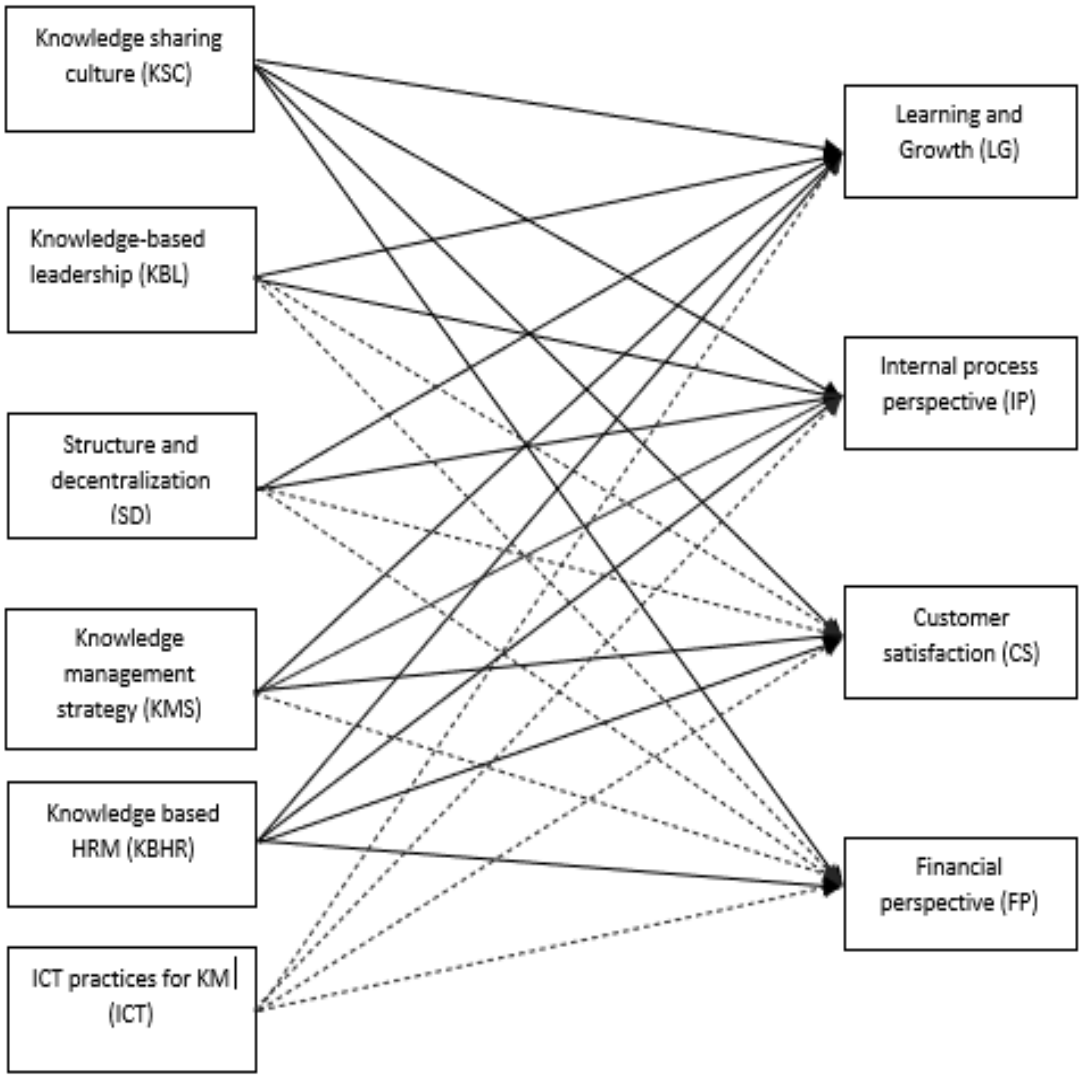

Figure 4.28: Key findings of the research

4.8 Conclusion

The research framework developed for the study was tested through a multi-staged data analysis process. It started with pilot testing the questionnaire on a set of 62 respondents; this helped establish the reliability of the research instrument. This was followed by full-scale data collection, the effective sample for which was 477. This sample was demographically analyzed in order to confirm its suitability to the norms set for the respondent profile. The next major step in the data analysis process was the application of Exploratory factor analysis for checking the factor loading of each item and also tracking cross-loadings if any. This helped to confirm the factor structure also.

Post EFA, Confirmatory factor analysis was conducted with the help of AMOS SEM. CFA helped to check the convergent and divergent validity of the constructs and also confirm reliability with the calculation of Critical ratio (CR). The measurement model so developed was also checked for model fit indices i.e. CFI – 0.882, SRMR – 0.076; RMSEA – 0.055; and PClose – 0.032, which were all found to be well within the recommended limits.

The analysis turned to the next step of constructing the structural model for hypothesis testing. After confirming that all four model fit indices (CFI – 0.824, SRMR – 0.074; RMSEA – 0.054; and PClose – 0.087) fall in the recommended range, the analysis moved to hypotheses testing.

A total of twenty-four relationships were hypothesized. The structural results obtained in CFA indicated that the relationships KSC - LG (p-value -0.000), KSC - IP (p-value -0.000), KSC - CS (p-value -0.000), KSC - FP (p-value -0.000), KBL- LG (p-value -0.000), KBL - IP (p-value -0.008), KBL - CS (p-value -0.588), KBL - FP (p-

value -0.102), SD -LG (p-value – 0.000), SD - IP (p-value – 0.000), SD - CS (p-value – 0.565), SD - FP (p-value – 0.956), KMS – LG (p – value – 0.000), KMS – IP (p – value – 0.026), KMS – CS (p – value – 0.000), KMS – FP (p – value – 0.336), KBHR – LG (p – value – 0.000), KBHR – IP (p – value – 0.000), KBHR – CS (p – value – 0.000), KBHR – FP (p – value – 0.000), ICT– LG (p – value – 0.685), ICT– IP (p – value – 0.532), ICT– CS (p – value – 0.517), ICT– FP (p – value – 0.345) It was observed that out of these, fifteen hypotheses were positive and significant, the other nine were positive but insignificant. It was observed that Knowledge sharing culture (KSC) and Knowledge based HRM (KBHR) emerged as the strongest influencers and affected all aspects of OP. The study of the decomposed model helped uncover individual connections between the constructs and lead to a deeper understanding of the dynamics of their relationship**.**

The detailed discussion of these relationships is explained further in the next chapter.

5. Discussion and Conclusion

5.1 Discussion

5.1.1 Knowledge Sharing Culture (KSC) as a significant factor determining Learning and Growth (LG) of an organization

Among the six KM practices, KSC has emerged as the strongest positive influencer affecting all the measures of OP significantly, proving the hypothesis that KSC positively and significantly affects the learning and growth of an organization. of these hypotheses true [H1a ($\beta = 0.48$, $p = 0.000$)]. KM literature has generally accepted that culture of the work environment has a significant influence on OP (Gold et. al. 2001; Lee and Choi, 2003; Lee and Lee, 2007; Zheng et.al., 2010; Mills and Smith, 2011, Jain and Moreno, 2015). The respondents felt that the presence of an environment of collaboration, support, participation and team spirit in the organization serve as key underlying success factors. When there is a clear focus on development through learning and innovation, the employees find themselves placed in comfortable spots to develop new skills and hone current ones. This constant quest for new knowledge and application of the current set has shown to affect the capability and willingness of the members of the organization in a highly positive manner.

