

**KNOWLEDGE MANAGEMENT & INNOVATION CULTURE AND
ITS IMPACT ON BUSINESS PERFORMANCE – A STUDY OF
INDIAN IT ORGANIZATIONS**

BY

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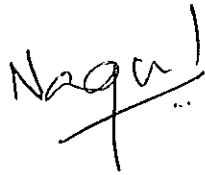
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DECLARATION BY THE AUTHOR

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

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Sign:

A handwritten signature in black ink, appearing to read 'Nagesh', with a horizontal line underneath and a vertical stroke extending downwards from the end.

Date: 15-11-2015

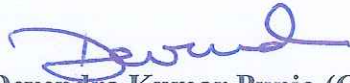
THESIS COMPLETION CERTIFICATE

This is to certify that the thesis on “**Knowledge Management & Innovation Culture and its Impact on Business Performance – A Study of Indian IT Organizations**” by T. Nagesh in Partial completion of the requirements for the award of the Degree of Doctor of Philosophy (Management) is an original work carried out by him under our joint supervision and guidance.

It is certified that the work has not been submitted anywhere else for the award of any other diploma or degree of this or any other University.

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Table of Contents

Executive Summary	i
Chapter 1: Introduction & Background	1
1.1 Introduction	1
1.2 Background	5
1.3 Motivation/Need for the Research.....	7
1.4 Present work.....	9
Chapter 2: Literature Review	11
2.1 Overview of emerging global scenario	11
2.2 Knowledge management and innovation linkages.....	14
2.3 Innovation culture as a differentiator.....	20
2.3.1 The role of innovation archetype	22
2.4 Knowledge management and innovation culture	25
2.5 The role of culture in innovation and knowledge management	29
2.6 Knowledge management and impact on performance	35
2.7 Research gaps that have emerged from the literature review.....	40
Chapter 3: Research Design	41
3.1 Statement of the Problem	41
3.2 Research Questions	42
3.3 Research Objectives.....	43
3.4 Operating Definitions.....	44
3.5 Research Methodology	45
3.5.1 Research Methods	46
3.5.2 Data Collection and Analysis: Research Question 1 & 1a	46
3.5.3 Data Collection: Research Question 2	47
3.5.4 Data Analysis: Research Question 2.....	48
Chapter 4: Data Collection and Analysis	50
4.1 Infosys Limited	50
4.1.1 Lessons learned during knowledge management initiative evolution	52

4.1.2	Impact of KM initiatives on Infosys Ltd.....	53
4.2	3M Company.....	56
4.2.1	Linkages between KM & Innovation Culture	58
4.2.2	Summary of the linkages of KM & Innovation Culture and its impact business performance	66
4.3	Further linkages from the literature review	67
4.4	A model linking KM and innovation culture	72
4.5	A model linking KM & IC for business performance improvement	76
4.6	Managing knowledge and innovation in organizations.....	77
4.6.1	Role of Knowledge Management.....	86
4.6.2	Leadership.....	94
4.6.3	Business Model	113
4.6.4	Organization Conversation	118
4.6.5	Innovation Culture and its dimensions	123
4.7	Factors Emerged from the studies.....	160
4.8	Outcome of the Semi-structured interviews	161
4.8.1	Knowledge management systems	161
4.8.2	Business Model	165
4.8.3	Leadership.....	166
4.8.4	Organizational Conversational Practices	167
4.8.5	Innovation culture and its elements	168
4.9	Impact on performance	170
4.10	Summary of the semi-structured interview results and discussions.....	171
4.11	Factors emerged from the semi-structured interviews.....	172
4.12	Questionnaire administration.....	173
4.13	Analysis and discussion	174
4.13.1	Regression output - Knowledge management initiatives and business performance	174
4.14	Factors Analysis and discussion	177
4.14.1	Reliability & Validity	177
4.14.2	Leadership's commitment towards KM.....	178

4.14.3	Strategic priority	179
4.14.4	KM systems & processes.....	180
4.14.5	Market orientation.....	182
4.14.6	Technology Orientation	183
4.15	Summary of the survey outcome.....	185
Chapter 5:	Findings, Conclusions and contribution to theory.....	187
5.1	Findings	187
5.2	Conclusions	189
5.3	Contribution to theory/literature and practice	191
6.0	Limitation of the study.....	192
7.0	Future work.....	193
8.0	References	194

List of Tables

Table 2.1:	Knowledge management & innovation culture linkages	27
Table 2.2:	Linkages of innovation culture on KM & Innovation	33
Table 2.3:	Knowledge management and its impact on business performance.....	38
Table 4.1:	Key capabilities required for various levels of Infosys' KM Maturity Model	51
Table 4.2:	LR on linkages of KM & culture and its impact on performance.....	68
Table 4.3:	Cases of Best Practices on linkages of KM & culture and its impact.....	69
Table 4.4:	Cases of linkages of KM & culture and its impact (IT organizations)	70
Table 4.5:	Further cases of linkages of KM & culture and its impact (IT organizations)	71
Table 4.6:	Knowledge Management	93
Table 4.7:	Leadership at 3M.....	109
Table 4.8:	Leadership, KM and innovation linkages	112
Table 4.9:	Business Model, KM and innovation linkages	117
Table 4.10:	Organizational conversation, KM and innovation linkages.....	121
Table 4.11:	Market orientation, KM and innovation linkages	131
Table 4.12:	Technology, KM and innovation linkages.....	141
Table 4.13:	Entrepreneurship orientation, KM and innovation linkages	148
Table 4.14:	Learning orientation, KM and innovation linkages	156
Table 4.15:	Knowledge Management Evolution	163
Table 4.16:	Leadership's commitment towards KM	178
Table 4.17:	Strategic priority	179
Table 4.18:	KM systems & processes.....	180
Table 4.19:	Market Orientation.....	182
Table 4.20:	Technology Orientation	183

List of Figures

Fig. 3.1: Research Methodology	45
Fig. 4.1: Linkages between acquisition/creation & value	59
Fig. 4.2: Linkages between acquisition/creation and norms	60
Fig. 4.3: Linkages between acquisition/creation and practices	61
Fig. 4.4: Linkages between storage and practices	62
Fig. 4.5: Linkages between sharing and practices	63
Fig. 4.6: Linkages between application and practices	64
Fig. 4.7: Linkages between sharing and practices	65
Fig. 4.8: Summary of KM & IC linkages and its impact on business performance	66
Fig. 4.9: Impact Return on assets (ROA)	73
Fig. 4.10: Impact Return on sales (ROS)	73
Fig. 4.11: Impact on Operating income to assets (OI/A)	74
Fig. 4.12: Impact on Operating income to sales (OI/S)	74
Fig. 4.13: Impact on operating income to employee (OI/E)	75
Fig. 4.14: Model linking KM & IC for business performance improvement	76
Fig. 4.15: Facets of Innovation Culture	126

List of Appendix

- A. Interview Questions
- B. Summary of the Semi-Structured Interviews Responses
- C. Questionnaire
- D. Regression Analysis
- E. SPSS output: FA & Reliability Test
- F. Curriculum Vitae of the researcher

EXECUTIVE SUMMARY

The quest for knowledge has remained a dominant theme in the evolution of civilization and society (Wiig, 1997), and throughout our existence it will continue to guide us to the path of development and prosperity. Rightly the 21st century is characterized by the importance attached to knowledge, and its impact is felt across all the aspects of organizations (Bose, 2004). However evolving as a knowledge-based organization is not so straightforward and cannot be purely accidental (Edvinsson & Malone, 1997). Also, the same theme resonates in the words of Tsoukas and Vladimirou as they have also pointed out that “Organizational knowledge is much talked about but little understood” (Tsoukas & Vladimirou, 2001).

Unlike in the past, the ways in which John D. Rockefeller, Andrew Carnegie, and Henry Ford among others capitalists of 19th & early 20th century adopted ways for creating wealth is no more applicable in the present context. The modern day leaders like Gates of Microsoft, Branson of Virgin, Eliason of Oracle, Dell of Dell Computer, Moore of Intel, and Swanson of Genetech followed altogether different ways and accumulated wealth (Teece, 1998). The current generation of leaders are increasingly becoming aware of the importance and potential of knowledge, and they rightly consider it as a key resource to create value in organizations (Carneiro, 2000). Further, they have recognized that by active exploration, and exploitation of their internal knowledge resources they can gain a sustainable competitive advantage (Schiuma, 2009; Schiuma et al., 2008). Davenport and Beck even advocated that becoming a knowledge-based firm is seen as a mandatory condition for the organization’s success as they foresee the advent of a new era of knowledge economy (Davenport & Beck, 2002). Davenport and others have suggested that if firms want to enhance its capacity to manage knowledge

then it can be done only through supportive organizational culture (Davenport et al., 1998; DeLong and Fahey, 2000).

Gary Hamel in his book titled *The Future of Management* describes innovation hierarchy into four stages by its ascending level of importance – operational innovation, product/service innovation, strategic innovation, and right at the top management innovation, and has suggested that the higher the level of innovation hierarchy the organization's can attain, its potential for value creation and competitive advantage increases substantially, and this also act as a game-changer since it becomes harder for the competitors to replicate (Hamel & Breen, 2007), and therefore can emerge as a differentiator and an effective business strategy for organizations to pursue.

However, in one of the global survey conducted by the reputed management consulting firm Booz & company have established that when compared the financial performance of 10 top most innovative companies is relatively far more superior than the top 10 R&D spenders. The same survey also concluded that fewer than half of the surveyed company's innovation strategy and its supporting culture are found to be not in alignment (Barry, John, & Richard, 2011). Also even today the importance of culture's positive role in effectively managing knowledge is less understood (Davenport et al., 1998; DeLong & Fahey, 2000). Rightly Kings and Marks pointed out that relationship between culture – KM is not so straight forward (King & Marks, 2006), though it is also evident from the various other studies that strong innovation cultures of a group significantly and positively affects the innovation capability (Hurley & Hult, 1998).

In the recent past academic and industry practitioners have shown greater interest towards innovation, and also on the effects of an innovation culture on organizations performance (Govindarajan & Trimble, 2005; Hamel, 2002; Hammer, 2004; Senge & Carstedt, 2001). However, many of the practicing organizations are still lacking much of the needed insights and successful models that can be effectively adopted (Hansen et al., 1999). The researcher has attempted to find answers through this research to the abovementioned gaps and mapped the evolution of how successful companies have tread a journey of linkages of knowledge management & innovation culture and achieved successful impact on business performance. Also identified the factors that may be affecting the transition to such a culture thus hampering potential for enhanced business performance. The study was carried out by a mixed method and in combination with qualitative and quantitative methods, and different techniques were used such as Document Analysis using Secondary data, semi-structured interviews, administering a survey, and data analysis was carried out using factor analysis and regression analysis to draw inferences and conclusions.

The study establishes that knowledge management in organizations cannot be treated like any other corporate initiative for quick results. However for it to remain successful it should necessarily have strong leadership commitment, encouragement of organizational conversation across the organization, constantly develop and deploy dynamic business models, backed by a sound knowledge management system, and above all it is to be embedded in innovation culture, and if all those attributes are present then it can certainly expect enhanced business performance. Further, the term innovation culture is often used in a generic way by the people and organizations, and the study provides greater insights into the aspects and manifestations of innovation culture as it is found to have high potential to create innovation, facilitate the use of knowledge, and improves business performance.

The study of the organizations that are also considered pioneers in the field of managing knowledge and innovation has provided deeper insights into how they have achieved breakthroughs and continues to remain innovative through the established linkages of knowledge management and innovation culture. Also, proposed a model linking both the KM and innovation culture that have enormous potential to improve business performance. Further tested the model in two of the Indian IT organizations and what has emerged is that only a few of the identified factors along with some of the elements of innovation culture have made inroad in the organizations and, as a result, they are not able to reap the desired impact on the business performance. The proposed model can also act as an effective tool for the leadership to improve business performance.

The motivation to carry out such a study was to understand how some of the innovative and successful organizations have evolved, and the researcher's area of work throughout his career has been towards improving productivity and managing the performance of the people. Hence the focus of the study was from an internal perspective, to identify associated dynamics and its impact on business performance in some of the leading organizations. Therefore, external factors were not included in the scope of the study. This limitation also sets the agenda for the future work in this less explored area, and once more and more investigative studies are carried out including external perspectives it may perhaps lead to further opportunities for business performance improvements.

Chapter 1: Introduction & Background

1.1 Introduction

According to Drucker, Knowledge is the business and further stated that business is a composition of human organizations that are made or broken by the quality of its people (Drucker, 1996). In a world of extreme resource crunch many of the today's organizations have mastered the Taylor's Scientific Management principles, and that had enabled them to stretch the limits of productivity improvements in their organizations in the past, further Porter pointed out that after a decade of impressive gains in operational effectiveness many of the firms have exhausted avenues for more gains, though the legacy of continuous improvement is still on managers' mind (Porter,1996). Therefore the scope for further improvement and exploitation with this initiative alone is now fully exhausted in the organizations, and a paradigm shift is required to find new ways and approaches towards getting the best from the human capital.

The scientific community in early 1900 stated that all the information in the world doubled every 30 years by 1970, the number of years was further reduced to 7, and earlier the prognosticators also stated that by the year 2010 all the information in the world would double in 11 hours (Nick, 2001). Therefore, it may be inferred that with the advancement in the technologies the duration may further get shortened substantially, thus managing the massive amount of knowledge inflow will itself create more challenges and opportunities for the organizations and its people.

Today business and technological landscape are changing at a faster pace, and the existing generation of managers has greater challenges to face, and the survival of the organizations itself is at stake (Drucker, 1999), and in the last one-decade innovation has become a great concern for many of the CEOs (Leavy, 2010). Historically people understood innovation to be more of a random process (Christensen, Anthony, & Roth, 2004), rather than a sustainable source for success and that requires to be nurtured by the organizations. Hence this gap, in general, perception by itself creates challenges for the organizations and its people, and that notion needs to be well understood and changed if it wants to harness significant benefits from it.

Not very long ago "innovation" used to mean to organizations like just investing in internal research laboratories, scouting for talented & brilliant people, and they were expected to work on new developments and come up with innovative products, however it is not true anymore since the cost associated with the innovation value chain - idea inception to launching of the products in the market has grown many folds (Chesbrough, 2007). Gary Hamel in his book titled "The Future of Management" has put forward innovation hierarchy into four categories by its ascending level of importance – operational innovation, product/service innovation, strategic innovation, and at the top is management innovation, the higher the level the organization can operate and more it is capable of embedding innovation, and its potential for value creation and competitive advantage increases substantially, further the ability to nurture innovation at the higher levels by the organizations can act as a game-changer and it becomes harder for the competitors to replicate (Hamel & Breen, 2007), this can prove to be a differentiator and an effective business strategy for organizations to adopt.

Today many of the organizations have been able to improve performance have not just relied on the use of tangible assets and resources alone, but are also dependent upon effective use and management of knowledge (Lee & Sukoco, 2007). Knowledge management has tremendous potential to improve organizational performance (Simonin, 1997; Lee & Choi, 2003; Darroch & McNaughton, 2003; Schulz & Jobe, 2001; Tanriverdi, 2005), innovation in organizations are highly attributed to the availability of knowledge, therefore the management of knowledge becomes utmost important to the organizations if they wish to have success in innovations (Shani et al., 2003; Adams and Lamont, 2003; Darroch and McNaughton, 2002; Cardinal et al., 2001; Pyka, 2002), further not only organizations have realized the importance of knowledge management and innovation, but a country like China have ambition of becoming “an innovation-oriented country” by 2020 and a “world’s leading science power” by 2050 which has drawn world’s attention, and the commitment of China’s leaders are visible in seeing their country being transformed into an innovation-oriented society (Wei Xie, & Richard, 2009).

However, China is also faced with the challenge of its traditional philosophy and culture which can sometimes act as an obstacle for it to emerge as an innovation-oriented society. The Chinese tradition of deferring to authority is also not conducive to innovation either (Jakobson, 2007). Hence, it has to find new ways to overcome those challenges. Even today on the global front organizations are facing high degree of competition and if it has to counter such challenges they have no other options but to take the path of innovation, as Skerlavaj and others have put it that a real innovative firm is one that is rooted in a strong culture and encourages innovative behavior (Skerlavaj et al., 2010).

Encouraged by the recent and far-fetched developments across the globe and as evident from the above, further according to Brentani for a highly innovative and successful businesses the strong presence in its environment of an innovation culture is the primary prerequisite (Brentani, 2001), hence a need to gain deeper insights on the underlying relationships between KM, Innovation and culture is envisioned so that organizations and its people can have more latitude to perform to their true potential, and equip them with the renewed synergy of KM, innovation and culture to contribute to the society and enhance their potential to achieve greater economic prosperity.

1.2 Background

Historically the development of civilization and society is as a result of the quest for knowledge and has remained an endeavor in our journey of constant evolution (Wiig, 1997). Tsoukas and Vladimirou have pointed out that “Organizational knowledge is much talked about, but little understood” (Tsoukas & Vladimirou, 2001), and to become a knowledge-based company is not to be seen as a purely accidental phenomena (Edvinsson & Malone, 1997).

The twenty-first century is characterized by the growth and importance attached to knowledge, and its impact on all aspects within an organization (Bose, 2004). Davenport and Beck have advocated that for organizations to succeed in this new era of the knowledge economy, an effective KM strategy backed by a desire to become a knowledge-based organizations are seen as prerequisite conditions (Davenport & Beck, 2002). However the reality is far more different, and as evident from the outcome of one of the McKinsey survey of 40 European, Japanese and American companies reveals that the employee’s understanding of knowledge management is just limited to building an advanced information technology systems (Hauschild, Licht, & Stein, 2001), suggesting that they have still not perceived its importance & true potential that it can offer to the organizations.

According to Greiner and others, “Everybody discusses knowledge management, but how can it be used and how can we successfully apply it?” (Greiner, Böhmman & Krcmar, 2007). Moreover, this question persists today despite the best efforts put forward by firms, and many of them face the challenges of implementing and keeping alive the KM initiatives and processes as they are unable to sustain it for long due to many reasons like having unrealistic

expectations, one size fits for all applications and requirements, not recognizing the power of knowledge management, excessive technology reliance, no strategic alignment across the organization, and overloaded with information (Bergeron, 2003).

Today one of the fundamental issues that remains to be tackled is that how knowledge can be successfully transformed into innovation and business performance improvement (Schiuma, 2012). However with the developments in the field of innovation, it has emerged that knowledge management has a strong influence on it and plays a primary role in improving organizational competitiveness (Hedlund, 1994), and it was also clearly recognized that knowledge management and innovation are closely related (Nonaka, 2007; Chapman & Magnusson, 2006), but it is also evident from the various other studies that a strong innovation culture of a group significantly and definitely affects the capacity to be innovative and enhances ability to come up successfully with ideas and to develop products in organization (Hurley & Hult, 1998). However, still more needs to be done to understand the importance of culture's positive role in effectively managing organization knowledge (Davenport et al., 1998; DeLong & Fahey, 2000).

The above literature thread suggests that a journey of Knowledge management and innovation culture and its associated positive impact on the organizations can be harnessed, though it is a long drawn and complex process that still requires to be better understood, and requires careful analysis from a practice point of view on how some of the organizations have evolved and succeeded in this endeavor. Thus, the present study is to gain better understanding and insight in this direction.

1.3 Motivation/Need for the Research

The researcher has obtained a Masters qualification in industrial engineering/management and acquired over 20 years of rich industrial and consulting experience at various levels and across different industries/sectors, thus gained insights about people, processes and structure prevailing within the organizations and also witnessed how knowledge plays a vital role in shaping the destiny of the organizations. Also, Industrial Engineering profession is concerned with the design, improvement, and installation of integrated systems of men, materials, and equipment. It draws upon specialized knowledge and skill in the mathematical, physical and social sciences together with the principles and methods of engineering analysis and design to specify predict and evaluate the results to be obtained from such systems (Maynard, 1963), and the researcher feels very much associated and connected with the chosen field of the study.

Further encouraged by the new ways in the emerging economic power countries – learning to do more with less for more people, and looking at some of the success stories made possible by many innovations. Such as a one cent for a one-minute telephone call, a \$30 for cataract surgery, \$2000 for a car are all possible and the outcome of innovations, they are also lowest in cost globally by any order of the magnitude, and these innovations are now becoming a certainty that were originally prompted by the shortage of capital and technologies (Prahalad & Mashelkar, 2010), and further developments in this direction will fast replace the notion that affluence and abundance are the only drivers of innovation, and many of such innovative solutions will definitely serve the society and the needy people, and enable them to survive and grow.

However in a recent global survey, “Why Culture is Key”, come up with an interesting finding that when the performance of the top 10 innovative companies is compared with respect to top 10 R&D spender companies, it has emerged that EBITDA of the top 10 innovative companies is relatively much higher, the same survey also points to the organizations that have greater alignment with both innovation strategy & culture often enjoys superior financial performance (Barry, John, & Richard, 2011). Further the Most Admired Knowledge Enterprise (MAKE), a prestigious global award for the recognition of firm’s ability to leverage enterprise knowledge to deliver superior performance in the area of innovation, operational effectiveness, and excellence in product and services, nominated in 2011 all of the above referred 10 most innovative companies, and finally 7 out 10 companies got the award in the year 2011 (MAKE, 2011).

The above suggest that the organizations with the linkages between knowledge management and innovation culture have gained superior business performance, thus through the proposed study the researcher aims to gain a better understanding of the underlying mechanisms in a more practical sense so that it may be applied to the other organizations.

1.4 Present work

The researcher wishes to venture into a less explored field of knowledge management and innovation culture and it is evident from the various literature strands that this linkage has a huge potential to enhance business performance, and feels that the studies in this direction may provide a paradigm shift in managing knowledge and innovation initiatives more so from an industry practice perspective, and further the inputs to the study will be drawn from the available research, discussion with industry experts and practicing executives of some of the leading organizations, field visits, administering of survey. Further drawing of the interpretations and conclusions will provide insights and also suggests ways to overcome the challenges that the organizations may be facing. The outcome of the study is also towards providing the answer to some of the gaps in the literature that have been identified and to get more industry insight on the following.

- An understanding of how some of the successful companies have achieved business performance improvements with the linkage of knowledge management and innovation culture.
- Gain an understanding of the various aspects and type of culture that has created a mediating effect on knowledge management and innovation in the practicing organizations and thus making an impact on its business performance.
- Identify the factors that may be affecting the transition to innovation culture thus impacting business performance.

The study is very much relevant in the present context as more and more organizations are finding it difficult to survive by adopting the traditional

practices to manage its resources & people, and not able to fully exploit its knowledge resources. It will also provide a fresh perspective on how organizations can forge linkages between knowledge management and culture that ultimately will have a positive impact on the business performance.

Chapter 2: Literature Review

The literature review was conducted using an integrated database search comprising of EBSCO host, Emerald insight, Sage online, Wiley online library, references of primary research carried out by professional organizations, other databases, and published materials.

2.1 Overview of emerging global scenario

Organizations across the world face a common challenge of improving their business performance in order to gain competitive advantage, if we closely look at the present global scenario, North America is associated with restructuring and downsizing, and it is predominantly carried out to regain market share from global competition, in Eastern Europe organizations are struggling to introduce new behavior and procedures with an objective that it will enable them to compete in the free market, and the Third World countries are fervently trying to penetrate the growth market around the world for their economic development (Basadur & Gelade, 2006).

Some of the earlier organizational research studies, have pointed out that effective organizations have always displayed distinctive characteristics in terms of efficiency, adaptability and flexibility, as a result in the last few decades many organizations had predominately adopted routines, and the so-called efficient organizations were able to sustain by following a well-structured, stable routines/process with the sole objective of delivering its core products, often in high quantity, in the right quality, and at low cost (Mott, 1972). However, as a result in the past efficiency was able to thrive in a relatively stable business

environment, but the same may not be the case, as the today's world, is more volatile, and efficiency alone cannot be an effective business strategy.

The current organizations are fast becoming dependent on superior thinking, though labor, capital, processes, and technologies still continue to be important, however organization's capability to think is becoming more important, and terms such as knowledge management and intellectual capital of late have gained greater prominence in some of the organizations (Basadur & Gleade, 2006).

The changes in technology and business landscape are fast taking place today unlike in the past, therefore, now organizations are not confined just to introduce variation in existing products, but also design new technological and organizational architecture that can stimulate continuous innovation in companies (Brown, 2003), Brown further stresses that company no matter, what business it is into, should adapt its technology to the work and must learn to create an environment that encourages continuous innovation by its employees.

However in the current era of economic downturn, organizations across the globe are unable to respond to the challenges and are compelled to explore various options such as shutting down, downsize operations, or cut operating costs, as it becomes necessary in some of the organizations in the event of an unfeasible business operating conditions, but today if the organizations are just preoccupied with costs alone then they will lose track of other avenues, which otherwise may present to them more options and opportunities for survival and growth, such as exploring the longer- term importance of the strategic factor - like fostering and disseminating innovation across organization (Meyer & Verecke, 2012), and thus try to regain some of the lost ground. Some companies may also be forced to

revisit their product portfolio and introduce new products based on the need of the customers and it will further enable them to remain competitive and profitable, and to do that firms must also have right conditions and environment to capitalize on maximizing success from innovation (Alwis & Hartmann, 2008).

Therefore the changes in the global landscape is forcing the contemporary society of today to shift its thinking about innovation in organizations – the innovation may be in technology, in product, in processes and it may also be strategic or organizational, as it is considered as key form of knowledge creation and is difficult to be just explained in the form of information processing or problem-solving (Alwis & Hartmann, 2008).

2.2 Knowledge management and innovation linkages

Nonaka and Takeuchi have pointed out that innovation process is the most knowledge-intensive business process (Nonaka & Takeuchi, 1995), and earlier they had also advocated that the primary task of innovating firm lies in reusing & applying its existing knowledge assets, and exploring new knowledge in the organizations. It is also frequently mentioned in the literature that one of the main determinants of organization's innovation is knowledge (Nonaka & Takeuchi 1995; Slater & Narver 1995; Galunic & Rodan 1998; Darroch 2005; Carneiro 2000 and Plessis 2007) and knowledge management is often cited as an antecedent of innovation (Carneiro, 2000; Dove, 1999; Nonaka & Takeuchi, 1995).

Hamel defines, “innovation as a marked departure from traditional management principles, processes, and practices or a departure from customary organizational form that significantly alter the way the work of management is performed” (Hamel, 1999), therefore it may be fair to consider innovation as dynamic and evolutionary process in the organizations and requires supportive leadership. To understand innovation better, it should be viewed from a process perspective in the organizations and as when it encounters new problems that can be easily resolved, and solutions can be found with the development of new knowledge (Nonaka, 1994, p. 14), also industry practitioners and academicians have recognized knowledge as a key source of competitive advantage (Grant, 1997), understanding the linkages between knowledge management and innovation also enable us to understand how the firms can exploit and generate new knowledge, and also provides a new context to explore development of new products/services (Shani et al., 2003).

On analyzing the definition provided by Gartner Group on Knowledge Management – “it is an emerging set of organizational design and operational principles, processes, organizational structures, applications and technologies that help knowledge workers to leverage dramatically their creativity and ability to deliver business value” (Gurteen, 1998), we get a sense that the existing organizations already have process, structure, and technologies, but our new perspective lies in understanding the role of the knowledge workers and how organizations can take advantage from them. Knowledge is also considered as a newly found and important resource for any firm as it has certain inherent characteristics such as it is highly valued, rare, and can not be easily copied, and if effectively utilized, it can create a uniquely advantageous position, assuming that the knowledge is also in tacit form (Polanyi, 1966; Hall & Sapsed, 2005), and knowledge management strategy for an organization need not be arbitrary and much depends on the “way the company serves its clients, the economics of its business, and the people it hires” (Hansen et al., 1999).

In an APQC report of 2005, a longitudinal study of best-practice organizations confirmed the notion that innovation must have a corporate focus, driven by top down, and CEO’s support and commitment to be highly visible. In 2009, APQC once again visited the same organizations and noted that though top level support and commitment is still essential for innovation to flourish in the organizations, but is not a sufficient ingredient by itself. The organizations must have matching bottom-up efforts and involve the employees who are closer to the customers, and should be supported by systems, structures, and other drivers to make it successful (APQC, 2009a).

Schumpeter, first defined innovation as the successful introduction of the new things such as products, methods of production, market and so on (Schumpeter,

1934). Since then the research has extended its scope from economics to management and engineering fields, and now innovation also has emerged as a multi-dimensional phenomenon (Xu et al., 2010). Its reach now extends to various other disciplines – as it is regarded as an object or a tool for entrepreneurship (Drucker, 1993; Rothwell, 1994), it can be considered as a process or a result of a process (OSLO, 2005; Trott, 2005).

Innovation is considered as a strategic option and has witnessed high growth regarding the increase in customer base, improvement of assets, capabilities and enhanced product /services offerings (Kim & Mauborgne, 2004). Innovation also opens up multiple avenues and scope for improvement within an organization, as a recent empirical study also substantiates it, that the firm's ability to innovate and performance improvement in (production, marketing, and finance) are positively associated (Gunday et al., 2011).

In an earlier survey of 100 top companies of the UK administered by KPMG, it has emerged that 50% of the firms have undertaken some form of knowledge management initiatives with an aim to remain competitive, in the recent studies also many scholars have widely discussed the effect of innovation on firm's performance (Cho & Pucik, 2005; Hernández-Espallardo & Delgado-Ballester, 2009; Salomo et al., 2008), studies have also established a positive linkage between firm's performance and innovation, such as improvement in ROI, in market share, competitive positioning and value addition to the customers (Neely et al., 2001). Further literature review in this direction also suggests a direct linkage between innovation process and firm's performance and is also facilitated by innovation outcomes (Binti et al., 2011).

Drucker argues that like any other corporate function, innovation should also be managed, and greater success is likely to result from a systematic pursuit, rather than a one-time idea generation, he further puts across his insight by highlighting that “Innovation is work rather than genius. It requires knowledge. It often requires ingenuity. Moreover, it requires focus”, and when all the ingredients are cultivated in an organization then innovation also requires hard, focused and purposeful work, and finally it should also be supported by diligence, persistence, and commitment in order to utilize the talent, ingenuity, and knowledge (Drucker, 2002), hence innovation is a multi-prolonged task requiring conscious effort to make it a success and difficult to be embedded in the organization.

Peebles argues that, innovation should not be viewed from the perspective of a traditional business function and activities, where one uses templates, rules, processes and even measuring success from it in a conventional way, innovation is a unique feast, and is anything but business as usual. However, the uniqueness of certain organization lies in their ability to bring out new ideas all the time, though the ideas may lead to development of new products, enhanced ways of working, new strategies, or even entirely new line of business and open up many more such business avenues for it to play, and the secret lies in finding how some companies succeeded (Peebles, 2003). Hamel had suggested that if organizations across the globe would like to gain a competitive advantage then it would have to be necessarily built on a capacity of strategic innovation; though he also cautioned that the strategy alone will not lead to innovation (Hamel, 1997).

In different studies one conducted by a top American consulting organizations (Strategos, 2004), and other two studies of Arthur D. Little (1994, 2005), had provided some deeper insights, that the organizations have huge untapped potential to improve profit and growth, and this can be achieved through

exploitation of innovation management, therefore it is fair to say that managing innovative ability should be accorded utmost priority in the organizations if organizations want to be led into a path of increase in profitability and growth. Further in the 2005 Arthur D. Little's study of over 800 organizations, the conclusions drawn were that by practicing innovation excellence, organizations could boost their EBIT by 4%, top innovators gained substantial higher sales from new products to the extent of 2.5 times, and also achieved more than 10 times higher returns from their investment in innovation initiatives, the numbers are very appealing, and that can make significant impact to any organization. Therefore the questions need to be answered, why innovation should not be a top corporate agenda? Moreover, why not many companies pursue innovation full heartedly? The study also revealed that unlike any other organization, top innovators have a well-balanced architecture, i.e. by explicitly linking business strategy to well-defined and clear innovation objectives, and they regularly address all elements of innovation capabilities, which includes idea management, product/service development process, process to gather market intelligence and many more such factors, hence it is fair to say that a deliberate choice of such a practice by organizations can make a huge difference and also enhance their competitiveness. However from the studies of Strategos and Arthur D. Little, it is also concluded that though most companies viewed innovation as extremely important but only about 15 % of the surveyed organization considered themselves to be successful at creating an innovation environment.

The conclusion drawn from the both studies also suggest that organizations have long way to go before they can embed a DNA of innovation and can drive rich benefits from it, according to Dobni the organizations that have deliberately followed a path of innovation strategy are the organizations that are more successful, however in reality many of the organizations still have long way to go, and perhaps by an exploitative and deliberate positioning they will be able to

realign with the changes taking place in the competitive landscape and, as a result, they may experience increased differentiation that would be difficult to overcome easily, and those prospective innovative organizations may have enhanced margins to play with, hence reduced price sensitivity, ease of pressure on excessive focus on reducing limited value-added activities, and thus may further encourage organization to make more investments in innovation (Dobni, 2010).

2.3 Innovation culture as a differentiator

Unlike Six Sigma or operational excellence which is widely practiced in the organizations over the decades, and now it is embedded in some of the organizations like GE and Motorola, but now remains insufficient as a practice to deal with differentiation because of growing competition, whereas innovation remains a more important challenge that also has a high potential and greater ability to bring about the desired differentiation, though now seems more solvable than ever, this is possible by the decades of research by scholars such as Robert Burgelman, Clayton Christensen, Eric von Hippel, Henry Mintzberg, James Utterback, and others that has enabled us to unearth the patterns common to successful innovations, and now some of the firms are also able to understand that a structured approach is required to be followed to increase their odds of creating innovations, and that can make significant impact to their growth (APQC, 2005).

However nowadays number of organizations without first grasping the intricacies associated with innovation and culture, remains obsessed with implementing radical & new models as their business strategy with an objective of staying competitive and also to survive (Leifer, 2002; Chesbrough, 2006a; Gratton, 2007), it needs to be noted that innovation activities do not happen in isolation, it occurs in specific social context and influenced by cultural and political traditions of the respective national (Khairuzzaman & Ismail, 2007), and also the existing cultural conditions of the organization determine whether, when, how, and in what form innovation can be adopted (Herbig & Dunphy, 1998).

McGehee in an APQC report stresses, that “The key to successful market innovation is in the authenticity of a company's innovation culture. It must be more than a program, process, or initiative. It must be woven into the very fabric

of the company" when effectively done it can provide great benefits (APQC, 2005). To understand innovation culture better it should be looked from a perspective of a subculture of an organization culture, Schein's defined organizational culture, and then he argued that the organizational culture often develops subcultures, that can coexist in the organization, and requires to be managed effectively otherwise it may result in dissonance in an organization (Schein, 1988).

Innovation culture can be viewed as having the following attributes in an organization:

- organization-wide shared basic values that support innovation,
- organization-wide norms for innovation, and
- perceptible innovation-oriented practices (artifacts and behavior) (Herzog & Leker, 2010).

Dobni also defined innovation culture as a multi-dimensional context that includes the intention to be innovative, the infrastructure to support innovation, operational level behaviors necessary to influence a market and value orientation, and the environment to implement innovation (Dobni, 2008). Innovation culture is also defined as an organization-wide shared basic value that support innovation, organization-wide norms for innovation, and perceptible innovation-oriented practices (Herzog & Leker, 2007). According to Dunphy and May, "An innovation culture expresses the way an organization works to deliver innovations in its products, services, business models or working practices" (Dunphy & May, 2012).

Recent studies have also found that many of the elements of an innovation culture are also found in the related orientation constructs such as market, technology, learning, and entrepreneurship and are positively linked to innovation (Zhou et al., 2005), therefore in order to fully grasp and capitalize on innovation culture in its true form, it is essential that organizations view it as a broad-based and holistically (Boverman & Russell, 2004). In an APQC report, on the study of the best-practice partners, it was revealed that when organizations encourage and facilitate a distinct culture related to innovation, it enables them to achieve the objective of innovation in the organization, and senior management also use the introduction of innovation processes, infrastructure, and tools as a means of the changing the organizational behaviors and focus, in other words, they use innovation to change the culture of the organization and orientation (APQC, 2005).

2.3.1 The role of innovation archetype

According to APQC, an archetype is a unique mix of cultural and operational traits that represent how an organization innovates, the effectiveness of driving company's innovation performance depends on "innovation archetype", an innovation archetype is a combination of innovation strategies and operational elements that are tied together (Donaldson, 2001; Meyer et al., 1993), the firms can only pursue a limited number of archetypes due to their inherent innovation DNA. However, they can exercise some leeway in deciding which archetype best fits their business objectives (Pohle & Wunker, 2007).

The firms that intend to innovate, they are compelled to formulate strategies – even though some organizations also try to avoid deliberately, and create structures, cultures, and capabilities, and set incentives and coordination systems

in place, and in many of the organizations these elements are not normally present at the time of inception. The companies who adopt different innovation strategies to organize their innovation portfolio accordingly also deploy a limited number of organizational elements - incentive systems, leadership principles, and capabilities, (Prange & Schlegelmilch, 2010) and together, they constitute what organization theorists call them “archetype” (Greenwood & Hinings, 1993).

As it is evident that no one-size-fits-all approach will be suitable for the organizations while addressing innovation and knowledge management initiatives, that may vary greatly from organization to organization, and requires an understanding of the underlying differences in organizations’ operations and culture (APQC, 2009b), therefore it will be futile to attempt to replicate the outstanding innovators without having first the right architecture in place. In a study conducted by APQC between 2006 & 2007, of the 250 organizations across, the resulting “Innovation Archetype Model” - the innovation value chain comprising of sourcing, sharing, and implementation, at the innovative firms conform to only a few number of innovation archetype, which represent “a self-reinforcing combination of culture and operations” (Pohle & Wunker, 2007), and the major type of archetypes are as below:

1. **Marketplace of ideas**, presents in 16 % of the organization, the familiar organization that characterizes this particular type of archetype is Google.
2. **Visionary Leader**, present in 22 % of the organization, the familiar organization that characterizes this particular type of archetype is Apple.
3. **Innovation through rigor**, present in 37% of the organization, the familiar organization that characterizes this particular type of archetype is Samsung.
4. **Innovation through collaboration**, present in 25% of the organization, the familiar organization that characterizes this type of archetype is Vodafone.

Today there are only a few companies that are effectively and consistently pursuing innovation, such as 3M, P&G, IBM, and a handful others, however many organizations who try to emulate these companies, without understanding the philosophy and values that were indoctrinated into the business by the founders and leaders and in some organizations that took place a century ago, as they try to focus too much on the specific innovation practices, policies, and systems and often not able to take off (Leavy, 2005), and even fail miserably to create worthwhile differentiation.

To put things in the right perspective, we need to acknowledge that the innovative organizations have a different characteristic than the one that are not innovative (Subramaniam, 1996). Also, it is not sufficient for the organizations to be highly innovative; they also need to capitalize on their innovation ability on an ongoing basis to improve its business performance (Neely, et al., 2001). Therefore the immediate challenge is to understand how successful organizations have emerged, characteristics and practices that got evolved, and the challenges they faced during such a complex journey unless we do that organizations will only be attempting to build processes and investing in infrastructure and lose out on the big picture.

2.4 Knowledge management and innovation culture

The literature points out that though management research is extensively done on organizational culture, however, its relationship between knowledge management system has not been explored sufficiently (Ciganek, Mao, & Srite, 2008), some studies that investigated issues of KM concluded that corporate culture that plays a vital role in making knowledge sharing and exchange successful/unsuccessful in the organizations (Rhodes et al., 2008; Zhang et al., 2006; Leidner & Alavi, 2006; Kim & Lee, 2006; Chong & Choi, 2005; Akamavi & Kimble, 2005; Lucas, 2005; Park et al., 2004; Faraj & Wasko, 2001), also according to DeLong and Fahey organizational culture can facilitate organizations to achieve their business objectives, and is also recognized for making an influence on knowledge management (DeLong and Fahey, 2000), thus suggesting a pivotal role of culture in managing knowledge.

Organizational Culture refers to shared assumptions, values, and norms (Schein, 1985), though in reality culture means different thing to different people, Schein has also advocated that culture is like a sustainable strength within an organizational context (Schein, 2004). Barney and other researchers advocated firm's culture as 'a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm conducts its business' (Barney, 1986, p. 657), however in reality organizational cultures takes shape depending on the organizational dynamics, structures, and decisions taken by individuals and groups exposed to consensus, disagreement and culmination of various perspectives (Martin, 2002), thus culture should be viewed as "a variable" that can be developed as unique and strong (Smircich, 1983, p.439), also organizational culture is generally considered to be a major hindrance to the acceptance of knowledge management systems (De Long & Fahey, 2000; Grover & Davenport, 2001; Ruppel & Harrington, 2001), though the organization culture is considered

important in the realm of knowledge management, however still more is to be known on how to create an effective culture that is conducive to KM (Oliver & Kandadi, 2006), and according to Davenport two-thirds of a firm's efforts are also required towards organizational and cultural issues (Davenport, 1997), perhaps even to reap some benefits, and O'Dell estimates that fewer than 10% of organizations that tried to implement KM were only successful in making it part of their culture (O'Dell, 2002).