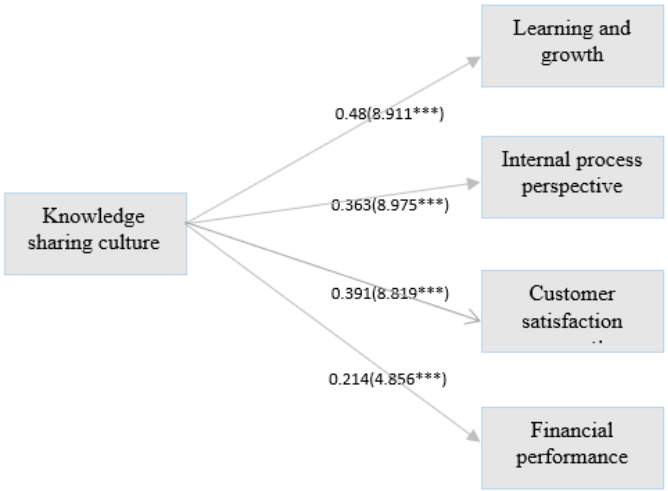

Figure 5.1: Knowledge sharing culture and organizational performance

5.1.2 Knowledge Sharing Culture (KSC) as a significant factor determining Internal Process (IP) of an organization

KSC has a positive significant and direct effect on all aspects of an organization's performance including internal process ($\beta = 0.363$, $p = 0.000$). Effective knowledge processes are a result of voluntary effort exerted by an organization's employees. Since knowledge to a large extent is personal, organizational culture plays a major role, it provides the motivation, sense of belonging and ownership to employees (Akhavan and Jafari, 2006). Culture is instrumental in encouraging the employee to enrich his knowledge resource by respecting him for the possession and use of specific know-how. The study has proven that a positive and motivating culture has a positive direct effect on the internal processes of an organization. De Long and Fahey (2000) have depicted various ways in which organizational culture has a positive effect on knowledge sharing. The findings of a large number of studies (Alavi et al., 2005-2006; Lopez et al., 2004; De Long and Fahey, 2000, Gupta and Govidaranjan, 2000, Zheng, 2009, Kulkarni et al., 2006-2007) are in line with the conclusion of this study that the presence and cultivation of organizational culture which promotes KM practices lead to better OP in terms of better and efficient organizational processes. Instilling a culture of standardization of processes and maintenance of relevant information is essential for the achievement of organizational objectives. KSC acts as a platform that facilitates the use of information and knowledge through social interaction, communication and collaboration with peers inside and outside the organization, as a result of which individual performances improve, which in turn has a cumulative effect on the overall performance of the organization. There is low duplicity of work - 'reinvention of the wheel' is discouraged ensuring speedy dissemination of best KM practices for carrying out day to day activities, enhancing the performance at all levels of the organization.

5.1.3 Knowledge Sharing Culture (KSC) as a significant factor determining Customer Satisfaction (CS) of an organization

The study has shown that KSC has a positive and significant direct effect on customer satisfaction ($\beta = 0.391$, $p = 0.000$). The empirical evidence has shown that KSC has proven to be a powerful tool in enhancing OP in terms of increased customer satisfaction. KMC that enhances and encourages employee interactions by the use of cooperation and coordination and is not dependent on formal, standard and systematized processes will facilitate organizational learning and development, these learnings consolidate in the form of processes that yield better customer service. KMC exerts influence on customer satisfaction by influencing the behaviour of organizational members. KMC conditions the process of gathering information, considering the various alternatives for decision making and choosing the right one, it helps restructure new knowledge and decide on courses of action on the basis of this new set of understanding. The culture of an organization functions as a filter as the values and behaviour of employees are developed and modified according to organizational culture. Amongst all factors examined, culture has the strongest influence on measures of OP including customer satisfaction. (Zheng, 2010; Bresnen et al. 2003; Kasvi et al., 2003; Brookes et al., 2006).

5.1.4 Knowledge Sharing Culture (KSC) as a significant factor in determining Financial performance (FP) of an organization

The effect of KSC on financial performance of an organization is proven to be positive significant and direct in the study ($\beta = 214$, $p = 0.000$)]. When managing KM, there is a strong need to optimize the economic value of individual employees. The study has shown that KSC not only affects learning and growth, internal organizational processes

and customer satisfaction, a positive and supportive culture renders useful even at the level of financial performance. A culture that demonstrates concern for employees, promotes KM processes and knowledge sharing, leads to percolation of the positive effects of these on financial performance of an organization too. Knowledge is considered a significant resource in developed economies. Many organizations, in these regions, consider effective management of knowledge as one of the major factors for success. The construct 'KMC' has proven to be significant for all aspects of OP including the financial measures, for a developing economy like India. This is to be noted and given due importance to.

5.1.5 Knowledge-based leadership (KBL) as a significant factor determining Learning and Growth (LG) of an organization

The study has proven that KBL is a significant positive and direct contributor to an organization's learning and growth ($\beta = 0.393$; p-value = 0.000) It is the top management of the organization which decides how the rest of the company deals with knowledge and the various tasks associated with it. They are the ones who set the tone for others to follow. DeTienne et al., 2004 has endorsed the importance of sound knowledge-based leadership for an organization and states that if KM does not reach all levels of the organization, with the leaders playing a strong and pivotal role, it is highly unlikely that it will ever catch up in that organization. Leadership acts as a catalyst for processes of inspiring, mentoring, creating a culture of mutual trust, teaching, learning, listening and sharing knowledge (Holsapple and Singh, 2001). The study suggests that senior management plays a critical role in KM success. Top-level management has the capability to develop policies and programmes in an organization that make the KM program a reality. Top management should not only be familiar with the key concepts

and terms of KM but also possess a clear vision of the benefits that may be accrued through the implementation of KM. According to a study conducted by Peyman et al. (2005), if there is little effort on part of top management to remove organizational constraints that impede KM processes, not encourage KSC and promote working in teams, empower employees and engage them meaningfully in their jobs, it would lead to widespread inefficiencies in the system. Thus, the culture and values of the organization flow from the top leaving its effect on the attitude towards learning and growing all employees.

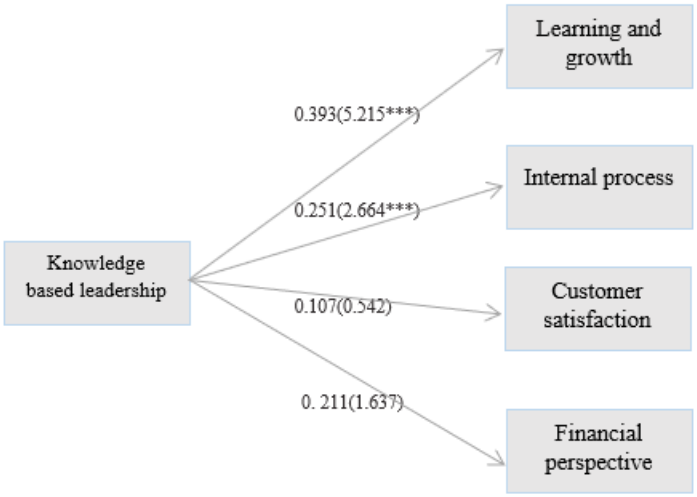

Figure 5.2: Knowledge-based leadership and organizational performance

5.1.6 Knowledge-based Leadership (KBL) as a significant factor determining Internal Process (IP) of an organization

Leadership of an organization decides the direction the organization will take in terms of managing organizational knowledge and knowledge assets. Knowledge-based leadership (KBL) has a positive and significant effect on internal process of an organization ($\beta = 0.251$; p-value = 0.008). If the leaders of an organization are not committed to KM, recruitment and selection processes are not given enough attention

leading to a poorly skilled and lowly motivated workforce. Leaders of an organization should carefully review the organizational mission, vision and purpose for their organizational knowledge processes. For good leaders, this is not a one-off exercise instead this is an iterative ongoing process. Leaders understand that cultivation of knowledge-sharing culture starts from the top, it is this group of people who have the position and capability to reward possession and sharing of specific knowledge by employees, encouraging members to learn and share more. There is a clear understanding of the top management that 'development of employees' is 'development of the organization'. With this clarity, resources are invested in training and development programs related to KM and application of an appropriate performance measurement system to capture the knowledge dimension of its employees. The management is in constant quest of benchmarking against the industry best practices to achieve high levels of quality and perfection in internal processes. The study shows that since top management has the capability to mobilize resources, the effect percolates to the entire organization positively affecting the internal processes also.

5.1.7 Knowledge-based Leadership (KBL) as an insignificant factor for determining Customer Satisfaction (CS) of an organization

KBL does not show a significant direct effect on customer satisfaction ($\beta = 0.107$; p-value = 0.588). The effect of KBL does not directly have a direct positive effect on customer satisfaction. The study has analysed direct relationships between KM practices on individual OP practices. Literature on the study of these individual relationships is scarce, major work has been done and presented on the overall performance This study has shown that though KBL significantly, positively and directly affects learning and growth aspect of an organization and also has a similar

influence on internal processes, it does not show any direct significant relationship with customer satisfaction. Customer satisfaction is a result of better customer service through new products and services, tangible measures of customer satisfaction are increase in market share, increased customer retention, better rate of acquisition of new customers. The explanation for this insignificant relationship may be that an organization may be doing well and improving its performance in comparison to what it was doing earlier, but since customer satisfaction is a relative term influenced by competition also; maybe the competitors are in space that they can serve the customer better.

5.1.8 Knowledge-based Leadership (KBL) as an insignificant factor for determining Financial Performance (FP) of an organization

Even though strong evidence was found for the association between KBL and learning and growth and KBL and internal process; the study did not find a similar association between KBL and financial performance. KBL does not have a significant direct effect on financial performance of an organization ($\beta = 0.211$; ρ value= 0.102). The financial performance of an organization is influenced by a large number of factors besides KM leadership. There are a large number of macro-environment factors influencing the financial performance of an organization in the likes of the economic environment, competitive environment, technological environment etc. These factors can affect the finances of a firm in more ways than one, this explains that insignificance of this direct relationship.

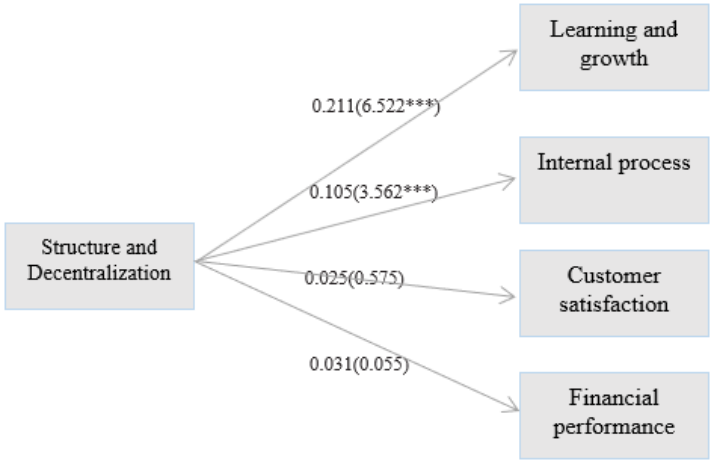

Figure 5.3: Structure and decentralization and organizational performance

5.1.9 Structure and Decentralization (SD) as a significant factor determining Learning and Growth (LG) of an organization

SD have a positive and significant direct effect on learning and growth of an organization (β = 0.211; p-value = 0.000). An organization with a well-organized structure facilitates the process of learning. Members of the organization are well aware of the correct sources of the required information and are in a position to seek it as per their requirement. Along with formalization, a certain degree of freedom of action and thought is a highly desirable quality in a growth-oriented organization. The results of this study have shown that the involvement of employees in everyday decision making and freedom to allow them to take their own calls encourages responsibility and enhances the learning process. There is an overall significant, positive, direct effect of SD on the learning and growth perspective.

5.1.10 Structure and Decentralization (SD) as a significant factor determining Internal process (IP) of an organization

SD have a positive and significant direct effect on internal process of an organization (β = 0.105; p-value = 0.000). The internal processes of an organization are improved and

function better with an organized structure. Effective problem-solving percentage is enhanced as the flow of information is smooth and seamless in a well-structured organization. Also, the delegation of decision-making and providing a support structure for an employee's everyday work helps keep the processes running more effectively and efficiently. When organizational members are allowed to use discretion while performing tasks, it yields results not only because of the tangible aspect being affected positively but also the intangible aspect i.e. the mind is also set free to think and act.

5.1.11 Structure and Decentralization (SD) as an insignificant factor for determining Customer Satisfaction (CS) of an organization

SD do not show a significant effect on customer satisfaction of an organization (β = 0.025; p-value = 0.565). Although a large number of previous studies have measured the effect of structure on innovation, not many have tested the impact of organizational structure on customer satisfaction perspective. A well-organized structure aims at lending an organization the best route to complete a process, the purpose is to create a seamless flow of information amongst all levels in the organization for facilitating managerial decision-making. The study has proven that a flexible organizational structure positively affects learning and growth as well as internal processes, but it doesn't exhibit such relationship with customer satisfaction. While the former two factors viz. learning and growth and internal processes are internal i.e. within an organization, the customer is an external entity and hence is affected by a large number of uncontrollable factors present outside the organization. Though customer satisfaction is a factor of an organization's internal processes also, the study shows that the effect is positive but insignificant. One can draw this conclusion from this research that in order to affect customer satisfaction positively, a combination of factors have to work in

tandem, only by putting a good organizational structure in place would not be sufficient to generate satisfaction of this important stakeholder.

5.1.12 Structure and Decentralization (SD) as an insignificant factor for determining Financial Performance (FP) of an organization

The study has shown that SD does not have a significant, positive, direct effect on the financial performance of an organization (β = 0.031; p-value = 0.956). As is the case with customer satisfaction, a similar factor in the measurement of OP is financial performance. It is affected by a large number of uncontrollable factors which are macro in nature and can have a long-lasting impact on an organization. While structure and decentralization KM practices may positively affect some of the functions of an organization, the organization has to function in an economically and technologically competitive environment, where the actions of one may have financial repercussions for another. With the current pace of change of technology, business policies and practices have to be updated and modified from time to time. Well implemented structural KM practices can help create an environment of information gathering, sorting, utilizing and dissemination, but they do not have a direct effect on the financial performance of an organization.

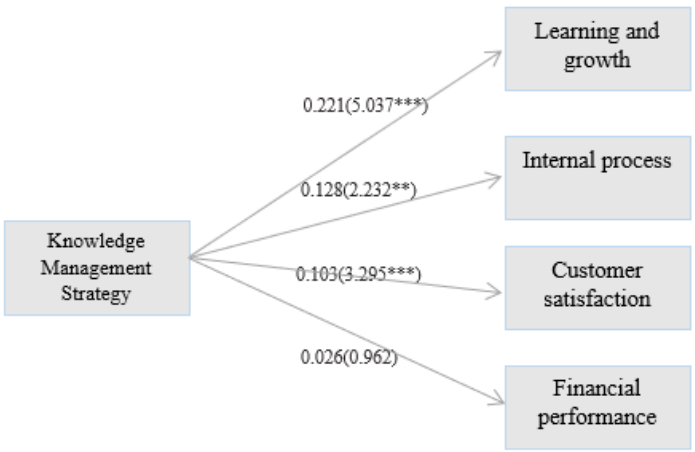

Figure 5.4: Knowledge management strategy and organizational performance

5.1.13 Knowledge Management Strategy (KMS) as a significant factor determining Learning and Growth (LG) of an organization

KMS is shown to have a positive significant and direct effect on learning and growth of an organization ($\beta = 0.221$, $p = 0.000$). A focussed KMS must be reviewed in the light of current and future market requirements, the development of knowledge inside and outside an organization and the results yielded by the current KM processes and practices. Strategic KM practices enable an organization in the recognition of key KM resources and focus their energy and effort on using them to develop a competitive advantage. The positive effect of KM strategy on the learning and growth perspective indicates clearly that the organization has been able to identify and invest in resources enabling learning and growth.

5.1.14 Knowledge Management Strategy (KMS) as a significant factor determining Internal Process (IP) of an organization

The study has proven that KM strategy has a positive significant and direct effect on internal process of an organization ($\beta = 0.128$; $p = 0.026$). Recognition of knowledge as a key resource in the organization and possession of a common vision for KM that people at all levels support has a collective coherent effect on an organization's internal processes. The processes become faster and effective when the entire organization is focussed on a single goal. A clear KM strategy has depicted the ability to enhance organizational ability to function and achieve its objectives. Effectiveness and efficiency in processes is a result of a high degree of alignment between KM strategy and organizational strategy; when there is clear identification of the potential value to be achieved from KM, the internal processes have to be affected in a positive manner.