Recent researcher's focus on organizational sciences is toward how organizational cultural studies have enhanced functional capabilities, and how they have emerged as a key driver for effectiveness (Schein, 1983, 1984, 1985; Yilmaz & Ergun, 2008), further organizations can also expect handsome gains by embedding innovation into the organization culture and in its management processes (Syrett & Lammiman, 1997; Tushman & O'Reilly, 1997). Herkema defines innovation as a knowledge process aligned to develop new knowledge to facilitate value creations and business solutions (Herkema, 2003). Tushman and O'Reilly also consider organization culture central to innovation, and along with others they have pointed out that the way organizations makes use of structures, practices and procedures, day-to-day artifacts and the ways it communicates value proposition, that may lead to creating an impact on creativity and innovation.

Sharifirad & Ataei have put forward an analogy to gain better understanding of innovation culture, according to them innovation is like a seed that requires a fertile and cultivated land in the form of organization culture (Sharifirad & Ataei, 2012), according to Dobni, the researchers have recommended studying the innovation culture's effect on performance as this area lacks empirical studies in the literature (Dobni, 2008), and also earlier academic and practitioner's interest had increased on the effects of innovation culture on organization performance

(Christensen & Raynor, 2003; Govindarajan & Trimble, 2005; Hamel, 2002; Hammer, 2004; Senge & Carstedt, 2001). Table 2.1 summarizes various strands extracted so far from the literature review on the knowledge management and innovation culture linkages.

Table 2.1: Knowledge management & innovation culture linkages

Authors/ Researchers	Key findings
(Pillania, 2006)	Inadequate focus on cultural aspects has led to many failures of KM initiatives
(Gold et al., 2001; Yang 2007)	Many studies that have investigated KM initiatives have failed to point out that culture is the main obstacle to success
(Ribiere and Sitar, 2003)	Lack of insight is evident in LR on how organizational culture supports to or inhibit KM
(Dobni, 2008)	Innovation is very much circumstantial and the degree to which organizations are regarded as innovative is limited by its culture
(Oliver and Kandadi, 2006)	Lack of empirical evidence has enabled us to understand the specific cultural variables that facilitate KM processes and develop knowledge culture
(Chapman & Magnusson, 2006)	KM & Innovation should be investigated from a systemic point of view for better understanding
(King and Marks, 2006)	Relationship between culture – KM is not so straight forward
(Brian, 2005)	On 3M, many companies tend to view specific innovation practices but fail to understand philosophy & values underpinning them
(Rai, 2011)	Only a few studies have focused that too on limited aspects of organizational culture and KM
(Huber, 2001)	Specific norms & values that have influence on KM practices are inconclusive
(Janz & Prasarnphanich, 2003)	Conceptually/empirically little research is done to understand what constitutes or facilitates creation and dissemination of knowledge
(Herzog, 2011a)	Only one reference of linking open innovation with innovation culture on scanning LR is found

Though the earlier studies directly point toward a strong link between KM and innovation culture, Julia and Naranjo have also pointed out that much of the importance is attached to culture as a key stimulant for innovation, however this aspect also lacks empirical research as not many studies have focused on the effect of culture on innovation, and available few research studies have focused and analyzed on the limited aspects of cultural characteristics (Julia & Naranjo, 2011). On scanning the literature so far the researcher has come across only one reference to a study linking open innovation with innovation culture that to with specific reference to specialty chemical industry (Herzog, 2011a), thus leaving a huge gap in gaining an understanding of how successful companies have tread the journey of establishing linkages between knowledge management and innovation culture and that has also provided them economic prosperity.

2.5 The role of culture in innovation and knowledge management

A truly innovative company is a combination of many elements such as a winning business strategy, understanding of customers, talented people, and execution excellence, however, all the above-mentioned elements may not be sufficient by itself, the most important element not listed above moreover, that has the potential to make a difference lies in the form of corporate culture - it is the organization's self-sustaining patterns of behaving, feeling, thinking, and believing – and it also has the potential to link all the factors together (Jaruzelski, Loehr, & Holman, 2011).

However, in a recent study of The Global Innovation 1000 provides us a startling finding, that only about half of the surveyed companies were able to point clearly out that their corporate culture robustly supported their innovation strategy, though the studies also concluded that the unsupportive culture and poor strategic alignment has resulted in underperformance relative to their competitors (Jaruzelski, Loehr, & Holman, 2011). This study raises a very fundamental question about why such a disconnect exist between corporate culture and innovation strategy, even though it has been established that, the most important driver for increasing profitability and growth in organizations is through enhancing its innovative ability (Dobni, 2010), and we also need to acknowledge that the innovative organizations have different organizational characteristic, and they operate differently than most of the non-innovative companies (Subramaniam, 1996).

Schein has stressed that, " Always think first of culture as your source of strength", he had further defined organization culture as, " a pattern of shared basic assumptions that the group learned as it solved its problems of external

adaptation and internal integration, that worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems". Therefore culture is essentially a way towards patterning and integration, it also implies that providing opportunities to employees to explore and experiment, whereas the management needs to support, through actively encouraging and motivating the employees' innovative behaviors (Schein, 1999). A simpler way to understand culture is that - it comprises of unwritten rules, shared beliefs, and mental models of people, that affects the effectiveness of innovation (Davila et al., 2006), culture is also dynamic and evolves all the time, organization by designing new systems, processes, new symbols, and organization values can facilitate in evolving a company culture (Christensen et al., 1999).

The leaders have the challenge of managing the culture in the organization, and if not managed effectively then culture will manage them, and managing innovation is about creating culture in which new ideas are generated, valued, and supported (Streatts and Boundary, 2004), there is no single model of innovation that works well for all firms, and when companies imitate another company they get into trouble, also if they try to replicate the characteristics of other firms they may also fail miserably, as the business culture and operating model are not similar to their DNA, Instead they should find out what characteristics are inhibiting them and try to develop them and capitalize on those capabilities that are currently supporting the existing strengths of the firm, then only companies may have better chance of success (Pohle & Wunker 2007), also innovation cannot be a standalone initiative in organizations and requires organizational support to inculcate innovation culture. To get a better perspective on the dynamic and evolutionary nature of the culture, we look at the following examples of some of the organizations:

- IBM is known as a computer industry giant, when we go back to the past, it was almost on the verge of disappearing in the early 1990s, the reason

behind it was that the company's culture based on the age old foundation of "prized homogeneity and conformance", was making it difficult to deal with the changes and challenges going around it, however, it was brought back on track by a new external CEO, by driving a forceful and risky cultural change, and today it is once again thriving (Christensen et al., 1999).

- In the case of Dell, in 1997 its CEO Kevin B. Rollins made a determined effort to understand and grow Dell's culture into a competitive asset. Rollins' objective was to adapt and enhance the positive elements of the existing culture and not to create a new culture, in other words, winning culture (Fisher, 2004), and he succeeded in his endeavor.
- The organizations are generally dynamic and have to deal effectively with some form of the organizational and cultural changes all the time, at Microsoft it is a well-recognized and understood phenomenon, therefore whenever knowledge management initiatives or activities are introduced, individuals and group may be required to recalibrate their ways, since the familiar patterns of the existing culture may not support such an initiative, a knowledge-based and dynamic organization such as Microsoft can effectively cope with the introduction of new business strategy or processes, and adapts cultural changes in an effective manner (Conway & Sligar, 2002), and on an ongoing manner.

In all the three organizations referred above at some stage of their existence, it had to redefine its culture or had to align to mitigate the inherent risks it

encountered, and with the initiative and vision of its leaders it was once again able to survive and achieve superior performance.

As it is evident from literature review that knowledge management and innovation are positively related (Chapman & Magnusson, 2006; Robinson et al., 2006; Nonaka, 2007), also from the literature it has been repeatedly emerged that one of the main driver of innovation is the role of knowledge and knowledge management, that is essentially associated with the process of acquiring, sharing and using knowledge in the organization and potential to improve capabilities and performance (Scarborough et al., 1999; Spender, 1996; Grant, 1996). Nonaka and Takeuchi have also pointed out that the innovation process is the most knowledge-intensive business process (Nonaka & Takeuchi, 1995), further according to Slater and Narver and others, the organizations should regularly renew its knowledge for it to remain innovative (Slater & Narver, 1995; Galunic & Rodan, 1998), and use its knowledge assets to create new knowledge (Cantner et al., 2011), hence by this process the innovative firms can remain successful in converting their existing knowledge assets and resources to develop new knowledge (Nonaka & Takeuchi, 1995), and this way innovation in organizations can be encouraged by effectively managing knowledge. Knowledge also acts as an effective catalyst and simulates a conducive environment which in turn encourages creativity and innovation (Gloet & Terziovski, 2004), according to Davenport and others the role of culture is also important in managing knowledge effectively (Davenport et al., 1998; DeLong & Fahey, 2000), also existing literature points to the role of culture as a prerequisite to innovation in organization (Dobni, 2008), and Barney points out that if over a long period if culture is sustained and nurtured, then it can shape into an important asset, thus facilitating the development of a unique competitive advantage to the organization, and that is also not easily imitable (Barney, 1986), literature review also suggests that strong innovation cultures of a group significantly and

positively affects the innovative capacity (Hurley & Hult, 1998). Table 2.2 summarizes various strands extracted so far from the literature review on the role of innovation culture on innovation and knowledge management.

Table 2.2: Linkages of innovation culture on KM & Innovation

Authors/ Researchers	Key findings
(Govindarajan & Trimble, 2005; Hamel, 2002; Hammer, 2004; Senge & Carstedt, 2001)	Recent academic & industry practitioners are showing great interest on innovation, & also on effect of innovation culture on organization's performance
(Hurley & Hult, 1998)	LR suggest that strong innovation cultures of a group significantly and positively affects the innovative capacity
(Dobni, 2008)	Existing LR points to the role of culture as a prerequisite for innovation in organization
(Barry, John, & Richard, 2011)	Companies with unsupportive cultures & poor strategic alignment, significantly underperform
(Subramaniam and Youndt, 2005)	It is frequently pointed in LR that though a linkage between firm knowledge & innovation is evident, still more needs to be understood about its complex nature
(Wang and Ahmed, 2004)	LR suggests that a primary focus is lacking to establish a scale empirically to measure organizational innovativeness
(Reißet et al., 1997; Geiger, 2006; Hans, 2007)	Culture of innovation should be treated as a change project to establish how transformation has taken place
(Julia & Naranjo-Valencia, 2011)	Though lot of importance is attached to culture as a stimulant for innovation but lacks empirical research in this aspects

Frequent reference in LR points to linkages between firm's knowledge and innovation, however still more needs to be understood about its complex nature (Subramaniam & Youndt, 2005), and earlier studies on innovation processes are

more towards external perspectives thus leaving aside internal dynamics and characteristics, further as mentioned earlier that King and Marks pointed out that the relationship between culture – KM is not so straight forward (King & Marks, 2006), thus making it difficult for the organization to create such linkages due to complexities and uncertainties, though the earlier studies have suggested the presence of a strong link between KM, innovation, and culture.

Julia and Naranjo have also pointed out that much of the importance is attached to culture as a key stimulant for innovation, however this aspect also lacks empirical research as not many studies have focused on the effect of culture on innovation, and the available scarce research studies have focused and analyzed on limited aspects of cultural characteristics (Julia & Naranjo-Valencia, 2011). Reißet et al. and others have also pointed that development of a culture of innovation should be treated as a change project to establish how transformation from one state to another have taken place (Reißet et al., 1997; Geiger, 2006; Hans, 2007), however studies of specific norms and value that have influence on the KM practices are also found to be inconclusive (Huber, 2001), therefore a gap between theory and practice is clearly visible, suggesting a urgent need to carry out studies to understand what aspects and type of culture have acted as a stimulant for innovation in the organizations.

2.6 Knowledge management and impact on performance

Hamel argues that “your company will be challenged to change in a way for which it has no precedent” (Hamel, 2006). However most of the companies are still following the 20th-century model of designing and managing organizations, that is based on the importance attached to the hierarchy, labor, and capital, and this strategy sometimes fails them in effectively dealing with the ever growing challenges when they are forced to operate in a rough and competitive landscape, even more so since it does not encourage to tap the potential of its talented employees by giving due emphasis on the collaboration activities and forgoes its wealth creation opportunities, and ultimately leads to a not very conducive work environment and that too not supporting in attaining its critical objectives (Hamel & Bryan, 2008).

In an era of fierce competition, companies are forced to look beyond the traditional business model of operating and compelled to revisit their organization and innovate to survive and become successful (Xu et al., 2010). In one of the study it has emerged that in some of most successful firms as much as 75% of the revenue is generated by the introduction of new products/services, and five years ago those products/services had not even existed (Smith, 2006), unlike the past where product life cycle have been never ending, like our famous “Bajaj Vespa”?

Today many of the organizations even highly value and consider knowledge and innovation as an important part of their strategy and are aggressively pursuing such a strategy, knowledge and innovation are considered as the crucial sources for sustaining competitive advantage of a company (Nonaka & Takeuchi, 1995), earlier studies points out that when KM practices are deployed in the organizations they are positively associated with organizational performance both

qualitative (Davenport & Prusak, 1998; Nonaka, 1994; Massey et al., 2002) and quantitative (Choi & Lee, 2003; Darroch & McNaughton, 2002; Lee & Choi, 2003; Schulz & Jobe, 2001; Simonin, 1997; Tanriverdi, 2005). Davenport and others have also argued that knowledge management though has the potential to bring in direct economic benefits to the firm through saving or earning money. However, a more perceived view seems to be that it has an indirect impact on financial performance of the firm (Davenport et al., 1998).

According to Davenport and Prusak, the practice of knowledge management is focused on processes and mechanisms for locating and sharing useful knowledge, and if it is effectively utilized then, organizations can see an improvement in performance (Davenport & Prusak, 1998). In a similar context organization's ability to share internal best practices is also equally important for overall organizational performance (Szulanski, 1996), and when organization also exploit external knowledge it enables them to drive crucial new product innovation (von Hippel, 1994) and ultimately in terms of organization performance in general (Sher & Lee, 2004), and also the main reason for knowledge management practices to gain prominence in the organizations is due to the fact that it makes a difference to the bottom line of the company (Andreeva & Kianto, 2011), further knowledge management also enhances economic value in the firm by various other means like accelerating innovation and structural agility; shortening of cycle time; creating a knowledge-friendly culture; low attrition (Demarest, 1997).

Knowledge Management is a systematic effort to enable information and knowledge to grow, flow, and create value (O'Dell & Hubert, 2011), some of recent studies that positively supports knowledge management in the organizations points to KM as an originator of organizational performance (Zaim, Tatoglu, & Zaim, 2007), and as pointed out earlier also towards rise of

knowledge and intellectual capital as key sources of value creation, unlike in the past when the importance was attached to tangible assets such as land, machinery and equipment (Nonaka & Takeuchi, 1995; Davenport & Prusak, 1998), even though KM has gained so much prominence in the recent times but still lacks empirical studies that provide clarity on the extent of impact that can be created by KM infrastructure and processes on KM performance (Zaim et al., 2007).

According to Alavi and Leinder an organizational knowledge can be viewed as a valuable strategic asset that has a potential to influence future actions (Alavi & Leinder, 2001). Cavaleri and others have pointed out that organizational KM predominately focuses on knowledge related activities with an aim to leverage organization's intellectual capital to achieve its objectives (Cavaleri, 2004; Sveiby, 1997), studies have also pointed out to KM's direct link with various aspects of firm's performances, like KM and financial performance measures are positively linked (Tanriverdi, 2005), to some of the-the non-financial performance measures that could be to quality (Mukherjee et al., 1998), to innovation (Francisco & Guadamillas, 2002), and to productivity improvement (Lapre & Wassenhove, 2001), and according to Kalling KM focuses on building a successful link between knowledge and performance (Kalling, 2003). Earlier Davenport and Prusak have also pointed out that when adopting the practices of KM i.e. by locating and sharing useful knowledge, the organizational performance improves (Davenport & Prusak, 1998). Table 2.3 provides a summary of various strands extracted so far from the literature review on knowledge management and its impact on business performance.

Table 2.3: Knowledge management and its impact on business performance

Authors/ Researchers	Key findings
(Alavi and Leinder, 2001)	Organizational knowledge when viewed as valuable strategic assets it has a potential to influence future actions
(Cavaleri, 2004; Sveiby, 1997)	KM predominantly focuses on knowledge-related activities with an aim to leverage organizational objectives
(Tanriverdi, 2005; (Mukherjee et al., 1998; Francisco & Guadamillas, 2002; Lapre and Wassenhove, 2001)	Points to direct link to firm's financial performance measures, & non-financial such as quality, innovation and to productivity
(Davenport and Prusak, 1998)	When adopting the practice of KM, the organizational performance improves
(Kalling, 2003)	KM focuses on building the successful link between knowledge and performance
(Donate & Guadamillas, 2010)	Culture-oriented towards KM & Innovation is also a factor for better technological performance
(Dobni, 2008).	Researchers have recommended studying the innovation culture's effect on performance as this area lacks empirical studies in the literature
(Lemon and Sahota, 2004)	Though it is argued that KM practices concerning innovation are positively related to innovation culture, and this linkage also impacts firm's performance in a positive way, no empirical studies are found in literature to substantiate

However it is also evident from the literature review that culture is perhaps the most influential factor in promoting or inhibiting the practice of KM (Davenport et al., 1998; Lee & Choi, 2003), culture oriented towards KM and innovation has emerged as a factor for better technological performance (Donate & Guadamillas, 2010). Koulopoulos and Frappaolo have pointed out that organizations may continue to build tools and functions related to KM, however if a supportive cultural environment is missing then it cannot achieve any success (Koulopoulos & Frappaolo, 1999), researchers have pointed out that sufficient studies are still lacking in the area of innovation culture's effect on performance (Dobni, 2008), it

is also argued that KM practices concerning innovation are positively related to innovation culture, and this linkage also impact firm's performance in a positive way, but no empirical studies are found in literature to substantiate the same (Lemon & Sahota, 2004), hence a need arises to study and gain an understanding on how successful organizations have successfully linked KM and innovation culture and achieved improvement in business performance.

2.7 Research gaps that have emerged from the literature review

1. KM & Innovation culture linkages are not adequately addressed in literature
2. Culture acting as a stimulant for innovation in organizations needs to be studied empirically
3. KM & Innovation culture linkages impacting organization performance needs to be studied for better understanding & practice

Chapter 3: Research Design

3.1 Statement of the Problem

Study how successful firm's business performance are impacted with the linkages between knowledge management and innovation culture, and what are the factors that may be affecting the transition to innovation culture in the organizations thus hampering business performance.

3.2 Research Questions

RQ1: How successful companies have achieved improvement in business performance with the linkage of knowledge management and innovation culture and its impact on the organization's performance?

RQ1a: What aspects and elements of culture that have created a mediating effect to sustain the linkages?

RQ2: What factors affect the transition to innovation culture?

3.3 Research Objectives

- To map an evolution of how successful companies have tread a journey of linkages of knowledge management and innovation culture and have achieved impact on business performance
- To identify the factors that may be affecting transition to such a culture thus hampering enhanced business performance

3.4 Operating Definitions

- Innovation culture is defined as an organization-wide shared basic value that support innovation, organization-wide norms for innovation, and perceptible innovation-oriented practices (Herzog & Leker, 2007).
- Business performance is defined as an achievement of organizational goals related to profitability and growth in sales and market share, as well as the accomplishment of general firm strategic objectives (Hult, Hurley, & Knight, 2004).

3.5 Research Methodology

Exploratory research focuses on unstructured and not well-understood problems that aim to uncover and better comprehend the nature of the phenomenon of interest and develop knowledge in that area (Ghauri et al., 1995; Sekaran, 2003). The research process for qualitative method is also considered emergent, i.e. an initial plan for research may change or shift after the researcher enters the field and begins to collect data (Creswell, 2009), the researcher had also experienced the same during the process of the research due to such a nature of the problem that was undertaken and the journey so far has been full of learning. The initial phase of the proposed research is very apt for an exploratory research due to emerging nature of the field of study, and subsequent stages were followed by quantitative methods, thus deploying a mixed method for the purpose of research; the summary of the research methodology is presented in Fig. 3.1, and the following sections further elaborates the research methods deployed for the purpose of the study.

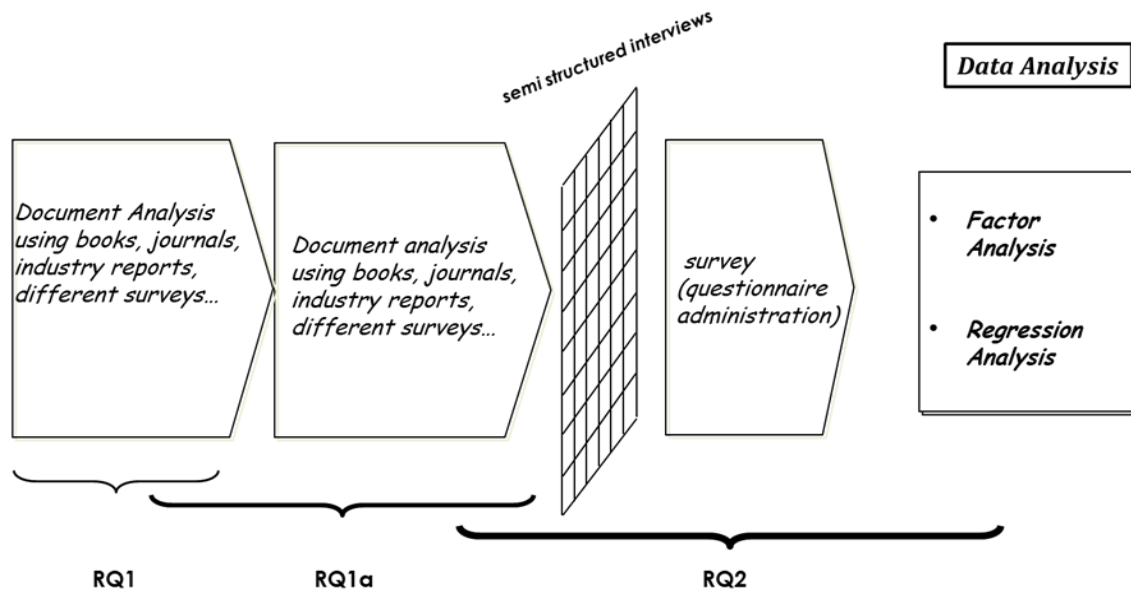


Fig. 3.1: Research Methodology

3.5.1 Research Methods

As mentioned above the study was carried out by the mixed method and in combination with qualitative and quantitative methods, the Document Analysis using Secondary data was initially deployed, followed by semi-structured interviews and administering a survey, and data analysis was carried out using factor analysis and regression analysis to draw inferences.

3.5.2 Data Collection and Analysis: Research Question 1 & 1a

Document Analysis using Secondary data method on two of the most successful companies who have been successful in implementation of knowledge management initiative and are also considered highly innovative, they are identified based on the Global Most Admired Knowledge Enterprises awarded organizations (GMAKE, 2011) was carried out, and the researcher selected the Infosys Limited and 3M for the purpose of the study.

- For RQ1 & RQ1a, the Document Analysis using Books, journals, industry reports, statistics, and different surveys were carried out.
- The factors were identified based on the analysis and conclusions were drawn, the identified factors were used as input for the next part of the study.

3.5.3 Data Collection: Research Question 2

The initial part of the study was conducted at the two units of a top ranking IT firm based in India, here afterward referred to as “organization”, and the following methodology was adopted:

- At this stage the factors identified from the earlier study were validated through a process of semi-structured interviews, a method best suited for obtaining in-depth and detailed research material in an informal settings, which otherwise may be difficult to obtain by any other means, and this also ensures that the information is highly meaningful since the discussions were conducted with the leading practitioner and experts within the field of KM and innovation from the organization, and they were also identified based on the consultation with the unit heads/peers.
- Kvale had suggested that the most suitable number of interviewees for a qualitative research study is between five and twenty-five (Kvale, 1996), hence for the purpose of this study considering the availability of the interviewee and the time and logistics constraints, fourteen participants were identified, and face to face interviews were carried out and found to be adequate for comparison and analysis of the responses.
- According to Yin, by adopting various data sources also increases the validity of the construct and reliability of the study (Yin,1984), therefore use of multiple sources of data were adopted for the purpose of this part of the study, i.e. along with face to face interviews, observation and document analysis was carried out thus forming a triangulation in order to bring more coherence, accuracy and reliability on the topics.

- As a following step questionnaire was designed based on the factors identified in the earlier stages and also by making use of the inputs from all studies carried out so far, a 5 – point Linkert scale was used for the purpose of capturing the responses.
- The questionnaire was reviewed by the experts & their inputs were incorporated (Appendix A).
- A piloting of the questionnaire was performed electronically on a small group of people to incorporate basically their views and ensure ease of administration and collection of responses, and based on the feedback changes were incorporated, one of the significant change that was to add a disclaimer clause and to include an option to be anonymous so that the respondents feel free to respond to the questionnaire.
- The questionnaire was electronically administered.

3.5.4 Data Analysis: Research Question 2

The outcome of the survey results were subjected to the following analysis:

- Part I: To establish the existence of the factors that were identified from the studies, the following methodology was adopted:
 - Before proceeding with the Factor Analysis, to ensure the quality of measurement the variables were subjected to reliability - Cronbach alpha reliability test, and appropriateness - Barlett's test of sphericity and Kaiser-Meyer-Olkin measures of sampling adequacy (Rose and Sullivan, 1993). One exception was made on Technology related factor even though at the initial stage Cronbach

alpha was lower than 0.7, however considering the significance of the factor that too in IT organizations, the factor was retained to gain further insights.

- After determining that the data scales were suitable for further analysis, principal components analysis (PCA) using SPSS was applied to determine the minimum number of factors that account for maximum data variance (Hair et al., 1987; Tabachnick & Fidell, 1998).
 - The eigenvalues technique for factor extraction was used, and only those factors with eigenvalues greater than 1.0 were included in the model, as these variables also signify factors with variance greater than one.
 - The next step in the process was to calculate factor loadings, presenting the significance of each variable within the factor category, and labeling of the factor (Hair et al., 1987; Tabachnick & Fidell, 1998), and discussion of the factors identified was presented.
- Part II: A regression analysis was carried out to ascertain the presence of a relationship and the magnitude of strength between knowledge management initiatives and impact on business performance in the organization.

Chapter 4: Data Collection and Analysis

RQ1 is addressed using Document Analysis using Books, journals, industry reports, statistics and different surveys and two organizations that were studied namely Infosys Limited and 3M Company.

4.1 Infosys Limited

Infosys Limited is a leading IT organization in India and operates worldwide, having a clientele that includes some of the most reputed organizations in the world, and it operates in the domain of designs and delivers technology-enabled business solutions, including consulting, engineering, outsourcing, software and technology services. With annual sales of US \$6 billion (fiscal year ending March 31, 2011) and employing over 140,000 people worldwide and it has 64 offices spanning 33 countries and 65 development centers around the world.

"At Infosys, Knowledge Management is central to our core strategy of providing differentiated value to customers and enabling their business growth. KM has helped us develop a pervasive culture of beneficent knowledge exchange across geographies. "

- Nandan M Nilekani, CEO, President, and Managing Director, Infosys, in 2006.¹

Infosys's motto for managing the knowledge is to "*Learn once, use anywhere*"; this led to the evolution of an integrated approach to managing its knowledge capital. Hence all its KM efforts are aligned to deliver business advantage to the

¹ Annual Report 2006

customers through leveraging of the organizational learning, and in mid 1999s its President & COO Nandan Nilekani in widespread consultation with his people articulated a vision for KM and also a strategy for implementation, and its aspiration to manage knowledge capital available across the organization in order to meet its business objectives are reflected in its KM vision:

- Enable every action by the power of knowledge.
- Empower every employee with the knowledge of every other employee.
- Leveraging knowledge for innovation.
- Be a globally respected knowledge leader (Kochikar, Mahesh, & Mahind, 2003).

Infosys adopted a strategy to manage its market development and challenges leading to significant drivers of growth by leveraging with effective management of organizational knowledge, and in order to reach the company's KM vision and with its continued commitment led to the development of a proprietary Knowledge Management Maturity model, KMM, comprising of multi-staged maturity framework that also reinforces its KM strategy and its elements are as below in Table 4.1:

Table 4.1: Key capabilities required for various levels of Infosys' KM Maturity Model

Level	Label	Key result areas		
		People	Processes	Technology
1	Default	None	None	None
2	Reactive	Knowledge Awareness	Knowledge capture	KM infrastructure
3	Aware	Knowledge involvement	Knowledge creation & sharing	Robust KM infrastructure
4	Convinced	Customized enabling	Knowledge enlivenment	Self-managing KM infrastructure
5	Sharing	# Expertise Integration # Knowledge Leverage # Innovation Management		

Source: (Kochikar2003; Suresh & Mahesh 2006)

Also in the past several years it has made sustained efforts in the organization on the four basic dimensions - people, process, knowledge, and content – constituting its knowledge management architecture. At Infosys, knowledge management is perceived by its people like that helps to create business value. Therefore its KM architecture is designed to provide the power of its organizational knowledge to its people, and rightly it believes that the knowledge sharing is to be woven into the fabric of an organization’s work culture, and this drive of knowledge sharing is sustained by putting in place systems and processes that support in building a pervasive culture of knowledge exchange, and also the top management leadership supports this organizational endeavors through addressing the factors that are intrinsic to the employee and their environment – aspirations, fears, hopes, potential for learning and growth, internal motivation, rewards, and recognition, etc.

4.1.1 Lessons learned during knowledge management initiative evolution

- Managing knowledge consists of four critical elements: people, processes, technology and content.
- KM vision encompasses to become an organization where “every employee is empowered by the knowledge of every other employee.”
- An evolutionary strategy has been embraced to address constantly the four basic elements of KM, resulting in a scalable architecture that is capable of managing its knowledge capital to deliver business advantage to its customers.
- A multi-layered KM process architecture has been designed to enable easy submission, review and publication of knowledge artifacts, even while seamlessly adding process elements to facilitate their use, analyze metrics

related to usage, utility, quality and relevance of artifacts, and evaluate their collective impact on the quality and productivity of deliverables in different functions within the organization.

- A novel incentive scheme, based on a proprietary system termed Knowledge Currency Units (KCU), supports and promotes the KM processes by providing various forms of rewards and recognition to knowledge sharing in the company.
- KM technology infrastructure has been built to conform to the specific ways in which people interact, use systems and exchange knowledge across the organization.

4.1.2 Impact of KM initiatives on Infosys Ltd.

- Based on an initial assessment conducted by KM group through an annual and semiannual polls employees attributed a 2% to 4% increase in operational efficiency due to KM initiatives, and 90% of the respondents reported a saving of at least 1 day every quarter, and about 20% to 30 % reportedly saved up to 8 days (Ravindra & Suresh, 2003).
- In the year 1999 when Infosys had detected the shortcomings in managing its organization knowledge flows and that were hampering its organizational structure and business model effectiveness (Mehta, Oswald, & Mehta, 2007), and by the late 2003 after implementation of the KMM model basically to address the above lacuna with substantial efforts resulted into impressive results as evident:

- The knowledge taxonomy had evolved into a robust four-level structure encompassing more than 1,700 nodes displaying over 18,000 knowledge assets covering various industries, technologies, and project management topics.
 - On any typical workday, Infosys employees all over the world downloaded over 1,000 artifacts from KM portal totaling over 150,000 documents every quarter.
-
- One in every four employees had contributed at least one knowledge artifact to the central knowledge repository.
 - Thousands of employees regularly participated in knowledge exchanges on the discussion forums.

Apart from the above mentioned anecdotal evidence on the impact on organization further insight can be obtained from the studies done in collaboration with Teleos and The KNOW Network that had established the Global Most Admired Knowledge Enterprises (MAKE) research program in 1998 to identify and recognize those organizations which are creating shareholder/stakeholder wealth by transforming new as well as existing enterprise knowledge into superior products/services/solutions, and based on the longitudinal Global MAKE studies, it concluded that the economic and competitive advantages of pursuing a knowledge-driven business strategy provides tangible and significant benefits, and the 2013 Global MAKE Finalists and Winners clearly have demonstrated that by adopting an enterprise-wide, knowledge-driven strategy delivers superior organizational performance (GMAKE, 2013).

Based on the above-mentioned report in the GMAKE study of 2013, one of the performance criteria namely Return on Assets (average profits as a percentage of assets) - that reflects the gradual shift from an emphasis on enterprise physical assets towards enterprise intellectual assets, Infosys Limited emerged as a Global leader with 21.3%, as against Global MAKE Finalists and Fortune Global 500 were at 8.7% and 2.7 % respectively, thus clearly indicating that its KM vision and subsequent implementation of KM initiatives have yielded substantial benefits to the organization, further Infosys was ranked at 21 among others innovative companies such as Apple (4), Google (6), Microsoft (9) and IBM (22) as GMAKE Most Innovative Company.

4.2 3M Company

Brian in his study of 3M points out an interesting finding that many companies tend to look at 3M from the point of view of specific innovation practices, thus leaving behind an understanding of the philosophy and values that are underpinning them, whereas in 3M they have recognized that “to maintain a climate in which innovation flourishes may be the single biggest factor overall” (Brian, 2005). Adam also pointed that at 3M knowledge management is seen more of a cultural and organizational issue than a technological (Adam, 1998).

More than one hundred years ago 3M was founded, though at inception it faced too many crises and, as a result, any ordinary company would have been easily wiped out but what emerged from its own struggle to survive was perseverance as one of its core values, and later other values got embedded that made a huge contribution in being recognized as "The Ten Most Admired Corporation," and in one of the polls conducted by Fortune magazine on American CEOs, it emerged that though most of the companies were finding it difficult to bring in an entrepreneurship trigger in their employees, however, 3M figured prominently in this domain as it was able to do it and considered a benchmark standard.

According to Brand, 3M has for long nurtured an objective to be most innovative company in the world and to remain innovative in the competitive landscape and effective use of knowledge management is a must, also requires backing of an encouraging environment that is becoming an essential condition, however at the core 3M encourages 'tacit to tacit' exchanges with a belief that if it can make it functioning in the organization so that the other aspects of KM will fall in place by itself, and essentially it views KM as more of a cultural and organizational issue rather than a mere technological initiative (Brand, 1998).

Over a period of time 3M successfully cultivated linkages between knowledge management and innovation culture, and rightly 3M defines knowledge management as a central competency that enables every corporate initiative, business process, and individual employee to maximize customer satisfaction, sustainable profitability, and growth (APQC, 2002) and backed by for more than a century 3M fostered culture of creativity and new ideas (3M, 2010), thus forming unique linkages that enabled it to achieve a coveted position and breakthrough performances, rightly Fortune magazine described it as "a kind of corporate petri dish that fosters a culture of innovation," below are the insights gained from the case analysis that reinforces the existence of such linkages and the factors responsible for its sustenance.

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4.2.1 Linkages between KM & Innovation Culture

Schein had advocated that organizational culture consists of a set of basic assumptions that have developed as a consequence of the organization's attempts to adapt to internal and external problems (Schein, 1992). Culture is also reflected in values, norms, and practices and all are interrelated, however as the organization matures values gets manifested into norms and in turn they take the form of specific practices, and the practices portray visible symbols and true manifestation of culture that often becomes repetitive behavior in the organization (Long & Fahey, 2000).

Legendry McKnight, who had risen from a position of assistant bookkeeper to the rank of President and CEO, was instrumental in installing the vision, ethics and values that remain intact and his management philosophies and tenets are enshrined in what is famously known as McKnight principle in the workplace and culture, as result the manifestation in the form of linkages between KM and innovations culture that emerged are described in the exhibits below:

4.2.1.1 Linkages between acquisition/creation and value

The first key issue the company faced was failing to make quality sandpaper. They could have given up and gone under. It is incredible that they persisted and looked beyond a short- term vision of success.” Dick Lidstad retired vice president, Human Resources.

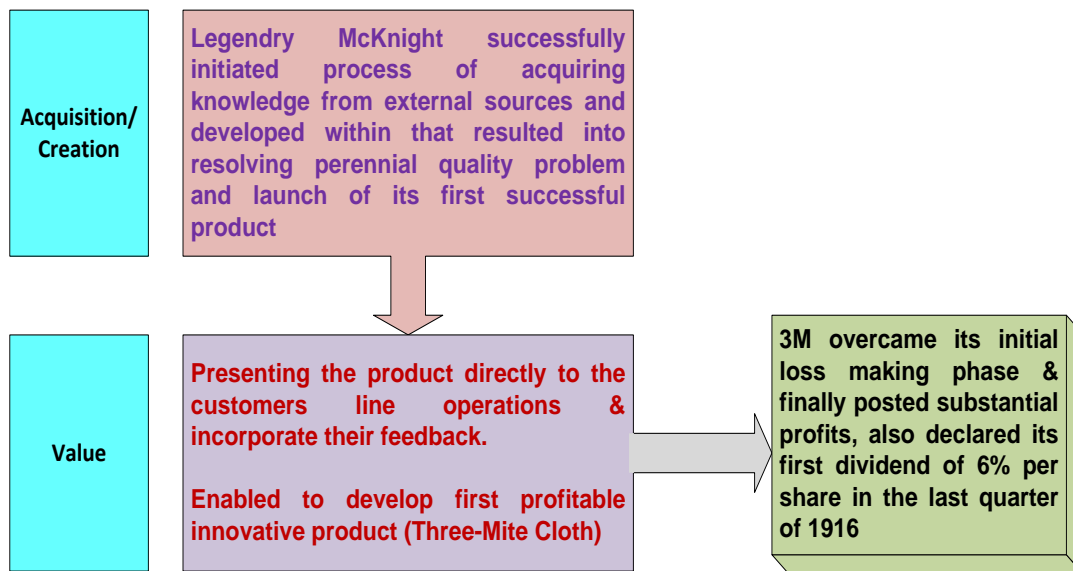


Fig. 4.1: Linkages between acquisition/creation & value

4.2.1.2 Linkages between acquisition/creation and norms

“3M recognized the importance of quality assurance and technology excellence sooner than most companies. The builders of 3M knew that if their company was to be a leader, they had to identify and solve problems.” Ken Schoen retired executive vice president, Information, and Imaging Technologies Sector.