5.1.15 KM Strategy (KMS) as a significant factor determining Customer Satisfaction (CS) of an organization

KMS has proven to be positively significantly and directly effecting the customer satisfaction perspective ($\beta = 0.103$; $p = 0.000$). Not all KM practices under study have shown a positive effect on customer satisfaction perspective of OP. KM strategy has proven to be third most important KM practice after KSC and knowledge-based human resource management. KM Strategy does not only have a positive effect on learning and growth perspective and internal process perspective but it also positively affects customer satisfaction perspective of an organization. A deliberate focus on KM strategy, identification and recognition of KM resources by the management and appropriate interest and investment in them leads to a positive contribution to all aspects of performance. Development and protection of strategic KM practices lead to percolation of their positive effects on customer satisfaction too. When learning and growth and internal processes are improved and function better, the customer is served well and in effect is more satisfied.

5.1.16 Knowledge Management Strategy (KMS) as an insignificant factor for determining Financial Performance (FP) of an organization

The effect of KMS does not directly percolate to financial performance of an organization d ($\beta = 0.026$; $p = 0.336$). Though the first three aspects of organizational performance are positively, directly and significantly affected by KM strategy, it does not show a significant direct relationship with financial performance of an organization. As discussed earlier, financial performance of a firm is a complex factor affected by a large number of macro-environmental factors such as competition, economic factors, technological factors etc. Also, measurement of the direct effect of a KM strategy may

not be visible in a cross-sectional form of data since it provides a snapshot, while strategy will show its impact over a long period of time. Hence, there seems to be no significant relationship between KM strategy and financial performance of a firm.

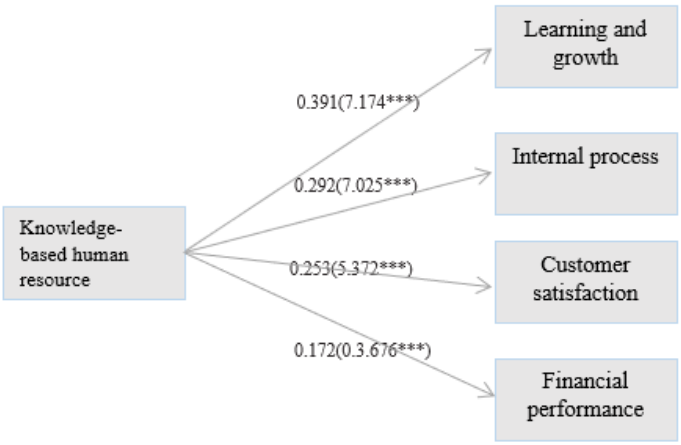

Figure 5.5: Knowledge-based human resource management and organizational performance

5.1.17 Knowledge-Based Human Resource Management (KBHR) as a significant factor determining Learning and Growth (LG) of an organization

The association between KBHR and OP is the most studied amongst all KM practices. This relationship is direct, positive and significant in this study ($\beta = 0.391$, $p = 0.000$). Though KBHR practices have been associated with all aspects of performance, the effect on learning and growth of an organization is the most noteworthy. Literature on KM practices has endorsed this thought. Kamhawi, 2012, has pointed out that the application of KM practices has a positive effect on the knowledge processes of acquisition, sharing and creation. The effect of KBHR practices on the learning and growth of an organization is positive and significant H2a ($\beta = 0.391$, $p = 0.000$). It is interesting to note that KBHR practices have shown a positive direct effect on L&G, IP, CS and FP. Literature endorses that an organization's focus on the management of the human resource in line with knowledge has proved to be advantageous for the

organization (Lee and Choi, 2003; Marques and Simon, 2006; Lu et. al., 208; Andreeva and Kianto, 2012; Wu and Chen, 2014). The 'people' factor in organizations has garnered immense importance. With the advent of intangibles in product portfolios and the service component becoming a major contributor to an organization's bottom line, knowledge has become an indispensable resource for organizations and people being creators, users and disseminators of the same have become the fulcrum of all activity. While there is theoretical evidence from previous research that HRM contributes to knowledge performance and FP (Foss and Minbaeva, 2009), very little empirical research has proven this link before. This research is a definitive step in this direction.

KBHR is one of the most crucial practices in building a knowledge friendly environment in the organization that promotes knowledge sharing, out-of-the-box thinking and encourages healthy open discussions. Literature strongly suggests that human resource practices are strongly associated with innovation capability (Kamhawi, 2012), product and service innovations (Kuo and Lee, 2011), administrative and innovations (Chen and Huang, 2009) and product and process innovations and technological knowledge (Soto-Acosta et al., 2014). Chuang et al., 2014 endorsed that providing incentives to employees gave a push to the utilization of IT resources that helped increase the innovation capability of an organization. Inkinen et al., 2015 conducted a study on Finnish firms and have also suggested that knowledge-based human resource practices have a positive effect on innovation performance in terms of process and production methods, products and services, management and marketing practices of an organization.

5.1.18 Knowledge-Based Human Resource Management (KBHR) as a significant factor determining Internal process (IP) of an organization

The study shows that KBHR has a positive significant and direct relationship with internal process of an organization (β = 0.292; p-value = 0.000) Kamhawi, 2012, has pointed out that KBHR practices facilitate knowledge acquisition, creation and sharing which has a positive effect on internal processes and promotes innovation capability of an organization. According to Camelo-Ordaz et al., 2011 KBHR practices help to strengthen the employees' affective component which has a positive effect on organizational processes indirectly affecting the financial performance of an organization. These practices are also helpful in building trust and add value to relationships, which in turn has a positive bearing on the organization's innovativeness (Vanhala and Ritala, 2016). KBHR practices are instrumental in increasing IT support for KM (Chuang et al. 2013). The results of this research indicate that knowledge-based human resource practices have a positive effect on the internal processes of an organization. Human resource practices have a significant effect on the attitude, beliefs and values of organizational members. Organizations that possess a tendency to evaluate, compensate and promote their employees purely on the basis of their merit and performance usually exhibit better problem solving through improved teamwork, which leads to more effective organizational processes.

5.1.19 Knowledge-Based Human Resource Management (KBHR) as a significant factor determining Customer Satisfaction (CS) of an organization

KBHR positively, significantly and directly affects the customer satisfaction of an organization (β =0. 253; p = 0.000). Human Capital is an indispensable asset for a learning organization. It describes the competencies and know-how of the employees of

an organization. The study proves that effective resource deployment on human capital yields results in terms of delivering customer satisfaction. As Bae et al., (1998) has said that organic human resource strategy i.e. human resource policy wherein performance remains the sole criteria for promotion and compensation, lends an environment where merit is valued; such an organization has a clear strategy of growth through implementing customer-friendly practices and policies. Knowledge-based HRM is bound to have a positive, direct and significant effect on customer satisfaction as there is clarity on thought and action that internal and external customers of an organization have to be satisfied so as to have a smooth-running profitable organization. There is a complete and clear focus on the development of human resource so that they can function better and serve the customer better.

5.1.20 Knowledge-Based Human Resource Management (KBHR) as a significant factor in determining Financial Performance (FP) of an organization

Empirical research has proven that KBHR practices can be utilized to influence an organization's bottom line directly (Andreeva and Kianto, 2012; Inkinen et.al. 2015; Kim and Hancer, 2010; Liao,2011; Inkinen and Kianto, 2014, Inkinen, 2016). In line with the literature, KBHR has shown to have a direct positive and significant effect on Financial performance of an organization ($\beta = 0.172$, $p = 0.000$). In line with the KM literature, Knowledge-based HRM practices have exhibited a positive, significant and direct effect on the financial performance of an organization. KSC and knowledge-based HRM have emerged as the two most significant factors in this research. Literature has time and again emphasised that the human resource of an organization must remain the centre point of all development activities since this resource becomes instrumental in using and employing all other resources. It has been proven here empirically that

knowledge-based HRM not only exhibits a positive effect learning and growth, internal processes as well as customer satisfaction, but it also has a direct positive effect on the financial performance of an organization too. The application of this idea will definitely lead to a radical change in the way the human resource is viewed in organizations. This should now dawn upon leaders of organizations that any expenditure done on the training, development and well-being of 'people' of the organization is not an expenditure but an investment which will show its effect on aspects of performance including financial aspect too.

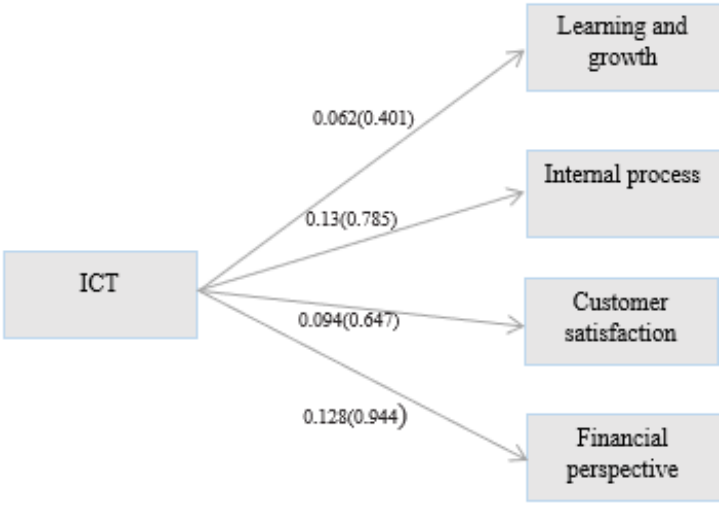

Figure 5.6: Information communication technology and organizational performance

5.1.21 Information and Communication Technology (ICT) as an insignificant factor for determining Learning and Growth (LG) of an organization

Chuang et al., 2014 have said that the utilization of IT resources is increased by providing a push to knowledge-based human resource practices which indirectly affects the innovation capability of an organization. In agreement with the literature, ICT for KM has not shown a significant effect on the learning and growth of an organization ($\beta = 0.076$, $p = 0.685$). The concept of a learning organization has been described by many

as a response to an unpredictable and extremely dynamic business environment. A learning organization is able to create, acquire and transfer skills and competencies; and is able to adapt its behaviour according to new knowledge and views. The learning organization basis its future competitive advantage on this characteristic of continuous learning ability and adaptability. It is our argument that in hypercompetitive global firms serving internationally, information technology will be interfaced with knowledge processes that span time and geographic boundaries. Rising need for short cycle time and open innovation necessitates the dependence on aligning KM with ICT. The paper, therefore, suggests that the role of ICT in organizations be given considerable importance. However mere investment in ICT may not function as the key; processes and practices must be laid down to equip employees to train them ensuring the possession of skill-set, know-how and motivation to optimally use these technological advancements. Gloet and Terziovski (2004) emphasised that KM would act as a contributing factor to innovation performance only when ICT and HRM are worked upon simultaneously. The essence of this discussion is that all KM activity should essentially follow a socio-cultural approach so as to achieve its desired outcomes (Pan and Scarbrough, 1998; Meso and Smith, 2000)

5.1.22 Information and Communication Technology (ICT) as an insignificant factor for determining Internal Process (IP) of an organization

The study has shown that ICT for KM does not have a significant direct effect on the internal process of an organization (β =0.314, p = 0.685). Organizations have to understand that ICT cannot serve as a source of competitive advantage for them rather these systems should be so designed that they help capture and utilize the human resource potential of the organization to the fullest. This study has shown that

knowledge-based human resource practices and development of KSC are the two most significant KM practices that have a direct effect on learning and growth of the organization, internal processes, customer satisfaction and financial performance.

According to Nonaka et al., 2000 and Nonaka and Konno, 1998, knowledge creation process is deeply rooted in intense human interaction, which involves the exchange of both tacit and explicit knowledge while requiring face-to-face contact and physical proximity. The focal point of a large number of research papers in KM has been the human element of an organization. The current study has not shown any direct link between ICT practices and internal processes of an organization. One of the factors contributing to this result is that the organizations under survey for the current study are all running with a certain level of ICT implementation already for a long time now. When prompted to answer the effect of ICT on internal process, there is little or no previous experience of a situation where these ICT practices were not in place, the employees of Fortune 500 companies have always had the availability and accessibility to best in class ICT; we draw this inference that there is no effect on internal processes of an organization with just the enhancement and up-gradation of these resources, in fact, the real challenge is to rightly invest and develop the human resource element as they are the ones who can make the real difference.

5.1.23 Information and Communication Technology (ICT) as an insignificant factor for determining Customer Satisfaction (CS) of an organization

It has been proven in the study that ICT for KM does not show a significant direct effect on the customer satisfaction of an organization d ($\beta = 0.272$, $p = 0.517$). KM is essentially a human-based approach. Previous research has shown that the KM

practices of an organization should focus on the development of the right culture and HR practices. Since this research is based on a decomposed model wherein the effect of each KM practice is being analysed on four individual performance measures, it has been proven by the data that ICT practices do not have a direct, positive, significant effect on customer satisfaction. KM literature has authenticated this result from time to time, Lee and Choi (2003) point out that ICT can act as a facilitator, the original investment required is in the 'people' of the organization. The ICT practices should be upgraded and must meet the industry norms, this is a major pre-requisite, but a continuous, ongoing investment and a lot of attention being given to ICT alone may also prove to be detrimental. The organization may fall in the trap of 'product concept' wherein major investment is put into the development of the product without bothering about the needs and wants of the target segment. The modifications and changes are appropriate only till such a point where demand exists, if the target segment does not desire such changes, they are bound to be fruitless. Similarly, the target segment here is the employees of the organization, it is these people who have to put these ICT systems to use, the ICT practices must be aligned with the knowledge-based human resource practices so as to produce results.

5.1.24 Information and Communication Technology (ICT) as an insignificant factor for determining Financial Performance (FP) of an organization

ICT for KM does not affect the financial performance significantly d ($\beta = 0.048$, $p = 0.345$). It does not show any direct effect on the financial performance of an organization. Andreeva and Kianto, 2012 created a model studying ICT, competitiveness, HR practices and financial performance to analyse the inter-relationships between these variables. They have clearly pointed out that investment in ICT when done alone, decreases economic

performance. The authors provide a valid explanation for this statement that while huge investments in ICT systems obviously cost an organization time and money, burdening the economic resources, the real benefit of these ICT resources can only be seen when they are aligned with appropriate investment in training of human resource since it is them who will these to use (Devaraj and Kohli, 2003). Another crucial factor is to make sure that organizational members use ICT resources for KM processes that benefit the organization. This is in line with Mohrman et al., (2002) who state that it is the behaviour of individuals, not ICT systems, that lead to the generation of new knowledge, apply it in novel ways, yield shared meanings and strengthen the ability of the organization to derive value from knowledge. Dedrick et al. (2003) have said that in order to reap benefits from ICT investments, complementary management practices have to be focussed upon.

5.2 Conclusion

The principal objective of this research was to answer the following question –

'What is the relationship between KM practices and organizational performance?'

This was addressed by answering a few sub-objectives.

The first two sub-objectives 'Identification of the key KM practices' and 'Identification of the various financial and non-financial OP measures' were answered by employing systematic literature review. Another observation to be made during the literature review was to assess the current understanding of the relationship between KM practices and OP measures. Relevant conceptual and empirical peer-reviewed literature was analysed in order to find out the key KM practices and financial and non-financial measures that have been used by researchers over a period of time. Six KM practices emerged from the literature review viz. Knowledge sharing culture (KMC),

Structure and decentralization (SD), Knowledge-based leadership (KBL), Knowledge-based human resource management (KBHR), Information and communication technology (ICT) and Knowledge management strategy (KMS). Four key financial and non-financial organizational performance measures that were identified were Learning and Growth (LG), Internal process perspective (IP), Customer satisfaction perspective (CS) and Financial performance perspective (FP).