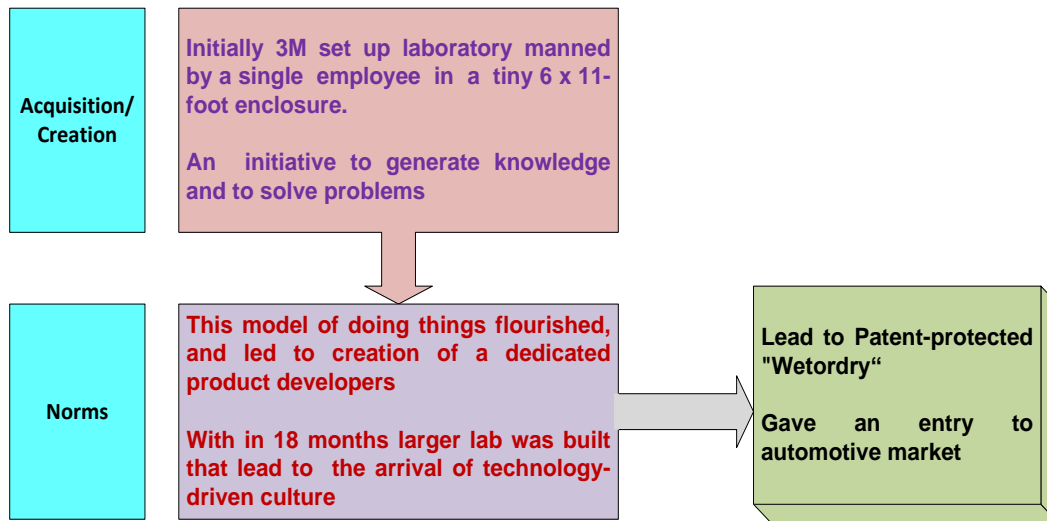


Fig. 4.2: Linkages between acquisition/creation and norms

4.2.1.3 Linkages between acquisition/creation and practices

“Annual investment in R&D in good years— and bad—is a cornerstone of the company. The consistency in the bad years is especially important.” David Powell vice president, marketing

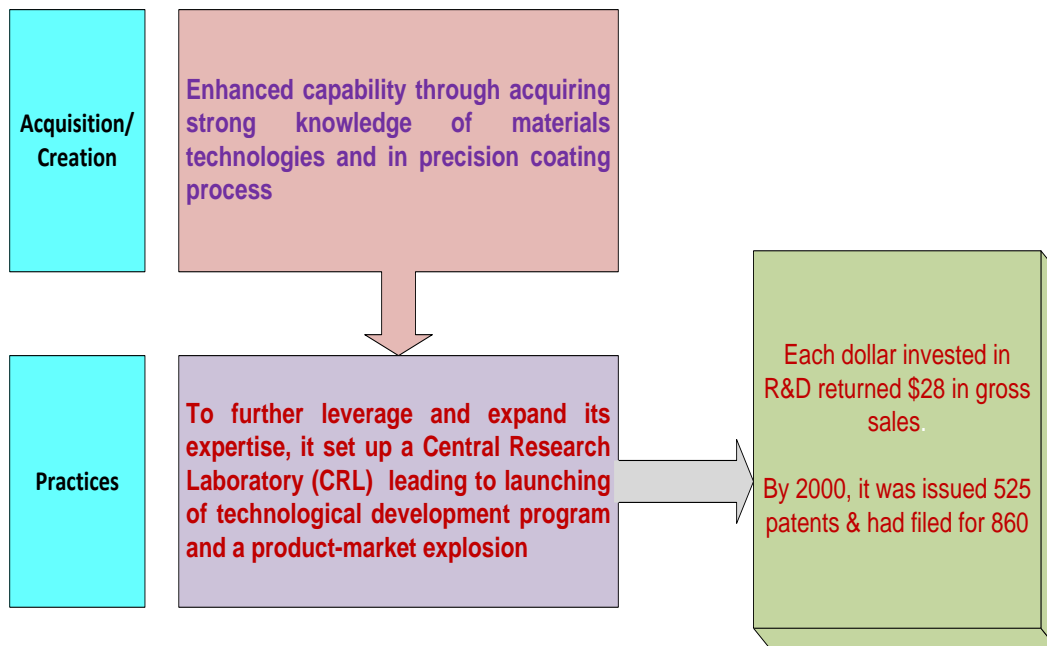


Fig. 4.3: Linkages between acquisition/creation and practices

4.2.1.4 Linkages between storage and practices

“At 3M we are a bunch of ideas. We never throw an idea away because you never know when someone else may need it.” - Art Fry

“You have an idea, you take this idea, and you pull all the things that need to come together and it is called ‘believing.’ Innovation boils down to conceive it, believe it, achieve it.” > Leon Royer retired executive director, 3M Leadership Development Center, Human Resources, formerly a technical director

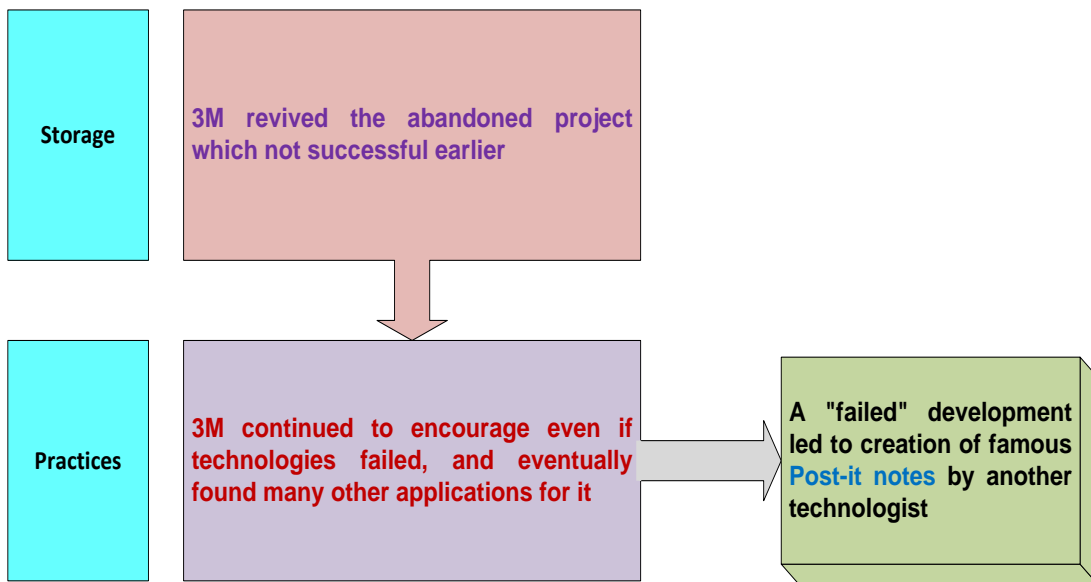


Fig. 4.4: Linkages between storage and practices

4.2.1.5 Linkages between sharing and practices

“The forum built morale and respect among colleagues. It got people talking— young with senior, basic scientist with applied technologist, experienced or famous with people new to the company”. Pride in being a 3M technical person often began right there. - Roger Evans retired research scientist

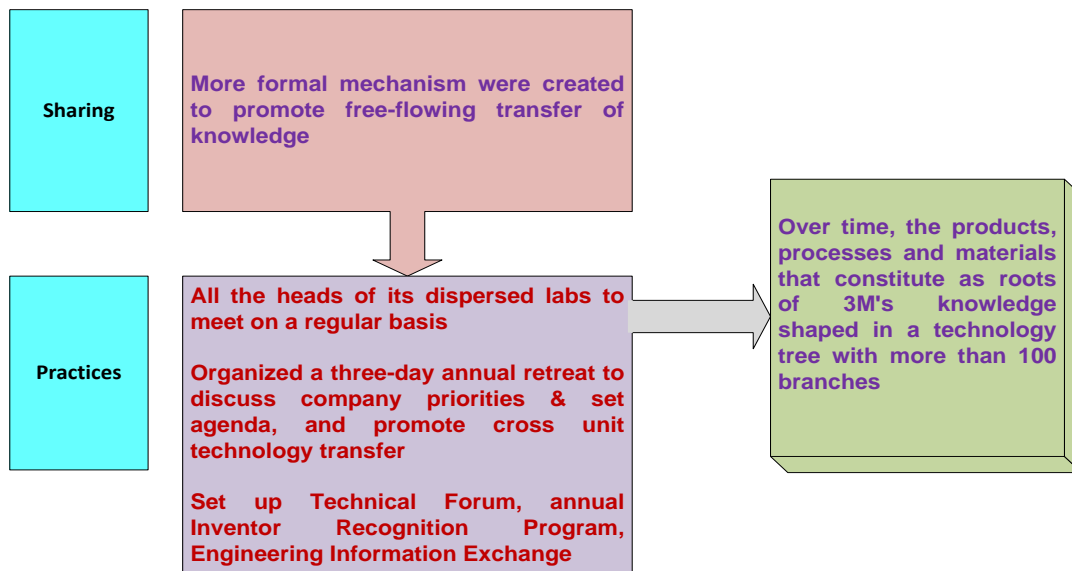


Fig. 4.5: Linkages between sharing and practices

4.2.1.6 Linkages between application and practices

“You have the freedom at 3M to maneuver things to your benefit if you want to take advantage of it. Some things will not work, so you fail once in a while, but that is a lot better than the cost of a missed opportunity.” - Les Krogh retired senior vice president, Research, and Development

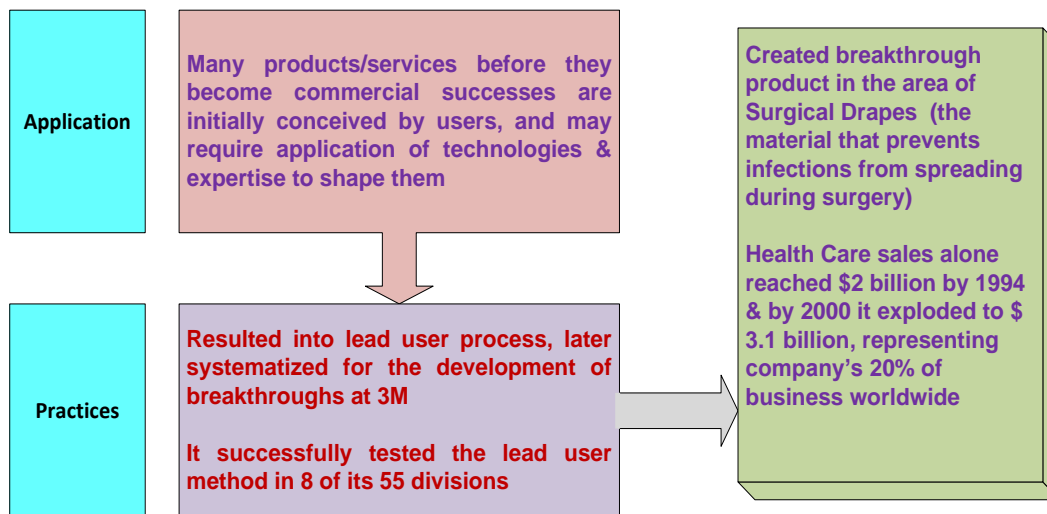


Fig. 4.6: Linkages between application and practices

4.2.1.7 Linkages between sharing and practices

Rather than protecting what they knew, 3M employees shared knowledge. "I saw openness and a spirit of extensive cooperation that helped people get things done" Bailey, American Lava, a 3M subsidiary

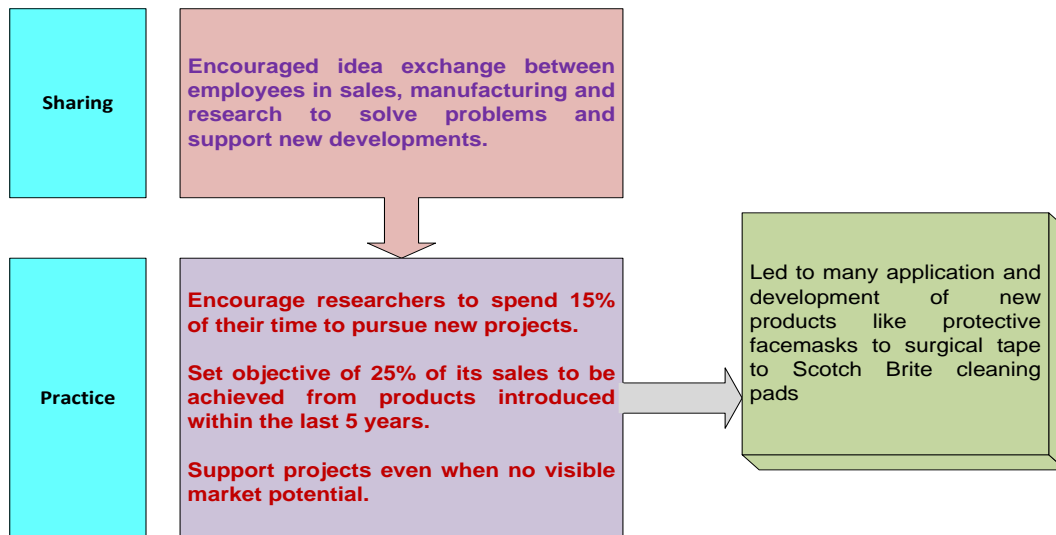


Fig. 4.7: Linkages between sharing and practices

Davenport rightly pointed out that organizational and cultural issue requires two-thirds of a firm's efforts (Davenport, 1997). According to Webster, vice president of R&D, transportation, graphics, and safety, 3M has successfully adopted key practices to infuse culture, guiding principles and the desired behavior in the company, they are also evident from the in-house practices - encouraging freedom and individual initiatives, access to several technology platforms for providing customer solution, leverage and combine multiple technologies, customer focus and encourage them to recognize customer needs much before others, and

emphasize that everyone is a business builder, this makes everyone at 3M feel responsible to the team across the organization and stimulates them to develop and sell profitable products and services that ultimately delights 3M's customers (APQC, 2002).

Below is the summary of the exhibits presented, and from the Fig. 4.8, it is very much evident that the organization has clearly matured over a period of a century since its existence and hence most of the cultural manifestations have emerged as embedded practices.

4.2.2 Summary of the linkages of KM & Innovation Culture and its impact business performance

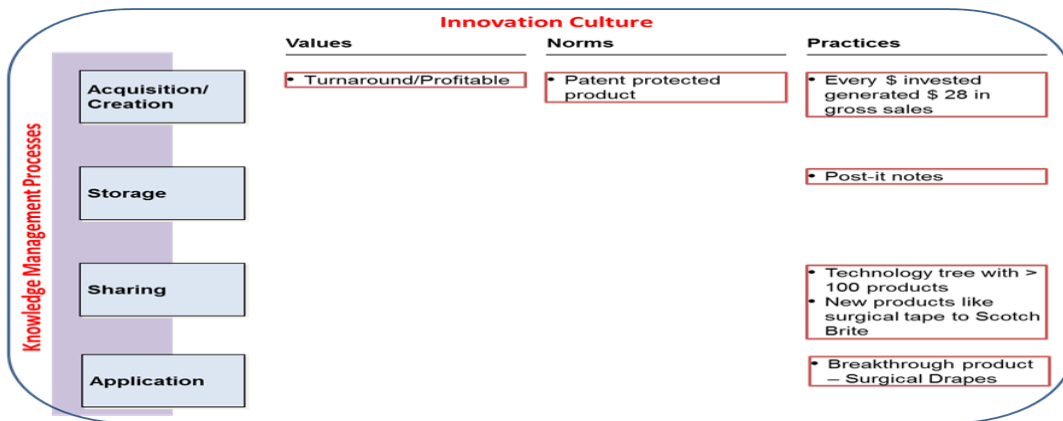


Fig. 4.8: Summary of KM & IC linkages and its impact on business performance

"Every company seeks the keys to innovation, but few find them. Over the decades, 3M learned how to be innovative and today the company uses that skill to great competitive advantage." - Jerry I. Porras, Co-author, Built to last

4.3 Further linkages from the literature review

The study of two organizations has provided insights on how the organizations have tread the complex journey, and that enabled them to emerge as some of the most innovative organizations, based on the linkages established between knowledge management and innovation culture and its impact on business performance, further literature scan was carried out to ascertain the presence of such linkages in other organizations, and the findings from the study are summarized and presented below.

Table 4.2: LR on linkages of KM & culture and its impact on performance

S.No.	References	Knowledge management	Cultural manifestations	Impact on performance
1.	(Tseng, 2010)	Knowledge Conversion	Adhocracy culture (risk taking & entrepreneurship)	Positive impact on corporate
2.	(Cavaleri et al., 2005; Davenport & Prusak, 1998)	KM practices	Behavior (organization learning)	Improved organization performance
3.	(Donate & Guadamillas, 2010)	KM & Innovation	Supporting Values (creativity, interactions)	Positive impact on technological results
4.	(Hackett, 2000)	KM efforts	Use and contribute	Positive impact on organizational success
5.	(Alavi et al., 2005; Davenport et al., 1998; DeLong & Fahey, 2000; Lee & Choi, 2003; Leidner et al., 2006)	KM activities	Sharing behavior	Positive impact on firms performance
6.	(Migdadi, 2009)	KM processes	Organizational cooperative behavior	Organizational performance
7.	(Nold III, 2012)	KM processes	High level of trust, pride & camaraderie	Improved operating results

Table 4.3: Cases of Best Practices on linkages of KM & culture and its impact

S.No.	Company	Knowledge Management	Cultural manifestations	Objective/outcome/results
1.	Dow Chemicals	Emphasis on intellectual assets management (patent archive)	Encouraged working with business units to weed out portfolio	Saved more than \$ 1 million in 18 months
2.	Toyota Motor Company	Identify & share creative ideas & best practice (Suggestion systems)	Screening & Evaluation of suggestions from individuals and team	Results in direct & indirect benefits
3.	General Electric	Knowledge transfers through personnel rotation	Institutionalized system to send people to other organization for studies	In one of such study, GE Appliances was able to reduce cycle time by 75% from order receipt to finished goods and reduced inventory by \$ 200 million
4.	AstraZeneca	Contribute, publish & share information	#Facilitate higher level of communication with its global workforce #To replicate organizational learning in multiple facilities	#Experienced increase in the productivity by leveraging of lessons learned & best practices #Shorten development time
5.	Monsanto	Knowledge sharing of past experiences	#Encourage interactions of people and information #Engagement of the collective intellect of people	#Enabled to reduce the launch of new product to market from 11 to 8 years #Enhance individual effectiveness & overall performance improvement

Source: (Best Practices LLC, 2004)

Table 4.4: Cases of linkages of KM & culture and its impact (IT organizations)

S.No.	Company	Reference	Knowledge Management	Cultural manifestations	Objective/ outcome/result
1.	Accenture	(Meister & Davenport, 2005)	Knowledge & Resources channel (search, browse & collaborate)	#Culture that believes in reuse #Inherent belief in the value of KM	#Lower impact of knowledge drain #Turn knowledge into valuable intellectual property
2.	IDS Financial Services (subsidiary of American Express Co.,)	(Best Practices LLC, 2004)	Knowledge storage - codified the expertise of its best account managers	Encourage its planners to utilize expertise through the software called "Insight	In four years the client dropout rate reduced by 50%.
3.	Hewlett-Packard	(Best Practices LLC, 2004)	Knowledge sharing workshops	Encourage culture of collaborations, and informal networking	#Facilitation of best practice knowledge sharing #Management framework for knowledge exchange #Establishment of a common language
4.	EDS - Texas-based IT services Company	(Best Practices LLC, 2004)	Focus on knowledge asset management	Incorporated in strategic planning process & encourages cross – disciplinary teams	Enabled to focus on achieving long-term targets

Table 4.5: Further cases of linkages of KM & culture and its impact (IT organizations)

S.No.	Company	Reference	Knowledge Management	Cultural manifestations	Objective/ outcome/result
5.	Wipro	(APQC, 2013)	Knowledge exchanges across departments, functions & locations)	#Promote collaboration through discussion boards, an idea lounge, events #Monitor performance through KM dashboards	#To deliver business solutions
6.	Infosys	(Indu, 2006)	Knowledge dissemination through a central system	Leverage through organizational learning	In an internal survey, 80% of project manager believed team performance, productivity & quality of work has improved
7.	IBM	APQC, 2010a)	#Expertise locator systems #Communities of practice #Facilitated transfer of best practices	#Encourages people to collaborate (boundaryless) #Encourage to leverage activities from other business #Encourage to collaborate with others	Results vary depending on the program #IBM executives view KM as a means to achieve operational efficiency #From web conferencing savings estimated to be \$ 50 million/yr. in travel cost #Estimated cost avoidance of \$6 million/yr. by locating information more quickly and less of rework

4.4 A model linking KM and innovation culture

The study of the organizations presented so far provides an insight on how the organization has tread the complex journey of sustained innovations, and the linkages that were established between knowledge management and innovation culture resulted in improved business performances, further evidence of such linkages are also found from the study of The Global Most Admired Knowledge Enterprises that recognizes "organizations that are creating shareholder/stakeholder wealth by transforming new as well as existing enterprise knowledge into superior products/services/solutions", and the eight knowledge performance dimensions that form the MAKE framework are the visible drivers of value creation:

- creating an enterprise knowledge-driven culture
- developing knowledge workers through senior management leadership
- developing and delivering knowledge-based products/services/solutions
- maximizing enterprise intellectual capital
- creating an environment for collaborative enterprise knowledge sharing
- creating a learning organization
- delivering value based on stakeholder knowledge
- transforming enterprise knowledge into shareholder/stakeholder value (MAKE, 2013).

An empirical study based on the matched-sample-comparison-group method (MSCG) that involves analytical comparison of the levels of some variables under investigation for two samples spanning a period of interest (Megginson, & Weiss, 1991), was conducted on a treatment sample of firms (winner) with superior KM performance & MAKE awarded firms, taken along with a carefully selected control sample of firms (control) that matched to the treatment sample by size and type, some of the interesting and important finding from the study points to a

direct link between KM performance and profitability performance in the winner firms (Holsapple & Wu, 2011), the ratios that were considered in the study to measure performance - return on assets (ROA), return on sales (ROS), operating income to assets (OI/A), operating income to sales (OI/S), and operating income to employees (OI/E), for the period 1998-2005 are presented as below:

(ROA) - Indicates how profitable a firm employs its assets

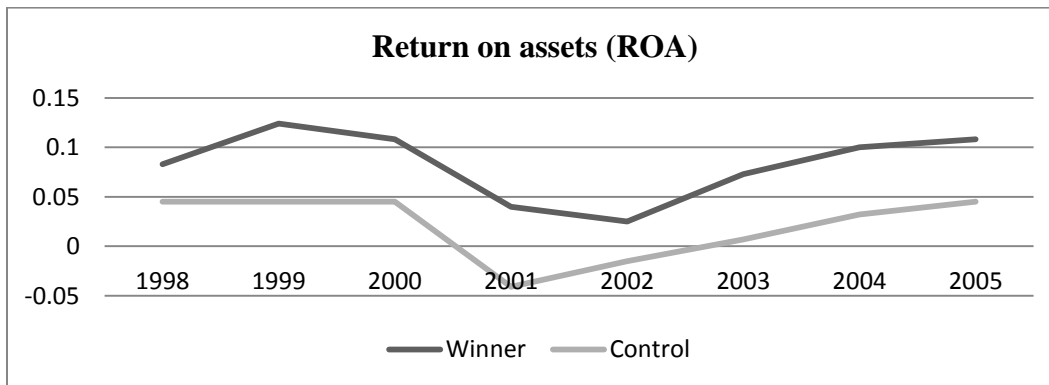


Fig. 4.9: Impact Return on assets (ROA)

(ROS) – How much profit a firm is able to generate for each dollar of product sold

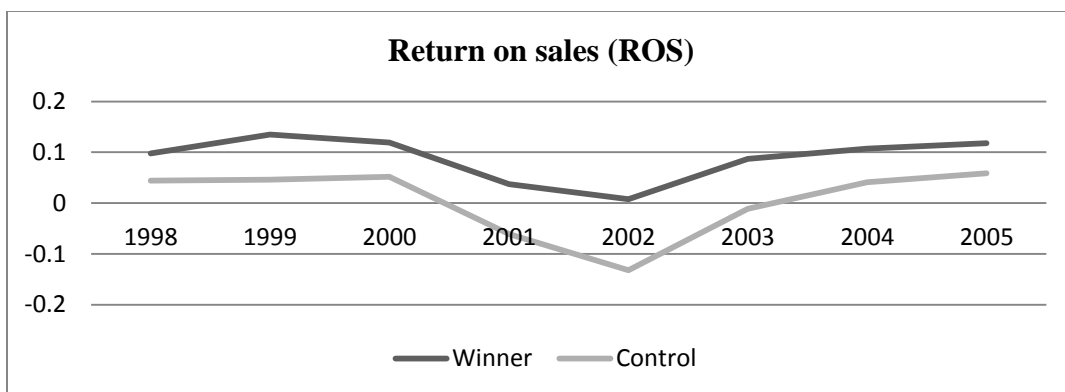


Fig. 4.10: Impact Return on sales (ROS)

(OI/A) - Focus on operating returns only, that excludes income earned by the firm from other sources such as interest & investment income

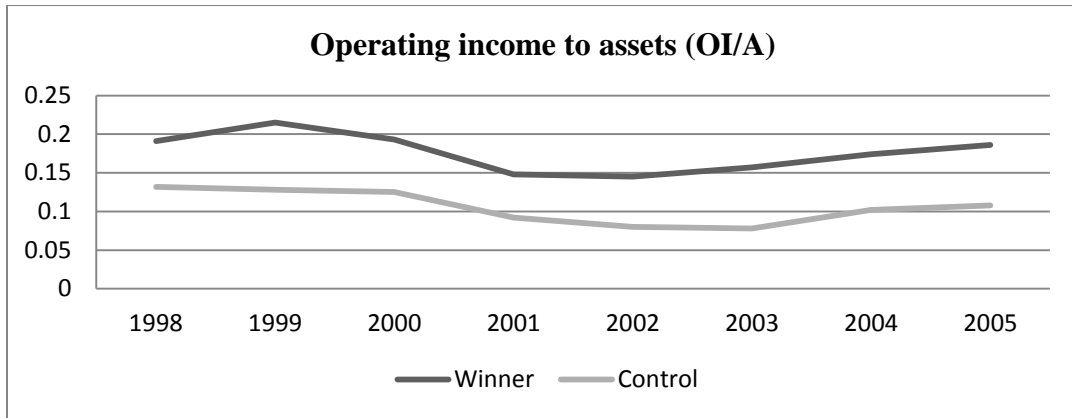


Fig. 4.11: Impact on Operating income to assets (OI/A)

(OI/S) – Also, focus on operating returns only, that excludes income earned by the firm from other sources such as interest & investment income

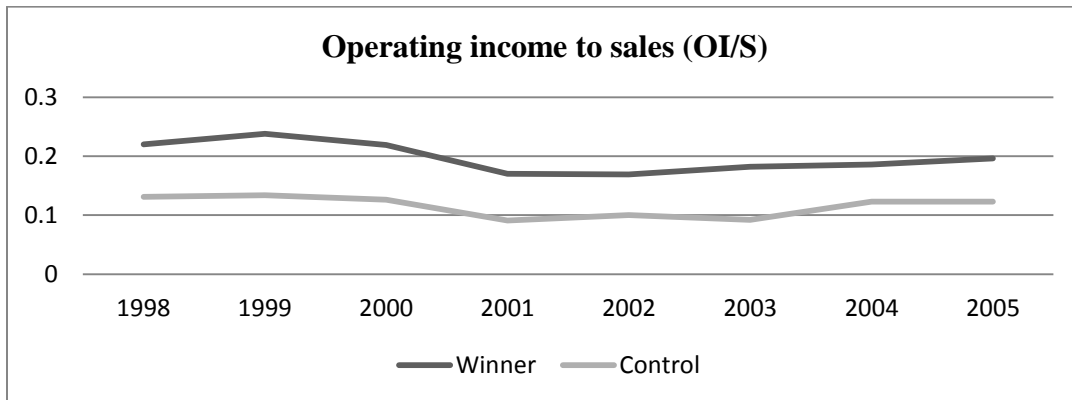


Fig. 4.12: Impact on operating income to sales (OI/S)

(OI/E)- Indicates the profitability of every single employee in a firm

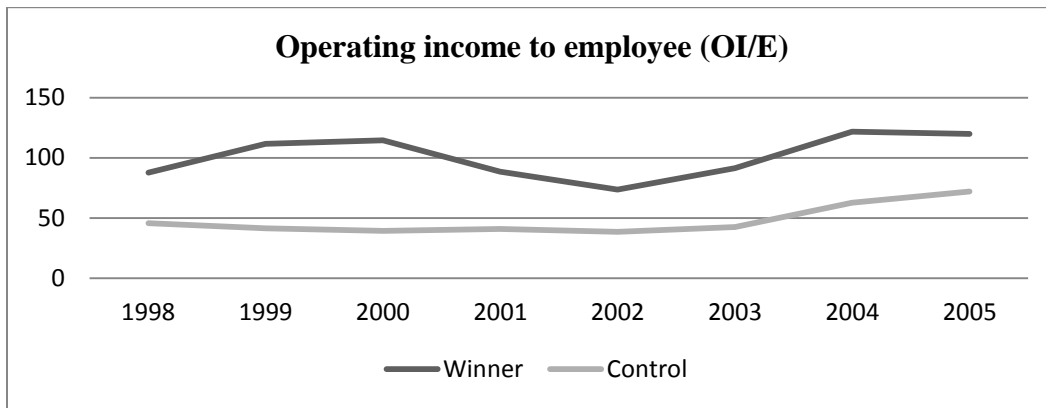


Fig. 4.13: Impact on operating income to employee (OI/E)

4.5 A model linking KM & IC for business performance improvement

Based on the findings and insights gained from the various studies presented in the earlier section, it has clearly emerged that as a result of linkages between knowledge management and innovation culture a positive impact on business performances are evident across sectors IT and non-IT organizations, the model that has emerged is presented in the Fig 4.14.

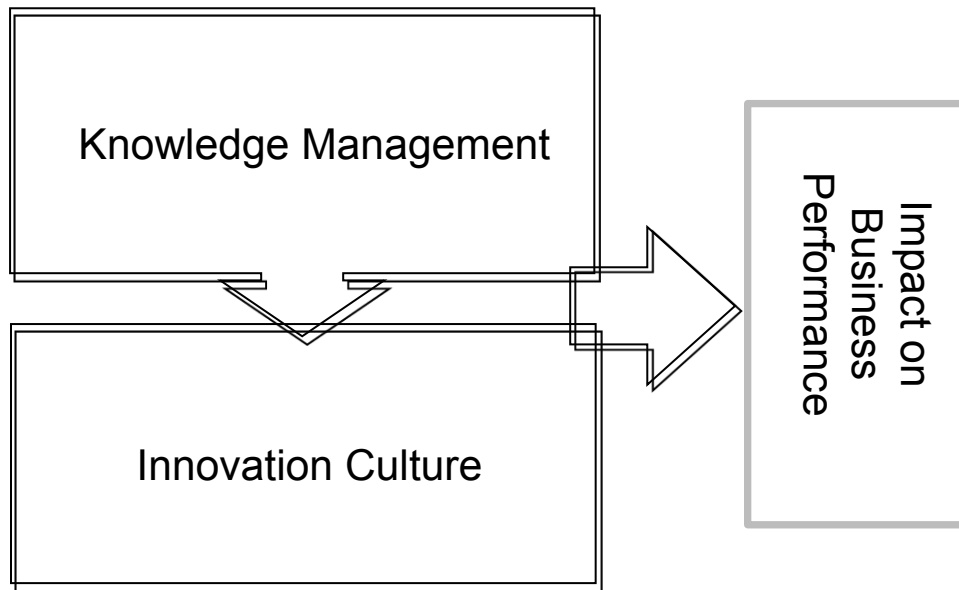


Fig. 4.14: Model linking KM & IC for business performance improvement

RQ1a is addressed using Document Analysis using Books, journals, industry reports, statistics, and different survey to gain further insight into factors, aspects and elements of culture that have created a mediating effect to sustain the linkage.

4.6 Managing knowledge and innovation in organizations

APQC defined innovation as new or modified processes or products that reach the marketplace and when put into use increases the performance and competitiveness of the organization, therefore the scope of innovations are much broader and can be found in new designs, techniques, managerial tools, organizational approaches, patents and licenses, business models, and even in paradigms. APQC has also concluded from their earlier studies that innovation is a distinct organizational capability, and it has to be developed and nurtured in organizations. It is also different from creativity though it is also practiced in organizations, it provides new ideas and concept at the individual level, in other words, can be also called a capability of the people (APQC International Benchmarking Clearinghouse, 2003).

When an organizational capability is put in effective use, it can result in new products or processes and opens up many more avenues for improving organizational performance. On the other hand when knowledge is looked from the perspective of innovation, it falls into two categories namely explicit and tacit, when both the forms of knowledge i.e. explicit and tacit are combined and synthesized it may result in knowledge creation, which can also be a great source of innovation, and if organizations are already nurturing this organizational capability then they can expect an all-around improvement in their performance, also the knowledge workers can facilitate an increase in innovations when they

put efforts on converting tacit knowledge to explicit knowledge and also by passing on their tacit knowledge to other workers (Nonaka & Takeuchi, 1995; Hedlund, 1994).

It will also be interesting to understand the various perspectives and definitions put across from the APQC International Benchmarking Clearinghouse studies on innovation and knowledge management as they are also dominant at some of the leading organizations

- **Millennium Pharmaceuticals:** KM and knowledge sharing helps to drive innovation and new products to the market faster.
- **NASA JPL:** defines innovation as the process by which an entity (i.e. a person or a team) can locate and use shared knowledge and creates new knowledge for the purpose of stimulating the development of innovative solutions.
- **The Word Bank:** Innovation and reuse of knowledge are one way to address the needs of its constituents.
- **3M:** defines innovation as the process by which the creative ideas of employees, customers, and suppliers are turned into products that become a value to the company.
- **Boeing Rocketdyne:** defines innovation as an advancement in a methodology, practice, process, or concept that improves the product or improves cost, time-to-market, and/or quality, (APQC International Benchmarking Clearinghouse, 2003).

When the various perspectives put across by the leading organizations are analyzed and synthesized, it can be inferred that the inputs for innovation can come from any direction, such as creative ideas provided by employees, customers, and suppliers, or from sharing and reuse of the existing knowledge, and each of these inputs have potential to facilitate value creation for their businesses. However, what needs to be noted is that the entire process of managing knowledge and innovation needs to be very effective otherwise the valuable assets that are presented in the organization gets unutilized and the potential to gain economic value can be lost.

The earlier studies also points towards a clear and strong link between knowledge management and innovation (McAdam, 2000), in some of the longitudinal studies conducted on organizations as mentioned above by the APQC, it is concluded that though innovation needs and strategies may differ in each of those organizations, however, they have greatly valued knowledge and as a result experienced a definite connect in relation to innovation, and have always aspired to manage it better, further it is also inferred from the studies that by sharing knowledge the organizations can achieve increased speed, improved quality, increased innovation, and reduced costs (APQC International Benchmarking Clearinghouse, 2003).

All the organizations mentioned above that have promoted a strategy of knowledge management; it has emerged as a clear differentiator for it to become innovative and also facilitated in achieving improvement in business performance, and rightly the organizations has viewed knowledge management as its integral business function. It is also emerged that knowledge management is an important supporting function, and recently it is also viewed as a discipline by itself, and certainly provides a platform for conversion of resources into capabilities that also

facilitates value creation for such practicing organizations (Darroch, 2005), clearly suggesting that knowledge management is an important contributor to value creation in the organization. However today many organizations are trying to invest quickly in knowledge management initiatives but the equally higher rate of failures is reported (Chua, 2009; Lucier & Torsilieri, 1997; Storey & Barnett, 2000).

APQC defines knowledge management as a systematic effort to enable information and knowledge to grow, flow, and create value (O'Dell & Hubert, 2011), from the perspective drawn from the definition it may be inferred that KM is about creating and managing the processes of acquiring and making available the right knowledge to people at the right time, that enables people to share and act on information and may also facilitate in enhancing organizational performance, therefore institutionalizing knowledge management initiatives in the organizations may be considered as a sure way to promote knowledge-sharing practices, further it also establishes connect with other employees, knowledge assets and with experts having experience & know-how that may prove to be very vital for the organization in today's context, and it can further facilitate in solving problems much faster and stimulate innovation in the organization.

Every corporate initiative must support the organization's strategies if its objectives are to enhance performance, and knowledge management initiative is no exception, in the five best-practice organization study conducted by APQC one common trend that has emerged is that they have at least a minimum of six years of experience in formal KM initiatives and each of the organizations had their own reason for launching KM initiatives, and other striking similarity that emerged was that all the five organization benefited from the strategic placement of KM initiatives, and in all the five organizations this initiative was also tagged

to the senior leadership of their respective organizations, further the KM team also facilitates by finding, developing tools, and approaches for knowledge-sharing that helps the organizations to achieve its mission and goals (APQC, 2012).

According to Geoff Nicholson a retired vice president of International Technical Operations at 3M's, leaders have consistently embraced the value of innovation right from its inception and linked it to their knowledge (APQC International Benchmarking Clearinghouse, 2003), one can imagine that a company with more than 100 years of experience must have mastered such an initiative and definitely gained economic benefits, and rightly knowledge management is considered as a competency that enables every corporate initiative, business process, and individual employee to maximize customer satisfaction, sustainable profitability, and growth (APQC, 2002), for people at 3M it is not mere statements, the organizations takes many more actions, especially in the R&D to encourage value of sharing and also develops interest in people towards innovation.

However what needs to be noted is that the organizations must choose their knowledge management strategy carefully, and it is certainly not arbitrary and to a large extent depends on the “way the company serves its clients, the economics of its business, and the people it hires” (Hansen et al., 1999), thus reflecting its competitive strategy. Today many organizations are inquisitive about knowledge management, but how to use it and successfully implement it is a big practical problem, further the problem is also compounded as different knowledge management strategies are required for different type of knowledge to be shared as the knowledge may be in tacit or explicit form, and it also depends on the environment in which organizations operates, according to Porter an organization can create competitive advantage for itself in two ways, by adopting a strategy of

cost reduction to attain a position of cost leadership, or deploying resources to make an impact by working on parameters of time, quality, and innovation leading to radical improvements thus creating a differentiation (Porter, 1980), therefore from the perspective of competitive advantage two main goals/objectives for knowledge management that emerged are to enhance efficiency & productivity, and the other is to improve innovation, and both the KM strategies are not unique and differs in approaches that require different interventions (Greiner, Böhmann, & Krcmar, 2007).

Today some organizations may also consider knowledge management as an overhead since they do not realize how it can positively contribute to their business performance, however looking at other organization's success model some organization's perception is also changing about knowledge management, since it is providing a competitive advantage as also evident from the APQC' studies, for example by building knowledge-sharing capabilities in a Construction and Engineering firm comprising of easy access to design manuals, interactions with experts and repositories of past lessons learnt from projects enabled them to save one million euros for the clients and this capability also resulted in getting more of similar projects in future, further other customers also started recognizing the firm's KM capabilities, and that opened up many more opportunities for them. In an another reputed oilfield services company, the KM team constantly encourages employees to use collaboration tools during their interactions with clients - a tool designed keeping in mind the external collaborations it has with customers, clients, and partners, again by building off this capability enabled the organization to emerge as a preferred choice of their clients and customers, and also this capability proved to be a big source of competitive advantage (APQC, 2012).

Hence by adopting the above-referred practices in the organizations and by deploying adequate resources to develop & design effective knowledge management systems and capabilities, it further enhances the potential of achieving higher value propositions, and once they become aware of this it can turn into an agenda and priority that can be pursued by organizations, and they can start visualizing a strong possibility of gaining competitive differentiation through execution of this strategy and in turn encourage them to pursue this endeavor.

The companies who want to introduce formal knowledge management systems must first need to understand that all organizational knowledge is not equal, and the company needs to develop an ability to distinguish between different types of knowledge and then choose the right strategic practices needed to manage that knowledge, though today many of the companies are engaged in some form of the knowledge management with an objective to gain competitive advantage (Rifkin, 2000), however for centuries knowledge management has been practiced in the family business, only in the 1990's chief executives took a note of it after the competitive pressures started increasing in the industrial environment, and a shift in perspective started taking place from the traditional reliance on natural resources to effective utilization of intellectual assets, and more and more organizations were forced to reflect on the knowledge underlying in their businesses and also to learn how to manage it better (Hansen et al., 1999).

According to O'Dell and Hubert people and not the technology is the key to knowledge management and three aspects that needs to be considered while drawing such a conclusion, first the sharing and learning is a well understood social activity, and it takes place between people, second technology can enable in capturing pattern or description but only people can convey practices and are

capable of applying judgment that are also associated with complex cultural & contextual elements and is a challenge that needs to be managed effectively, and finally practices not only need to be shared but also transferred effectively so that it can make a difference by establishing a connect with the employees and enable them to share their tacit knowledge, and if all the processes are encouraged in the organization then it can take the shape of a self-perpetuating cycle (O'Dell & Hubert, 2011).

When the strategic orientation towards KM in the practicing organizations is ascertained, two traditionally and well-practiced views emerges which have been also dominant in the industry for a long time, one the organizations focuses on the environment in which it operates, also called as positioning school (Porter, 1980), the other is a resource-based view and the firm's predominant focus is on inside the firm and to look for the ways to exploit its resources (Nonaka & Toyama, 2003), though by adopting the positioning school strategies can create and build a sustainable competitive advantage as the focus is on scanning the environment for opportunities, this may also leave aside relatively fewer efforts on strengthening its internal processes, however knowledge that is available as an internal resource in the organization or its environment can only emerge by systematic synthesis and effectively utilized by exploitation. According to Tom Stewart in a 1994 Fortune magazine article, even cautioned companies to give less emphasis on what they own and more on what they know, obviously referring to organization's intellectual capital (Devanport & Prusak, 1998), and Stanford economist Paul Romer even advocated the view that knowledge is an unlimited resource that keeps growing as we use it.

Today's fast emerging Knowledge Economy and Society is witnessing an advent of a new competitive dynamics (Johnson et al., 2002; D1'az-D1'az et al., 2008),

the firms are giving more importance to knowledge and intellectual assets when they face competitors and also recognizing that new knowledge, learning and its effective implementation are vital for gaining competitive advantage (Galende, 2006), a shift from excessive reliance on traditional factors (labor, capital, and land) are also taking place, and what needs to be noted is that the firm's innovative capability, intellectual assets & knowledge it possesses have strong correlation (Subramaniam & Youndt, 2005), and gets further enhanced if it is built on the ability to deploy it effectively. Hence innovation process should be viewed as a most knowledge-intensive business process (Nonaka & Takeuchi, 1995), and the traditional positioning or resource based view alone may no longer be adequate for organizations. According to Govindarajan, a management professor at Dartmouth's Tuck School of Business, "The mindset that is needed, the capabilities that are needed, the metrics that are needed, and the whole culture that is needed for discontinuous innovation, are fundamentally different" (Hindo, 2007).

Even today innovation remains as a top agenda for Chief Executive Officers, in a recent survey conducted in the year 2012 only 50 % of the top managers were impressed with the returns on their innovation focused investments, and the main building block that has emerged and still remains with the culture (Denham & Kaberon, 2012), therefore innovation and cultural change requirements remains most dreaded task even for the most well-intentioned and dedicated organizations, and this challenge still needs to be well perceived and understood by the organizations even before venturing into a journey filled with full of uncertainty.

In an another APQC best practice report, it has been concluded from their studies of high performing companies that technology alone will not ensure people to use, share and also encourage each other's to use knowledge, however, what can make

a difference is how enthusiastic people are about sharing their knowledge, and when people value and cherish each other's ideas and share their own experiences then only leveraging of knowledge can be seen in the organizations and also to a large extent it depends on the culture of the organization, therefore together those prerequisites emerge like a conducive environment that influences behavior, and that needs to be well managed (APQC International Benchmarking Clearinghouse, 1999). The best-practice organizations also put up a focused and considerable effort to create a linkage between KM, innovation and culture through various in-house initiatives such as training, messaging, event planning, rewards, incentive and even allowances for failure, and such cultural initiative's not just affects the R&D performance, but are also essential for organization's strategic interest (APQC, 2009c), below are the factors, aspects and elements of culture that have created a mediating effect to sustain the linkages of knowledge management and innovation culture.

4.6.1 Role of Knowledge Management

According to Brand 3M has a long-cherished objective to be the most innovative company in the world and to remain innovative in the competitive landscape, and effective use of knowledge management is a must and that also requires backing of a conducive environment and forms an essential condition, however at the core 3M encourages on 'tacit to tacit' with a belief that if it can make it function well then other aspects of KM will fall in place by itself, and rightly 3M views KM as more of a cultural and organizational issue rather than a mere technological initiative. What differentiates 3M from other companies is that it views KM, not as a technological intervention but more of cultural and organizational initiatives, therefore if another organization invests in similar infrastructure that 3M built over the years for its KM, they will find it hard to develop KM environment similar to that of 3M (Brand, 1998).

One of its corporate performance initiatives is to promote an innovation culture and 3M actively uses KM to support it, 3M goes at length to foster collaborations and over the past century it has created formal/informal systems and norms to encourage information sharing that has triggered many of its innovations. Some of the mechanisms that include connecting with internal and external customers that include its Tech Forum, technology platforms, the 3M education and learning site, Lotus Notes databases, the Idea Hopper, staff rotation, peer recognition, Six Sigma, storytelling, and library and information services (APQC, 2002).

3M's legendary leader McKnight had a foresight about knowledge management in its earlier days itself, though the true definitions and perceptive matured and emerged in the industry much later. However 3M always encouraged a free exchange of data and ideas to take place across the organization, and advocated a transition from a technical phase – associated with the laboratory to the production. 3M's also encouraged every idea evolved to be given a chance to prove its worth, and ultimately this philosophy emerged as a "3M's policy and creed" (Bartlett & Mohammed, 1995).

APQC defined the Knowledge Management - as a discipline about creating and managing the process to get the right knowledge to the right people at the right time and help people share and act on the information in order to improve organization performance (O'Dell & Hubert, 2011), and according to Davenport and Prusak, "knowledge itself is worthy of attention because it tells firms how to do things and how they might do them better" (Davenport & Prusak, 1998), today when we reflect on those words they very much resonates with what 3M had envisioned about knowledge management nearly a century ago and is also evident from the practices it has adopted across the organization.

The 3M's culture also encouraged employees to leverage its products, processes, and technologies into converting new market opportunities, and it was a matter of time that a technology tree having more than 100 branches emerged and was possible by nurturing of its roots in the form of 3M's knowledge thus providing multiple new products, such a rapid pace and explosion of new product development was made possible because 3M's research community and leadership had well recognized much earlier the value and potential of sharing knowledge. Also in the earlier phase of its existence the culture of innovation that had evolved at 3M emerged as a catalyst and facilitated in creating external demands with its unyielding focus on innovation and by constantly matching its internal capabilities, which ultimately resulted into ever expanding product applications, in identifying and meeting new customer needs, and also provided concepts and ideas for future development, in other words it witnessed arrival of product explosion being triggered by the knowledge conversion (Bartlett & Mohammed, 1995).

Although 3M's research community initially grew in a tightly-knit informal network due to limitations in availability of infrastructure at that time, however, it did not deter them from going ahead with the process of knowledge conversion, as technology base developed and further expanded the need was felt to have a free flow of knowledge transfer, and hence systems and processes were built to address, and despite the inherent limitation it had faced at that time, the development program was still pursued vigorously, and the research community at 3M truly recognized the value of sharing their knowledge and also encouraged cross-unit technology transfer. 3M also organized Annual Technology Fair - a three-day internal event to showcase their latest findings, and many more such initiatives, and as the company rapidly grew in various dimensions the technologies also continued to diffuse much faster, and they were also adopted and customized for their requirements across the unit (3M Company, 2002).

Much later and over a period the true definition of knowledge management that evolved at 3M does reflect its aspirations - a central competency that enables every corporate initiative, business process, and individual employee to maximize customer satisfaction, sustainable profitability, and growth (APQC, 2002), and early recognition of knowledge management was pivotal and most important factor, and its resolute faith in it has continued to remain throughout in its journey, and thus enabled it to emerge as a most admired and an innovative company, it is also evident from the study so far that knowledge management has played an important role since its inception and has emerged as an important factor throughout its journey.

At 3M from the perspective of an innovation culture – an organization-wide shared basic value that support innovation, organization-wide norms for innovation, and perceptible innovation-oriented practices (Herzog & Leker, 2007), is most appropriate since innovation culture is also embedded in the DNA of the organization and its evolution originated almost a century ago, and that was initially perceived and initiated by the deft handling of its visionary founders and leaders, as a result it built the right infrastructure in terms of technologies, R & D platforms to pursue research and right attitudes as reflected in its core purpose resulting into every day innovations, and perhaps this has resulted in considering 3M as one of the most innovative organization.

Today some of the other innovative enterprises have also exhibited such distinct social connections, culture, and supporting behaviors thus enabling it to stand out, according to Lafley, ex-CEO of P&G, innovation is a part of their daily routine, and they had to work hard to establish an innovation culture, and a decision to focus on innovation as core strength of the organization has had direct influence on its performance. As a result, it delivered on an average 6% organic sales

growth since the beginning of the decade, and that was virtually possible by its relentless drive for innovation (Lafley & Charan, 2008).

3M right from its inception cultivated an environment conducive for innovation culture, and today it has become inseparable within the organization, that is why it is rightly called a truly innovative company. Even at the earlier stages when the international expansion was perceived as a priority area from a strategic point of view by the leadership, it was able to excel due to its unwavering reliance on innovation culture, though the priority was set by McKnight as he was convinced that in order to deprive competitors to build strength, capabilities and to counter challenges, and this vision became intrinsic and continued with the several leadership successions that took place after his demise. In order to sustain its innovation culture it provided adequate opportunities for employees recognition and to make them feel important, apart from cash reward system, service awards for long-term service it also provided many other avenues such as:

- The Carlton Society honors employees for outstanding scientific achievements.
- Circle of Technical Excellence and Innovation Awards to honor exceptional contributions towards innovation, productivity, and growth of 3M.
- The Quality Achievement Awards program to identify internal best practices, and communicates those practices throughout the organization (APQC, 2010a).

One of the APQC report also points to the present scenario where the need to power the economy is dominated by the knowledge workers, therefore any

effective use of the knowledge can lead to faster, less risky, and more vibrant innovation in all sectors, including profit or nonprofit organizations, and for many the organization knowledge is even considered as equal to raw material, and for some output (product) of their work, the study also concluded that the way organizations manages the knowledge is the key to being more innovative, or, in other words, specific driver for innovation is all about effectively managing knowledge (APQC International Benchmarking Clearinghouse, 2003).

The differentiating factors for some of the organizations to be more innovative than others rests in the understanding of the border perspective that is embedded in business applications and innovation practices of such innovative organizations, as the innovation may be in the areas of new products, designs, business models, processes, etc. When viewed in a more pragmatic way, 3M built its \$60 billion business by exploiting ideas and technologies and then applying various permutations and combination to create more and more innovative product applications, new context or even develop & introduce products that are completely new to the markets, for example when 3M had developed Post-it-Notes, today its application has manifested into a source of productivity improvement in our offices, and it was made possible by being able to connect knowledge about technologies to knowledge about customer's and also anticipating market needs (APQC International Benchmarking Clearinghouse, 2003), therefore it may be fair to conclude that knowledge management tools and principle can be the key source of further invention and innovation in the organizations, it also depends on how organizations can nurture knowledge management initiatives that stimulates and encourages their knowledge workers to contribute more through regular use of knowledge and experience.

According to O'Dell and Hubert "KM must serve an organization's strategic goals and the needs of employees using the knowledge" (O'Dell & Hubert, 2011). APQC has also consistently concluded from their earlier studies of the high performing organizations that knowledge management is like a catalyst that can make organizations more efficient and effective, and it encourages employees to share what they already know and also enables them to learn from others through number of approaches that have emerged by managing knowledge (APQC International Benchmarking Clearinghouse, 2003), therefore knowledge management address both the needs of the organization and people, and together it can facilitate in achieving the business goals. Organizations that are highly innovative also usually have an effective knowledge management system, for example, to remain as a most innovative company of the world is the 3M's important mission and long ago it realised that a sure way to excel in its goals is to adopt a path of effective knowledge management (McAdam, 2000), below Exhibit provides further threads extracted from the literature review on KM.

Table 4.6: Knowledge Management

Aspects/Factor	Reference	Encouraged philosophies/values/practices	Facilitates KM & innovation
Knowledge Management	(Brand, 1998)	At 3M KM is more of a cultural issue than a technological one	<ul style="list-style-type: none"> • Systems in place such as Formal training programs, learning by doing, help desks, intranet, Lotus Notes, IT-based databases. • It actively maintains best practices databases and continually maps so that it can locate where those technological skills are available
	(APQC, 2002)	KM as a driver of change	Successfully created competitive advantage through shared: <ul style="list-style-type: none"> • world-class technology • customers, channels, and brands • manufacturing global infrastructure • a culture of innovation
		Created value system way back 100 years to discourage knowledge hoarding	A social & cultural structure in place that promotes knowledge sharing
		3M follows a KM steering team approach with representatives from various disciplines (e.g., Six Sigma, IT, HR, library and information services, and marketing).	That resulted in six strategies for KM to: <ul style="list-style-type: none"> • Foster awareness & understanding of KM in the organization • Promote high-value KM initiatives • Leverage existing technology • Develop KM methodology and processes • Benchmark • Maintain sustainability

4.6.2 Leadership

"Investing in leadership development will remain a top priority. Our leaders provide the focus, power, and inspiration that have made 3M one of the most innovative enterprises in the world today. We recognize the powerful impact leaders have on the company's ability to continue delivering innovative solutions and social responsibility, so 3M will continue to encourage our leaders to look beyond themselves to the world in which we live." - Cindy Johnson, Global Director of Talent Development on the Leadership Philosophy at 3M.

In fact throughout its evolution a consistent theme that resonates with the above philosophy, and further reinforced by various interviews and publications is that - innovation success is a consequence of creating the culture, in which it can take place, and rightly their 'heroes' amongst past CEOs have consistently promoted the innovation culture, and it so happens to be the characteristics of the firm (Tidd, Bessant, & Pavitt, 2005).

McNerney - a first outsider to lead 3M in its 100-year history, on joining announced that he would change the DNA of the place and put in great emphasis on efficiency & productivity improvement and brought in Six Sigma initiative - that uses rigorous measurement to reduce variation and eliminate defect, however they experienced that the initiative was not conducive to company's culture and felt that the creativity was getting crushed, according to Vijay Govindarajan, a management professor at Dartmouth's Tuck School of Business. "The mindset that is needed, the capabilities that are needed, the metrics that are needed, the whole culture that is needed for discontinuous innovation, are fundamentally different." Rightly the successor to McNerney and former CEO George Buckley

stated that "Invention is by its very nature a disorderly process," and he had to undo many of the initiatives of McNerney.

Timm Hammond, the director of strategic business development, says "[Buckley] has brought back a spark around creativity," and according to Bob Anderson, a business director in 3M's radio frequency identification division: "We feel like we can dream again" (Hindo, 2007). It will be interesting to study how the successive CEO's had aligned and managed its challenging journey and to further insight on the leadership are drawn from its in-house publication - A Century of Innovation: The 3M Story (3M Company, 2002).

4.6.2.1 Lou Lehr (1980-1985): Building a New Base

After taking over as CEO's job in 1980 at 3M at a time when outbreak of inflation and global recession was at large and the advent of second "oil shock" even posed a much greater challenges for him, apart from resolving the immediate challenges he was facing Lehr's believed that the company's diversity which he termed "our greatest strength" was leading to "a fragmentation of effort," as by then 3M had diversified into additional 15 new divisions and 5 new product groups during the previous decade alone and to further exploit its 85 basic technologies and 40 odd major markets operating in 50 countries worldwide was becoming a difficult task. Lehr's set his priority to assess management's ability and limitations on how to deal with its agenda of massive diversification and introduced major changes to the organization by encouraging more of coordination across the units and introduced strategic planning processes, and additional thrust on expansion and leveraging of its technological base.

Under Lehr leadership a massive reorganization was initiated, thus 3M converted its portfolio of 42 divisions and 10 groups into four business sectors based on their related technologies, the primary objective was to facilitate the development and diffusion of technologies across closely related divisions and supported by each sector having its laboratory and contribute towards development of new products and processes so that it can be quickly translated into innovations.

Under this new configuration, it also set up a Central Research Laboratories to focus on longer time horizon and to carry out basic research for the purpose of leading the company into entirely new business/portfolio and set a mandate to focus on the core technologies that would drive medium-term growth in the businesses they had supported. The new sector structure also allowed a gradual adjustment of 3M's classical philosophy of creating fully-integrated, self-sufficient divisions, and also management start providing equal emphasis on both market and product development.

The other initiative under the leadership of Lehr was as impactful as the structural change and ensured that a formal planning process that was first introduced in GE in the 1970s was in place at 3M after customization. The intelligence gathering from the market and as well as competitors become part of the newly introduced planning processes and performance targets for the managers were set based on such inputs. Initially divisional level managers resisted the newly formed process driven format and felt that it was not effective, since they were more exposed to informal planning process in the past and had greater autonomy to pursue opportunities, however with the passage of few cycles of implementation line managers attitudes changed, and they accepted the new processes, and in the words of one of the divisional manager, "By focusing attention externally, and

particularly on competitors, it jolted us out of our short-term, operational mentality."

Lehr also increased its R&D budget that had to be squeezed earlier because of huge borrowings in the mid-1970s and during his six-year period as a CEO, 3M's spending's on R&D more than doubled to a figure of 6.5% of total sales in 1985, the increase in R&D budget provided a new impetus to innovation, it witnessed a sharp jump of 25% in sales of product that was introduced in the last five years.

As a result of Lehr's leadership in overseeing the introduction of new organization structure, planning processes, and increasing investment in R&D, a lasting impact on 3M's products & processes development and introduction was evident. Lehr also wanted to recognize the individual's efforts and serendipitous discoveries and, therefore, gave consent for the establishment of a Genesis program that year marked up to \$ 50,000 to carry out research on any potential idea, and also introduced many other programs that boosted individual recognition and motivation.

Lehr was a strong leader and conveyed a strong vision, highly successful organizations can know how to manage the antibodies that come in the way of anything new and also know how to grab opportunities and convert them into a winning big and are also able to easily visualize that continuous gradual improvement may not be just sufficient by itself (Kotter & Cohen, 2002), true of a successful leader and considering the legacy of Lehr, his actions were bold and far-fetched at a time when the business environment was not at all conducive to initiate such a magnitude of change, according to Kotter and Cohen, people in the organization do not change much if they are just given an analysis of the situation

and expecting a shift in their thinking, what matters most is that when they are shown the truth that ultimately influences their feelings, and in the world full of economic turbulence if this reality is handled well then chances of winning are high, otherwise it will prove to be very expensive for the organizations and some may not even survive, as Drucker rightly put it, “people need to know what their organization stands for and is trying to accomplish” (Hesselbein & Cohen, 1999). Lehr was clearly able to have an organizational conversation and also articulated & presented the truth to his people across the organization, unlike what Sull had pointed out that one of the most common phenomena observed in successful companies is that when they face a big challenge in their environment they often fail to respond effectively, and their sales and profit often erode, though some organizations may ultimately manage to recover invariably through a painful exercise of downsizing and restructuring (Sull, 2002). However 3M managed to overcome the challenges and also successfully transitioned without any adverse impact and obtained the unquestioned support of its people all along, and that is why Lehr was considered a visionary and respected leader of his time.

4.6.2.2 Allen "Jake" Jacobson (1986-1991)

During Jake’s predecessor’s period between 1980 to 1985 sales fell, while net income remained flat as a result of a global recession, overvaluation of dollar and challenges put forth by competitors from overseas market, which confronted the new CEO, Allen "Jake" Jacobson on his arrival with new challenges, however Lehr had also left behind impressive technology infrastructure that were expanded by further additional of 20 new technologies and also a stream of new product pipeline that alone resulted in sales of new products to more than 30% by 1998.

On the other side, 3M's cost of goods sold had increased from 54.7% in 1979 to 60.5% by 1985 thus resulted into a drop in net income from 21.2% to 14.0% of total sales. The company was now facing challenges of uncompetitive cost structure and that forced to withdraw or spin-off several of its operations including core businesses such as audio tapes & copying machines and as the competitive pressure further increased, some of its old and new lines of business like abrasives, office supplies, and magnetic media had to be subsequently hived off, this situation by itself set an agenda for Jacobson to deal with and he concluded that time for 3M has come to make some major shift in its conventional strategies and adopt a more progressive view to moving ahead.

4.6.2.2.1 Productivity and Competitiveness

Jacobson earlier as president of 3M's U.S. operations had introduced a program called "J35"- the J stood for Jack and 35 stood for his five-year target percentage reduction in manufacturing labor content and cycle time, and on his taking over as CEO also set such similar targets for its global operations, at the same time the earlier introduced formal planning process by his predecessor was also driving managers to recognize and respond to the pressing external pressures created as a result of falling selling price and rising costs associated with raw materials, and those external and internal forces together reshaped the way 3M managers perceived about their competitive strategy.

However, traditionally 3M's strategy had been to develop premium-priced products catering for a niche market. Therefore, it was not very comfortable to compete on low product price. Today many of the organizations across the industry have adopted Porter's framework of "generic strategies" and deploy appropriate strategies to achieve above-average performance (Porter, 1996), at

3M a shift was emphasized on its high-cost structure in order to counter the prevailing competitive landscape, and that forced to change its focus to cost leadership strategy so as to enable it to expand its market base, however, its earlier predominant focus on high premium-priced had never really encouraged it to develop manufacturing competencies & capabilities, and it proved to be a major limitation. As a result by the mid – the 1980s, 3M was forced to undergo changes in many areas and develop new strategies. However, it successfully executed them and later proved to be revolutionary within 3M culture.

For instance, a highly profitable Post-it note product was perceived as competitively vulnerable, management team, therefore, redefined its strategic objective to achieve 90% global market share, this shift in strategy by itself was very bold and aggressive. However a shift in strategic approach also called for a change in management mentalities at multiple levels and further the challenges of managing initial skepticism at divisional level was enormous to handle, as some employees even felt that a 90% market share objective was just not achievable, however at the other divisions producing and selling of mature products like sandpaper, or videotape catering for a highly competitive segments were also quickly learning that market share and unit cost measures were as important as new product introduction for their growth.

4.6.2.2.2 Disciplined Development Process

Jacobson continued Lehr's commitment of funding R&D with a renewed emphasis and an aim to convert such investment to a better and effective source of competitive advantage. Hence, 3M became focused on its choice of project development initiatives to reduce cycle time and bring the new products to market much faster. The management also created action teams composed of technology,

production, and marketing specialists and assigned with the responsibility of developing and delivering new products, and as a result of this initiative within a couple of years saw introduction of several new products in some divisions and also other divisions were reporting successes by deploying such cross-functional teams, and soon such practices were replicated in other divisions as well, Jacobson also supported and accelerated the process by communicating this success across the organization as models for the corporation, there were several other initiatives introduced at 3M that were equally effective, however it was also felt that with a change in management orientation and on introduction of several such initiatives across the organization, people felt that there was less freedom for them as compared to 10 to 15 years back, as result the leadership was faced with more of motivational and morale issues to deal with.

4.6.2.2.3 Focus on Customers and Markets

Jacobson also ensured that the company's technological capabilities were in line with its customer's sensitivity and market focus, and also continued with Lehr emphasis on quality, as defined by him in terms of meeting customer expectations, but he also attached a productivity measure to it - a 35% reduction in the cost of quality, and later added and termed it as “J35” targets for the 1990s, and at same time also continued Lehr’s other initiatives.

At the international market front, Jacobson saw opportunity to expand its current market share as overseas sales accounted for just 37% of total sales in 1985; Jacobson encouraged an increase in major investments in offshore technical resources and manufacturing capabilities with an objective of reaching an overseas sales target of 50% of the total company’s sales.

4.6.2.2.4 Impact on Performance

At the time of Jacobson retirement in October 1991, 3M was able to achieve a handsome gains in its performance as a result of his effective leadership, witnessed on an average 10% annual sales growth that was possible by the international expansion in the consecutive years from 1986 to 1990, 3M also exceeded its goals of accounting for 25% of its sales from new products – in fact in the last three years it even exceeded its targets and achieved 30%, its earnings share growth average was 15.6% per annum against its corporate objective of 10% or better. Again on the “J35” front that Jacobson had introduced at the worldwide level on his taking over as CEO and had set some challenging productivity targets, the company achieved a 35% reduction in labor content, 40% drop in the cost of quality, and a 21% cut in manufacturing cycle time over his five-year tenure.

Jacobson was able to achieve impressive performance as the above statistics clearly indicate however not without substantial investment in the organization. Jacobson ensured that annual R&D investment had been maintained in the range of 6.5% - 6.6% of sales and that in monetary terms were more than \$35 billion over five years, his aggressive capital investment, particularly in plant modernization alone, had totaled to \$4.9 billion during his tenure as CEO, despite heavy outflow of capital, the return on stakeholders' equity averaged to 20.9% between 1986 and 1990, as compared to the corporate target that was set to 20%-25%, and at the same time return on capital employed averaged 25.2% against the objective of 27%.

Jacobson was rightly recognized for his impressive performance and named as Manager of the year by the National Management Association on his retirement,

earlier the 3M had found a place in Fortune's list of "America's Ten Most Admired Companies," its sixth appearance in seven years and also named in R&D Magazine a "Corporation of the Year."

Jacobson's successful tenure was associated with dramatic changes in the organization, and also shift in strategic positioning of the organization enabled to transition from focused (niche markets) to cost leadership and it was no ordinary feat, according to Meyerson changes in organizations primarily happens in two ways: either through drastic action or through evolutionary adaptation, in case of former it is usually associated with a forced down approach on the organization which is discontinuous and mandated by top management to counter major technological innovation, or due to scarcity or even abundance of critical resources, or by sudden changes in the regulatory, legal, competitive or political landscape, and under such circumstances changes normally happen quickly and often involves significant pain (Meyerson, 2002), the changes at 3M can be attributed to drastic action at 3M by the leadership.

Looking at the organization from the perspective of "drastic change" the changes implemented during the 1980s, that had even challenged and also resulted into dramatic overturn of some of the company's well-established practices, for instance, earlier philosophy of "divide and grow" approach being replaced by consolidating organizational units with specialization by function and that also created apprehensions/concerns about future in the minds of some people. However, the same organization change also brought an impressive gain regarding an overall performance improvement under the leadership of Jacobson.

Earlier the organization had also witnessed evolutionary approach adopted by its legendary leader McKnight, according to Meyerson an evolutionary approach can be viewed as - a gentle, incremental, decentralized, and over a period capable of producing a broad and lasting shift with less upheaval (Meyerson, 2002), and this approach also made huge difference at 3M, though it was quite an opposite to Jacobson style of leadership, perhaps best way to describe leaderships at 3M is in the words of retired Chairman of the Board & CEO Lew Lehr, “The integration process could best be described as evolution, not a revolution” (3M Company, 2012).

4.6.2.3 3M “Desi” DeSimone 1992: Preparing for the future

Livio "Desi" DeSimone, took over as CEO in November 1991, at a time when doubts were cast about the organization's ability to compete in a highly challenging business environment. Desi was described in one of the reports on his appointment as "a textbook example of the quintessential 3M CEO", an engineer by profession joined 3M more than 30 years back, considered to possess high energy, consensus builder, and well known as a manager who got results, and in contrast to his predecessors who was associated with a disciplined and focused style of operations, Desi had much of a "loose" style. When asked to describe his own management approach, he mentioned that he would like to have attributes of his three predecessors: Ray Herzog's charismatic motivating style, Lou Lehr's ability to bring the best out of an individual, and "Jake" Jacobson's discipline, focus and objectivity, however he was also pragmatic and recognized the challenges of leading an organization in the present scenario and understood that it was much different to operate now than when he had joined 3M in the 1960s. As DeSimone started reflecting on his course of action, he felt that at 3M traces of old model of operating was still prevailing and not dead, though in the recent years emphasis was also made more on command and control capability, though

he felt that self-driven action by his people in the organization was still the key to success, at the same time he felt that the organization was now equipped with better architecture to deal effectively in case an emergency.

DeSimone also acknowledged the role of senior management in creating an internal environment and their ability to have an “organizational conversation” that makes people understand and value 3M's ways of operating and its culture, in which innovation and respect for the individual are still central and embedded in the organization’s DNA.

DeSimone quickly reorganized and restructured the businesses from the existing four sectors into three and continued with Jacobson's productivity initiatives, but he also set a most dramatic new challenge for 3M in the area of faster and more efficient product development process, though he also retained the most aggressive financial goals set earlier by his predecessors (10% earnings growth, 27% ROCE, and 20%-25% ROE), and further enhanced the well-known objective of achieving 25% of sales from products introduced within the past five years, to a target of 30% of sales from products introduced within the last four years with an renewed emphasis on a new strategic imperative to develop and bring innovation to market much faster, and continued with the objective of investing in the R&D and supported by increasing its spending.

DeSimone’s challenges were no simple as he was entrusted to carry the legacy of 3M, in the past it had also witnessed annual sales and earnings of around 13% in the 1970s however then it fell substantially to almost 8% in the 1980s and the subsequent decade beginning 1990s was also not looking good at all for 3M. In the midst of a worldwide economic slump sales for the first three years of the

1990s grew at an annual rate of less than 5%, while earnings remained stubbornly flat and performance against the other two key financial goals was also disappointing, in the year 1992 its return on equity of 18.8% had fallen and was below the 20% target rate set for the past two years and the ROCE had dropped even more dramatically after 1989, plunging by more than eight percentage points to 19.7% far short of its 27% target (Bartlett & Mohammed, 1995).

Though the company had become larger and more diverse, however the industry observers were of the opinion that 3M's ability to maintain its unique ability to drive growth through innovation was waning and by then its sales was \$14 billion and almost 90,000 employees were spread across 47 product divisions in 57 countries, and doubts were also raised that 3M is too large and too diverse to be managed effectively.

In the past three decades beginning 1970, the leadership at the 3M has been able to overcome the challenges put forth by the turbulent environment, as DeSimone had earlier summarized the leadership styles of predecessors such as Ray Herzog's - charismatic and motivating, Lou Lehr's - ability to bring the best out of an individual, and "Jake" Jacobson's - discipline, focus and objectivity, though all the CEO were very effective during their respective tenure and had introduced some path breaking trends that led to the consolidation and development of innovative products, but the organization was witnessing that the lasting impact the leadership had made in the past was now diminishing.

When we analyze the Jacobson's tenure, during the 1970s and 1980s the Japanese firms were predominately focused on total quality management and continuous improvement, and according to Porter, the operational effectiveness was at the

heart of Japanese organizations and also a source of great challenge to Western companies in the 1980s as the Japanese companies were much ahead of their western counterparts, however after making impressive gains for over a decade by operational effectiveness it was proving no more an effective source of competitive advantage, as the companies had by then perfected the application of this model in their organizations (Porter, 1996). Jacobson in 1980 was perhaps influenced by the Japanese's drive of operational effectiveness, hence he adopted and emphasized on productivity improvement as a key driver in 3M and provided some short term gains and an alternative strategy, though DeSimone also acknowledged that 3M had built its architecture & competencies and was well equipped to deal effectively in such situations.

According to Hesselbein and Cohen in order to manage effective partnerships in an organization the leaders must be able to demonstrate three imperatives- managing for mission, managing for innovation and managing for diversity (Hesselbein & Cohen, 1999), in the last three decades, 3M was facing a tough operating situation as a result of market, competition and fast-paced growth around the globe that were also throwing up new challenges, and it was trying to mitigate the challenges by exploring new strategies and find new ways to operate, perhaps its reliance and emphasis on core values was temporarily shifted and the leadership of the time was more focused on to mobilize people to do more of an adaptive work, such a shift in work is associated when deeply held beliefs are challenged or the values that have made in the past successful are now less relevant (Heifetz & Laurie, 2002). An inclination towards adaptive work was also evident from the perception of the people across the organization and the changes implemented during the 1980s, and in the process the leadership had challenged and overturned some of the company's age-old well-established practices (3M Company, 2012), Collins in his book *Good to Great* has categorized five levels of leadership and if we reflect on the attributes of an effective leader the

characterization that best fits - catalyzes commitment and vigorous pursuits of a clear and compelling vision, thus stimulate higher performance standards (Collins, 2001), and those words also very much resonates in the leadership of the CEO of the last three decades at 3M. The table below summarizes the philosophies of its leaders so far and the outcome that had resulted.

Table 4.7: Leadership at 3M

Leader	Period	Philosophies/ Values/ Practices	Outcome
McKnight	1929-1966	<ul style="list-style-type: none"> • Unshakable belief in the power of individual entrepreneurship • Built technology driven culture • Promote value of research & experimentation 	<ul style="list-style-type: none"> • 3Mer's felt: "a climate that stimulates ordinary people to produce extraordinary performances." • Built a legacy of technological innovation, market responsiveness, and institutionalized entrepreneurship • Established product differentiation as a key to success
Lewis W. Lehr	1980-1985	<ul style="list-style-type: none"> • Communicated a strong vision of the future • Carried major reorganization to allow better cross unit coordination • Emphasis on formal strategic planning • Leveraging of 3M's technological base 	<ul style="list-style-type: none"> • Can be summed up in the words of one of its VP – we relied on a pool of technology, some talented people, and supportive culture to create innovation by spontaneous combustion. • Created enduring impact on 3M
"Jak" Jacobson	1986-1991	<ul style="list-style-type: none"> • Introduced 15% of employees time to work on their ideas • Introduced "Cooperating for Growth" program • Broadened & strengthened technology base by addition of more than 20 new technologies 	<ul style="list-style-type: none"> • Percentage of sales from new products increased by 30% • 10% average annual sales growth • Manager of the year by National Management Association, USA
"Desi" DeSimone	1991-2001	<ul style="list-style-type: none"> • Empathy for people & commitment to innovation were his hallmark • Reenergized & refocused quality initiatives & committed to customer satisfaction 	<ul style="list-style-type: none"> • Set target and achieved 25% of sales from products introduced within the past five years

At 3M innovation has always remained pivotal and according to Drucker Innovation is defined as "change that creates a new dimension of performance", at the same time successful innovation also depends on how leaders ensure consistency in supporting values and behaviors within an organization, at times the leaders also make "planned abandonment" and are forced to give up some of the programs that work better today, but they feel that not necessarily in future (Hesselbein & Cohen, 1999), though the decision to retain or abandon also depends upon the determination and judgment of the leader. According to Collins, "Leadership is the answer to everything", empirical research has also established that the leadership is a stimulant to ensure the success of innovation, however, specific leadership behavior is also equally important in an organization for innovation success (Bledow, Frese, & Mueller, 2011), in other words, leadership can manifest innovation success, and is very much visible at 3M.

However, Forbes magazine on 3M had concluded in 1991 that: "The company's well-deserved reputation as an innovator rests largely on incremental improvements in slow moving markets such as adhesive tapes, films, abrasives, and coatings, where its proprietary technology tends to hold up well. It simply isn't geared to businesses where today's hot seller can be tomorrow's inventory glut" (Forbes, 1991), but when we look at the current performance of the organization we see a different picture all together that is evident from the performance data mentioned below.

On a revisit to the 3M's website today we come across an impressive performance achieved so far, it's operation income has grown to \$6 billion an increase of 4%, and sales of \$ 29.6 billion (as on 2011), EPS were at \$ 5.96 at 6% increase over the previous year and generated free cash flow of nearly \$4 billion, and also returned \$4.3 billion to shareholders via dividends and share repurchases, further

the international (non-US) sales account for \$19.6 billion (66% of company's total sales), and employs 84,000 people, operates in more than 65 countries and products are sold in nearly 200 countries (3M Company, 2012), such an impressive performance is as a result of its belief in its embed core purpose - To solve unsolved problems innovatively.

In an interview with Bill Hewlett of HP, when asked to name a company he greatly admired and saw as a role model, his answer was, "3M? No doubt about it. You never know what they are going to come up with next. The beauty of it they probably don't know what they are going to come up with next, either. However, even though you can never predict what exactly the company will do, you know that it will continue to be successful" (Collins & Porras, 2000). At 3M, leadership has played a vital role in creating a mindset toward innovation and acted as a stimulant for innovation and has been shaping its destiny all along and rightly emerged as an important factor.

Based on the insight obtained from the study of 3M on leadership, a further literature review was carried to assess the impact of leadership, and it emerged that it facilitated knowledge management and innovation in other organizations as well that can be seen in Table 4.8.

Table 4.8: Leadership, KM and innovation linkages

	Reference	Encouraged philosophies/values/practices	Facilitates KM & innovation
Leadership	(Aragon-Correa et al., 2007; Colbert et al., 2006)	Leaders exhibits certain (unique) behavior	Results in accelerating employees' level of innovative thinking
	(Barsh, Capozzi, & Davidson, 2006)	Strong leadership capabilities	A predictor for innovation performance
	(APQC, 2012)	Leadership in best practice organizations	Tagged to KM initiatives
	(APQC, 2005)	Management commitment is evident in organizations	To link innovation & company's overall strategy
	(Bollinger and Smith, 2001; Roth, 2003; Haas and Hansen, 2005).	Leaders when encourages experimentation, facilitate knowledge sharing	Drives Knowledge management in the organization
	(Yang,2007)	Certain leadership style is more appropriate	For supporting KM activities
	(Bledow, Frese, & Mueller, 2011)	Leadership plays a role	To stimulate innovation

4.6.3 Business Model

For more than a century organizations were structured based on the philosophy of Taylor, he had suggested a clear separation between the roles of workers and management, and the worker's task was predominant to work, and the management task was to take decisions, it was a distinct demarcation and for many decades considered as a basic law in most of the organizations (Schütt, 2003), however innovative companies have developed innovative ways that have been also highly contextual, McKnight came up with a revolutionary idea in 1948 that ignited growth, diversification and innovation for decades to come as he had restructured 3M and created divisions, what we also call today as profits centers and provided autonomy, power, and resources so as to enable it to run independently, it was also perceived as an uncommon idea to American business at that time.

In today's context, what Apple did can also be considered as a path-breaking, it introduced the iPod in the iTunes store and the entire portable entertainment was revolutionized, creating new markets resulting into exponential growth for itself, the iPod/iTunes combination became a phenomenal success that generated additional sales of almost \$ 10 billion, which is about 50% of Apple's revenue (Johnson, Christensen, & Kagermann, 2008), such similar groundbreaking business models elsewhere have also reshaped the entire industry and created billions of dollars of revenue, in fact some of the organizations that found their way into the Fortune 500 lists in the past 10 years did so through adopting business model innovation, though success stories similar to the magnitude of Apple linking to business model innovation is rare. However, an analysis of the major innovations within existing organizations over the past decades has shown that only a few have been business-model related, in fact in a recent study by American Management Association determined that not more than 10% of

innovation investment at global companies be year marked by developing new business models.

McKnight's past experiences in finding solutions based on the interactions with the customer made him believe that such a divisional approach that he had initiated at 3M will keep the businesses closer to customers, and enable to respond to customers much faster and at the same time it will act as strong motivation to the employees, even his timing to introduce such a foresighted approach was perfect, since in the last 40 years 3M had grown significantly and with the end of World War II high demands for products had increased employment opportunities for the people, and diversification had set the stage for the company's growth. By end of 1948, the experiment had already succeeded, and McKnight replicated this structure and recognized the entire company into seven divisions, and each unit had its research lab, production operations, and sales force, and over the years divisions thrived with the companies growing product and market diversification strategy and continued to be operated as small entrepreneurial units, and one of the ex- CEO rightly defined this approach as "grow and divide".

McKnight and his successors also had set stretching growth and performance targets for its divisions to drive performance, such as objectives of 25% of sales from new products, divisional objectives were also to contribute towards predefined corporate financial performance targets, and management exercised tight control over operations through strong corporate staff and a sophisticated control system, rightly Johnson and others have pointed out that a model if well-conceived and put in place results into creating and delivering values (Johnson, Christensen, & Kagermann, 2008).

The industry expert and academicians have come up with the definition of business model as "the logic of the firm, the way it creates and captures value for its stakeholders" (Baden-Fuller et al., 2008), however, to promote which components of a business models depends upon the priority of the management, they can typically be compensation, practices, facility location, assets employed, and sales and marketing and many more, and all the components needs to be connected to value creation & value capture opportunities, and the outcome of a good business model if well-conceived and put in place may facilitate in attaining the goals of the organization and also enable to sustain it (Masanell & Ricart, 2010), as mentioned earlier in the case of Apple – iPod/iTunes synergy created billions of \$ worth of revenue, at 3M McKnight was always convinced of a dynamic business model for his enterprise, for instance when he created a divisional structure it was considered bold and uncommon in America, when it came to promoting innovation culture he had institutionalized a corporate objective of achieving 25% sales from product introduced within last five years, later successive CEO's further enhanced the targets to give more vigor and focus on innovation, it not only provided the right type of business environment but also enabled its progress and grew.

4.6.3.1 International Expansion

Managing the ideological change and technological revolution are the key drivers of today's globalization, and it is considered as most important strategic and organizational issue for any firm, managers are also expected to view their industry as a global industry and every business as a knowledge business, Gupta and others have also predicted that knowledge, skills, and experience required to navigate the company in the global arena is increasingly becoming a core competency for people and organizations (Gupta, Govindarajan, & Wang, 2008).

Today we are clearly able to see global trends toward business expansion as they are emerging as a major force, in fact it has also become mandatory even for a Silicon Valley entrepreneur to include in its business plan an R&D establishment in a low-cost, high-talent location such as India and China, if they are required to be considered seriously by any venture capitalist (Gupta, Govindarajan, & Wang, 2008). However what needs to be noted that 3M perceived this way back and set international expansion as a priority, McKnight had a vision and he articulated it much earlier on that in order to deprive competitors of building strength and capabilities that may ultimately be used to take on 3M and to counter that he set its focus on the international markets, and at 3M managers began deploying this strategy of expansion in the international markets, and by 1973 it had touched an overseas sales of over \$ 1 billion mark (3 M Company, 2012) and this was possible due to 3M's focus on its reliance on business models and they were able to capture easily global demand and also fulfill it with innovations thus creating a strategic position for itself.

In the coming decades also succeeding CEOs have provided great emphasis on the business model and have taken various initiatives all along to realign continually the organization with dynamic business models, and that has also remained an important factor and acted as a great enabler in achieving business objectives of an innovative enterprise, below is the summary of various aspects of business models that facilitated knowledge management and innovation in organization.

Table 4.9: Business Model, KM and innovation linkages

Aspects/ Elements of Culture	Reference	Encouraged philosophies/values/practices	Facilitates KM & innovation
Business Model		Shared Technology	<ul style="list-style-type: none"> • Motto - IP belongs to company & not to single business • 2500 patents issued alone in 2010 • 43000+ issued/pending patents
	(3M, 2011)	Connect Global Collaboration Community	<ul style="list-style-type: none"> • 800+ Technology Forum Events Globally <ul style="list-style-type: none"> ○ Inventor Recognition Ceremony ○ Virtual Technology Information Exchange ○ Circle of Technical Excellence & Innovation ○ The “Annual” Technology Event • 63 full-scale operating businesses in 70 countries
	(Jaruzelski, Holman, & Baker, 2011)	Commitment to open innovation	<ul style="list-style-type: none"> • 30 Central Technology Centers • 85 laboratories globally • Built 46 Technology Platforms • 15% of efforts, interactions, learning & teaching of the technical people is deployed outside their domain of responsibilities
	(Hippel, Thomke, & Sonnack, 1999)	Lead user process (generates breakthrough strategies, products & services systematically)	<ul style="list-style-type: none"> • Cross-functional teams worked in close relationship with leading edge customers/experts • Early on tested & implemented this model in its 8 of 55 divisions

4.6.4 Organization Conversation

According to Dick Lidstad retired vice president, Human Resources at 3M, “McKnight wanted to keep the divisions small and focused on satisfying customers and giving people a chance to be entrepreneurial,” people at 3M were always supported by providing the required technologies to enable them to leverage them into new businesses, and at the same time ensured that the bureaucracy did not hamper the progress. McKnight also ensured that all the support and resources did not remain a free-for-all environment and made sure that 3M remained strongly centralized in some of the core functions like engineering, research and development, finance and human resources, and a manager from each of these functions was assigned to division’s operating committee to ensure consistency in practices throughout the company. Peters and Waterman in their book “In Search of Excellence” have described that 3M operated with simultaneous “loose-tight” properties – tight when corporate consistency was the key and loose when entrepreneurship action mattered most. McKnight’s decision of organizing the company into divisions crafted a climate of perpetual change, and can best be described by Lew Lehr, retired 3M chairman of the board and CEO, “Almost without exception, that new unit began growing at a faster rate” (3M Company, 2012), however this continuity would not have been possible without the presence of a coherent and an effective communication strategy across the units.

Leadership at 3M has all along encouraged networking -- formal and informal -- among its researchers, this was rightly perceived as a secret weapon according to Wendling. However when in 1977 Annual Report it was announced the death of its legendary leader William L. McKnight and in the management review section it also acknowledged that "Bigness can be an obstacle to growth because in bigness

you tend to lose communication. Moreover, when you lose communication, you lose the continuity of philosophy which is so important to 3M."