It was observed that current literature analyses the overall effect of KM practices (individual effect is not observed) and generally establishes that KM practices have a positive effect on the more often used non-financial measures of performance. One of the main effects of KM, established over a range of KM studies, was on the most frequently used performance measure - innovation performance of an organization. Despite the presence of this strong connectedness with innovation, other aspects of performance have been relatively ignored in the KM literature, there is very little emphasis on non-financial measures like internal process, customer satisfaction and the financial performance. Thus, creating a strong agenda for future research.

The third sub-objective was to explicate the effect of KM practices on OP measures. In order to achieve this objective, a decomposed model was employed so as to be able to draw conclusions about individual relationships between each KM practice and each OP measure. The use of this model helped gauge each path separately and relationships were now understood at a deeper level. Empirical employee-level data was collected and the paths were analysed.

Consistent with literature and expectations based on it, the results of the study has provided strong support for the decomposed model, accounting for .72 of Learning

and Growth, 0.59 of Internal process, 0.49 of Customer satisfaction and 0. 47 of Financial performance. In comparison to the previous literature on KM and OP, this study tests the decomposed model that examines the effect of individual KM practices separately on four OP outcomes. Although the findings of this study complement the KM literature (Mills and Smith, 2011; Gold et al., 2001, Tanriverdi, 2005; Darroch, 2005; Marqués and Simón, 2006; Zack et al., 2009; Andreeva and Kianto, 2012), there are some new relationships that have been discovered and a few established that have been challenged. The empirical analysis throws light on several major findings. Since this study has measured individual relationships through a decomposed model, the paper has been able to uncover underlying relationships between constructs.

The model yielded mixed results with some hypothesized relationships between the independent and dependent variables proving to be positive and some negative. While KSC and KBHR showed a positive association with all the aspects of OP viz. LG, IP, CS and FP; KMS and KBL had a positive affected the non-financial parameters i.e. LG, IP and CS but there was no significant positive effect on FP. SD positively contributed to LG and IP but did not show any effect on CS and FP; there was no effect of ICT practices on any of the performance measures – financial and non-financial. The study contributes to the literature by pointing out the potentially most valuable KM practices that are likely to have a positive effect on all aspects of organizational performance. The study has categorically demonstrated that not all KM practices are equally capable facilitators of an organization's performance. This study has documented a five-dimensional conceptual model of KM, which possess the capability of identifying the key strategic intangible aspects of an organization that can be systematized to create value for stakeholders. From a managerial perspective, this study has established that different aspects of OP are

supported by different KM practices; hence a specific pinpoint approach would be more efficient to achieve success than maximizing the overall level of KM.

The fourth sub-objective was to rank KM practices in order of their effect on OP measures. KSC and KBHR have emerged as the two most significant factors in this research. Literature has time and again emphasised that the human resource of an organization must remain the centre point of all development activities since this resource becomes instrumental in using and employing all other resources. It has been proven here empirically that knowledge-based HRM not only exhibits a positive effect learning and growth, internal processes as well as customer satisfaction, but it also has a direct positive effect on the financial performance of an organization too. The application of this idea will definitely lead to a radical change in the way the human resource is viewed in organizations. This should now dawn upon leaders of organizations that any expenditure done on the training, development and well-being of 'people' of the organization is not an expenditure but an investment which will show its effect on aspects of performance including financial aspect too. While KBL positively and significantly affects LG and IP, it has no significant effect on CS and FP. SD also has a similar effect i.e. it positively and significantly affects the first two OP measures i.e. LG but has no significant effect on CS and FP. KMS has a positive and significant effect on three of these measures viz. LG, IP and CS, but does not affect FP.

One of the factors that have garnered a lot of attention in recent times is information and communication technology. Though the significance of presence and use of state-of-the-art ICT in organizations is not debatable, the direct effect of ICT on learning and growth (LG), internal process (IP), customer satisfaction (CS) and

financial performance has been found to be insignificant in this study. Gloet and Terziovski (2004) emphasised that KM would act as a contributing factor to innovation performance only when ICT and HRM are worked upon simultaneously. One of the factors contributing to this result is that the organizations under survey for the current study are all running with a certain level of ICT implementation already for a long time now. When prompted to answer the effect of ICT on internal process, there is little or no previous experience of a situation where these ICT practices were not in place, the employees of Fortune 500 companies have always had availability and accessibility to best in class ICT. So, there is no such benchmark against which they can compare their present performance.

AS KBHR has emerged as one of the strongest affecting KM practices, there is surely a feeling in the employees head that mind of the customer that of these resources, in fact, the real challenge is to rightly invest and develop the human resource element as they are the ones who can make the real difference. The essence of this discussion is that all KM activity should essentially follow a socio-cultural approach so as to achieve its desired outcomes (Pan and Scarbrough, 1998; Mill and Smith, 2000)

Hence, we conclude that the focal point of all KM activity revolves around developing the right culture and the right people.

The last objective was to provide a more fundamental understanding of the linkage between KM practices of an organization and performance of that organization in order to enhance and improve the management decision-making process at the resource-level. Previous literature on KM has majorly focused on composite models, and hence seen the overall effect of the entire component of KM on OP. It is here that

we see that though the overall component positively and significantly affects performance, not all individual practices have a direct positive effect. This result is consistent with the resource-based view of a firm which suggests that only a subset of an organization's resources contributes directly to its performance when analyzed individually (Grant, 1991). The study has been able to pin-point the more important KM practices as KM literature states that although knowledge management capabilities may contribute to organizational performance in some cases, the contribution of particular resources may vary in their effect on factors associated with the performance of an organization. The research has clearly demonstrated those factors which have a direct bearing on all factors of an organization's performance. Previous research findings that capabilities to manage knowledge resources are more important than the possession resources (Grant, 1996; Penrose, 1959; Spender and Grant, 1996) has been proven again through the medium of this research. The study contributes directly to the discussion on key capabilities by identifying that KMC and KBHR were associated with LG, IP, CS and FP; KMS is associated with LG, IP, CS and FP; KBL and SD were associated with LG and IP; while ICT did not associate directly with any of these measures. From a managerial perspective, this study has established that different aspects of OP are supported by different KM practices; hence a specific pinpoint approach would be more efficient to achieve success than maximizing the overall level of KM.

5.3 Contribution and implications for knowledge management literature

This thesis contributed to the KM literature in a number of ways. It added structure to the current set of literature by focusing on the novel idea of KM practices as proposed by Kianto et. al., (2014). Prior to this, the main focus of KM research was KM

processes; KM practices were either not included at all or were merged with processes. A systematic literature review has added sense and structure to this novel concept. Also, it has proved that KM practice discussion is a different line of research and has the capability to contribute to developing a better understanding of the knowledge-based view of the firm, resource-based view of the firm and knowledge-based competitive advantage of the firm.

This study has enhanced the theoretical understanding of KM by developing and empirically testing a decomposed model on KM practices and organizational performance. The decomposed model constructed and studied in this research with six key KM practices studied along with four OP measures is unique and thread bares specific relationships at the individual level. KM literature has majorly focused on, competitiveness (Allard and Holaspple, 2002; Perez and Pablos, 2003; Chong, 2006; Wang et al., 2012); market share (Andreeva and Kianto, 2012; Zheng et al. 2010; Lee and Choi, 2003); growth rate (Andreeva and Kianto, 2012; Lee and Choi, 2003); innovativeness (Sinha et al., 2015; Zheng et al. 2010; Zack et al. 2009; Lu et al., 2008; Chong, 2006; Darroch, J.2005; Gloet and Terziovski, 2004); profitability (Andreeva and Kianto, 2012; Zheng et al. 2010; Zack et al. 2009; Lee and Choi, 2003); research and development performance (Lee et al., 2005); better training (Chong 2006); enhanced OP (Wu and Chen, 2014; Wang et al., 2012; Mills and Smith, 2011; Starns and Odom, 2006); customer performance (Lee and Lee, 2007; Anantamula, 2007; Zack et al. 2009, Wu and Chen, 2014, Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002); financial performance (Jain and Moreno, 2015; Wu and Chen, 2014; Andreeva and Kianto, 2012; Vaccaro et al., 2010; Zack et al. 2009; Lee and Lee, 2007, (Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002);

employee creativity (Kianto, 2011, Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002); commercialization of creative ideas (Kianto, 2011); Learning and growth (Gonzalez-Padron et al., 2010; Chen and Mohamed, 2008; Arora, 2002), there is a a dearth of literature which studies the overall performance both in financial and non-financial terms and depicts a complete picture. The study has filled this void; thus, opening an avenue for further research with the same research instrument.