Conventional techniques adopted by leadership are delegation, negotiation, supervision, and training or coaching, however now new trends are emerging and termed as "organizational conversation, it is about how leaders can talk "with" employees and that has potential to improve connectivity, performance, and results (Crumpton, 2012). According to Groysberg and Slind in most of the organization today, top executives wield considerable power and command over the people, and they drive organizational performance by developing strategic objectives, which are converted and cascaded as performance targets down the line through the hierarchy and passed on to the employees, and expecting that their jobs are to execute merely those orders, this structure can typically be also called command-and-control model (Groysberg & Slind, 2012), and is very much prevalent today in most of the companies, however this approach may not necessarily result in the commitment of employees but may result into a forced compliance to the requirements set out by the management. Groysberg & Slind have suggested four elements of organizational conversation namely intimacy, interactivity, inclusion & intentionality and from this perspective when the organizations are looked at more insights are obtained on how to make organization conversation an effective tool.

3M leadership team never advocated a command-and-control model, but what really mattered was a transformation of the philosophy of their leader into a value proposition, through the entrepreneurial spirit of the people, and the organization always encouraged to bring out the energies and capabilities residing in their mind in the form of tacit knowledge, and also continuity of this spirit required a good articulation and communication strategies, in today's parlance it can also be best

described as organization conversation though a term may not be familiar at that time, according to Groysberg and Slind, organization conversation is a means of circulating information across the company through the full range of patterns and processes – it may be in the form of ideas, images, organization contents passed between leaders and employees, or from employees to employees, though the organizational conversation’s purpose is not to manifest itself as control over a person or a process, but it’s the kind of power that makes people or process to takeoff, and such a practice also facilitates in developing higher level of thrust, in achieving improved operational efficiency and greater commitment among employees, and also results in better synergy between top-level strategy and front line execution, in other words it is like a driving force within the organization that enables to retain a greater focus towards organization’s objectives, also it is not similar to “corporate communication”, which has traditionally grown out of the command-and-control model, and best suited for the needs of a large, hierarchy-driven organization for distributing news of corporate activity to internal as well as external stakeholders (Groysberg & Slind, 2012), at 3M the leaders have always engaged its people in the right way to unleash their potential and to put their tacit knowledge to the best use, and all along the top management have acted like a mentor and their imprints have always remained visible, in fact the initial phase of its existence was closely associated with organization conversation which provided the lifeline and kept them going, it also acts as an additional source of energy within the organization, and the so-called “organization conversation” remained an unique organizational power all along at 3M, and can be a factor that has been guiding the organization for decades, Table 4.10 summarizes the various aspect of organizational conversation that have enabled in facilitating knowledge management and innovation.

Table 4.10: Organizational conversation, KM and innovation linkages

Aspects/ Elements of Culture	Reference	Encouraged philosophies/values/practices	Facilitates KM & innovation
Organizational Conversation	(3M Company, 2002)	Intimacy (sharing vision, empathy & acceptance of employee’s feelings)	<ul style="list-style-type: none"> • Huge tolerance for failure • "Doing the right thing" - not the easy, expeditious or less costly thing. • A “culture of caring” for employees - a major tenet of the 3M culture • Hire people for a career, promote-from-within policy • Early stage leaders encouraged to be challenged by employees & served as mentors to many
	(Dayton, 2010)	Interactivity (Encouraging conversation flow, deploying social technology to facilitate)	<ul style="list-style-type: none"> • Knowledge Networks, Communities, After-action Reviews, Peer Assists, Storytelling, Wikis and Blogs, Social Networking, SharePoint • Culture of Collaboration

Organizational conversation, KM & innovation linkages

Aspects/ Elements of Culture	Reference	Encouraged philosophies/values/practices	Facilitates KM & innovation
Organizational Conversation	(3M, 2011)	Inclusion (Equal opportunity proposition)	<ul style="list-style-type: none"> • 800+ Technology Forum Events Globally • Inventor Recognition Ceremony • Virtual Technology Information Exchange • Circle of Technical Excellence & Innovation • The “Annual” Technology Event • 30+ Active Specialized Interest chapters • Leveraged Capabilities • No IP Barriers & it’s motto is IP belongs to company & not to single business
	(APQC, 2010b)	Interactivity (Create structure & purpose, frame, and agenda for the purposeful conversation)	<ul style="list-style-type: none"> • Created Business Value system • Understand what customers value the most and address it • 3M Trends • To support customers through the identification, recognition, and interpretation of trends & provide them new proposals • Process for managing external ideas • Capture/generate ideas to match the needs of the customers

4.6.5 Innovation Culture and its dimensions

The organizational culture has been studied from multiple perspectives in the past ranging from disciplines such as anthropology and sociology, organizational behavior, management science and organizational commitment (Naicker, 2008), in the past Kroeber & Kluckholm had catalogued more than 100 different definitions of culture (Kroeber & Kluckholm, 1952), however to understand in simple terms "Culture is the way of life of the group of people" (Foster, 1962), it is what a given set of people - normally the founders having enough stability and history, enabled to form over a period enabled its group of people to learn to survive in a complex external environment and also to overcome its problem of internal integration (Schein, 1990).

Cameron and Freeman in their study of competing values framework (CVF) have pointed out that generally when the focus of any organizations is on internal orientation and integration along with an emphasis on external orientation and differentiation, and when both the orientations are combined, it results into four cultural dimensions namely clan, hierarchy, adhocracy, and market (Cameron & Freeman, 1991), and the four different patterns of organizational culture leads to differences in terms of organization focus, leadership styles, employee management, criteria for organizational success (Cameron and Quinn, 1999).

However when we closely analyze the orientation of the adhocracy culture, it manifests into external orientations along with flexibility thus emphasizing more on entrepreneurship and creativity activities in the organizations (Naranjo-Valencia, et al., 2011), and further by having such an inclination towards adhocracy culture organizations are generally characterized as a dynamic and creative workplace, and attributes such as individual initiative, experimentation,

flexibility, and freedom are easily visible in the organizations with an ultimate objective to find new markets and avenues for growth, and they also develop abilities to adapt quickly to new technological and market opportunities (Cameron & Freeman, 1991), hence the adhocracy culture can be considered more conducive to innovations relative to the other three types of orientations, and it provides the first indication of the characteristics of an innovation-supportive culture.

Even today not many clear definitions of the term innovation culture have emerged in the literature on technology and innovation management (Ernst, 2001), for the purpose of this study, and as mentioned in the earlier section the definition of Herzog and Leker on innovation culture has been adopted, and they have defined innovation culture as an organization-wide shared basic values that support innovation, organization-wide norms for innovation, and perceptible innovation-oriented practices (Herzog & Leker, 2007), however then the question arises, which values, norms, and practices are characteristic for such an innovation culture, and are there certain values or norms that are more likely to support innovation than others in the organizations, though innovation is highly desired by many of the firms, but then may not be possible if values, norms, and practices underline the status-quo in the organizations (Herzog, 2011b).

Marketing research literature have pointed out to the interrelationships that exists between entrepreneurship, learning orientation, market orientation, innovation and pointed out about their impact on business performance that are felt in the organizations (Bhunia, et al., 2005; Chen, et al., 2009), it is also suggested that higher the market orientation in the organization it will lead to higher learning orientation (Matsuno et.al., 2002), Farrel pointed out that when organizations adopt to market orientation they also show inclination towards learning

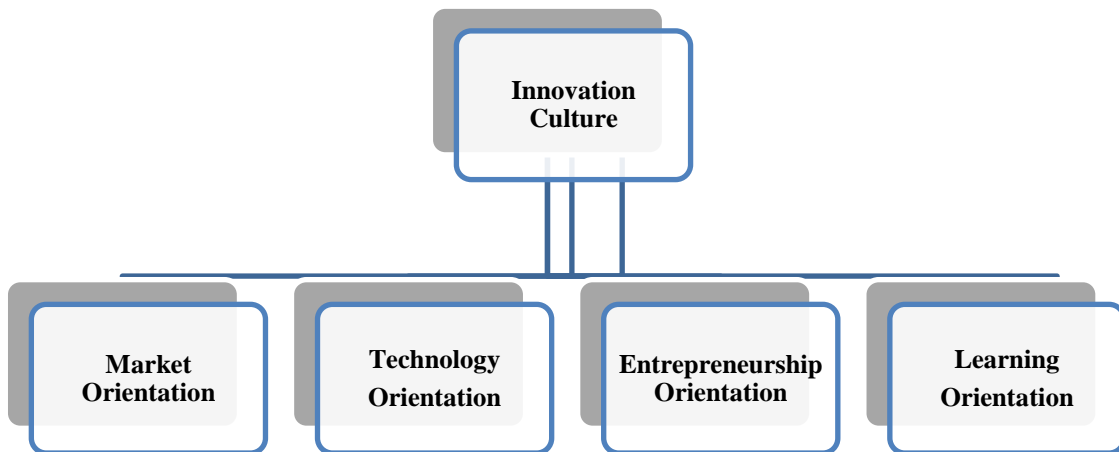
orientation (Farrell, 2000). Market driven behavior is also the key to entrepreneurial action that reflects the intensity of entrepreneurship orientation in the organization (Schindehutte et al., 2008), earlier research suggests that through entrepreneurial orientation organizations can effectively cope up with competitive forces and can also overcome competitive pressures (Burgelman, 1983; Lumpkin and Dess, 1996; Peterson and Berger, 1971), also a synergy of entrepreneurial and technology orientation facilitates entrepreneurial spirit in the organizations, and such organizations are generally found to be risk-takers, and they use and develop cutting-edge technologies (Hakala & Kohtamäki, 2011), according to Zhou firm's market and technology orientations also generally reflects its philosophy on how it will manage its business (Zhou et al., 2005).

Hult, Hurley and Knight based on their studies have identified market, learning, and entrepreneurial orientation as antecedents of innovativeness and concluded that all the three types of orientation enhance organization's innovativeness (Hult, Hurley & Knight, 2004), and Zhou and others have also empirically found a positive relationship between technology, market, and entrepreneurial orientation to innovation (Zhou et al., 2005), therefore if organization's want to be innovative then market, technology, learning, moreover, entrepreneurial orientations should be embedded in a firm's innovation culture, and according to Siguaw and others the orientation concepts often refers to both beliefs or attitudes and actions (Siguaw, Simpson & Enz, 2006).

Thus assimilating the various strands pointed out in the literature on market, technology, learning, and entrepreneurial orientations once embedded in an organization they become an essential part of its innovation culture (Fig. 4.15). Therefore studying each of the element and associated practices from the point of a predisposed orientation in the organizations will provide better insight and

further enlighten on the manifestations and understandings of the various aspects of innovation culture, below is the summary of the various facets of the innovation culture.

Fig. 4.15: Facets of Innovation Culture



4.6.5.1 Market Orientation and its Manifestations

Kotler & Keller in their famous book on Marketing Management have defined marketing as “meeting needs profitably” (Kotler & Keller, 2006), for many of the organizations that aspire to be financially successful for them marketing is essentially the lifeline, and in organizations if the top line does not grow then bottom line gets wiped out soon, therefore constantly improving the top line is the most challenging task for many organizations, and the sentiments echoed in the words of Drucker “There is only one valid definition of business purpose: to create a customer. Therefore, any business enterprise has two—and only

two—basic functions: marketing and innovation” (Drucker, 1954, p. 35), points to marketing and innovation as to two separate entity, and further marketing should be viewed as a dynamic function of providing 'better and more economic goods and services' (p. 37), whereas innovation is about new products or services, creating new application for the existing products or improving existing products, and identifying new market for the existing products (Simmonds, 1986), however it is also clear that both i.e. marketing and innovation’s ultimate objective is to generate value for the organization.

In today’s highly competitive world there is a growing interest on the concept of market orientation, empirical evidences have also suggests that organizations with higher market orientation are witnessing better economic and commercial results, and researchers have also established a very strong positive effect as a result of market orientation on business performance (Lado & Maydeu-olivares, 2000), Kara and others have pointed out that market orientation is more of core aspect of organization culture that shapes competing values, norms, artifacts and behavior and they provide further avenues for organizations to gain competitive advantage (Kara et al., 2005), and if organizations focus is increased on market orientation than market performance is also expected to increase (Narver, & Slater,1990), relationship between ROA and business performance with market orientation are also seen as relatively positive (Lytle, 1994).

Further the current research also indicate that the key to understand this phenomenon lies in market orientation's positive effect on businesses’ degree of innovation (Atuahene-Gima, 1996, 1995; Gatignon & Xuereb, 1997; Han et al.,1998; Hurley & Hult, 1998), and further Hurley and Hult have also developed explicit framework linking market orientation, business performance and innovation.

Today two views that are prevalent regarding the market orientation, one is that it is considered mainly as a company culture, and the second is generally regarded by others as a specific set of behavior, whereas when market orientation is considered as a form of company culture, it is normally referred to as a specific set of organizational values (Lado & Maydeu-olivares, 2000), and when viewed from a behavioral perspective it reflects a knowledge-producing behavior (Hunt & Morgan, 1995; Baker & Sinkula, 1999), therefore the organizations that are predisposed towards marketing orientation may have strong supporting culture that is built over time.

Organizations with MO also have shown commitment to open innovation (Jaruzelski, Holman, & Baker, 2011), MO is associated with synergy of external specialization and collaboration (Bughin, Chui, & Johnson, 2008), MO can act as a first step to support innovation (Marinova, 2004), In a study of EU & US insurance firms it is empirically established that MO is significantly associated with innovation degree and innovation performance (Lado & Maydeu-olivares, 2000), organizations pursuing MO have demonstrated higher business performance & innovation (Hurley & Hult, 1998), and promoting MO leads to superior performance (O'Cass & Ngo, 2007), studies have also established positive relationship between MO and firm's performance (Narver & Slater, 1990; Slater & Narver, 1994), further research has also pointed out that through market orientation long-term competitive advantage and superior profitability can also be achieved (Kohli & Jaworski, 1990; Day, 1994; Jaworski, Kohli, & Sahay, 2000; Kumar, Scheer, & Kotler, 2000).

Kohli and Jaworski have conceptualized market orientation as the organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across the departments, and organization-

wide responsiveness to it (Kohli & Jaworski, 1990, p. 6), market intelligence is also perceived as a starting point of MO (Kohli & Jaworski, 1990), MO is associated with listening & delivering solutions to customer based on their interest & needs (Desphandé, Farley, and Webster 1993; Slater & Narver 1995), therefore organizations that deliberately pursue market orientation are able to do so by acquiring knowledge from the relevant stakeholders such as customer, business partners, suppliers, and also through scanning of the environment and use it as an input for developing product/services, further such organizations may also have a relatively greater chance of attaining superior performance and may consider it as a strategic priority, and the same view also resonates with the definition provided by Lambin on market orientation, “a competitive strategy geared to generating and maintaining a situation in which there is a value exchange with [the firms’] markets, the equity in this exchange creates a differentiating position that leads to loyalty to the brand and high economic returns” (Lambin, 1996, p. 25).

However when it comes to high-tech companies it is also observed that they have under-developed competencies in marketing and lack an understanding of customer needs (Mohr & Sarin, 2008), and this shortcoming can greatly hamper organization’s progress, and if they want to stay ahead then they must deliberately nurture such competencies, and also clearly set priority to acquire knowledge and insight from internal and external sources to be put into good use and gain competitive advantage. Drucker had also strongly advocated a need for market information and its relevance in knowledge-based innovations, according to him “It may seem paradoxical, but knowledge-based innovation is more market-dependent than any other kind of innovation. Careful analysis of the needs—and above all, the capabilities—of the intended user is essential” (Drucker, 1985, p. 9), and his insight is also consistent with the today’s emergence of knowledge-based view of the firm that solely relies on the knowledge creation and

management, in fact, market orientation is also considered as an intangible resource and pertains to behavioral process of gathering market information collected from customers and competitors and need to act effectively and efficiently to gain competitive advantage (Hunt & Morgan, 1995), Table 4.11 provides a summary of MO and KM & innovation linkages, this perspective enables organizations to put across marketing concepts into practice and guides the management in doing their business effectively, hence it may be interesting to understand from the perspective of the adopted practices of market orientations that have emerged from some of the organizations and gain some more insight.

Table 4.11: Market orientation, KM and innovation linkages

Reference	Facilitate KM/Innovation
(Hurley & Hult,1998)	Organizations pursuing MO have demonstrated higher business performance & innovation
(Lado & Maydeu-olivares, 2000)	In a study of EU & US insurance firms, it is empirically established that MO is significantly associated with innovation degree and innovation performance. MO is considered as a form of company culture; it is normally referred to as a specific set of organizational values
(Baker & Sinkula, 1999)	When viewed from behavioral perspective it reflects a knowledge-producing behavior
(Kohli & Jaworski, 1990, p. 6)	MO is associated as the organization-wide generation of market intelligence about current and future customer needs, dissemination of the intelligence across departments, and organization-wide responsiveness to it
(Bughin, Chui, & Johnson, 2008)	MO is associated with synergy of external specialization and collaboration
(Jaruzelski, Holman, & Baker, 2011)	Organizations whom MO have shown commitment to open innovation

4.6.5.1.1 Industry Practices: Market Orientation

The literature and the best practice models have recognized MO as one of most influencing factor for innovation in organizations (Bastic & Leskovar-spacapan, 2006), in a more conventional approach the marketing orientation provides an insight into the process of capturing customer value, through the process of integrating the value exploration, value creation, and value delivery activities with an objective of building a long-term mutually satisfying relationships and thus

providing benefits to the key stakeholders (Kotler & Keller, 2006), and according to this view the holistic marketers succeed by effectively managing and delivering quality products in the right quantity at the right time, and the growth is also maximized by continuously expanding customer share, building customer loyalty, and through capturing and retaining of customers.

According to Prahalad and Krishnan in their book - the New Age of Innovation, have pointed out that today in the business world a fundamental transformation is taking place across the globe, and innovation is shaping consumer expectations, and organizations need to respond quickly to the changing demands, behaviors, and experiences of consumers. The authors have also developed a framework suggesting that the next generation of innovations will have two pillars i.e. N=1, a personalized co-created experience involving individual customer, and R=G, global access to resources and talent, and together they will have the potential to create unique personalized experiences and also provides a basis for value creation opportunities and innovations, however this view is much different from the tradition “product-market expansion” that focuses on customer segment and large aggregates (Prahalad & Krishnan, 2008).

Many of the leading and traditional organizations have adopted “product-market expansion” strategies, however on the contrary when we look at the business model of one of the most innovative organization namely P&G, it relies on the assumption of higher brand, product trial rates and higher conversion or loyalty rates, and believes that this translates in higher margins and profits (Lafley & Charan, 2008), however in the past it had also experienced that not enough customers were attracted to P&G brand and product lines, and when they used products it did not get converted to customer loyalty. P&G’s market intelligence was by capturing the data on what the consumer decides to buy or try out, and

also when the product is used by the consumers. Earlier it had also concluded that it was not adding new consumers & delighting them by its product offerings, however P&G soon realized that its consumers who buy and use the product are the real source of innovation, and the market intelligence can only be gathered if one listens, observes and even lives with the consumers, as Drucker also put it “The customer has to be assumed to be rational. His or her reality, however, is usually quite different from that of the manufacturer” (Lafley & Charan, 2008).

At P&G, the definition of innovation is not to just focus on the benefits product can provide, but most importantly on the total consumer experience, acquired from purchase to usage by its consumers, through this philosophy and practice has enabled P&G to become one of the most successful innovative & high performing organizations and it also acquired worldwide dominance. P&G also understood that fulfilling the needs of a new market is not just marketing, but it is about managing the fundamental business challenges.

Researchers have observed that many firms today depend on the external linkages for knowledge and information (Teece, 1992), they are also supplementing with external knowledge when internal sources are inadequate (Leonard-Barton, 1992), and this process is enabling organizations to cope up with the renewed demand of new product development, and at the same time providing the desired knowledge with an increasing speed (Vanhaverbeke, Duys-ters & Noorderhaven, 2002). Today 3M’s sales are around \$30 billion, with around \$20 billion of sales takes place in the international market, and it employs more than 50,000 people overseas in 40 of its international companies (3M Company, 2012), however in the recent past it had faced a different type of business challenge, its conventional method of gathering market intelligence was no more sufficient, it felt that through the market reports it was able to gather large data from various sources,

but the information was not adequate to conceptualize and also to continue its legacy of introducing breakthrough products (Thomke, 2002), 3M was also disappointed with its traditional market research efforts, since it was no longer leading to the kind of innovations the senior management had visualized and thus faced a unique challenge that needed to be handled.

3M is well known as an "innovation company", and it explored and found an innovative marketing approach of gathering market intelligence, and adopted the so-called Lead User Process - a systematic way for 3M's 55 divisions to identify new opportunities and quickly capitalize them into appropriate strategies, products, and services. The process was initially conceived by Eric von Hippel, a professor at the MIT's Sloan School of Management, the Lead User Process was based on the insight gained and on the premise that many of the new product ideas are not just generated at the manufacturing companies, but are present in the minds and workplaces of "everyday" and people from all walks, they are also referred to as the "lead users" they actually carry out the research, and such organizations also develop ability to anticipate, experience and respond to the unstated needs much ahead of their peers or competitors, the so-called "lead users" are also likely to be ahead of market trends and most likely to have ideas and plans that are yet to be conceived by anyone, and this process also requires them to obtain information from places and people not normally considered in conventional product development research (Henderson & APQC, 2000), and perhaps with such path breaking initiatives 3M could set for itself an aggressive goal of 30% of sales from products that did not exist four years earlier- and also able to successfully achieve it.

According to Govindarajan, another opportunity for multinationals corporation is fast emerging, unlike in the past where the multinationals had pursued a strategy

of global localization, or "globcalization" – that is, trying to modify the products developed for rich countries to suit local conditions (Leavy, 2011), however today by learning about the requirements of the emerging markets and by being physically present, they can generate successful innovation with the new insights & recently acquired knowledge and able to develop new products based on their needs, and they are also able to export the know-how to the developed world by customizing products for their use, this process also called reverse innovation has also introduced new trends in innovation and product development (Govindarajan, 2012), using this process GE has been able to introduce many innovations in India and China (Immelt, Govindarajan, & Trimble, 2009), and the recent McKinsey survey had pointed out that leading companies in the developed world just earn about 17 % of revenues from emerging markets, even though these markets have potential of 36% of the global GDP as on 2010 (Atsmon, et al., 2012), and are likely to reach to 70% of global GDP growth by 2025, hence a high potential to exploit untapped market with innovations remains for many of the organizations.

According to an article published in The McKinsey Quarterly, companies are witnessing new trends as the top executives in number of companies are considering open innovation, and also looking at the option of delegating more of the management of innovation to independent specialist, suppliers and also through interaction, consultation, and collaboration to co-create products and services, also number of companies have already made headway in open innovation, like Boeing known for designing its aircraft, though its supplier make parts but some also own the intellectual property for many of the components, even in case of HP's computer and Apple's iPod many of the parts are invented and even manufactured by other companies across the globe in far remote places, and the organizations continues to benefit from such a synergy of external specialization and collaboration, and customers are at the same time getting new

products (Bughin, Chui, & Johnson, 2008), this can be also viewed as a new trend in market orientation.

In another survey conducted by Booz & Company, the senior innovation executives voted 3M, as the 3rd most innovation leader, right behind Apple and Google, and 3M's ability to churn out innovation is very much dependent on its long-standing commitment to open innovation, and according to Fred J. Palensky, 3M's CIO, it's highly collaborative culture and innovation leadership are key to create and develop ideas through open innovation (Jaruzelski, Holman, & Baker, 2011).

4.6.5.2 Technology Orientation and its Manifestations

According to Zhou firm's technology orientation reflects its philosophy on how it will use the most advanced technologies (Zhou et al., 2005). Technology-oriented companies use their technical knowledge to develop new solutions to address the stated and unstated needs of their customers (Gatignon & Xuereb, 1997), and technology orientation facilitates long-term success that can be achieved through new technological solutions, products, and services (Gatignon and Xuereb, 1997; Grinstein, 2008; Hamel & Prahalad, 1991). Technology orientation also refers to adaptability to new ideas and technologies during product development (Hurley and Hult, 1998), and technology-oriented firms are found to be proactive in implementing latest technologies that may facilitate the development of new products/services (Gatignon and Xuereb, 1997).

According to Hansen and others though for centuries knowledge management is being practiced in some form or the other, earlier in the family businesses the

knowledge and insights acquired was traditionally passed to their off springs, only in the 1990s chief executives took a serious note of the KM when the competitive pressures started increasing in the industrial environment, a visible shift was taking place from the traditional reliance on natural resources to intellectual assets, and more and more organizations were forced to assess their knowledge management strategies, according to Hansen and others today two approaches have emerged for the knowledge management in the organizations, one is to codify carefully and store in databases that can be accessed and used easily by anyone in the company also called codification strategy – basically a "people-to-documents" approach, the other approach is closely linked to the person who developed and owned it and normally can be shared through direct person-to-person contact also called - personalization strategy (Hansen, et al., 1999).

However the choice between codification and personalization strategy is a key decision and challenge for any CEO's since it also requires huge investment, therefore the organizations should be able to select the right approach and strategy for the KM consistent with its culture in order for it to be successful, and also an effective firm that wishes to excel should primarily focus on one of the strategies, and use the other one in a supporting mode, however if they try to use both then they may fail miserably, Hansen, et al., have pointed out that organizations may also adopt an approaches of 80-20 split: 80% of their knowledge sharing follows one strategy, 20% the other (Hansen, et al., 1999), studies have shown that managers get two-thirds of their information and knowledge from direct interactions i.e. meeting, brainstorming, face to face and even phone conversations, and only one third comes from the document (Davenport, 1994), this finding is also consistent with the researcher's experiences in the organizations where people generally tend to take advice or consult with people who are knowledgeable in the organizations.

Drucker, who coined the word "Knowledge worker" in 1959 that appeared in his book, *Landmarks of Tomorrow* since then their share of the workforce has been steadily increasing. Today number of technology tools such as Lotus Notes, The web, Expert Systems, Case-based Reasoning and many more have come up to boost their productivity (Davenport & Prusak 1998). However in the face of the tough environments and constraints, CEO does not only face the challenges of deciding on the best knowledge management approach and strategies for their organization and also the investment associated with it, but they should also consider the rate at which knowledge can be created and transferred so that organizations and its people can make the best use of it, and hence can create a new competitive advantage for itself (Nonaka, 1994; Nonaka & Takeuchi, 1995).

In a recent Mckinsey Quarterly article, it was inferred that studies have not shown direct correlation between increased spending on technologies - personal computing, productivity software, knowledge management systems, and on performance, in fact, what has also emerged from the research is that multitasking work environments are hampering productivity, and yet according to Davenport technology is an enabler and driver of collaborations and communications internally/ externally, and also a great facilitator by providing access to information at the right time (Davenport, 2011), therefore this situation is a great paradox and a challenge for any CEO. Davenport and Prusak have also conceded that knowledge management is much more than technology. Therefore, organizations are forced to make a choice on the appropriate technologies and also substantial investments if they want to pursue knowledge management initiatives to stay ahead in the business (Davenport & Prusak 1998).

Though after the arrival of communication networks and internet access, the greater speed and agility, collaborations, knowledge sharing, customer and supplier interactions, and lowering of cost are more evident (Mohamed, el at., 2006), however the role of information technology in the scheme of knowledge

sharing has still remained a much debated topic, in fact many researchers are of the opinion that knowledge management initiatives could still be useful even without using IT tools, and, therefore, IT should only be adopted when it becomes essential (McDermott & O'Dell, 2001; Hibbard & Carillo, 1998). In fact when organizations start regarding Information technology as a substitute for social interaction then it becomes one of the prime reasons for the failure of the knowledge management initiatives (Birkinshaw, 2001), what also needs to be considered is that if KM projects are to be successful then the IT professionals should not see it from a purely technical perspective alone, and they should be made aware of the knowledge management process for better appreciation and application (Ray, 2008).

Some researchers have also argued that IT becomes strategically essential for organizations that are geographically widespread (Duffy, 2000; Lang, 2001), and the availability of new technologies such as Lotus Notes and the World Wide Web and few more such technologies have enabled in driving knowledge management movement, further as we have always possessed knowledge for ages and also understood the value it can deliver by harnessing it, hence deploying the above-mentioned technologies in the organizations can even enhance their performance (Davenport & Prusak 1998).

Organizations have also experienced that by pursuing a strategy of closed innovation model they are already stretched to the limit, however today's world is associated with an increased mobility of knowledge, availability of highly-skilled employees, and the shortening of product lifecycles that are considered as the crucial factors for survival, at the same time traditional reliance on R&D is also undergoing a paradigm shift towards the practice of open innovation (Chesbrough, 2003a, b; Afuah, 2003; West et al., 2006).

Open innovation has further gained momentum because of an increase in the tradability of technology, and intellectual property supports this shift from a closed towards to an open innovation model, the open innovation models also fosters collaboration with customers, suppliers and other innovation sources and provides benefits to all the stakeholders, thus suggesting that internal R&D is no more an invaluable strategic asset that can be pursued forever by the organizations (Inauen & Schenker-wicki, 2011), therefore it is evident that technology is playing an important role in making innovation happen, Table 4.12 further provides a summary of TO and KM & innovation linkages, this perspective enables organizations to put across technology concepts into practice and guides the management in doing their business effectively, hence it may be interesting to understand from the perspective of the adopted practices of technology orientations that have emerged from some of the organizations and gain some more insight.

Table 4.12: Technology, KM and innovation linkages

Reference	Facilitate KM/Innovation
(Davenport & Prusak 1998)	Choice of the appropriate technologies and also substantial investments required to pursue knowledge management initiatives to stay ahead in the business
(APQC, 2012)	Technology solutions need to be user-friendly and fit organization culture
(Inauen & Schenker-wicki, 2011)	Technology a great enabler of innovation
(Davenport, 2011)	Technology considered as an enabler for collaboration and for providing access to information at the right time
(Chesbrough, 2003c; 2006b)	Technology driven perspective – focus on collaboration through open innovation
(Jaruzelski, Holman, & Baker, 2011)	Technology connects the business spread across geography
(Davenport & Prusak 1998)	Today number of technology tools such as Lotus Notes, The web, Expert Systems, Case-based Reasoning have enabled in boosting the productivity
(Ray, 2008)	KM project is not viewed purely from IT perspective, knowledge management services needs are first considered then technology requirements

4.6.5.2.1 Industry Practices: Technology Orientation

In one of the APQC research project carried out at their best-practice partner organization - Tata Chemicals a key theme emerged, "People are the fulcrum of KM, and changing their behavior [to enable] more effective collaboration is the key to success," however it also emerged that though technology was important,

but not the priority for integrating knowledge sharing and collaboration into the flow of work, and the technology solutions were designed to be user friendly that also fits into the organization's culture (APQC, 2012), Tata Chemicals has also adopted number of KM tools and approaches and employees have number of options to choose for sharing tacit and explicit knowledge that includes storytelling, knowledge sharing sessions, skits, fairs, communities of practice, and the K-connect portal. The organization also uses to share stories through the K-Connect portal, and hardcopy and booklets are provided to employees, and training programs & monthly review meetings disseminates knowledge in the organization, and its KM toolkit is designed to appeal to the largest pool of employees.

In the same APQC study of the best-practice organizations it has also emerged that they leverage virtual tools to enable capturing and sharing of the knowledge, in fact all the five organization in their studies are currently using Microsoft SharePoint as their KM platform, many combine SharePoint with social technologies such as Yammer or NewGator, though such technology portfolios are not groundbreaking - in fact they are fast becoming the baseline in terms of KM sophistication, also the organizations take great care in selecting the tools that support the existing processes and cultures, and the vital insight that has emerged from the study is "First design the process, then select the technology."

The other key finding that has also emerged from this study is that if organizations want employees to do something, then it has to be made easy for them to use the infrastructure and various tools, the best-practice organizations go out of their way to encourage employees to contribute ideas, knowledge, and lessons and facilitate through processes, tools, and templates and ease of

technology usage, thus simplifying knowledge capturing and documentation and also building these activities into flow of employees' normal tasks and routines.

According to Fred J. Palensky, chief technology officer at 3M's, in an interview pointed out that 3M has developed an ability to churn out innovations, and it is very much dependent on the company's commitment to open innovation, along with both internal and external as well, also a highly collaborative culture and supportive innovation leadership are essential for the process to be effective, and he also stressed that technologies and technological capabilities have no boundaries or barriers, since any technology is made available to any business in any industry in any geography around the world (Jaruzelski, Holman, & Baker, 2011).

P&G is recently figured as one of the most innovative company (Jaruzelski et al., 2011), and more than 42% of its new products are originated from external ideas, by pursuing a policy of deliberately opening its boundaries (Spena & Mele, 2012), today we are also witnessing the advent of a technology-driven perspective which focuses on collaboration through open innovation platform (Chesbrough, 2003c; 2006b), this also enables a shift from the focus on innovation from a deeply embedded within the firm view to a network of relationship with external partners. The new concept of networked nature of innovation has led to co-creation, also viewed as collaborative domain promoting a combination of ideas, knowledge and technology distributed among a network of innovating players (Chesbrough, 2003d, Enkel, et al., 2009; Gassmann et al., 2010).

The current research is also pointing to the role of Information and Communication Technologies (ICT) and is vastly increasing the ability of the

firms to work with external partners cutting across different geographic and organizational boundaries (Pavitt, 2003). P&G has been a pioneer in the use of these new technologies that supports its innovation endeavor in a number of ways, like forging an alliance with technology development and market information and at P&G this new found synergy is shaping the way it intends to manage the innovation process (Dodgson, et al., 2005).

4.6.5.3 Entrepreneurship Orientation and its manifestations

From the earlier studies it is evident that entrepreneurship orientation has made definite impact on product development and financial performance (Avlonitis & Salvou, 2007; Li et al., 2008), LR has asserted the view that entrepreneurship orientation and performance have positive relationship (Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra, 1991; Zahra & Covin, 1995) It is also empirically established that entrepreneurship orientation is a driver of innovation in the organization (Salavou & Lioukas, 2003), studies have also pointed out that entrepreneurship orientation can facilitate market growth rate (Ireland et al., 2003; Shane & Venkataramana, 2000), and according to Antoncic, firms can have greater profitability and growth when they adopt entrepreneurial behavior and systems (Antoncic, 2007).

The practitioners and researchers have expressed that entrepreneurship and innovation are always important (Harvey, et al., 2010), and innovation is difficult, discontinuous and not easily accessible to everyone because it requires certain qualities that need to be pursued (Schumpeter, 1934), further Schumpeter also advocated that the importance of innovation by entrepreneurs gaining momentum today. We can see around us that the world itself is unfolding many of the entrepreneurial opportunities for the people (Harvey et al., 2010). In order

for the firms to understand the unarticulated needs of the customers requirement a firm must be able to adopt an entrepreneurial mindset (Atuahene-Gima & Ko, 2001), and basically having strong entrepreneurship orientation means presence of market-driving behavior (Schindehutte et al., 2008) Past research have suggested that through entrepreneurial orientation organizations can effectively manage and cope up with competitive threats and also overcome competitive pressures (Burgelman, 1983; Lumpkin & Dess, 1996; Peterson & Berger, 1971), and necessarily the entrepreneurial process comprises of opportunity recognition, exploitation and innovation and those attributes in the organizations can be achieved by firm's entrepreneurial orientation (Schindehutte et al., 2008).

However the existing literature does not provide a consensus on defining entrepreneurship and innovation, many views have emerged from the earlier studies, some researcher have studied from a point of view of personality and psychology of entrepreneurs and innovators (Littunen, 2000; Caird, 1988; Casson, 1982), while other have mentioned about the nature of entrepreneurship and innovation in the organizations (Goffin & Pfeiffer, 1999; Martin, 1994), and others have touched upon the conceptual relationship between the two (Schumpeter, 1934; Drucker, 1994; Legge & Hindle, 1997; Kanungo 1999; Sundbo, 1998). The literature review also stresses on the influence of culture on the development of entrepreneurship and innovation (Herbig et al., 1994), and according to Slevin and Covin, organizational culture has also exhibited an important impact on entrepreneurship and innovation (Slevin & Covin, 1990), therefore it may be concluded that if one has to know the presence of entrepreneurship and innovation in organizations then it must be viewed from multiple perspectives to understand really its presence and impact.

In practice entrepreneurs who view innovation as a specific tool of entrepreneurship are able to bring changes across the organization to adopt entrepreneurship and create new opportunities for businesses and services, in fact an overlap also exist between entrepreneurship and innovation (Kanungo, 1999; Sundbo, 1998; Drucker, 1994; Schumpeter, 1934), and Peter Drucker had provided a recipe for an existing business to be capable of innovation “it has to make sure its incentives, compensation, personnel decisions, and policies all reward the right entrepreneurship behavior and do not penalize it” (Lafley & Charan, 2008), therefore for organizations a clear cut road map is sketched and some have even made best use of it.

Knowledge-based innovation is the “super-star” of entrepreneurship, knowledge need not be necessarily scientific or technical, and even the social innovation based on knowledge can even have greater impact, thus knowledge-based innovations ranks high (Drucker, 1996), and when the organizations pursue such a strategy of knowledge-based innovation they cannot feel its impact immediately, since it has longer lead time for all innovations in the organizations. Drucker has also said that the innovation is a specific function of entrepreneurship, and its presence can be felt in any form of the organizations, it can be a public service, existing business, a single man venture, but what needs to be noted is that it has the potential to create new wealth-producing resources, or by exploiting the existing resources it can even create enhanced wealth (Drucker, 1996), however in spite of its impact felt across the industry, even today confusion exists about what entrepreneurship means, as some refer to it as small business, others to new business, but in practice many great businesses engage in highly successful entrepreneurship and perform certain kind of activities and at heart the activities are nothing other than innovation, though different from others activities and have potential to create economic value for the enterprises.

Today innovation in products and processes are regarded as essential for the survival of the organizations, and much of the attention is drawn and focused towards entrepreneurship orientation by academic researchers and organizational members to understand it better (Wang & Ahmad, 2004), in organizations entrepreneurship orientation also manifest in the form of product and process innovations (Ireland & Webb, 2007). Entrepreneurship orientation can also be traced in the processes, practices, and decision-making activities but what differentiates it from others is that it can facilitate new entry (Lumpkin & Dess 1996a), and further they have described five aspects of entrepreneurship orientation that are innovativeness, risk-taking, proactive, competitive aggressiveness and autonomy and all attributes are also part of entrepreneurial processes.

Innovativeness in an organization is associated with a tendency to encourage, engage and support new ideas, experimentation, and creative processes that may result into new products or services (Lumpkin & Dess, 1996a; Lumpkin & Dess, 2001b; Certo et al., 2009). Risk taking in organizations means engaging in high-risk projects, and a visible commitment of management towards such a tendency leads to the achievement of its objectives (Miller, 1983). Proactiveness is a process of looking ahead or anticipating and then acting in advance (Kreiser et al., 2002) , hence anticipate and identify new opportunities which may open up further potential for exploitation, however the opportunities may or may not be necessarily present in its current line of operations, it may even result into introduction of new products or new brands, and may enable it to get rid of obsolete/mature products or that are at the declining stage of the life cycle (Lumpkin & Dess, 2001a).

Competitive aggressiveness has been defined as an ability to aggressively challenge and to outperform its competitors (Certo et al., 2009). Autonomy is termed as an independent action by a team or individual to bring forth a vision or idea and then to see it through to completion (Lumpkin & Dess, 1996a), and earlier research have also suggested that autonomy encourages innovation, increases the competitive effectiveness of a firm and even promotes launching of new ventures (Brock, 2003), Table 4.13 provides summary of the TO and KM & innovation linkages, and if organizations have to create a differentiation to its customers then it must vigorously pursue those attributes mentioned above in order to achieve an economic impact, and by studying the practices adopted in some of the organizations we can further gain more insights.

Table 4.13: Entrepreneurship orientation, KM and innovation linkages

Reference	Facilitate KM/Innovation
(Lumpkin and Dess 1996)	Presence of attributes like innovativeness, risk-taking, proactive, competitive aggressiveness and autonomy
(Slevin & Covin, 1990)	Organizational culture exhibits important impact on entrepreneurship & innovation
(Drucker, 1996)	Knowledge-based innovation is the “super-star” of entrepreneurship
(Bartlett & Mohammed, 1995)	Promoting a culture of institutionalized entrepreneurship
(Kanungo, 1999, Sundbo, 1998, Drucker, 1994, Schumpeter, 1934)	An overlap also exists between entrepreneurship and innovation
(Herbig et al., 1994)	Literature review stresses that the culture influences development of entrepreneurship and innovation
(Ireland & Webb, 2007)	In organizations entrepreneurship orientation also manifest in the form of product and process innovations
(Lumpkin & Dess 1996a)	EO can be traced in the processes, practices, and decision-making activities

4.6.5.3.1 Industry Practices: Entrepreneurship Orientation

In a recent article on Corporate Entrepreneurship and Innovation on the experiences at Silicon Valley reveals that though today Google which is ranked as one of the top most innovative companies in the world among others like Apple known for innovative products and technologies, what needs to be noted is that it was only possible by embedding corporate entrepreneurship and innovation into the organization, and that also emerged as a source of success (Finkle, 2012). In an another study of the best-practice report carried out by APQC of the organizations, it has also emerged that a strong linkage between innovation and the company's overall strategy exists, and the main reason for such a synergy is due to management's commitment, and in such organizations management provides adequate funding for innovation, further organizations also follow the practice of funding for "unofficial" projects so as to promote innovative thinking, and supports by giving specific time allowances to employees so as to encourage them to develop new ideas (APQC, 2005), and all these initiatives points to innovativeness which is one of the attribute of the entrepreneurship (Lumpkin & Dess, 1996a; Lumpkin & Dess, 2001b; Certo et al., 2009).