The study contributes to the current KM literature by demonstrating the effect of KM practices as a managerial tool that can be leveraged to enhance organizational performance. It has expounded the effect of key KM practices independently on OP measures and uncovered associations that were never before analysed. It indicated that Knowledge management culture and Knowledge-based HRM practices were the fulcra for all KM activity in an organization; thereby bringing the focus back to the 'people' factor of an organization.

5.4 Managerial implications

The results of the study have a number of implications for KM practitioners. By studying the decomposed relationships that exist between individual KM practices and OP, many important implications for KM in organizations have been highlighted. First, the research results have thread bared individual relationships and shown that KM, when implemented in thought and spirit in organizations affects all the aspects of performance percolating down to FP also. Previous research has suggested that investment in KM initiatives positively affects OP; however, findings of this study clearly demonstrate that not all KM resources and practices contribute directly to performance. This is not to state that organizations can afford to ignore or not invest in

these KM resources. Instead, the significance of this point is developing an understanding that though these resources do not have a direct effect on performance, they work in combination with other resources like culture (KSC) and human resources (KBHR) that have a direct linkage with performance variables.

Second, KSC and KHRM have a significant positive effect on all the measures of OP. This highlights that the development of highly competitive, breakneck competition is not essential for organizations to perform well. This is of significance since the findings are based on the Indian sample. Due to various historical, demographic and economic factors, India has faced enormous pressure on resources, and hence there exists huge competition for even small means. This has led to a common belief in India that competition is all-pervasive. It is extremely heartening to see through this study that Indian organizations are now working towards the development of a culture of collaboration and cooperation and believing and experiencing that this is in the best interest of the company.

Though there is a clear focus on KSC and KBHR, other KM practices have a lot to contribute to an organization's performance. Discretion in decision-making and flexibility in job behaviour, freedom of action and thought is a highly desirable quality in a growth-oriented organization. The results of this study have shown that the involvement of employees in everyday decision making and freedom to allow them to take their own call encourages responsibility and enhances the learning process.

The correct combination of resources and practices will vary from one organization to another. There is no magic formula or silver bullet to decide the right mix, but identification of specific KM practices and the results they yield; thus, creating

a match with the desired performance measures is a decision that the manager has to undertake. Such insights can help managers identify appropriate strategies well suited for their respective organizations. And since this combination is going to be unique for every organization, this can serve as a lasting source of competitive advantage.

When compared to composite models, this research is a step forward, as it has been able to identify and quantify the effect and contribution of individual KM practices to the performance of an organization. There exists a gap in the literature linking specific KM practices with OP (Mills and Smith, 2011), the current research helps bridge this gap.

Association of KM practices with financial and non-financial measures has major implications for organizations. Generally, OP has been measured as a single construct in previous research. The measures used for gauging OP have been limited to innovation (Darroch, 2003; Gloet and Terziovski, 2004; Zheng et. al., 2010); competitiveness (Allard and Holsapple, 2002; Chong, 2006); market share and profitability (Lee and Choi, 2003, Marques and Simon, 2006); stock price and financial performance (Lee et.al., 2005; Jain and Moreno, 2015). Also, the KM practices analyzed vary from one research to another. Due to this, the development of an overall understanding of the relationship between KM practices and OP is difficult to draw from the current set of literature.

This research has not only integrated KM practices with financial and non-financial measures of OP, but it also exhibits individual relationships between them. The study shows that KSC and KBHR practices when implemented in an organization will lead to better learning and growth of the organization, efficiency in the IP, better

customer service and also positively affect the FP of the organization. While KBL and SD affect L&G and IP positively, there is no significant effect exhibited on CS and FP of an organization. This can also lead the researcher's thought in the direction of considering the presence of causal relationships in the dependent variables. It is observed that each KM practice has a positive and significant effect on learning and growth and internal process perspective of an organization; customer satisfaction and financial performance are not directly linked to some of the KM practices. Previous research has suggested causal relationships between learning and growth, internal process, customer satisfaction and financial performance i.e. improvement in one has a positive effect on the other. In view of this, the KM practices that are not showing a direct effect on some of the performance measures may be contributing to organization's performance indirectly through the positive effect they have on learning and growth of an organization.

These are important KM-performance links that have been uncovered by means of this research. This is an in-depth study and stands in stark comparison to the current set of literature on KM and OP which focusses on the overall effects.

5.5 Limitations and future research

As with other survey-based research, despite its contributions, there are some limitations, which if addressed in future studies, can help add more robustness to the study.

Firstly, the study is subject to the possibility of response bias. For unreportable and unpredictable reasons, managers may under-report or over-report the level of KM practices of their organization. Gold et al., (2001) suggested that collection of more than

two or more respondent data from one organization can help resolve this issue to a large extent, but this adversely affects how much data will be collected.

Secondly, this study provides an analysis of a sample of organization's knowledge assets and capabilities. Such an insight if worked out for a single organization will enable a deeper and thorough understanding of its knowledge capabilities and help uncover factors that lead to differences in the performance of these KM practices under different situations. Further research is therefore required to examine firm-level knowledge capabilities and how they relate to performance. Another limitation of this study is that it does not study knowledge processes, such as knowledge creation, evaluation, sharing, transfer and use. This can be argued that KM processes are a part of every organization and exist in every organization, to a certain extent, without conscious effort of the management. While this research emphasised practising deliberate KM practices for better management of organizational knowledge, KM processes may also be affected. Therefore, it makes a good case for further research to include KM processes to analyse the interaction amongst these variables, if any.

Thirdly, the research has a limited scope as the data for the study has been collected only from Indian organizations. This adversely affects the generalizability of the study.

Fourthly, since the study could not conclude any direct effect of all KM practices on customer satisfaction and financial performance, the presence of causal relationships in the dependent variables could also be considered. As Devaraj and Kohli (2003) and Andreeva and Kianto pointed out that the effect of ICT may not be visible on performance soon enough, it may be that if performance data was collected at a later

point in time, a direct relationship between these variables might be visible. Also, in order to increase external validity, it is recommended to conduct similar researches in developed countries, where the KM capabilities are rather mature.

Another limitation is the use of perceptual, self-reported data. Though, subjective data can be reliable and used for research in the absence of objective data (Delaney and Huselid, 1996). Future studies could measure these constructs using more objective data instead of perceptual data. Another change could be made in the method of data collection, structured interviews could be used instead of a questionnaire so as to overcome misinterpretations of questions if any.

Lastly, with the emergence of novel concepts like big data, internet of things and data analytics, has the knowledge management pyramid undergone a change? Generation of massive data and development of tools that help in analysis, has led to a strong current in favour of data-driven decision-making as opposed to intuitive decision-making. These trends raise a few questions, with regard to the role of process and enablers of KM and metric used to gauge their effects on performance outcomes, which will need attention in the coming future.

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Appendix-A: Questionnaire

Introduction

This survey is part of my doctoral research work and focuses on Knowledge Management (KM) Practices in organizations and their effect on Organizational Performance. The information you provide will be kept strictly confidential and used for research purpose only.