According to Miller, risk taking is an attribute of entrepreneurship orientation (Miller, 1983), and in organizations where management commitment towards encouraging risk taking is visible they are in a better position to address market needs through innovation, and that also requires entrepreneurship for achieving commercial success (Zhao, 2001). At P&G, it is well understood that innovation is risky venture, however they treat it like any other risk, however, what differentiates it from other organizations is that they are also aware that even currency and commodity risk can be hedged, managed and mitigated, and with such an attitude and commitment to manage risk P&G has been able to demonstrate for many years an increase in yield from the process of innovation as

the figures themselves suggest - from a 15-20 percent success rate to 50-60 percent, and able to generate revenue from innovation with a lower rates of investment, further they have also learned to manage the risks inherent by taking a path of innovation through learning and experiences of their people (Lafley & Charan, 2008), even at LEGO another world class organization similar views resonates, they believe that risk cannot be eliminated all altogether however they believe in finding ways to mitigate or reduce risks so as to make the business more predictable.

In the same APQC best practice report, one of the interesting finding that has also emerged is that unlike in the traditional companies where generally the failures of a new initiatives or ideas are not acceptable, and this notion is generally evident across the organizations, on the contrary at P&G the notion is that the "right" failure is an option, and also other best-practice organization that have also been studied viewed failure as part of innovation process and some of the organizations have even leveraged by learning from such failures, therefore organizations that promote innovativeness are the one that have greater chance of coming up with new products and services (Lumpkin & Dess, 1996a; Lumpkin & Dess, 2001b; Certo et al., 2009).

According to Lumpkin and Dess pro-activeness is an attribute for entrepreneurship orientation (Lumpkin & Dess, 2001b), IBM's actively conducts research to keep a track on innovation trends so that it can identify future opportunities and also able to exploit them, its Global Technology Outlook constantly scans for emerging technology trends and identifies that can make significant impact, though may not necessarily in a short span of time but looks at a time horizon of three to seven years and this also has a potential to makes a direct impact on IBM's technology strategy, since the Global Innovation Outlook

wing in anticipation starts a dialogue about innovations internally and also initiates business transformation in units if required and starts executing plans in order to stay ahead in the business (APQC, 2010).

3M in the initial days was almost heading towards a bankrupt entity, however, made a turnaround into a very successful and one of the most innovative company in the world, and it was able to do so due to its unshakable belief in the power of individual entrepreneurship, and this belief took a new shape in the organization and 3Mers describe it as "a climate that stimulates ordinary people to produce extraordinary performances." Management at 3M also made supporting policy decisions to promote entrepreneurship by encouraging researchers to spend up to 15% of the time on projects of their interest, and also implementing various such initiatives that can promote a culture of institutionalized entrepreneurship within the organization (Bartlett & Mohammed, 1995).

4.6.5.4 Learning Orientation and its Manifestations

According to Senge, if organization wants to achieve superior performance over the long run then it also depends on their superior learning (Senge, 1990a), and adopting higher learning orientation processes can lead to radical innovations in the organizations (Baker & Sinkula, 2002), and learning orientation promotes members to "think outside a box" and prompts organization towards value adding and double-loop learning (Baker & Sinkula, 1999), earlier studies have also enabled to demonstrate linkages among learning orientation, innovation, and performance (Calantone et al., 2002). In a Shell study report according to Arie de Geus a former planning director "a full one-third of the Fortune '500' industrial listed in 1970 had vanished by 1998" (de Geus, 1988), further in the same study it was also found that only a handful of companies could survive seventy-five years

or longer, and the key to their survival that emerged was as a result of continually scanning, learning and exploiting new businesses and organizational opportunities and that continually creates new sources of growth for them. Senge points out that in fact the average lifetime of some of the largest industrial enterprise has probably come down to half the average lifetime of a person in an industrial society (Senge,1990b), and this may perhaps be attributed to the fact that organizations are not learning enough.

In today's competitive world it has become mandatory for the organizations to pursue the processes of learning (Slater & Narver, 1995), organizational learning can best be understood as the development of new knowledge or insights that has the potential to influence behavior (Fiol & Lyles, 1985; Huber, 1991; Simon, 1969; Sinkula, 1994), and it is presumed that learning also facilitates behavior change that has the potential to improve performance (Fiol & Lyles, 1985; Garvin, 1993; Senge, 1990a; Sinkula, 1994), in this context today's organizations can no longer survive with the old model, "the top thinks and local acts," and they must start integrating thinking and acting at all levels and with this transition in the approach one can certainly expect payoffs from it in due course of time (Senge, 1990a), however the main themes that have emerged from the definition of learning orientation are knowledge source, content-process focus, dissemination mode, learning scope, learning focus, knowledge reserve and value-chain focus (DiBella & Nevis, 1998).

The concept of a learning organization emerged in the 1990s, it can be viewed as a compelling vision of an organization made up of employees who are skilled at creating, acquiring and transferring knowledge, whereas some leaders also emphasize in their organizations that by articulating a clear vision, providing incentives and training to employees they can promote learning, however, such

short-sighted perspective does not help organizations to achieve any benefits and turns out to be highly risky for organizations to pursue such a strategy in today's highly competitive environment. Therefore, the organizations learning strategies should be directed towards becoming a truly learning organization (Garvin, et al., 2008).

To get best from learning-based performance improvement the organization must give due emphasis to the establishment of a learning organization culture or the environment, and that should be the priority of the organizational learning processes (Song & Chermack, 2008). The collaborative learning-oriented organizational culture or environment is generally associated with many learning processes within the organizations like individuals' learning, learning and knowledge transfer, knowledge management system, and collaborative organizational learning culture (Kofman & Senge, 1993; Nonaka, 1991; Senge, 1990a; Tsang, 1997), and any of them or in combinations may be explored in the organizations.

Fortune magazine quoted from a best-selling book *The Fifth Discipline* by Senge that, "the most successful corporation of the 1990," "will be something called a learning organization, a consummately adaptive enterprise." However according to Argyris and Schon just by increasing the focus on adapting may not be the ultimate objective for organizations to advance towards a learning organization environment, in fact it is a step towards a learning organization, further many of the leading organizations are today also focusing on generative learning, which is about creating, whereas adaptive learning is about coping (Argyris & Schon, 1978). Hence generative learning, unlike adaptive learning, will facilitate in looking at the world in new ways and also in understanding customers and even

businesses differently (Senge, 1990a), thus further enable in the shaping of ideas into new products and services.

According to Cyert and March, the organizational learning is experimental and in the process of innovation the organizational learning constantly changes as a result of experience gained (Cyert & March 1992), and in organizations the practice of innovation and learning together happens simultaneously (Holmqvist, 2004). Researchers have clearly established a relationship between organizational learning and innovation and also found that innovation is a most important source of competitive advantage (Stata, 1989; Dodgson, 1993; Garvin, 1993; Brockmand & Morgan, 2003), further it is also established that culture plays an important role in organizational learning process (Argote et al., 2003; Davenport & Prusak, 1998; De Long & Fahey, 2000; Lee & Chen, 2005), and therefore culture can either facilitate learning or act as a major impediment depending upon what values an organization adopts and the level of encouragement it provides (Sanz-Valle, et al., 2011).

According to Peter Drucker, land, labor, and capital - the conventional factors of production - have become today secondary unlike the past, and knowledge has emerged as the primary resource for the new economy (Drucker, 1992), and the knowledge base for new economy also arises based on the need for greater specialization, in other words acquiring higher learning to meet the challenges of the competitive world and that has resulted into a shift from knowledge to knowledges, and also in future based on the ability of the organizations to integrate the specialized knowledges for effectively carrying out task/activities will determine how productive they are (Lang, 1998).

Senge defined a learning organization as comprising of a group of people continuously enhancing their capacity to create what they want to create (Senge, 1990a), therefore learning organization is about teamwork and collaboration in an organization, and organizational learning also creates a collective knowledge and so a conflict between them, and this process ultimately also stimulates innovation and creativity (McElroy, 2000).

James March (1991) a Nobel Prize winner in economics describes organizational learning perspective and throws light on different approaches that link innovation and new knowledge, one view is that for innovation it explores new knowledge, and the other one is by exploiting existing knowledge with new ways for more of innovation, therefore the organizations that explore a strategy of seeking new knowledge ends up in achieving incremental scientific improvements to serve the existing markets, or may even move away from the existing market and pursue a much bolder initiatives of creating new product ideas, or may even try to penetrate into new markets (American Management Association, 2006), therefore organization learning orientation can facilitate in exploiting new products or even markets with the support of a synergy between innovation and new knowledge.

The organizations following the practices of knowledge management and exhibiting orientation towards organizational learning have shown definite improvement in their performance (Cavaleri et al., 2005; Davenport & Prusak, 1998), Table 4.14 provides summary of TO and KM & innovation linkages, earlier research has also clearly established linkages between organizational learning, innovation, and its performance, however a limitation also emerged since the available management theory does not address and provides any specific tool and techniques designed for learning and innovation in organizations (Van Der Sluis, 2004), therefore organization must look from the perspective of the

practices adopted in some of the leading organizations to understand the learning orientation rather than from the process perspective alone to gain further insights.

Table 4.14: Learning orientation, KM and innovation linkages

Reference	Facilitate KM/Innovation
(Akgun et al., 2007)	Presence of management commitment, openness & experimentation, knowledge transfer & integration
(Calantone et al., 2002)	Commitment to learning, shared vision, open-mindedness, and inter-organizational sharing
(Lee & Tsai, 2005)	Creative thinking, Creative team improvement
(Alegra & Chiva, 2008)	Experimentation, risk taking, interaction with external environment, dialogue, and participative decision-making
(Davenport & Prusak, 1998)	Visible impact on performance
(Fiol & Lyles, 1985; Garvin, 1993; Senge, 1990)	Learning facilitates behavior change and has potential improve performance
(Holmqvist, 2004)	In organizations, the practice of innovation and learning together happens simultaneously
(APQC, 2005)	Fosters an environment of innovation
(Kofman & Senge, 1993; Nonaka, 1991; Senge, 1990a; Tsang, 1997)	Emphasis on collaborative learning-oriented organization culture

4.6.5.4.1 Industry Practices: Learning Orientation

The author, David Garvin of the book “Learning in Action, ” writes “To move ahead, one must often first look behind”, he cites the case of the U.S. Army’s After Action Reviews (AARs), as they are a classic example of a knowledge management system that has enabled the Army to turn into a learning organization by making the learning routine, this so-called routine has also created a culture where everyone continuously reflects, does an assessment of self & the organization and also finds ways for improvements, and once an important activity or event is finished the Army team routinely analyzes such actions that may be failures or successes, and continually try to refine the processes so that they can perform even better (Garvin, 2000, p. 106), this approach enables in capturing learnings from the experiences they have had and also in building knowledge base that can be applied and used to streamline operations to improve processes, and this step in this direction may even ease some of the revenue losses, this itself can be an effective strategy since according to International Data Corporation (IDC), Fortune 500 companies end up losing roughly “\$ 31.5 billion a year by failing to share knowledge” (Alrawi, 2008).

Today some progressive organizations have even developed learning vision, IBM’s learning vision is to operate in an environment where employees can acquire the needed skills and apply knowledge and experience to achieving business objectives as well as attain their personal goals. IBM’s goals for learning are multifold, to leverage intellectual capital and expand the knowledge base, hasten knowledge transfer to solve business problems, ensure that learning solutions reach the target audience and meets their needs, clarify roles and responsibilities so that accountabilities are clear, and also link learning with business results (APQC, 2010c). IBM’s learning strategy resonates with Senge notion that superior performance depends on superior learning (Senge, 1990a),

IBM also takes some initiatives like defining standards of practice, technology, and accountabilities, leverages each business unit's strengths, and also ensures strategic partnerships across IBM. Therefore, its commitment towards learning vision is visible across the organization.

In the year 2004 IBM Learning also established a new paradigm for business learning, providing enhanced focus on collaboration and innovation that built around how employees learn & practice during their daily routines and by pursuing a learning strategy at IBM it can foster an environment for innovation (APQC, 2005).

Garvin pointed out that learning organizations are skilled at creating, acquiring and transferring knowledge and also through this able to bring changes in behavior that reflects in its new knowledge and insights (Garvin, 1993). At Procter & Gamble one of the most innovative organization, its learning strategy is to create smart employees through a process of identifying, delivering, and evaluating learning opportunities, and further this strategy is also aligned with its objective of meeting or exceeding the customer's expectations and needs. P&G has also sets learning as a priority for its employees since it has understood and established that this practice will directly impact business results (APQC, 2002).

P&G is also one of the organizations that can leverage its failure by learning from it, unlike most of the organizations where the general philosophy and rule is that failures are not acceptable, however at P&G when it comes to innovation, failures are often accepted as long as it meets certain predetermined criteria identified early on in the process, and one unique element is visible in such companies is that they keep excelling at innovation and creating new market and that is

determined by their ability to invest a little to learn lot. In an another well-known organization, Kennametal tries to balance rigor with creativity by emphasizing that learning and failures are often viewed as good because lessons learned from the failed projects are often vital, and they also believe that every failure is a learning opportunity that has potential to add value in all its future projects (APQC, 2005).

4.7 Factors Emerged from the studies

1. Knowledge management
2. Leadership
3. Business Model
4. Organization Conversation
5. Innovation Culture
 - 5.1 Market Orientation
 - 5.2 Technology Orientation
 - 5.3 Entrepreneurship Orientation
 - 5.4 Learning Orientation

4.8 Outcome of the Semi-structured interviews

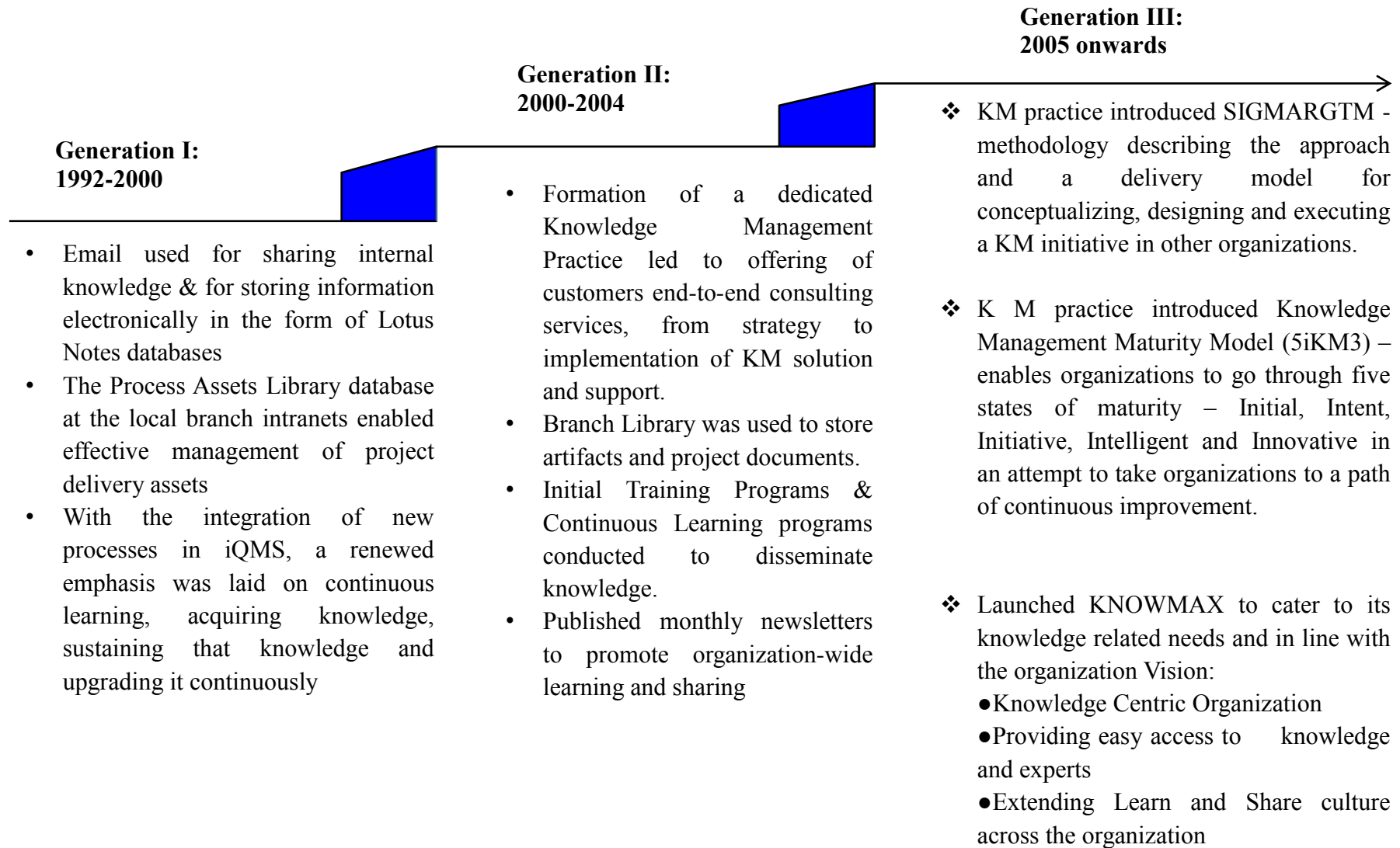
From the collection of the interview data based on the questions (Appendix A) that were framed and also evolved during the series of interviews, also supported by direct observations and Document Analysis, a comprehensive view was obtained after synthesizing the responses to ascertain the presence and validation of the factors, the (Appendix B) provides the summary of the interview responses, the following section also provides the outcome of the main findings.

4.8.1 Knowledge management systems

A decade ago during the period 2000-2004 the organization initiated dramatic changes through the route of strategic initiatives and thus renewed its emphasis on the need for new ideas and processes in order to stay ahead in the business, and during this period the organization saw the emergence of - an enterprise-wide social collaboration platform that actively facilitated the harnessing of the power of collective wisdom available within the organization. Initiatives implemented across the organization such as Ultimatix - an organization's digital intranet, and Knowmax a knowledge management process that ultimately helped in getting interconnected with its customers, suppliers, and business partners, as it is pointed out by O'Dell, Hubert and APQC that managing knowledge is associated with creating and managing the KM processes (O'Dell, Hubert & APQC, 2011), and such systems also facilitate in generating and using knowledge effectively (Devenport & Prusak, 1998), with this initiative the organization was able to conceive the KM systems to promote collaborations in various forms, such as person-to-person, systems-to-persons and systems-to-systems. The leadership's strategic initiatives, particularly in the domain of Knowledge Ecosystem Solution, enabled it to develop many key capabilities that not only created a differentiating edge over its competitors, also one such capability has also given rise to research-

led business innovation resulting in several of the disruptive innovations it can boast off, therefore it is consistent with the view that effective knowledge management is a driver for innovation (APQC International Benchmarking Clearinghouse, 2003), and the interview responses also suggest the same. Table 4.15 provides the progression of knowledge management practices in the organization that has evolved in three generations.

Table 4.15: Knowledge Management Evolution



4.8.1.1 Linkages between KM initiatives and Innovation

The organization's development of Knowledge Ecosystems Solution has enabled it to create a single virtual workplace, accessible from any location across geographies, where employees connect with each other, thus achieving the objectives of realizing the true collective potential of the organization, this initiative is also consistent with the view that the organization that focuses on knowledge sharing as a key driver also adopts innovative approaches and develops appropriate tools (APQC, 2012). The collaboration platform of the organization also brings out some aspects of social networking elements around its core business processes, and provides an additional benefit of blending work with creativity, enjoyment, and self-expression and also aids in decision-making process, this platforms not only provide benefits by connecting people but also identifies experts – based on participation, further with crowdsourcing it enables to find appropriate, and optimum solutions to complex business problems and the system also has a mobile app for quick access. The organization also connects with emerging technology companies, venture funds, strategic partners, academic research and some of the key customers to co-innovate with them thus capitalize on the strength of each other, and further create many opportunities to convert ideas into reality for employees.

The organization had also witnessed a long cherished relationship with innovation, one of the biggest disruptive innovations in IT industry that it developed and rightly boasts itself off is “offshoring model”, and the other initiative is the creation of a global network of “Innovation Labs and Co-innovation Network”, that enabled the organization to create breakthroughs in technologies and provided the right business successes for many decades. The organization also considers Innovation as a structured discipline that is capable of

delivering against its business imperatives; the organization practices three forms of innovations:

- Derivative or sustaining innovation – continually provides improvements on current offerings and services
- Transformational improvements or platform innovations – move/adapt to emerging technologies/markets
- Disruptive Innovation – create breakthroughs, game changer, or new market business models (Tata Consultancy Services, 2013)

The organization's predominant focus on knowledge sharing has enabled its "Innovation Labs" to attract the best talent, that is backed by best in class infrastructure, a nurtured network with academia and industry experts, and created for itself an environment that is more conducive to research and innovation, and the success of such labs is also evident from the evolution of new standards of technology, domain specific innovations, creation of many IPs for itself and consistently winning numerous awards year on year, according to McAdam Knowledge management should facilitate in achieving organization's strategic goals (McAdams, 2000), and it is not wrong to say that the organization has done it with perseverance and focus.

4.8.2 Business Model

The organization's business model evolved over the years from scratch, and at the beginning there was no model to follow (Ramadorai, 2011), the organization for the first twenty-five years not only sold its service offerings but had the task of marketing it, the business model evolved from the kind of work it did, i.e. from migration to maintenance to optimizing systems and finally developing the entire

system, and in the course of its journey it developed and nurtured the competency required to support this transition, the progression in this direction was in similar lines and not dramatic, and basically resulting into two types of operating models one “Customer-centric Engagement Model” and the other one “Global Network Delivery Model” and the business model predominantly addresses the value creation proposition, the organization’s structures are aligned for this purpose and do not pursue breakthrough at unit level and as a strategy it is conceived as more of an operating architecture than a dynamic innovation aiding mechanism by itself, unlike in the organizations like Wal-Mart in retailing, Dell in PCs, or Southwest in Airlines where with its business model innovation they basically exploit value creation & value capture processes, and are thus able to create a competitive advantage that is unbeatable & sustainable and that is why they are considered business leaders in their respective fields (Chesbrough, 2007), therefore it has not emerged as a factor in the organization that needs to be considered and the same views were also echoed by the respondents.

4.8.3 Leadership

Leadership at the said organization has been at the center of focus, at inception it was associated with a direct management style and exercised tight controls, and that shaped the foundation of the organization at the initial stage, later saw a transition to a more “collegiate team” environment which necessarily meant teamwork and participation in sharing ideas and delegation of work (Ramadorai, 2011), even when it came to take a decision on the future course for the organization and setting up of an audacious target of “Top 10 by 2010”, that was possible as a result of a more participative style and open discussions. The present leadership believed that innovation and R&D in the organization would be the key strategy for creating competitive differentiation, hence it institutionalized a Corporate Technology Board to oversee the governance of innovation in the

organization, and further emphasized that in order to have a bright future for itself, it must participate within active innovation networks and also nurture new capabilities. Hence, it opened up interactions with industry thought leaders, external research labs, startup & venture capitalist and academic fraternity. The leadership's commitment towards innovation served the business in two ways, one it started the continual improvement journey and also created a pipeline for future options and kept the challenge of differentiation alive with its competitors, the second it ensured a constant synergy between creative thinking of its people backed by its sophisticated R&D to deliver best solutions to its customers; however one of the senior employees did mention that the key challenge that remains to be addressed is to make the best use of the tacit knowledge, though leadership has taken great efforts to encourage knowledge management initiatives across the organization, therefore leadership has emerged as an important factor in the organization that needs to be considered and the same views were also echoed by the respondents.

4.8.4 Organizational Conversational Practices

The organization had witnessed the transition from an autocratic to a more participative style of leadership during its evolution (Ramadorai, 2011), therefore the four elements of organization conversation as put forth by Groysberg & Slind and discussed in the earlier section - intimacy, interactivity, inclusion and intentionality (Groysberg & Slind, 2012), are yet to be embedded into the organization, since the organization at its inception had also practiced more of a hierarchical structure, and at that time the line of communication along the hierarchy was not so conducive for open & free discussions and exchanging of ideas, hence the organization is yet to be matured in terms of organizational conversation and can best be considered still in an evolving phase, therefore not yet ready to adopt the contemporary practices of organizational conversation, and

rightly it does not stimulate any energy/drive within the organization, therefore it has not emerged as a factor in the organization that needs to be considered and the same views were also echoed by the respondents.

4.8.5 Innovation culture and its elements

Leadership in the organization has provided a platform for its people to utilize, perform and even to innovate, as Stamm had put it, organizations that constantly promotes supportive values and behavior leads to more innovation (Stamm, 2009), and also consistently create avenues for new knowledge that can be disseminated (Nonaka, 1991). Leadership has ensured its commitment towards innovation, by creating the right infrastructure and operational behavior for innovation and also encourages by constituting Innovation Awards and sabbatical breaks to promote collaboration amongst people and projects. The presence of its innovation culture elements/attributes is also evident from the following:

- *market orientation*: the organizations constantly strives to promote new offerings & solutions thus creating differentiation and unique solution to its customers
- *technology orientation*: it has emerged as a great enabler to connect people, projects, geography and to make the best use of enterprise's resources for providing better customer solutions
- *entrepreneurship*: risk taking and mitigation, encouragement through recognition of efforts like Innovation Awards, a separate career track for innovators are some of the hallmarks of entrepreneurship in the organization

- *learning*: Learn-act-deploy is the mantra for the organization and has become the way of life for the employees, the organization provides many avenues for learning that have been initiated earlier, such as through interactions, academia, venture capitalist, start-up companies and industry experts

The above suggest that innovation culture and its attributes are a part of organization DNA, and leadership actively promotes them. Therefore, it has emerged as a factor in the organization that needs to be considered and the respondents also echoed the same views.

4.9 Impact on performance

In the organization employees have definitely witnessed continual improvement and creation of a funnel of options for future growth as a result of innovation across the organization, further the organization also witnessed some form of disruptive innovation in its coveted “offshore delivery model”, and it constantly strives to make the best use of its creative thinking for providing unique business solutions, however the respondents could not quantify the gains in certain terms but felt that all efforts and initiatives do definitely make considerable impact on performance.

4.10 Summary of the semi-structured interview results and discussions

From the above section it may be concluded that factors such as knowledge management systems, leadership, and innovation culture & its four attributes namely market, technology, entrepreneurship and learning orientations are actively practiced in the organizations and respondents have also found it very relevant based on their experiences and the activities they perform, and the leadership rightly provides the required support and resources to promote such factors, hence they are considered as a part of further studies, while as explained in the earlier part of this section that the business model and organizational conversation do not make any considerable impact in the organization and the same views are also echoed by the respondents and hence have been excluded from further studies.

Also from the direct observations the researcher has also noted that due to the handling of large and confidential data provided by the clients, and as they have stipulated the condition to secure the workplace also called “offshore delivery centers (ODC)”, this implies that all the accesses get regulated, interactions are expected to be held in closed loop and even computer systems & networks have to follow certain protocols, restricting further opportunities for tacit to tacit or tacit to explicit knowledge transfer and thus resulting in a limitation, however it was also observed that in such situations the employees who are self-driven often finds ways to go out of the “ODC” and access the knowledge portals and also carry out inter-unit exchanges, though it also lowers the productivity and the numbers of such self-driven people may also be small.

4.11 Factors emerged from the semi-structured interviews

1. Knowledge management
2. Leadership
3. Innovation Culture
 - 3.1 Market Orientation
 - 3.2 Technology Orientation
 - 3.3 Entrepreneurship Orientation
 - 3.4 Learning Orientation

4.12 Questionnaire administration

A questionnaire was electronically administered (Appendix C) to 250 prospective respondents mostly using email ids, the list was again drawn in consultation with the team leaders/ peer group as it was suggested that they possess the relevant experience and expertise in the implementation of KM initiatives, the respondents were mostly having more than 10+ years of industry experience, and also in the domain of knowledge management implementation and also exposure to various KM systems in client's workplace, some of the respondents were also holding the leadership position in function/unit/domain, and the list was also drawn from two of the major IT companies in India, in total 130 responses were obtained and after scrutiny and elimination, 108 responses were found to be valid, thus suggesting a valid return rate of about 43% and response were analyzed, this next part of the study is to establish the existence of the factors that were identified in the earlier section, namely knowledge management systems, leadership, and innovation culture & its four elements namely market, technology, entrepreneurship and learning orientations and its impact on business performance.

4.13 Analysis and discussion

The section provides the outcome of the regression and factor analysis, and a discussion is presented.

4.13.1 Regression output - Knowledge management initiatives and business performance

Reliability Statistics

Cronbach's Alpha	N of Items
.765	7

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635 ^a	.403	.368	.657

Predictors: (Constant), Knowledge application for business problem/solutions, Knowledge Sharing, Knowledge acquisition through interaction with client's orgs, Commitment towards knowledge, Knowledge application for business processes, organization structure, products, etc., Knowledge storage & retrieval

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.012	.396		2.559	.012		
	Commitment towards knowledge	.198	.073	.255	2.726	.008	.650	1.538
	Knowledge application for business processes, organization structure, products etc.	.055	.093	.056	.594	.554	.646	1.547
	Knowledge acquisition through interaction with client's orgs	.140	.080	.154	1.755	.082	.742	1.347
	Knowledge storage & retrieval	.197	.085	.224	2.333	.022	.619	1.616
	Knowledge Sharing	-.062	.061	-.079	-1.026	.307	.953	1.049
	Knowledge application for business problem/solutions	.211	.103	.184	2.043	.044	.703	1.423

a. Dependent Variable: Positive impact on business performance as a result of KM systems

Based on the Regression Analysis carried out using the SPSS software (Appendix D), the multiple correlation coefficient R points to a strong relationship between making a positive impact on the business performance with the presence of various knowledge management initiatives in the organization, however the coefficient of determination R² value points to a weaker strength between them, suggesting that organization still have a long way to go in order to capitalize fully on such a linkages, though it is evident from the earlier studies that some of the innovative and successful organizations have immensely benefited by pursuing

such a strategy and the empirical evidence presented in the earlier section 4.4 also supports this notion. To understand why the organization has not been able to capitalize on such linkages, a factor analysis was carried out to gain further insight, and the outcome is presented in the following section.

4.14 Factors Analysis and discussion

Based on the responses obtained from the questionnaire and from the analysis that was carried out using Factor Analysis (Appendix E) and the following clusters that have emerged are appropriately labeled and presented below:

4.14.1 Reliability & Validity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.854
Bartlett's Test of Sphericity	Approx. Chi-Square	941.520
	df	190
	Sig.	.000

The MKO and Bartlett's Test for the adequacy of data (Rose & Sullivan, 1993) meets the requirement for interpreting factor analysis, and the suggested minimums for sample size that include from 3 to 20 times the number of variables is generally acceptable (Mundfrom & Shaw, 2005), and for six variables under study it works out to 18 times per variable with a total response of 108.

4.14.2 Leadership's commitment towards KM

1	Encouragement of interactions with the team members, business partners and customers leading to performance improvement	.711
2	Look at long term impact of KM initiatives	.688
3	Encouragement to share, act on new information & insights	.687
4	Encourages creativity, adaptability, and entrepreneurship	.608
5	Encourages innovation	.577

Cronbach's α : 0.835

Table 4.16: Leadership's commitment towards KM

The study has revealed that the management's commitment towards knowledge management and innovation is very much evident in the organization and management encourage teamwork, creativity, and entrepreneurship and sharing of insights across the organization that is also evident from the Table 4.16 and as the factor loadings are also higher for those elements. However according to Denham and Kaberon leadership's should not merely emphasize but must pervade its commitment to innovation that may create opportunities for growth (Denham & Kaberon, 2012), and on the other hand according to management gurus and researchers any firm can only survive if they constantly challenge their existing ways of doing business, for instance, IBM missed the advent of minicomputer because it did not feel the pulse of its customers, hence lost a tremendous business opportunities to competition (Prange & Schlegelmilch, 2010). According to Greenwood and Hinings when firms takes the journey to innovate they first formulate strategies and create structures, cultures, and capabilities and even provide incentives, though such elements may not be present at the inception stage but as the organization evolves and systems are built, typically all these elements together are called "archetype" (Greenwood and Hinings, 1993), and by building such an archetype the management may show its commitment.

Leadership is central to innovation, and it can exhibit its commitment by constantly supporting, empowering employees and providing incentives (Prange & Schlegelmilch, 2010). Therefore, organizations have to revisit constantly and realign themselves to stay in the business and identify opportunities for growth and create challenges for its employees so that they can contribute towards the growth of their organizations. Though the leadership’s commitment is evident in the organization but is it translating into innovation is to be seen in years to come.

4.14.3 Strategic priority

1	Encouraged by supporting new ideas, experimentation, and creative processes	.486
2	Strategic priority towards knowledge management systems & innovation is visible	.724
3	“Knowledge creation” activities meet the value creation objectives of the organization	.688
4	Encouraged with the focus provided towards entrepreneurship, flexibility, risk taking	.591

Cronbach's a: 0.727

Table 4.17: Strategic priority

Strategic intent should translate into envisioning of a desired leadership position by establishing the criterion through which it can chart its progress, in simple words strategic intent is an unfettered ambition, this essentially involves that the management constantly emphasizes on winning, motivating people, communicating the value of the desired achievement, sustaining enthusiasm and providing resources (Hamel & Prahalad, 1989). From the study and the Table 4.17, it has emerged that respondent do feel encouraged to experimentation and new ideas, and also with the focus that is provided towards entrepreneurship and risk taking, however in a smaller way as the lower factor loadings of the two

elements suggests that this aspect needs to catch still up in the organization. On the other hand management commitment is seen in creating a strategic priority towards knowledge management systems & innovation and in meeting the value creation objectives of the organization. Strategic intent also means creating a sizable stretch for and the organization and in order to achieve its objectives the current capabilities and resources may not be sufficient all the times and leadership should encourage people to be more inventive in order to get best out of them and constantly create more challenges so that they become better performer (Hamel & Prahalad, 1989).

4.14.4 KM systems & processes

1	KM initiatives are implemented to bring best out of the human capital	.833
2	Focus on new ways & approaches to get best out of human capital	.766
3	Encourages to catalog insights/perspectives gained from the interactions with colleagues and clients & storage	.687
4	Exposure to client's organizations for new ideas and processes for solutions development	.638

Cronbach's α : 0.797

Table 4.18: KM systems & processes

In a fast phased competitive world of today, knowledge is considered as a firm's only enduring source of advantage and employee's knowledge should get built in its structures and systems, even though R&D and consulting organizations had recognized this long ago, but other consumer product companies have also started recognizing it now. However, the problem with knowledge management is that

most of the organizations find it difficult to make it work for them (Birkinshaw, 2001). From the current study it is evident that great efforts are deployed by the management team to bring the best out of the human capital through knowledge management initiatives, the employees also gets exposure to client's knowledge management systems and processes while they are at their premises, and those insights can also be effectively utilized while building business solutions, the organization also encourages to catalogue the insight/perspective gained from the interactions with colleagues and clients as can also be inferred from the above Table 4.16, however from the Table 4.18 it is also evident from the lower factor loadings that the employees feel that organization provide a lesser extent of the required support for new ideas and experimentation and also to try out new processes.

According to Birkinshaw in his article "Why is knowledge management so difficult to manage?", Knowledge management is embedded into the firm and cannot be separated out and acted upon and that requires same efforts as an organization is trying to change the culture unlike a single business process or management system, in almost all the companies knowledge is "managed" through informal networks, and to do it better, it requires to develop new tools, and at the same time it should also eliminate the old ways of working, to make knowledge management work it also requires a complete understanding of what knowledge management is, where the problems are and what steps to be taken to resolve the problems. Therefore, the organization should proactively address the current shortcomings so that employees are encouraged to bring best out of them.

4.14.5 Market orientation

1	Encouraged to acquire knowledge from customers, business partners, suppliers for providing best solutions	.686
2	Dissemination of the market intelligence across the unit and organization is encouraged	.611
3	Market orientation lead to better competitive advantage	.600
4	Organization/unit captures market intelligence to meet the present & future needs of the customer	.578
5	Encouraged by the risk taking ability at the organization level	.536

Cronbach's α : 0.797

Table 4.19: Market Orientation

According to Drucker" marketing is not just selling but, rather understanding the customer", in fact Drucker articulated this and what is today regarded as "market orientation" (Mohr & Sarin, 2008), afterwards the other views also emerged on market orientation, and according to Deshpande et al., market orientation is like a corporate culture that puts customers' interests first (Deshpande et al. 1993).

From the current study and as can be seen in Table 4.19, it has emerged that in the organization the processes are in place when it comes to acquiring knowledge from customers, business partners, suppliers and they are also effective in providing business solutions, and employees also draw some degree of satisfaction from the process of dissemination of market intelligence to meet its current and also future requirements of its customers, however, on the other hand, employees are not satisfied with the risk-taking ability to the extent one would like to. Earlier studies from the literature had established that a positive link between market orientation and firm's performance exists (Ellis, 2006); it needs to be seen to what further extent strengthening and more emphasis on the market

orientation can contribute towards performance improvement in the organization. Drucker had also suggested that “It may seem paradoxical, but knowledge-based innovation is more market-dependent than any other kind of innovation. Careful analysis of the needs—and above all, the capabilities—of the intended user is essential” (Drucker 1985, P9).

4.14.6 Technology Orientation

Table 4.18

1	"First the focus on designing the process, then technology selection	.806
2	The investments in technology determine KM initiatives in the organization	.705

Cronbach's α : 0.449

Table 4.20: Technology Orientation

In the early stages of its inception the organization’s business model was based around the software solutions and services business, and at that time India had to depend on imports for computers and it was considered a scarce resource, hence the opportunities were limited to add value to the existing software and enhance customer experiences, and the “organization” had to be creative and innovative, more out of the necessity and not by choice that too in a limited playing field with an objective to maximize the use of computers. As a result, many innovations was born out of this necessity.

The organization's vision on innovation also comprised of bringing into affordable market technologies, though in the 1970's India was not ready to embrace technology, therefore the organization had to adopt a path of

continuously designing better solutions for its customers by embracing new technologies at all the times, this strategy also resulted in a striking ongoing value creation partnership with its customers, as it also facilitated its customers to innovate within their market and they always came up with new products and services.

The role of IT is also considered as an enabler for any knowledge management initiatives that also facilitates KM practices within an organization, it is also found that when a focused Knowledge management approach is applied addressing the strategic concerns and when they are consciously incorporated into the organization's IT infrastructure, it may further translate into an added benefit of being catalysts of change in such organizations, hence one can see a definite shift from knowledge hoarding to knowledge sharing cultures (Wild & Griggs, 2008). Though the Cronbach's α : 0.449 is low and below the threshold, as the study is on IT organizations and to gather better perspective on Technology orientation the factor is further studied, from the Table 4.20 the higher loading strongly suggest that the organization carefully plans before venturing into any technology selection process, and first look at designing the process and also takes into consideration the requirements, which may serve the purpose of implementing the knowledge management initiatives across the organization, however it has also emerged that KM initiatives are determined by the investment decision in technology, suggesting that organizations may not be that flexible when it comes to exploring alternate options and that may requires quick decision making in order to align itself with the changing requirements, and that may even prove to be effective and more productive, as Junnarkar and Brown have also pointed out that in organizations effective knowledge management requires synergy between people, information and IT, and IT is an enabler and should not be just dictated by the investment decisions alone (Junnarkar & Brown, 1997).

4.15 Summary of the survey outcome

According to Chakravarthy and others, great value from investments in knowledge management can be realized only when the organization achieves high capability in the performance of those KM practices, and greater organizational performance is expected from those firms who significantly engage in all of the KM practices (Chakravarthy et al., 2003). In reality nurturing a culture in which knowledge is valued and shared is one of the main challenges for any organization (Amidon, 1998). Though knowledge by itself does not produce value, what matters is that how organizations effectively control and use knowledge depends on the enterprise' KM capabilities (Davenport et al., 1998; Leonard-Barton, 1995; Soo et al., 2002).

The outcome of the regression analysis and the interpretation of the R value points to the presence of a strong relationship between knowledge management and performance, and also suggesting that organizations fully understands and appreciates the importance of its linkages. However the R² value points to a much weaker strength between them, suggesting that the knowledge assets and the infrastructure that is created in the organizations are not fully utilized. Further the strong presence of only one of the innovation culture's element i.e. market orientation is evident in the organization, and it provides some avenues and opportunities to its people to acquire knowledge from its customers, business partners and access to best practices, and they feel encouraged to risk taking to some extent, and also encourages them to be creative at work sometimes. Moreover, on the other hand, a weak presence of technology orientation and complete absence of learning and entrepreneurship orientations is also evident from the study. Thus, efforts by the organization towards the strengthening of all the attributes of innovation culture with renewed focus are expected to deliver more improved business performance.