Any queries may be sent at

mchopra2002@gmail.com

Demographic information

Name

Gender: Male / Female

Age

Educational qualification: Graduate/ Post graduate/ PhD

Organization

Position: Entry level/ Middle level/ Senior level

Total experience: 5-10 years/ 11-20 years/ 21-30 years/ 31 years and above

Experience with existing organization: less than 5 years/ 5 years - 10 years/ more than 10 years

Knowledge Management Practices

Please mark your level of agreement on the following statements with reference to your organization

Knowledge Sharing Culture	**Disagree Strongly**	**Disagree Moderately**	**Disagree Slightly**	**Average - Neither Agree nor Disagree**	**Agree Slightly**	**Agree Moderately**	**Agree Strongly**
[The members of the organization are willing to cooperate with each other]							
[The members of the organization are supportive for each other]							
[Different units in our organization work in a cooperative way to accomplish a task]							
[The members of our organization treat each other honestly and truthfully.]							
[The members of our organization have trust in each other's capability to perform tasks.]							
[The members of our organization believe that all decisions are made for the benefit of the entire organization not individuals]							
[Relationships between members of our organization are based on mutual trust]							
[In our organization, there is a continuous effort to enhance organizational knowledge through knowledge exchange programs.]							
[In our organization, members are generally satisfied with education and career development programs.]							

Structure and Decentralization							
[In our organization, employees can make their own decisions while performing tasks]							
[In our organization, employees at all levels provide input in everyday decision-making]							
[In our organization, employees have freedom in how they do their work]							
[In our organization, job behaviours are relatively unstructured]							
[In our organization, members are allowed to use discretion while performing tasks]							
Knowledge-based leadership							
[Top management of our organization understands the value of knowledge management]							
[Top management of our organization provides adequate financial resources for knowledge management]							
[Top management of our organization provides adequate human resources for knowledge management]							
[Top management of our organization lays stress on the importance of knowledge management for achieving excellence in organizational activities]							

Knowledge management strategy							
[Knowledge is recognized as a key resource in the organization.]							
[The organization has a common vision for KM that people at all levels support]							
[The organization has clear objectives for KM]							
[The organization's knowledge and competence strategy are clearly stated at all levels of the organization.]							
[There is high degree of alignment of KM strategy with organizational strategy.]							
[There is clear identification of the potential value to be achieved from KM]							
Knowledge-based HRM							
[Our organization lays a lot of stress on recruitment practices and policies]							
[There is a system of mentoring and training in the organization]							
[Our organization rewards knowledge creation with incentives]							
[Our organization rewards knowledge sharing with incentives]							
[Our organization provides opportunities for training and skill development as incentives for knowledge sharing]							

Information and Communication Technology for KM							
[ICT in our organization is utilized to gather information about internal and external stakeholders.]							
[ICT in our organization facilitates systematic processing of useful information and provides unrestrained access to this information independent of time and location.]							
[Our organization's ICT architecture is capable of timely sharing of information with all stakeholders in the organization]							
[ICT in our organization supports various software tools for managerial decision making]							
In your view, how much is the effect of the application of the above KM practices on the following measures in your organization?							
Learning and Growth	**Extremely Low**	**Moderately Low**	**Slightly Low**	**Average**	**Slightly High**	**Moderately High**	**Extremely High**
[Professional ability of employees]							
[Productivity of employees]							
[Knowledge sharing behaviour of employees]							
[Ability of the employees to handle emergency situations]							
[Ability of the employees to effectively use organization's IT resources]							

Internal Process							
[Time reduction in handling customer inquiries and complaints]							
[Time reduction in commercializing innovations]							
[Effective problem-solving percentage]							
Customer satisfaction							
[Better customer service through new products and services]							
[Increase in market share]							
[Increased customer retention]							
[Increase in rate of acquisition of new customers]							
Financial performance							
[Increase in size of business]							
[Positive effect on return on investment]							
[Positive effect on return on assets]							
[Positive effect on average profit]							
[Positive effect on revenue growth rate]							

Appendix B

Details of Published papers

	Title	**Name of the Authors**	**Name of the Journal**	**Indexing Status of Journal with Indexing Agency**
1	Knowledge management practices and organizational performance: A balanced scorecard approach	Meenu Chopra, Vikas Gupta	**Kybernetes** Published by 'Emerald'	Impact Factor – 1.381 (2018 Journal Citation Reports® (Clarivate Analytics, 2019) This journal is ranked by: 1. SciSearch® Science Citation Index (SSCI). 2. SCOPUS 3. The Association of Business Schools' (ABS) 4. Academic Journal Guide 2015 (the Guide), 5. AIDEA (Italy), 6. BFI (Denmark), 7. Current Contents®: Engineering, Computing and Technology, 8. COMPUMATH Citation Index®, 9. Norwegian Register for Scientific Journals, 10. The Publication Forum (Finland) This journal is indexed and abstracted in: 1. Academic Search Complete 2. Academic Search Premier, 3. BIOSIS Previews, 4. Cabell's Directory of Publishing Opportunities in Computer Science, 5. Computer Science Index, 6. Computers & Applied Sciences 7. Complete, 8. Current Abstracts, 9. EI Compendex, 10. Expanded Mathematical Reviews, 11. dblp Computer Science Bibliography, 12. IET Research Journals; 13. INSPEC®, 14. Alerting Services®, 15. Norwegian Scientific Index, 16. ReadCube Discover; 17. Zentralblatt MATHABI Inform.

	Title	**Name of the Authors**	**Name of the Journal**	**Indexing Status of Journal with Indexing Agency**
2.	Gauging the impact of knowledge management practices on organizational performance – a balanced scorecard perspective	Vikas Gupta, Meenu Chopra	**VINE Journal of Information and Knowledge Management Systems.** Published by 'Emerald'	This journal is ranked by: 1. Scopus, 2. Australian Business Deans Council (B), 3. Australian Council of Professors and Heads of Information Systems (B), 4. Computing Research & Education (CORE) Journal Ranking (B), 5. HCERES (France), 6. AIDEA (Italy) This journal is indexed and abstracted in: 1. ABI Inform; 2. Current Abstracts; 3. EI Compendex; 4. Emerging Sources Citation Index; 5. Excellence in Research for Australia (ERA); 6. INSPEC; 7. Library and Information Science Abstracts (LISA); 8. Library, Information Science and Technology Abstracts (LISTA); 9. ReadCube Discover; 10. TOC Premier, 11. Norwegian Scientific Index.
3	Strategic Management Using Balanced Scorecard—A Case Study on Tata Power	Meenu Chopra, Vikas Gupta, Bharat Chabbra	**South Asian Journal of Business and Management Cases** Published by 'Sage'	This journal is indexed and abstracted in: 1. SCOPUS 2. DeepDyve 3. Portico 4. Dutch-KB 5. OCLC 6. Ohio 7. J-Gate 8. Indian Citation Index (ICI)
4	An Effectiveness Measurement Model for Knowledge Management – A Balanced Scorecard Perspective	Meenu Chopra, Vikas Gupta	**International Journal of Business and Globalisation.** Published by 'Inderscience'	This journal is indexed and abstracted in: 1. Scopus (Elsevier) 2. Academic OneFile (Gale) 3. cnpLINKer (CNPIEC) 4. Business Collection (Gale) 5. Google Scholar 6. Info Trac (Gale) 7. Inspec (Institution of Engineering and Technology) 8. J-Gate 9. ProQuest Advanced Technologies 10. Database with Aerospace 11. RePEc

	Title	**Name of the Authors**	**Name of the Journal**	**Indexing Status of Journal with Indexing Agency**
5	Knowledge Management Practices and Balanced Scorecard Outcomes: An Organizational Performance Perspective	Meenu Chopra, Vikas Gupta	Changing organizations through Strategic and Behavioural Intervention	International Conference proceedings
6	The Sustainable Balanced Scorecard - linking sustainability to corporate strategy	Meenu Chopra, Vikas Gupta	Media and Communication in Sustainable Development	International Conference proceedings
7	Call of the times – Digitization	Meenu Chopra, Vikas Gupta	Paradigm shift from developing to developed India through digitization	National Conference proceedings
8	Conceptualization of the balanced scorecard	Meenu Chopra, Vikas Gupta	Emerging issues in Marketing and HR in corporate scenario	National Conference proceedings