Also it is evident from the Factor Analysis that the organizations that have been studied for the purpose of the research have exhibited a strong presence of leadership's commitment towards KM, as it rightly accords strategic priority to such initiatives and actively promotes the development of KM systems & processes, and they are greatly supported by the availability of the infrastructure and nurtures various knowledge management activities across the organization, and also the perception of the people in the organization is very strong towards the role of the innovation culture, as they feel that it is a catalyst and greater efforts in nurturing of the other elements of innovation culture can create further impact on the business performance.

Chapter 5: Findings, Conclusions and contribution to theory

5.1 Findings

The current study establishes that knowledge management in organizations cannot be viewed in isolation or treated like any other corporate initiative and expecting that it will provide breakthroughs. The organizations should necessarily have the leadership commitment and knowledge management systems in place, encourage and practice organizational conversation, evolve dynamic business models, and embedded in innovation culture, once all these ingredients are present in the organization it can certainly expect enhanced business performance.

The innovation culture is often used in generic terms by people and organizations. Through the study, insights are gained on the manifestation of innovation culture and the same can be found in marketing orientation, entrepreneurship orientation, learning orientation and also in technology orientation, and each of the manifestations of innovation culture has the potential to create innovation, facilitate the use of knowledge and improve business performance.

In organizations, all the elements of innovation culture may not have been embedded fully but they still have potential to benefit even with the limited presence of the elements. However, greater impact on business performance can be felt if organizations can fully nurture all the elements of innovation culture along with leadership exhibiting its commitment towards knowledge management and building appropriate systems & processes, encouraging organizational conversation and developing appropriate business models.

The literature review points to an erosion of the demarcations between manufacturing and service firms, and this trend had commenced as early as 1993, and today some of the leading organizations such as Xerox prefers to be called “the document company” and not “the copier/printer company”, Ford a “quality”, IBM markets “industry-solution units”, and 3M calls itself a knowledge company (Davenport & Prusak, 1998), further suggesting that today’s organizations want to be associated or called as knowledge creating enterprises that are providing business solutions rather than just as product/service organizations.

5.2 Conclusions

Bill Gates described a new type of work and referred to it as “thinking work” – through blending a business’s processes and corporate culture with the enabling technology to foster an innovative environment (Conway & Slinger, 2002). Way back in the 1950s, Peter Drucker, coined the term knowledge workers (Acsente, 2010), and innovation and creativity are now considered the hallmark of knowledge workers (Amabile, 1997; Amabile & Kramer, 2007; Kanter, 2000; Higgs & Hender, 2004).

Today innovate or fall behind has become a competitive imperative for virtually all the businesses. However, this is not a simple task for organizations since the innovations take place in the midst of different ideas, perceptions, and the way the information is processed and judged and the collisions that take place as a result (Leonard & Straus, 2000). Thomas Stewart editor of Fortune magazine in 1997 pointed out that “money talks, but it does not think; machines perform, often better than any human being can, but [machines and technology] do not invent...[The] the primary purpose of human capital is innovation – whether of new products and services or improvement in business processes” (Stewart, 1998).

In the recent times organizations have seen a sudden spurt in knowledge management projects that resulted in a multifold increase in investments in such initiatives (Ithia, 2003). However, at the same time failures of KM projects are also increasing, one estimate suggests that 84 per cent of KM initiative provided no significant benefit to the organizations, while they had ventured into a journey of adaptation (Lucier & Torsiliera, 1997). In the current study of the two organizations namely Infosys and 3M also considered pioneers in the field of

managing knowledge, has provided some insight on how they have achieved breakthroughs and continued to remain innovative through the linkages of knowledge management and innovation culture. Also proposed a model linking knowledge management and innovation culture for improved business performance. Further, the model was tested in the India IT organizations, and the proposed model can also act as an effective tool for the leadership to improve business performance if implemented.

5.3 Contribution to theory/literature and practice

Hamel in his famous innovation stack model pointed out that many of the organizations are today predominately tuned to operational and product/service innovations and therefore deploy considerable resources with a desire to harness the benefits, though much greater value creation opportunities can be achieved through strategic and management innovations that are also difficult for the competitor's to replicate (Hamel, 2007), however organizations are not equipped to transition to higher level and exploit innovation opportunities available in less explored strategic and management area due to lack of insights and non availability of appropriate models.

The current study bridges the above mentioned gap and provides insights on how organizations can establish the linkages of KM & Innovation culture and achieve improved business performance, and also identified factors that are responsible for sustaining such linkages in the organizations.

An exhaustive literature review in the earlier part of the study has provided insights, understanding and better perspectives on some of the less explored aspects of innovation culture.

The proposed model that has also been tested can be an effective tool from the practice point of view, and effective implementation by the leadership has the potential to enhance business performance.

6.0 Limitations of the study

As mentioned earlier an exhaustive literature review was performed on a less explored area of research, and references to in-house studies that were obtained from APQC and other data sources has provided a good insight on some of the most reputed and leading organizations and identified factors that were evolved during the study, and proposed a model that can be considered as universal in nature since the organizations are also well established innovative companies and some of them are world class. Also the model was tested in the Indian IT industry, the motivation to carry out such a study was to gain insight on how the innovative and successful organizations have evolved and the researcher's area of work throughout his career has been towards improving productivity and managing performance of the people and organizations, hence the focus of the study was to understand more from internal perspective and the associated dynamics that are prevalent in such organizations, and also to understand how it contributes to the improvement in business performance. Therefore, external factors were not included in the scope of the study.

7.0 Future work

The limitations as mentioned in the above section itself further provides scope for future work in this less explored area, and once more and more investigative studies are carried out including from the external perspectives it may perhaps lead to further avenues for business performance improvements.

The research can further be expanded in the area of how innovating companies have aligned their performance management system, designed the key performance indicators (KPI), and incentive systems to sustain linkages between knowledge management and innovation culture, thus providing the right motivation and opportunity to people to excel and enhance business performance.

Further testing of the model in other organizations will provide more insight into how organizations can overcome the challenges of managing intellectual capital for greater benefits. In the past as quality got embedded in most of the firm's culture, soon organizations may also witness knowledge management getting ingrained (Davenport & Prusak, 1998).

8.0 References

- Acsente, D. (2010). Literature review: a representation of how future knowledge worker is shaping the twenty-first-century workplace. *On the Horizon*, 18(3), 279–287. doi:10.1108/10748121011072726
- Adam, B. (1998). Knowledge management & innovation at 3M. *Journal of Knowledge Management*, Sept. 1998; 2, 1.
- Adams, G.L., and Lamont, B.T. (2003). “Knowledge management systems and developing sustainable competitive advantage”, *Journal of Knowledge Management*, Vol. 7 No. 2, pp. 142-54.
- Afuah, A. (2003). *Innovation Management: Strategies, Implementation and Profits*, Oxford University Press, Oxford.
- Akamavi, N., & Kimble, C. (2005). “Knowledge sharing and computer-supported collaborative work: the role of organizational culture and trust”, *Proceedings of 10th UKAIS Conference*, Northumbria University, UK, May 2005, available at: www.chris-kimble.com/Publications/Documents/Akamavi_2005.pdf
- Akgün, A.E., Keskin, H., Byrne, J.C. and Aren, S. (2007), “Emotional and learning capability and their impact on product innovativeness and firm performance”, *Technovation*, Vol. 27 No. 9, pp. 501-513.
- Alavi, M., Kayworth, T., and Leidner, D. (2005), “An empirical examination of the influence of organizational culture on knowledge management practices”, *Journal of Management Information Systems*, Vol. 22 No. 3, pp. 191-224.

- Alavi, M., & Leidner, D.E. (2001). Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly* 25(1): 107-136.
- Alegra, J. and Chiva, R. (2008), “Assessing the impact of organizational learning capability on product innovation performance: an empirical test”, *Technovation*, Vol. 28 No. 6, pp. 315-326.
- Alrawi, K. W. (2008). Knowledge management and organization’s perception in the United Arab Emirates: case study. *International Journal of Commerce and Management*, 18(4), 382–394. doi:10.1108/10569210810921988.
- Alwis, R. S., & Hartmann, E. (2008). The use of tacit knowledge within innovative companies : knowledge management in innovative enterprises. *Journal of Knowledge Management*, 12(1), 133-147. doi:10.1108/13673270810852449.
- Amabile, T.M., and Kramer, S.J. (2007). “Inner work life: understanding the subtext of business performance”, *Harvard Business Review*, Vol. 85 No. 5, May, pp. 72-83.
- Amabile, T.M. (1997). “Motivating creativity: on doing what you love and loving what you do”, *California Management Review*, Vol. 40 No. 1, pp. 39-58.
- American Management Association. (2006). *The Quest For Innovation : A Global Study of Innovation Management 2006-2016*.
- Amidon, D. M. (1998). Blueprint for 21st Century Innovation Management. *Journal of Knowledge Management*, 2(1), 23–31.
- Andreeva, T., & Kianto, A. (2011). Knowledge processes, knowledge- intensity and innovation: a moderated mediation analysis. *Journal of Knowledge Management*, Vol. 15 No.6, pp.1016 – 1034.

- Antoncic, B. (2007). "Intrapreneurship: a comparative structural equation modeling study", *Industrial Management & Data Systems*, Vol. 107 No. 3, pp. 309-25.
- APQC. (2013). *Transferring and Applying Critical Ltd.* (pp. 1–19).
- APQC. (2012). *Putting Knowledge in the Flow of Work : Best Practices Report* (pp. 1–132).
- APQC. (2010a). *Create a Rewards and Recognition Culture to Engage Employees.*
- APQC. (2010b). *3M Corporation: New Product Development and Using Market Insight* (Vol. 549).
- APQC. (2010c). *International Business Machines (IBM): Measuring the Impact of Knowledge Management* (pp. 1–11).
- APQC. (2009a). *Innovation : Putting Ideas into Action 2009. North* (pp. 1-57).
- APQC. (2009b). *APQC Advanced Working Group: The Intersection of Innovation and Knowledge Management.*
- APQC. (2009c). *Cultivating an Innovative Culture. APQC.*
- APQC. (2005). *Innovation : Putting Ideas into Action Innovation - Reference* (pp. 1-153).
- APQC. (2002). *Using Knowledge Management to Drive Innovation : 3M. APQC Publication* (pp. 1–18).
- APQC International Benchmarking Clearinghouse. (2003). *Using Knowledge Management to Drive Innovation: Best Practice Report. Knowledge Management* (pp. 1–194).

- APQC International Benchmarking Clearinghouse. (1999). *Creating a Knowledge-Sharing Culture. Culture* (pp. 1–92).
- Aragon-Correa, J. A., Garcia-Morales, V. J., & Cordon-Pozo, E. (2007). Leadership and organizational learning's role on innovation and performance: Lessons from Spain. *Industrial Marketing Management*, 36, 349–359.
- Argote, L., Beckman, S., & Epple, D. (2003). The persistence and transfer of learning in industrial settings. *Management Science*, Vol. 36 No. 2, pp. 140-54.
- Argyris, C., & Schön, D. (1978). *Organizational learning: a theory of action perspective*. Reading, Mass. Addison-Wesley.
- Arthur D. Little Global Innovation Excellence Study. (2005). Available at <http://www.vno-ncw.nl/web/servlet/nl.gx.vno.client.http.StreamDbContent?code=1244>.
- Arthur D. Little Global Survey on Innovation. (1994). In Jonash, R.S., and Sommerlate, T., *The Innovation Premium*. (Reading, Ma.: Perseus Books, 1999).
- Atsmon, Y., Child, P., Dobbs, R., & Narasimhan, L. (2012). Winning the \$ 30 trillion decathlon : Going for gold in emerging markets. *The McKinsey Quarterly*, 1–18.
- Atuahene-Gima, K. (1996). “Market orientation and innovation”, *Journal of Business Research*, No. 35, pp. 93-103.
- Atuahene-Gima, K. (1995). “An exploratory analysis of the impact of market orientation on new product performance”, *Journal of Product Innovation Management*, Vol. 12, pp. 275-93.

- Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*, 60(5), 566–575.
- Baden-Fuller, C., MacMillan, I., Demil, B., and Lecocq, X. (2008). “Special issue call for papers: business models”, *Long Range Planning*.
- Baker, W.E., and Sinkula, J.M. (2002). “Market orientation, learning orientation and product innovation: delving into the organization’s black box”, *Journal of Market-Focused Management*, Vol. 5 No. 1, pp. 5-23.
- Baker, W., & Sinkula, J. (1999). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, Vol. 27 No. 4, pp. 411-27.
- Barney, J.B. (1986). Organizational culture: can it be a source of sustained competitive advantage? *Academy of Management Review* 11(3): 656–665.
- Barry, J., John, L., & Richard, H. (2011). THE GLOBAL INNOVATION 1000 Why Culture Is Key. Issue 65 WINTER 2011.
- Barsh, J., Capozzi, M. M., & Davidson, J. (2006). Leadership and innovation. *The McKinsey Quarterly*, (April), 1–11.
- Bartlett, C. A., & Mohammed, A. (1995). 3M : Profile of an Innovating Company. *Innovating*.
- Basadur, M., & Gelade, G. A. (2006). The Role of Knowledge Management in the Innovation Process. *Creativity and Innovation Management*, 15(1), 45-62. doi:10.1111/j.1467-8691.2006.00368.x.

- Bastic, M., & Leskovar-spacapan, G. (2006). What do transition organizations lack to be innovative? *Kybernetes*, 35(7/8), 972–992. doi:10.1108/03684920610675030
- Beckman, T. J. (1997). *A Methodology for Knowledge Management*. International Association of Science and Technology for Development (IASTED). AI and Soft Computing Conference, Banff.
- Bergeron, B. (2003). *Essentials of knowledge management*. Hoboken, NJ: John Wiley.
- Baden-Fuller, C., MacMillan, I., Demil, B. and Lecocq, X. (2008) “Special issue call for papers: business models”, *Long Range Planning*.
- Best Practices LLC. (2004). *Knowledge Management of Internal Best Practices*. Knowledge Creation Diffusion Utilization (pp. 1–141).
- Bhunian, S. N., Menguc, B., and Bell, S. J. (2005). Just entrepreneurial enough: The moderating effect of entrepreneurship on the relationship between market orientation and performance. *Journal of Business Research*, 58,9–17.
- Binti, S., Abidin, Z., Sanuri, S., Mokhtar, B., Zien, R., & Yusoff, B. (2011). A Systematic Analysis of Innovation Studies : A Proposed Framework on Relationship Between Innovation Process and Firm’s Performance. *The Asian Journal of Technology Management*, 4(2), 65-83.
- Birkinshaw, J. (2001). Why is Knowledge Management So Difficult? *Business Strategy Review*, 12(1), 11–18.
- Bledow, R., Frese, M., & Mueller, V. (2011). Ambidextrous leadership for innovation : the influence of culture. *Advances in Global Leadership*, 6, 41–69. doi:10.1108/S1535-1203(2011)0000006006

- Bollinger, A.S. and Smith, R.D. (2001), “Managing organizational knowledge as a strategic asset”, *Journal of Knowledge Management*, Vol. 5 No. 1, pp. 8-18.
- Bose, R. (2004). Knowledge management metrics. *Industrial Management & Data Systems*, Volume 104, Number 6, 2004. pp. 457-468.
- Bovermann, T., and Russell. (2004). *The Culture of Innovation and the Building of Knowledge Societies*. UNESCO, Bureau of Strategic Planning 2003.
- Brand, A. (1998). Knowledge Management and Innovation at 3M. *Journal of Knowledge Management*, 2(1), 17–22.
- Brentani. (2001). Innovative verses incremental new business services: different keys for achieving success. *Journal of Product Innovation Management*, 18 (3):169-187.
- Brian, L. (2005). A leader’s guide to creating an innovation culture. *STRATEGY & LEADERSHIP*, VOL. 33 NO. 4 2005, pp. 38-45.
- Brock, D.M. (2003). Autonomy of individuals and organizations: Towards a strategy research agenda. *Inter. J. Bus. Econ.*, 2(1): 57.
- Brockmand, B., & Morgan, F. (2003). The role of existing knowledge in new product innovativeness and performance. *Decision Sciences*, Vol. 32 No. 2, pp. 385-419.
- Brown, J. S. (2003). Research That Reinvents the Corporation. In *Harvard business review on the innovative enterprise* (pp. 129-154). Boston, USA: Harvard Business School Publishing.
- Bughin, J., Chui, M., & Johnson, B. (2008). The next step in open innovation. *The McKinsey Quarterly*, (june), 1–9.

- Burgelman, R. A. (1983). Corporate entrepreneurship and strategic management: In- sights from a process study. *Management Science*, 29(12), 1349–1364.
- Burgelman, R. A. (1983). Corporate entrepreneurship and strategic management: In- sights from a process study. *Management Science*, 29(12), 1349–1364.
- Caird, S. (1988). *A Review of Methods of Measuring Enterprising Attributes*. Durham University Business School, Durham.
- Calantone, R. J., Cavusgil, S. T., and Zhao, Y. (2002). Learning orientation, firm innovation, and firm performance. *Industrial Marketing Management*, 31(6), 515–524.
- Cameron, K.S., & Freeman, S.J. (1991). Cultural congruence, strength, and type: relationships to effectiveness. *Research in Organizational Development*, Vol. 5, pp. 23-58.
- Cameron, K.S., and Quinn, R.E. (1999). *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*, Addison-Wesley, Reading, MA.
- Cantner, U., Joel, K., & Schmidt, T. (2011). The effects of knowledge management on innovative success – An empirical analysis of German firms. *Research Policy*, 40, 1453–1462. doi:10.1016/j.respol.2011.06.007
- Cardinal, L.B., Allessandri, T.M., and Turner, S.F. (2001). “Knowledge codifiability, resources, and science-based innovation”, *Journal of Knowledge Management*, Vol. 5 No. 2, pp. 195-204.
- Carneiro, A. (2000). How does knowledge management influence innovation and competitiveness? *Journal of Knowledge Management*, 4(2), 87–98. doi:10.1108/13673270010372242.

- Casson, M. (1982). *The Entrepreneur: An Economic Theory*, Martin Robertson, Oxford.
- Cavaleri, S., Seivert, S., & Lee, W.L. (2005). *Knowledge Leadership: The Art and Science of the Knowledge-based Organisation*, KMCI Press, Alexandria, VA.
- Cavaleri, S.A. (2004). "Leveraging organizational learning for knowledge and performance", *The Learning Organization*, Vol. 11 No. 2, pp. 159-76.
- Certo, T.S., Moss, T.W., & Short. J. (2009). Entrepreneurial orientation: An Applied Perspective. *Business Horizons*, 52: 319-324.
- Chakravarthy, B., McEvily, S., Doz, Y., & Rau, D. (2003). "Knowledge management and competitive advantage", in Easterby-Smith, M. and Lyles, M.A. (Eds), *The Blackwell Handbook of Organizational Learning and Knowledge Management*, Blackwell Publishing, Oxford, pp. 305-23.
- Chapman, R., and Magnusson, M. (2006). Continuous innovation, performance and knowledge management: an introduction. *Knowledge and Process Management*, Vol. 13 No. 3, pp. 129-31.
- Chen, Y. S., Lin, M. J. J., & Chang, C.H. (2009). The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management*, 38(2), 152–158.
- Chesbrough, H. (2007). Business model innovation: it's not just about technology anymore. *Strategy & Leadership*, 35(6), 12–17. doi:10.1108/10878570710833714
- Chesbrough, H. (2006a). *Open Business Models: How to Thrive in the New Innovation Landscape*. Harvard Business School Press, Boston, MA.

- Chesbrough, H. (2006b). Open Innovation: A New Paradigm for Understanding Industrial Innovation, in Chesbrough, H., Vanhaverbeke, W., West J. (Eds), Open Innovation: Researching a New Paradigm. Oxford University Press, Oxford, pp. 1-12.
- Chesbrough, H. (2003a). The era of open innovation. Sloan Management Review, 44, 3, 35–41.
- Chesbrough, H.W. (2003b), “The era of open innovation”, MIT Sloan Management Review, Vol. 44 No. 3, pp. 35-41.
- Chesbrough, H. (2003c). Open Innovation: How Companies Actually Do It. Harvard Business Review, Vol. 81 No. 7, pp. 12-14.
- Chesbrough, H. (2003d). Open Innovation: The New Imperative for Creating and Profiting from Technology. Boston, MA: Harvard Business School Press.
- Cho, H.-J., and Pucik, V. (2005). Relationship between Innovativeness, Quality, Growth, Profitability, and Market Value. Strategic Management Journal 26 (6): 555-575.
- Choi, B., and Lee, B. (2003). An empirical investigation of KM styles and their effect on corporate performance. Information and Management, Vol. 40 No. 5, pp. 403-17.
- Chong, S. C., and Choi, Y.S. (2005). Critical factors of knowledge management implementation success. Journal of Knowledge Management Practice 6(3): 21-37.
- Christensen, C., Anthony, S., & Roth, E. (2004). *Seeing what's next*. Boston, Massachusetts: Harvard Business School Publishing Corporation.

- Christensen, C.M., & Raynor, M. (2003). *The Innovator's Solution: Creating and Sustaining Successful Growth*, Harvard Business School Press, Boston, MA.
- Christensen., Clayton., & Kirstin, S. (1999). What is an organization's culture? Harvard Business School Case 9-399-104, May 20.
- Chua, A.Y.K. (2009). "The dark side of successful knowledge management initiatives", *Journal of Knowledge Management*, Vol. 13 No. 4, pp. 32-40.
- Ciganek, A. P., Mao, E., & Srite, M. (2008). Organizational Culture for Knowledge Management systems: a study of Corporate Users. *International Journal of Knowledge Management*, 4(1), 1–16.
- Colbert, A., Kristof-Brown, A., Bradley, B., & Barrick, M. (2008). CEO transformational leadership: The role of goal importance congruence in top management teams. *Academy of Management Journal*, 51, 81–96.
- Collins, J. (2001). *Good to Great: Why Some Companies Make the Leap and Others Don't*, Harper-Business. New York, NY.
- Collins, J. C., & Porras, J. I. (2000). Building Your Company's Vision. *Harvard Business Review*, 1–15.
- Conway, S., & Sligar, C. (2002). *Unlocking Knowledge Assets*. Washington: Microsoft Press.
- Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 3rd edn, Sage Publications, Thousand Oaks, California.

- Crumpton, M. A. (2012). Leading Results Talk about change. *The Bottom Line: Managing Library Finances*, 25(4), 140–142.
doi:10.1108/08880451211292559
- Cyert, R. & March, J.G. (1992). *Behavioral Theory of Firm*, 2nd ed., Blackwell, Cambridge, MA.
- Darroch, J. (2005). "Knowledge management, innovation and firm performance", *Journal of Knowledge Management*, Vol. 9 No. 3, pp. 101-15.
- Darroch, J., and McNaughton, R. (2003). “Beyond market orientation: Knowledge management and the innovativeness of New Zealand firms”, *European Journal of Marketing*, Vol. 37 Nos 3/4, pp. 572-93
- Darroch, J., and McNaughton, R. (2002). “Examining the link between knowledge management practices and types of innovation”, *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 210-22.
- Davenport, T. H. (2011). *Rethinking knowledge work : A strategic approach*. *The McKinsey Quarterly*, 1–11.
- Davenport ,T.H. (1997). *Known Evils, Common Pitfalls of Knowledge Management*. *CIO Magazine*. June 15, 1997.
- Davenport, T. R. (1994). *Saving IT’s soul: Human-centered information management*. *Harvard Business Review*, 72, 119–131.
- Davenport, T.H., & Beck, J.C. (2002). *The strategy and structure of firms in the attention economy*. *Ivey Business Journal*, Vol. 66, No. 4, pp. 48-54.
- Davenport, T., DeLong, D., & Beers, M. (1998). *Successful knowledge management projects*. *Sloan Management Review* 39: 43–57.

- Davenport, T., & Prusak, L. (1998). *Working knowledge: how organizations manage what they know*. Harvard Business School Press, Boston.
- Davila, T., Epstein, M., & Shelton, R. (2006). *Making Innovation Work: How To Manage It, Measure It, and Profit From It*. New Jersey: Wharton School Publishing, Pearson Education Inc.
- Dayton, B. K. (2010). *Improving Business Performance in the Global Enterprise – Successes, Failures, Lessons-Learned* (pp. 1–32).
- Day, G. S. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, 58(4), 37–52.
- de Geus, A. P. (1988). Planning as Learning. *Harvard Business Review*, March-April, 1–6.
- De Long, D.W., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *Academy of Management Executive*, Vol. 14 No. 4, pp. 113-27.
- Demarest, M. (1997). Understanding knowledge management. *Long Range Planning*, Vol. 30 No. 3, pp. 374-384.
- Denham, J., & Kaberon, R. (2012). Culture Is King: How Culture Contributes to Innovation. *Journal of Product Innovation Management*, 29(3), 358–360. doi:10.1111/j.1540-5885.2012.00908.x.
- Deshpande, R., Farley, J. U., & Webster Jr., F. E. (1993). Corporate culture, customer orientation, and innovativeness in Japanese Firms: A quadrat analysis. *Journal of Marketing*, 57,23–37 (January).
- Desphandé, R., John, U.F., & Frederick. E.W. (1993).“Corporate Culture, Market Orientation, and Innovativeness in Japanese Firms: A Quadrant Analysis.”*Journal of Marketing* 57(January): 23-37.

- Díaz-Díaz, N., Aguiar-Díaz, I., & DeSaa'-Pe ´rez, P. (2008). The effect of technological knowledge assets on performance: the innovation choice in Spanish firms. *Research Policy*, Vol. 37, pp. 1515-29.
- DiBella, A. J., & Nevis, E. C. (1998). *How organizations learn: An integrated strategy for building learning capability*, First Edition Ed. San Francisco, CA: Jossey-Bass.
- Dobni, C. B. (2010). Achieving synergy between strategy and innovation : The key to value creation. *Journal of Business and Applied Management*, 5(1).
- Dobni, C. B. (2008). Measuring innovation culture in organizations : The development of a generalized innovation analysis. *European Journal of Innovation Management*, 11(4), 539–559. doi:10.1108/14601060810911156.
- Dodgson, M., Gann, D.M., & Salter, A. (2005). *Think, Play, Do: Technology and the New Innovation Process*. Oxford: Oxford University Press.
- Dodgson, M. (1993). Organizational learning: a review of some literatures. *Organization Studies*, Vol. 14 No. 3, pp. 375-94.
- Donaldson, L. (2001). *The Contingency Theory of Organizations*. Sage Publications, Thousand Oaks, CA.
- Donate, M. J., & Guradamillas, F. (2010). The Effect of Organizational Culture on Knowledge Management Practices and Innovation. *Knowledge and Process Management*, 17(2), 82–94. doi:10.1002/kpm.
- Dove, R. (1999). Knowledge management, response ability, and the agile enterprise, *Journal of Knowledge Management*, Vol.4, pp. 89-108.
- Drucker, P. F. (2002). The Discipline of Innovation. In *Harvard Business Review*, August 2002.

- Drucker, P. (1999). *Management challenges for the 21st century*. Harper Collins Publishers.
- Drucker, P.F. (1998). *The Discipline of Innovation*, Harvard Business Review.
- Drucker, P. (1996). *The Executive In Action*. New York: HarperCollins Publishers, Inc.
- Drucker, P.F. (1994). *Innovation and Entrepreneurship: Practice and Principles*. Heinemann, London.
- Drucker, P.F. (1993). *Innovation and Entrepreneurship*, Collins, New York, NY.
- Drucker, P. (1985). *The Discipline of Innovation*. Harvard Business Review, 63,67–73 (May-June).
- Drucker, P. (1954). *The Practice Of Management*. New York: Harper & Row Publishers.
- Duffy, J. (2000), “Knowledge management: what every information professional should know”, *Information Management Journal*, Vol. 34 No. 3, pp. 10-16.
- Dunphy, B., & May, P. (2012). Frost & Sullivan. Retrieved July 22, 2012 from A frost-innovation-culture-webinar-live-250310:
[http://www.slideshare.net/Dunphy/ frost-innovation-culture-webinar-live-250310](http://www.slideshare.net/Dunphy/frost-innovation-culture-webinar-live-250310).
- Edvinsson, L., & Malone, M.S. (1997). *Intellectual Capital: Realizing your Company's True Value by Finding its Hidden Brainpower*. 1st ed., Harper Business, New York, NY.

- Ellis, P. D. (2006). Market orientation and performance: A meta- analysis and cross-national comparison. *Journal of Management Studies*, 43(5), 1089–1107.
- Enkel, E., Gassmann, O., & Chesbrough, H. (2009). Open R&D and open innovation: exploring the phenomenon. *R&D Management*, Vol. 39 No. 4, pp. 311-316.
- Ernst, H. (2001). *Erfolgsfaktoren neuer Produkte: Grundlagen für eine valide empirische Forschung*. Wiesbaden.
- Faraj, S., & Wasko, M.M. (2001). “The web of knowledge: an investigation of knowledge exchange in networks of practice”, paper presented at the Annual Meeting of the Academy of Management, Washington, DC, available at: <http://opensource.mit.edu/papers/Farajwasko.pdf> (accessed July 23, 2009).
- Farrell, M. A. (2000). Developing market-oriented learning organization. *Australian Journal of Management*, 25(2), 201–223.
- Finkle, T. A. (2012). Corporate Entrepreneurship and Innovation in Silicon Valley: The Case of Google, Inc. *Entrepreneurship Theory and Practice*, 36(4), 863–884. doi:10.1111/j.1540-6520.2010.00434.x.
- Fiol, C.M., & Lyles, M.A. (1985). Organizational Learning. *Academy of Management Review*, 10(4), 803-13.
- Fisher, L. M. (2004). How Dell got solutions. 2004. *Strategy & Business*, 36, August: 47-59.
- Forbes. (1991, April 29). A hard way to make a buck. *Forbes*, pp. 134-137.

- Francisco, J.F., & Guadamillas, F. (2002). A case study on the implementation of a knowledge management strategy oriented to innovation. *Knowledge and Process Management*, Vol. 9 No. 3, pp. 162-71.
- Galende, J. (2006). Analysis of technological innovation from business economics and management. *Technovation*, Vol. 26, pp. 300-11.
- Galunic, D.C., and Rodan, S. (1998)."Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation", *Strategic Management Journal*, Vol. 19, pp. 1193-201.
- Garvin, D. (2000). *Learning in Actions: A Guide to Putting the Learning Organization to Work*. Harvard Business School Press, p.106.
- Garvin, D. (1993). Building a learning organization. *Harvard Business Review*, Vol. 74 No. 4, pp. 78-91.
- Garvin, D. A., Edmondson, A. C., & Gino, F. (2008, March). Is yours a learning organization? *Harvard business review*, 86(3), 109–16, 134. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/18411968>.
- Gassmann O., Enkel, E., & Chesbrough, H. (2010). The future of open innovation, *R&D Management*, Vol. 40 No. 3, pp. 213-221.
- Gatignon, H., & Xuereb, J. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, Vol. 34, February, pp. 77-90.
- Geiger, I.K. (2006). Change management in komplexen Organisationen – Theorie, Topics, Tools. in Kruppke, H., Otto, M. and Gontard, M. (Eds), *Human Capital Management*.

- Ghauri, P., Gronhaug, K., & Kristianslund, I. (1995). *Research methods in business studies*. 1st edition. Hertfordshire: Prentice Hall International (UK) Limited.
- Gloet, M., & Terziovski, M. (2004). Exploring the relationship between knowledge management practices and innovation performance. *Journal of Manufacturing Technology Management*, Vol. 15No. 5, pp. 402-9.
- GMAKE. (2013). 2013 Global Most Admired Enterprises (MAKE) Report. Shropshire, U.K: Teleos-The KNOW Network.
- GMAKE. (2011). 2011 Global Most Admired Enterprises (MAKE) Report. Shropshire, U.K: Teleos-The KNOW Network.
- Goffin, K., & Pfeiffer, R. (1999). *Innovation Management in UK and German Manufacturing Companies*. Anglo-German Foundation, York.
- Gold, A., Malhotra, A., & Segars, A. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 185-214.
- Govindarajan, V. (2012). A Reverse-Innovation Playbook. *Harvard Business Review*,(April),1–6.
- Govindarajan, V., & Trimble, C. (2005). Organizational DNA for strategic innovation. *California Management Review*, Vol. 47 No. 3, pp. 47-76.
- Grant, R.M. (1996). "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, Vol. 17 No. 2, pp. 109-122.
- Gratton, L. (2007). *Hot Spots: Why Some Companies buzz with Energy and Innovation- and Others Don't*. Prentice Hall, Upper Saddle River, NJ.

- Gravin, D.A. (1993). Building a Learning Organization. *Harvard Business Review*, 71, p. 78-91.
- Greenwood, R., & Hinings, C.R. (1993). Understanding strategic change: the contribution of archetypes. *Academy of Management Journal*, Vol. 36 No. 5, pp. 1052-81.
- Greiner, M. E., Böhmann, T., & Krcmar, H. (2007). A strategy for knowledge management. *Journal of Knowledge Management*, 11(6), 3–15. doi:10.1108/13673270710832127.
- Grinstein, A. (2008). “The relationships between market orientation and alternative strategic orientations”, A meta-analysis, *European Journal of Marketing*, Vol. 42 Nos 1/2, pp. 115-34.
- Grover, V., & Davenport, T. (2001). General perspectives on knowledge management: Fostering a research agenda. *Journal of Management Information Systems*, 18(1), 5.
- Groysberg, B., & Slind, M. (2012). Leadership Is A Conversation. *Harvard Business Review*, (June), 1–10.
- Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of Innovation Types on Firm Performance. *International Journal of Production Economics*.
- Gupta, A., Govindarajan, V., & Wang, H. (2008). *The Quest for Global Dominance: Transferring Global Presence into Global Competitive Advantage*. John Wiley & Sons.
- Gurteen, D. (1998). Knowledge, Creativity and Innovation. *Journal of Knowledge Management*, 2(1), 5-13.

- Haas, M.R. and Hansen, M.T. (2005), “When using knowledge can hurt performance: the value of organizational capabilities in a management consulting company”, *Strategic Management Journal*, Vol. 26, pp. 1-24.
- Hackett, B. (2000). *Beyond Knowledge Management: New Ways to Work and Learn*, The Conference Board, New York, NY.
- Hair, J., Anderson, R., & Tatham, R. (1987). *Multivariate Data Analysis*. 2nd ed., Macmillan Publishing Company, New York, NY.
- Hakala, H., & Kohtamäki, M. (2011). Configurations of entrepreneurial- customer and technology orientation. *International Journal of Entrepreneurial Behavior & Research*, 17(1), 64–81. doi:10.1108/13552551111107516
- Hall, J., & Sapsed, J. (2005). Influences of knowledge sharing and hoarding in project-based firms. In Love, P., Irani, Z. and Fong, P. (Eds). *Management of Knowledge in Project Environments*. Butterworth-Heinemann, Oxford, pp. 57-79.
- Hamel.G. (2007). [Interview by Breen. B]. *The Future of Management*. Harvard Business School Press.
- Hamel, G. (2006). *The Why, What and How of Management Innovation*, HBR.
- Hamel, G. (2002). *Leading the Revolution*, Plume, New York, NY.Holt, Rinehart, and Winston, New York, NY.
- Hamel, G. (1999). Bringing silicon valley inside. *Harvard Business Review*, Vol. 77No. 5, pp. 70-84.
- Hamel. G. (1997). [interview by Tony Jackson]. *The Dirty Little Secret of Strategy*. *Financial Times*, April 24, 1997.

- Hamel, G., & Bryan, L. (2008). Innovative management : A conversation with Gary Hamel and Lowell Bryan. *The McKinsey Quarterly*, (1), 1-10.
- Hamel, G. and Prahalad, C.K. (1991), "Corporate imagination and expeditionary marketing", *Harvard Business Review*, Vol. 69 No. 4, pp. 81-92.
- Hamel, G., & Prahalad, C. K. (1989). Strategic Intent. *Harvard Business Review*.
- Hamel, G., & Breen, B. (2007). *The Future of Management*, Harvard Business Press, 2007 - Business & Economics
- Hammer, M. (2004). Deep change: how operational innovation can transform your company. *Harvard Business Review*, Vol. 82 No. 4, April, pp. 84-96.
- Han, J., Kim, N., & Srivastava, R. (1998). "Market orientation and organizational performance: is innovation the missing link?", *Journal of Marketing*, Vol. 62, October, pp. 30-45.
- Hans, R. (2007). Geschäftsmodell-Innovation und Notwendigkeit des Change Management – Anspruch, Wirklichkeit und mögliche Lösungsansätze", in Keuper, F. and Groten, H. (Eds.), *Nachhaltiges Change Management. Interdisziplinäre Fallbeispiele und Perspektiven*, Betriebswirtschaftlicher Verlag Gabler, Wiesbaden, pp. 181-97.
- Hansen, M.T., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge? *Harvard Business Review*, Vol. 77 No. 2, pp. 106-16.
- Harvey, M., Kiessling, T., & Moeller, M. (2010). A view of entrepreneurship and innovation from the economist "for all seasons": Joseph S. Schumpeter. *Journal of Management History*, 16(4), 527-531. doi:10.1108/17511341011074004.

- Hauschild, S., Licht, T., & Stein, W. (2001). Creating a knowledge culture. *The McKinsey Quarterly*.
- Hedlund G. (1994). A model of knowledge management and the N-form corporation. *Strategic Management Journal* 15: 73 - 90.
- Heifetz, R. A., & Laurie, D. L. (2002). The work of leadership. *Harvard business review*, 75(1), 1–43. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10174450>.
- Henderson, C. (2000). Finding, Examining Lead Users Push 3M to Leading Edge of Innovation. , APQC Publication 1–4.
- Herbig, P., & Dunphy, S. (1998). Culture and innovation: Cross Cultural Management. *An International Journal*, 5(4), 13-21.
- Herbig, P., Golden, E.J., & Dunphy, A. (1994). The relationship of structure to entrepreneurial and innovative success. *Marketing Intelligence & Planning*, Vol. 12 No. 9, pp. 37-48.
- Herkema, S. (2003). “A complex adaptive perspective on learning within innovation projects”, *The Learning Organization*, Vol. 10 No. 6, pp. 340-6.
- Hernández-Espallardo, M., & Elena Delgado-Ballester. (2009). Product Innovation in Small Manufacturers, Market Orientation and the Industry’s Five Competitive Forces. *European Journal of Innovation Management*, Vol. 12, nº. 4, pp. 1460-1060.
- Herzog, P. (2011a). Open and Closed Innovation : Different Cultures for Different Strategies. *Management* (pp. 1–287). Wiesbaden: Gabler. doi:10.1007/978-3-8349-6165-5

- Herzog, P. (2011b). *Open and Closed Innovation: Different Cultures for Different Strategies*. Gabler Verlag/Springer Fachmediem Wiesbaden GmbH.
- Herzog, P., & Leker, J. (2010). Open and closed innovation – different innovation cultures for different strategies. *International Journal of Technology Management*, 52(3/4), 322–343.
- Herzog, P., & Leker, J. (2007). Open vs closed innovation – different cultures for different strategies. Paper presented at ISPIM Conference, Warsaw, 17-20 June.
- Hesselbein, F., & Cohen, P. (1999). *Leader to Leader*. New Jersey: John Wiley & Sons, Inc.
- Higgs, M., & Hender, J. (2004). “The characteristics of the creative manager”, *Journal of General Management*, Vol. 29 No. 4, pp. 1-20.
- Hindo, B. (2007). At 3M , A Struggle Between Efficiency And Creativity. *Business Week*, (June), 8–14.
- Hippel, E.Von., Thomke, S., & Sonnack, M. (1999). Creating Breakthroughs at 3M. *Harvard Business Review*, 3–12.
- Holmqvist, M. (2004). Experiential learning processes of exploitation and exploration within and between organizations: an empirical study of product development. *Organization Science*, Vol. 15 No. 1, pp. 70-81.
- Holsapple, C. W., & Wu, J. (2011). An elusive antecedent of superior firm performance: The knowledge management factor. *Decision Support Systems*, 52(1), 271–283. doi:10.1016/j.dss.2011.08.003
- Huber, G. (2001). Transfer of knowledge in knowledge management systems: unexplained issues and suggested studies. *European Journal of Information Systems*, Vol. 10 No. 2, pp. 72-9.

- Huber, G.P. (1991). "Organization Learning: The Contributing Processes and the Literature," *Organization Science*, 2 (February), 88-115.
- Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: its antecedents and impact on business performance. *Industrial Marketing Management*, 33 (5): 429-438.
- Hunt, S.D., & Morgan, R.M. (1995). The comparative advantage theory of competition. *Journal of Marketing*, Vol. 59, pp. 1-15.
- Hurley., & Hult. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *Journal of Marketing*, 62 (3): 42-54.
- Immelt, J. R., Govindarajan, V., & Trimble, C. (2009). How GE Is Disrupting Itself. *Harvard Business Review*, 1–13.
- Inauen, M., & Schenker-wicki, A. (2011). The impact of outside-in open innovation on innovation performance. *European Journal of Innovation Management*, 14, 496–520. doi:10.1108/14601061111174934.
- Indu, P. (2006). Infosys ' Knowledge Management Initiatives. *ICFAI Center for Management Research*, 44(906).
- Ireland, R. D., Hitt, M. A., & Sirmon, D. G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of Management*, 29(6), 963–989.
- Ireland, R.D., & Webb, J.W. (2007). A cross-disciplinary exploration of entrepreneurship research. *J. Manage.*, 33(6): 891-927.
- Ithia, A. (2003). "UK lawyers spend more on KM", *KM Review*, Vol. 5 No. 6, p. 11.

- Jakobson, L. (2007). *Innovation with Chinese Characteristics*. Palgrave Macmillan, New York, NY.
- Janz, B.D., & Prasarnphanic, P. (2003). Understanding the antecedents of effective knowledge management: the importance of a knowledge-centered culture. *Decision Science* 34: 351–384.
- Jaruzelski, B., Holman, R., & Baker, E. (2011). 3M ' s Open Innovation 3M ' s Open Innovation. *Strategy+business Magazine*, 1–5.
- Jaruzelski, B., Loehr, J., & Holman, R. (2011). Why Culture Is Key. *Business+Strategy: Booz&co.*, (65), 1-18.
- Jaworski, B., Kohli, A. K., & Sahay, A. (2000). Market-driven versus driving markets. *Journal of the Academy of Marketing Science*, 28(1), 45–54.
- Johnson, L.D., Neave, E.H. & Pazderka, B. (2002). Knowledge, innovation and share value. *International Journal of Management Review*, Vol. 4, pp. 101-34.
- Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing Your Business Model. *Harvard Business Review*, (December 2009), 1–12.
- Julia, C., & Naranjo-Valencia. (2011). Innovation or imitation? The role of organizational culture, *Management Decision* Vol. 49 No. 1, 2011, pp. 55-72.
- Junnarkar, B., & Brown, C. V. (1997). Re-assessing the Enabling Role of Information Technology in KM. *Journal of Knowledge Management*, 1(2), 142–148. doi:10.1108/EUM0000000004589
- Kalling, T. (2003). “Knowledge management and the occasional links with performance”, *Journal of Knowledge Management*, Vol. 7 No. 3, pp. 67-81.

- Kanter, R.M. (2000). "Knowledge workers", *Executive Excellence*, Vol. 15 No. 1, January, pp. 15-16.
- Kanungo, R.N. (1999). *Entrepreneurship and Innovation: Models for Development* (Ed.). Sage Publications, London.
- Kara, A., Spillan, J., and DeShields, O. (2005). The effect of a market orientation on business performance: A study of small-sized service retailers using MARKOR scale. *Journal of Small Business Management*, 43(2), 105–118.
- Khairuzzaman, W., & Ismail, W. (2007). Framework of the culture of innovation : A revisit. *Jurnal Kemanusiaan bil.*
- Kim, S., & Lee, H. (2006). "The impact of organizational context and information technology on employee knowledge-sharing capacities", *Public Administration Review*, Vol. 66 No. 3, pp. 370-85.
- Kim, W. C., & Mauborgne, R. (2004). Value Innovation : The Strategic Logic of High Growth. *Harvard Business Review*, (July-August), 1–11.
- King, W.R., & Marks, P. (2006). "Motivating knowledge sharing through a knowledge management system", *OMEGA: The International Journal of Management Science*, available at: www.omegajournal.org/acceptedpaperslink.html.
- Kochikar, V. P., Mahesh, K., & Mahind, C. S. (2003). Knowledge Management in Action : The Experience of Infosys Technologies. In *Knowledge and Business Process Management* (pp. 83–98).
- Kochikar, V.P. (2003). The Knowledge Management Maturity Model – A staged framework for leveraging knowledge. Available 11th July 2005:www.Infosys.com.

- Kofman, F., & Senge, P. M. (1993). Communities of commitment: The heart of learning organizations. *Organizational Dynamics*, 22, 5-23.
- Kohli, A. and Jaworski, B. (1990), ``Market orientation: the construct, research propositions, and managerial implications'', *Journal of Marketing*, Vol. 54, April, pp. 1-18.
- Kotler, P., & Keller, K. (2006). *Marketing Management*. Prentice-Hall, Pearson Education, Inc.
- Kotter, J., & Cohen, D. (2002). *The Heart of Change: Real-Life Stories of How People Change Their Organization*. Harvard Business School Publishing.
- Kotter, J.P. (1996). *Leading Change*. Harvard Business School Press, Boston, MA.
- Koulopoulos, T., & Frappaolo, C. (1999). *Smart Things to Know About Knowledge Management*, Capstone Publishing Limited, Oxford.
- Kreiser, P. M., Marino, L. D., & Weaver, K. M. (2002). Assessing the psychometric properties of the entrepreneurial orientation scale: A multi-country analysis. *Entrepreneurship Theory and Practice*, 26(4), 71–94.
- Kroeber, A.L., & Kluckholm, C. (1952). *Culture: A critical Review of Concepts and Definitions*, Harvard University Press, Boston, MA
- Kumar, N., Scheer, L., & Kotler, P. (2000). From market driven to market driving. *European Management Journal*, 18(2), 129–142.
- Kvale, S. (1996). *InterViews: An Introduction to Qualitative Research Interviewing*, Sage Publications, London.

- Lado, N., & Maydeu-olivares, A. (2000). Exploring the link between market orientation and innovation in the European and US insurance markets. *International Marketing Review*, 18(2), 130–144.
- Lafley, A., & Charan, R. (2008). P&G's Innovation Culture. *Strategy+Business*, (52), 3–12.
- Lambin, J. (1996), ``The misunderstanding about marketing, today; marketing is too important to be left to sole marketing function. An empirical study in the private insurance sector'', *CEMS Business Review*, Vol. 1 No. 1-2, pp. 37-56.
- Lang, J.C. (2001). Managerial concerns in knowledge management. *Journal of Knowledge Management*, Vol. 5 No. 1, pp. 43-59.
- Lang, J. C. (1998). Managerial concerns in knowledge management. *Journal of Knowledge Management*, 5(1), 43–57.
- Lapre, M.A., & Wassenhove, L.N.V. (2001). Creating and transferring knowledge for productivity improvement in factories. *Management Science*, Vol. 47 No. 10, pp. 1311-25.
- Leavy, B. (2011). Vijay Govindarajan: innovation coach to the developed and developing world. *Strategy & Leadership*, 39(5), 4–12. doi:10.1108/10878571111161471.
- Leavy, B. (2010). Design thinking – a new mental model of value innovation. *Strategy & Leadership*, 38(3), 5–14. doi:10.1108/10878571011042050
- Leavy, B. (2005). A leader's guide to creating an innovation culture. *Strategy & Leadership*, 33(4), 38-45. doi:10.1108/10878570510608031.

- Lee, Ch., & Chen, W-J. (2005). The effects of internal marketing and organizational culture on knowledge management in the information technology industry. *International Journal of Management*, Vol. 22 No. 4, pp. 661-72.
- Lee, H., and Choi, B. (2003). “Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination”, *Journal of Management Information Systems*, Vol. 20 No. 1, pp. 179-228.
- Lee, L.T., & Sukoco, B.M. (2007). The effects of entrepreneurial orientation and knowledge management capability on organizational effectiveness in Taiwan: The moderating role of social capital. *International Journal of Management*, Vol. 24 No. 3, pp. 549-573.
- Legge, J., & Hindle, K. (1997). *Entrepreneurship: How Innovators Create the Future*. Macmillan Publishers, Melbourne.
- Leidner, D., & Alavi, M. (2006). “The role of culture in knowledge management: a case study of two global firms”, *International Journal of e-Collaboration*, Vol. 2 No. 1, pp. 17-40.
- Leifer, R. (2002). *Critical Factors Predicting Radial Innovation Success*. Technische, Berlin.
- Lemon, M., & Sahota, P.S. (2004). Organizational culture as a knowledge repository for increased innovative capacity. *Technovation*, Vol. 24, pp. 483-98.
- Leonard, D., & Straus, S. (2000). Putting Your Company’ s Whole Brain to Work AT. *The McKinsey Quarterly*, (4088), 1–15.

- Leonard-Barton, D. (1995). *Wellsprings of Knowledge: Building & Sustaining the Source of Innovation*, Harvard Business School Press, Boston, MA.
- Li, Y., Guo, H., Liu, Y., & Li, M. (2008). Incentive mechanisms, entrepreneurial orientation and technology commercialization: Evidence from China's transitional economy. *Journal of Product Innovation Management*, 25(1), 63–78.
- Littunen, H. (2000). Entrepreneurship and the characteristics of the entrepreneurial personality. *International Journal of Entrepreneurial Behaviour & Research*, Vol. 6 No. 6, pp. 295-309.
- Long, D. W. De., & Fahey, L. (2000). Diagnosing Cultural Barriers to Knowledge Management. *Academy of Management Executive*, 14(4), 113–127.
- Lucas, L.M. (2005). “The impact of trust and reputation on the transfer of best practices”, *Journal of Knowledge Management*, Vol. 9 No. 4, pp. 87-101.
- Lucier, C., & Torsiliera, J. (1997). “Why knowledge programs fail”, *Strategy and Business*, 4th quarter, pp. 14-28.
- Lumpkin, G.T., & Dess, G.G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *J. Bus. Venturing*, 16(5): 429-451.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172.
- Lytle, R. S. (1994). *Service Orientation, Market Orientation, and Performance: An Organizational Culture Perspective*. A Dissertation for the Degree of Doctor of Philosophy. Arizona State University.

- Madhoushi, M., Sadati, A., Delavari, H., Mehdivand, M., & Mihandost, R. (2011). Entrepreneurial Orientation and Innovation Performance: The Mediating Role of Knowledge Management. *Asian Journal of Business Management*, 3(4), 310–316.
- MAKE. (2013). 2013 Global Most Admired Knowledge Enterprises (MAKE) Report. G (pp. 1–16).
- MAKE. (2011). Retrieved on March 20, 2012, from <http://www.knowledgebusiness.com>.
- Marinova, D. (2004), “Actualizing innovation effort: the impact of market knowledge diffusion in a dynamic system of competition”, *Journal of Marketing*, Vol. 68 No. 3, pp. 1-21.
- Martin, J. (2002). *Organizational culture: Mapping the terrain*. Thousand Oaks, CA: Sage.
- Martin, M. (1994). *Managing Innovation and Entrepreneurship in Technology-Based Companies*. John Wiley & Sons, New York, NY.
- Masanell, R., & Ricart, J. E. (2010). Competitiveness: business model reconfiguration for innovation and internationalization. *The Journal of the Iberoamerican Academy of Management*, 8(2), 123–149. doi:10.1108/1536-541011066470.
- Matsuno, K., Mentzer, J. T., and Ozsomer, A. (2002). The effect of entrepreneurial proclivity and market orientation on business performance. *Journal of Marketing*, 66,18–32.
- Maynard, H.B. (1963). *Handbook of Industrial Engineering*, 2nd Edition, McGraw Hill.

- McAdam, R. (2000). Knowledge Management as a Catalyst for Innovation within Organizations: A Qualitative Study. *Knowledge and Process Management*, 7(4), 233–241. doi:10.1002/1099-1441(200010/12)7:4<233::AID-KPM94>3.3.CO;2-6.
- McDermott, R. and O’Dell, C. (2001), “Overcoming cultural barriers to sharing knowledge”, *Journal of Knowledge Management*, Vol. 5 No. 1, pp. 76-85.
- McElroy, M.W.(2000). Integrating complexity theory, knowledge management and organizational learning. *Journal of Knowledge Management*, Vol. 4 No. 3, pp. 195-303.
- Megginson. W.L., and Weiss. K.A. (1991). Venture capitalist certification in initial offerings, *Journal of Finance* 46 (3) (1991) 879–903.
- Mehta, N., Oswald, S., & Mehta, A. (2007). Infosys technologies: Improving organizational knowledge flows. *Journal of Information Technology*, 22, 456–464. doi:10.1057/palgrave.jit.2000115
- Meister, D., & Davenport, T. (2005). Knowledge management at accenture. *Ivey Management Services*, 1–19.
- Meyer, A., & Verecke, A. (2012, January 1). *The European Financial Review*. Retrieved from <http://www.europeanfinancialreview.com/?p=570>.
- Meyer, A.D., Tsui, A.S., & Hinings, C.R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal*, Vol. 36 No. 6, pp. 1175-95.
- Meyerson, D. E. (2002). Radical Change, the Quiet Way. In H. B. Review, *Harvard Business Review on Culture and Change* (pp. 59-81). Boston: Harvard Business School Publishing Corporation.

- Migdadi, M. M. (2009). A knowledge-centered culture as an antecedent of effective knowledge management at information technology centers in the Jordanian universities. *Journal of Systems and Information Technology*, 11(2), 89–116. doi:10.1108/13287260910955084.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Manage. Sci.*, 29(7): 770-791.
- Mohamed, M., Stankosky, M., & Murray, A. (2006). Knowledge management and information technology: can they work in perfect harmony? *Journal of Knowledge Management*, 10(3), 103–116. doi:10.1108/13673270610670885
- Mohr, J.J., & Sarin, S. (2008). Drucker’s insights on market orientation and innovation: implications for emerging areas in high-technology marketing. *Journal of the Academy of Marketing Science*, 37(1), 85–96. doi:10.1007/s11747-008-0101-5.
- Mott, P.E. (1972). *The characteristics of effective organizations*. New York: Harper and Row.
- Mukherjee, A.S., Lapre, M.A., & Wassenhove, L.N.V. (1998). “Knowledge-driven quality improvement”, *Management Science*, Vol. 44 No. 11, pp. S35-S49.
- Mundfrom, D.J., & Shaw, D.G. (2005). Minimum Sample Size Recommendations for Conducting Factor Analyses. *International Journal of Testing*, 5(2). doi:10.1207/s15327574.
- Naicker, N. (2008). “Organizational culture and employee commitment: a case study”, available at: http://ir.dut.ac.za/bitstream/handle/10321/475/Naicker_2008.pdf?sequence=1&1 (accessed 29 August 2010).

- Naranjo-Valencia, J. C., Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation or imitation? The role of organizational culture. *Management Decision*, 49(1), 55–72. doi:10.1108/00251741111094437
- Narver, J.C. and Slater, S.F. (1990), “The effect of a market orientation on business profitability”, *Journal of Marketing*, Vol. 20, October, pp. 20-35.
- Neely, A., Filippini, R., Forza, C., Vinelli, A., & Hii, J. (2001). A Framework for Analyzing Business Performance, Firm Innovation and Related Contextual Factors: Perceptions of Managers and Policy Makers in Two European Regions. *Integrated Manufacturing Systems* 12 (2): 114-124.
- Nick, B. (2001). *Managing Organizational Knowledge*. Idea Group Publishing.
- Nold III, H. A. (2012). Linking knowledge processes with firm performance: organizational culture. *Journal of Intellectual Capital*, 13(1), 16–38. doi:10.1108/14691931211196196.
- Nonaka, I. (2007). Knowledge Management: Theoretical and Methodological Foundations. In Smith, K. G. and Hitt, M. A. (Eds). *Great Minds in Management. The process of Theory development*, Oxford, New York, pp 373 – 393.
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science* 5(1): 14-37.
- Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review*, 69, 96-105.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York, NY.

- Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited : knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*, 1, 2–10. doi:10.1057/palgrave.kmrp.8500001.
- O’Cass, A., & Ngo, L. V. (2007). Market orientation versus innovative culture: two routes to superior brand performance. *European Journal of Marketing*, 41(7/8), 868–887. doi:10.1108/03090560710752438
- O’Dell, C. (2002). “Knowledge management”, paper presented at the APQC Knowledge Management Conference, Productivity and Quality Center, Crystal City, VA.
- O’Dell, C. (1996). A Current Review Of Knowledge Management Best Practices. Conference of Knowledge Management and the Transfer of Best Practices. London, Business Intelligence.
- O’Dell, C., & Hubert, C. (2011). The new edge in knowledge management. APQC, John Wiley & Sons Publication, New Jersey.
- Oliver, S., & Kandadi, K. R. (2006). How to develop knowledge culture in organizations? A multiple case study of large distributed organizations. *Journal of Knowledge Management*, 10(4), 6–24. doi:10.1108/13673270610679336
- OSLO, (2005). Guidelines for Collecting and Interpreting Innovation Data. 3rd ed., OECD, Paris.
- Park, H., Ribière, V., & Schulte Jr, W. D. (2004). Critical attributes of organizational culture that promote knowledge management technology implementation success. *Journal of Knowledge Management*, 8(3), 106–117. doi:10.1108/13673270410541079

- Pavitt, K. (2003). Specialization and systems integration. In Hobday, M. (ed.), *The Business of Systems Integration*. Oxford: Oxford University Press.
- Peebles, E. (2003). Inspiring Innovation. In *Harvard business review on the innovative enterprise* (pp. 89-110). Boston: Harvard Business School Publishing.
- Peterson, R. A., & Berger, D. G. (1971). Entrepreneurship in organizations: Evidence from the popular music industry. *Administrative Science Quarterly*, 16(1), 97–106.
- Peterson, R. A., & Berger, D. G. (1971). Entrepreneurship in organizations: Evidence from the popular music industry. *Administrative Science Quarterly*, 16(1), 97–106.
- Pillania, R. K. (2006). State of Organizational Culture for Knowledge Management in Indian Industry. *Global Business Review*, 7(1), 119–135. doi:10.1177/097215090500700108
- Plessis, M.D. (2007). "The role of knowledge management in innovation", *Journal of Knowledge Management*, Vol. 11 No. 4, pp. 20-29.
- Pohle, G., & Wunker, S. (2007). Innovating on your own terms. *Innovation* (pp. 1-16).
- Polanyi, M. (1966). *The Tacit Dimension*. Routledge & Keagan Paul, London.
- Porter, M. (1996). What is Strategy ? *HBR* (November - December, 1996).
- Prahalad, C., & Krishnan, M. (2008). *The New Age of Innovation*. New Delhi: Tata McGraw-Hill.
- Prahalad, C.K., & Mashelkar, R. A. (2010). Innovation's Holy Grail. *Harvard Business Review*, (July, 2010).

- Prange, C., & Schlegelmilch, B. B. (2010). Heading for the next innovation archetype? *Journal of Business Strategy*, 31(1), 46–55. doi:10.1108/02756661011012778.
- Pyka, A. (2002). “Innovation networks in economics: from the incentive-based to the knowledge-based approaches”, *European Journal of Innovation Management*, Vol. 5 No. 3, pp. 152-63.
- Ramadorai, S. (2011). *The TCS story... and beyond*. New Delhi: Penguin Books India.
- Ravindra, M.P., & Suresh, J.K. (2004). How Infosys embeds knowledge management to drive customer intimacy. *KM Review*, March/April, 5.
- Ray, L. (Lynn). (2008). Requirement for knowledge management: business driving information technology. *Journal of Knowledge Management*, 12(3), 156–168. doi:10.1108/13673270810875930.
- Reiß, M., von Rosenstiel, L., & Lanz, A. (1997). *Change-Management: Programme, Projekte und Prozesse*, Schäffer-Poeschel, Stuttgart.
- Rhodes, J., Hung, R., Lok, P., Lien, B.Y. & Wu, C.M. (2008). “Factors influencing organizational knowledge transfer: implications for corporate performance”, *Journal of Knowledge Management*, Vol. 12 No. 3, pp. 84-100.
- Ribiere, V.M., & Sitar, A.S. (2003). ‘Critical role of leadership in nurturing a knowledge- supporting culture’, *Knowledge Management Research & Practice*, 1, 39-48. *Strategic Management Journal*, Vol. 9, pp. 115-26.
- Rifkin, G. (2000). *The Right Path to Knowledge Management*. Strategy & Business -Booz Allen & Hamilton.

- Robinson, H.S., Anumba, C.J., & Al-Ghassani, A.M. (2006). STEPS: A Knowledge Management Maturity Roadmap for Corporate Sustainability. *Business Process Management Journal*, Vol. 12 No.6, pp 793 - 808.
- Rose, D., & Sullivan, O. (1993). *Introducing Data Analysis for Social Scientists*. Open University Press, Buckingham.
- Roth, J. (2003), “Enabling knowledge creation: learning from the R&D organization”, *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 32-48.
- Rothwell, R. (1994). Towards the fifth-generation innovation process. *International Marketing Review*, Vol. 11 No. 1, pp. 7-31.
- Ruppel, C. P., & Harrington, S. J. (2001). Sharing knowledge through intranets: A study of organizational culture and intranet implementation. *IEEE Transactions on Professional Communication*, 44(1), 37-52.
- Salavou., H, and Lioukas, S. (2003). Radical product innovations in SMEs: the dominance of entrepreneurial orientation. *Creativity and Innovation Management*;12(2): 94–108.
- Salomo, S., Talke, K., & Strecker, N. (2008). Innovation Field Orientation and Its Effect on Innovativeness and Firm Performance. *Journal of Product Innovation Management* 25: 560- 576.
- Sanz-Valle, R., Naranjo-Valencia, J. C., Jiménez-Jiménez, D., & Perez-Caballero, L. (2011). Linking organizational learning with technical innovation and organizational culture. *Journal of Knowledge Management*, 15(6), 997–1015. doi:10.1108/13673271111179334.
- Scarbrough, H. (2003). Knowledge management, HRM and the innovation process. *International Journal of Manpower*, Vol. 24 No. 5, pp. 501-16.

- Scarbrough, H., Swan, J., & Preston, J. (1999). Knowledge Management: A Literature Review. Issues in People Management, Institute of Personnel and Development, London.
- Schein, E. H. (2010). Organization Culture and Leadership. San Francisco: John Wiley & Sons.
- Schein, E.H. (2004). Organizational Culture and Leadership, 3rd ed., John Wiley & Sons, New York, NY
- Schein. E.H. (1999). The Corporate Culture Survival Guide. San Francisco: Jossey-Bass.
- Schein. E. H. (1992). Organizational Culture and Leadership (2nd edition). San Francisco: Jossey- Bass.
- Schein, E. H. (1990). Organizational Culture. American Psychologist, 45(February), 109–119.
- Schein, E. H. (1988). Organizational culture (Working paper No. 2088-88). Cambridge, MA: MIT, Sloan School of Management.
- Schein, E.H. (1985). Organizational Culture and Leadership, Jossey-Bass Business & Management series.
- Schein, E.H. (1984). “Coming to a new awareness of organizational culture”, Sloan Management Review, Vol. 25 No. 2, pp. 3-16.
- Schein, E.H. (1983). “The role of the founder in creating organizational culture”, Organizational Dynamics, Vol. 12 No. 1, pp. 13-28.
- Schindehutte, M., Morris, M. H., & Kocak, A. (2008). Understanding market-driving behavior: The role of entrepreneurship. Journal of Small Business Management, 46(1), 4–26.

- Schiama, G. (2012). Managing knowledge for business performance improvement. *Journal of Knowledge Management*, 16(4), 515–522. doi:10.1108/13673271211246103.
- Schulz, M., & Jobe, L.A. (2001). Codification and tacitness as knowledge management strategies: an empirical exploration. *Journal of High Technology Management Research*, Vol. 12 No. 1, pp. 139-65.
- Schumpeter, J. (1934). *The Theory of Economic Development*, (reproduced, New York (1961)). Harvard University Press, Cambridge, MA.
- Schütt, P. (2003). The post-Nonaka Knowledge Management. *Journal of Universal Computer Science*, 9(6), 451–462.
- Sekaran, U. (2003). *Research methods for business: A Skill-Building Approach*. 4th edition, New York: John Wiley & Sons Inc.
- Senge, P. M. (1990a). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday/Currency.
- Senge, P. M. (1990b). The Leader's New Work: Building Learning Organizations. *Sloan Management Review*, 32(1), 1–20.
- Senge, P.M., & Carstedt, G. (2001). “Innovating out way to the next industrial revolution”, *Sloan Management Review*, Vol. 42 No. 2, pp. 24-38.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–236.
- Shani, A.B., Sena, J.A., & Olin, T. (2003). Knowledge management and new product development: a study of two companies. *European Journal of Innovation Management*, Vol. 6 No. 3, pp. 137-49.

- Sharifirad, M. S., & Ataei, V. (2012). Organizational culture and innovation culture: exploring the relationships between constructs. *Leadership & Organization Development Journal*, 33(5), 494–517. doi:10.1108/01437731211241274.
- Sher, P.J., & Lee, V.C. (2004). Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. *Information and Management*, Vol. 41 No. 8, pp. 933-45.
- Siguaw, J. A., Simpson, P. M. & Enz, C. A. (2006). Conceptualizing innovation orientation: a framework for study and integration of innovation research. *Journal of Product Innovation Management*, 23 (6): 556-574.
- Simmonds, K. (1986). Marketing as Innovation. *Journal of Management Studies*, 1-23.
- Simon, H. (1969). *Sciences of the Artificial*. Cambridge, MA: M.I.T Press.
- Simonin, B.L. (1997). “The importance of collaborative know-how: an empirical test of the learning organization”, *Academy of Management Journal*, Vol. 40 No. 5, pp. 1150-74.
- Sinkula, J.M. (1994). Market Information Processing and Organizational Learning. *Journal of Marketing*, 58, 35-45.
- Skerlavaj., et al. (2010). Organization learning culture, innovative culture and innovation in South Korean Firms. *Expert Systems with Application* 37, (2010).
- Slater, S. F., & Narver.J.C (1995). “Market Orientation and the Learning Organization.” *Journal of Marketing* 59 (July): 63-74.

- Slater, S. F., & Narver, J. C. (1994). Does competitive environment moderate the market orientation–performance relationship? *Journal of Marketing*, 58,46–55.
- Slevin, D.P. & Covin, J.G. (1990). Juggling entrepreneurial style and organizational structure: how to get your act together. *Sloan Management Review*, Vol. 31 No. 2, pp. 43-53.
- Smircich, L. (1983). Concepts of culture and organizational analysis. *Administrative Science Quarterly*, 28, 339-355.
- Smith, D. (2006). Designing an innovative Britain. ESRC: The Edge, No. 22, March, p. 2.
- Song, J. H., & Chermack, T. J. (2008). A Theoretical Approach to the Organizational Knowledge Formation Process: Integrating the Concepts of Individual Learning and Learning Organization Culture. *Human Resource Development Review*, 7(4), 424–442. doi:10.1177/1534484308324983.
- Soo, C., Devinney, T., Midgley, D. & Deering, A. (2002). “Knowledge management: philosophy, processes and pitfalls”, *California Management Review*, Vol. 44 No. 4, pp. 129-150.
- Spena, T. R., & Mele, C. (2012). ' Five Co-s ' in innovating : a practice-based view. *Journal of Service Management*, 23(4).
- Spender, J.C. (1996). “Making knowledge the basis of a dynamic theory of the firm”, *Strategic Management Journal*, Vol. 17 No. 52, pp. 45-62.
- Stamm, B. Von. (2009). Leadership for innovation: what you can do to create a culture conducive to innovation. *Strategic Direction*, 25(6), 13–15. doi:10.1108/02580540910952154.

- Stata, R. (1989). Organizational learning, the key to management innovation. *Sloan Management Review*, Vol. 30 No. 3, pp. 45-62.
- Stewart, T. (1998). *Intellectual Capital: The New Wealth of Organizations*. London: Nicholas Brealey Publishing. 1998.
- Storey, J., & Barnett, E. (2000). Knowledge management initiatives: learning from failure. *Journal of Knowledge Management*, Vol. 4 No. 2, pp. 145-56.
- Strategos. (2004). Strategos Survey on Innovation available at www.strategos.com/survey/index.cfm.
- Streets, R., & Boundary, C. (2004). *Managing Innovation*. Australian Institute of Management - Version 1.0.
- Subramaniam, M., & Youndt, M.A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, Vol. 48, pp. 450-63.
- Subramanian, A. (1996). Innovativeness: redefining the concept. *Journal of Engineering Technology and Management*, Vol. 13 Nos 3-4, pp. 223-43.
- Sull, D. (2002). Why Good Companies Go Bad. In H. B. Review, *Harvard Business Review on Culture and Change* (pp. 83-106). Boston: Harvard Business School Publishing Corporation.
- Sundbo, J. (1998). *The Theory of Innovation: Entrepreneurs, Technology and Strategy*. Edward Elgar, Northampton, MA.
- Suresh, J.K. and Mahesh, K. (2006). *Ten Steps to Maturity in Knowledge Management*, Oxford, UK: Chandos Publishing.

- Sveiby, K.E. (1997). *The New Organizational Wealth: Managing and Measuring Knowledge-based Assets*, Berrett Koehler, San Francisco, CA.
- Syrett, M., & Lammiman, J. (1997). "The art of conjuring ideas", *Director*, Vol. 50 No. 9, pp. 48-54.
- Szulanski, G. (1996). Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal*, Vol. 17, Winter Special Issue, pp. 27-43.
- Tabachnick, B.G., & Fidell, L.S. (1998). *Using Multivariate Statistics*, 2nd ed., Harper Collins, New York, NY.
- Tanriverdi, H. (2005). "Information technology relatedness, knowledge management capability, and performance of multi-business firms", *MIS Quarterly*, Vol. 29 No. 2, pp. 311-34.
- Tata Consultancy Services. (2013, January 1). *TCS*. Retrieved from <http://www.tcs.com/resources/brochures/Pages/Innovation.aspx>.
- Teece, D.J. (1992). Competition, Cooperation, and Innovation – Organizational Arrangements for Regimes of Rapid Technological Progress. *Journal of Economic Behavior & Organization*, 18, 1–25.
- 3M Company. (2012, December 1). 3M Company. Retrieved from 3M: http://solutions.3m.com/wps/portal/3M/en_US/3M-Company/Information/Profile/Performance/.
- 3M. (2011). *Uncommon Connections Innovative solutions*. Thomke, S. (2002). *Innovation at 3M Corporation (A)*. *Harvard Business Review*, 1–23.
- 3M. (2010). *A Culture of Innovation*. 3M Website (pp. 1–14).
- 3M Company. (2002). *A Century of Innovation: The 3M Story* (pp. 1–248).

- Tidd, J., Bessant, J., & Pavitt, K. 3M: Rethinking Innovation, Wiley Europe 1–3 (2005).
- Trott, P. (2005). *Innovation Management and New Product Development*. 3rd ed., Pearson Education Limited, New York, NY.
- Tsang, E. W. K. (1997). Organizational learning and the learning organization: A dichotomy between descriptive and prescriptive research. *Human Relations*, 50, 73-79.
- Tseng, S. (2010). The correlation between organizational culture and knowledge conversion on corporate performance. *Journal of Knowledge Management*, 14(2), 269–284. doi:10.1108/13673271011032409
- Tsoukas, H., & Vladimirou, E. (2001). What is organizational knowledge? *Journal of Management Studies*, 38, 973-993.
- Tushman, M.L., & O'Reilly III, C.A. (1997). *Winning through Innovation: A Practical Guide to Leading Organizational Change and Renewal*, Harvard Business Press, Boston, MA.
- Van Der Sluis, L. E. (2004). Designing the workplace for learning and innovation. *Development and Learning in Organizations*, 18(5), 10–13. doi:10.1108/14777280410554942.
- Vanhaverbeke, W., Duysters, G., & Noorderhaven, N. (2002). External Technology Sourcing through Alliances or Acquisitions: An Analysis of the Application-Specific Integrated Circuits Industry. *Organization Science*, 13, 714–33.
- von Hippel, E. (1994). Sticky information and the locus of problem solving: implications for innovation. *Management Science*, Vol. 40 No. 4, pp. 429-39.

- Wang, C.L., & Ahmed, P.K. (2004). The development and validation of the organizational innovativeness construct using confirmatory factor analysis. *European J. Innov; Manage.*, 7: 303-313.
- Wei Xie., & Richard Li-Hua. (2009). *Journal of Knowledge-based Innovation in China* Vol. 1 No. 1, 2009 pp. 8-15.
- West, J., Vanhaverbeke, W., & Chesbrough, J. (2006). Open innovation: a research agenda. *Open Innovation: Researching a New Paradigm*, Oxford University Press, Oxford, pp. 285-307.
- Wiig, K. M. (1997). Knowledge Management: Where Did It Come From, and Where Will It Go? *Journal of Expert Systems with Applications* 13(1): 1-14.
- Wiklund, J. (1999). The sustainability of the entrepreneurial orientation–performance relationship. *Entrepreneurship Theory and Practice*, 24(1), 37–48.
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24,1307–1314.
- Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: A configurational approach. *Journal of Business Venturing*, 20,71–91.
- Wild, R., & Griggs, K. (2008). A model of information technology opportunities for facilitating the practice of knowledge management. *Vine*, 38(4), 490–506. doi:10.1108/03055720810917732.

- Xu, J., Houssin, R., Caillaud, E., & Gardoni, M. (2010). Macro process of knowledge management for continuous innovation. *Journal of Knowledge Management*, 14(4), 573-591. doi:10.1108/13673271011059536.
- Yang, J.T. (2007), “Knowledge sharing: investigating appropriate leadership roles and collaborative culture”, *Tourism Management*, Vol. 28 No. 5, pp. 530-43.
- Yang, J.T. (2007). Knowledge sharing: investigating appropriate leadership roles and collaborative culture. *Tourism Management*, Vol. 28 No. 5, pp. 530-43.
- Yilmaz, C., & Ergun, E. (2008). “Organizational culture and firm effectiveness: an examination of relative effects of culture traits and the balanced culture hypothesis in an emerging economy”, *Journal of World Business*, Vol. 43, pp. 290-306.
- Yin, R.K. (1984). *Case Study Research: Design and Methods*, Sage, Beverly Hills, CA.
- Zahra, S. A. (1991). Predictors and financial outcomes of corporate entrepreneurship: An explorative study. *Journal of Business Venturing*, 6,259–285.
- Zahra, S. A., & Covin, J. (1995). Contextual influences on the corporate entrepreneurship–performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10,43–58.
- Zaim, H., Tatoglu, E., & Zaim, S. (2007). Performance of knowledge management practices: a causal analysis. *Journal of Knowledge Management*, 11(6), 54–67. doi:10.1108/13673270710832163.
- Zhang, J., Faerman, S.R., & Cresswell, A.M. (2006). “The effect of organizational/technological factors and the nature of knowledge on

knowledge sharing'', paper presented at the 39th Hawaii International Conference on System Sciences (HICSS).

Zhao, F. (2001). Managing innovation and quality of collaborative R&D. Proceedings of 5th International & 8th National Research Conference, Melbourne.

Zhou, K. Z., Yim, C. K. & Tse, D. K. (2005). The effects of strategic orientations on technology- and market-based breakthrough innovations. *Journal of Marketing*, 69 (2):42-60.

Appendix A

Interview Questions – Semi Structured Interview

1. Is knowledge management actively practiced in the organization?
2. What sort of relationship you see with the synergy of knowledge management?
3. Do you think leadership is important for knowledge management & innovation practice to be effective in the organization?
4. Do you think business models are important for innovation?
5. Do you see organization conversation is practiced in the organization?
6. Do you think innovation culture is an important driver?
7. What are the manifestations of:
 - Market orientation
 - Technology orientation
 - Entrepreneurship
 - Learning
8. Do you see some relationship between knowledge management & innovation culture on performance.

Summary of the Semi Structured Interviews

Appendix B

Summarization of interviews	respondent 1	respondent 2	respondent 3	respondent 4
Is KM actively practiced in the organization	yes, very strongly practiced	yes, very strongly practiced. Strong KM infrastructure exists.	Yes, KM is very strongly practiced	KM practice is organization culture and KM platform usage is promoted
Relationship with the synergy of KM	Strong KM practices are used to drive innovation. Innovation in business models	Innovation to meet cost optimization/productivity improvement is driven in day to day working	Synergies in the form of IP capture, publications (white papers etc.)	No visible evidence of KM leading to innovation. KM focusses on tools, automation in project/service delivery
Importance of leadership for KM	Leadership commitment visible in the form of investments in technology, various rewards and recognition, at individual, project, unit level	Leadership commitment thru heavy investment in training for all	Leadership commitment thru CTO led innovation initiatives	Leadership focus on usage of KM platform/use "push" methods
Business models	Have witnessed changes in business models - in the outsourcing models, joint ventures, Global n/w delivery.	Yes, there have been innovations in the business models for e.g.. Global Network Delivery Model	No Specific reference/feedback	The lessons learnt are incorporated into solutionsing for new business deals.
Organizational conversation				
Importance of Innovation culture	Supervisor dependent/led. Seek different perspectives from external resources by inviting them.	Ethical culture, people centered, flexible, includes mentoring	Driven thru Knowledge sharing, brain storming	Change management approach used to promote the use of KM
Manifestations of Market orientation			Insights captured from the customers and 3rd party(technology) product companies	
Manifestation of Technology orientation	yes, long term investments are considered	Technology is the backbone	Investments are made with clear ROI and payback analysis	Driven by corporate based on priority, however supports continuous technology upgrade.
Manifestation of Entrepreneurship orientation	Management supports risk taking	Moderately supported	Moderate risk taking. Calculated risk is allowed based on the idea and the projected value add.	Risk taking is dependent and driven at unit level
Manifestation of Learning orientation	Driven thru Knowledge usage goals at individual level	Strong focus on learning for all across organization	investment in people - identification of needs, gaps and addressing them	L&D is pushed. Gap exists between what is available and what is being used
Relationship between KM and innovation culture on performance	Exists, and has shown productivity improvements, incremental innovations	Experienced startup time reduction and also productivity improvements and cost savings.	facilitate revenue generation, result in process improvements	No direct/visible relationship between KM and innovation

Summary of the Semi Structured Interviews

Appendix B

Summarization of interviews	respondent 5	respondent 6	respondent 7 & 8 (jointly)	respondent 9
Is KM actively practiced in the organization	KM is Practiced with a focus on Capture and dissemination. Challenge is how to capture tacit knowledge.	Yes, KM is practiced in the organization.	While Google addresses Micro and Macro level information, the organizations' KM is designed to capture Organization's own vast experience thus facilitating the KM	Practiced at project and unit levels supported KM training across the organization
Relationship with the synergy of KM	Sharing is robust and is in the DNA of the organization. Leads to incremental innovation and to some extent innovative solution platforms. No disruptive innovations	Innovation is incremental and sometimes are targeted to solve specific business problems for customers.	Breakthrough innovation pursued thro CTO and R&D organization. Incremental at project/unit level.	Predominantly "customer" centric, focus is on what customer expects.
Importance of leadership for KM	Leadership commitment thru investments, direct/indirect rewarding of contributions	Yes, senior leadership are role models. Leadership commitment is seen in setting transformation goals. Visible at Unit, project and customer relationship levels	Leadership commitment shown right from the mission statement that includes "creativity & Innovation". And thru "Rewards Recognition"	Provides continuous support. Sets goals at individual level for ideas and value adds
Business models	No specific mention/feedback	No specific mention/feedback	Yes, breakthrough in business models is pursued as part of innovation by Cross. E.g.. Global Network Delivery Model. Continuity with customers is by design. No two project are alike in reality.	Aligned to meet customer needs, and Building creative solutions along with technology partners.
Organizational conversation				
Importance of Innovation culture	Promoted thru a open, transparent discussions, fosters knowledge sharing	Supportive and creates healthy competition. Ideas are encouraged.	Change brought in thru interactions and collaborations with Academic institutions. Working in virtual team model.	project and unit level KM are promoted backed by KM training for all.
Manifestations of Market orientation		Orientation to meet customer requirements. Innovation labs that can be utilized by customers as well. Special themes on customer experience are driven.	Co-innovation, Ideation is practiced. There is willingness to challenge customer perspectives.	
Manifestation of Technology orientation	In the forma of platform innovations.	Infrastructure is available	Leveraging technologies for demonstrating organization's capability	Is seen as an enabler for transformation
Manifestation of Entrepreneurship orientation	Entrepreneurial culture exists and supported within the organization	Innovation takes longer time due to R&D related resource constraints	Organization promotes risk taking though not very successful in the attempts "Dare to Try"	Idea generation is promoted thru rewards and recognition.
Manifestation of Learning orientation	A lot of focus on continuous learning based on roles/skill gaps.	Focus on Technology and Business domain training. Learning Goals at individual level. Specialized trainings thru deputations.	Motivation provided to develop capabilities and there is focus on continuous education.	A lot of focus on training - Certifications, sponsoring external trainings.
Relationship between KM and innovation culture on performance	Lead to innovation in customer solutions/offering	Leading to solving business problems for customers.	Resulting in effective management of projects, where no two projects are alike.	Aligned to meet customer needs, and also focused on cost savings and productivity gains. Results in tools development and process optimization.

Summary of the Semi Structured Interviews

Appendix B

Summarization of interviews	respondent 10	respondent 11	respondent 12	respondent 15	respondent 16
Is KM actively practiced in the organization	Yes, KM is practiced in the organization, however, there are access restrictions from individual work places owing to security constraints imposed by customers.	Yes, KM is practiced in the organization. Focused on solving customer problems.	Yes, KM is practiced in the organization.	Customer confidentiality poses constraint in sharing knowledge. However, process and tools are in place for collaboration	KM is strongly practiced across organization. There is a strong focus on digitization with KM system implemented in 2005-06. Connect is used for informal and tacit knowledge.
Relationship with the synergy of KM		KM system is designed based on the need - it caters to business problems, customer needs, productivity tool	AS a services business, the organization participates and becomes part of customer innovations.	innovation is customer ask and has become mainstream.	Technology communities such as Business Intelligence, Agile development and other excellence centers. QMS driven process innovation, incremental at task level.
Importance of leadership for KM	Unit level, project level leadership promote KM - thru sharing and promoting value adds.	Leadership commitment thru investments in digitization , rewards and recognition	Commitment in creating avenues for collaboration between teams working across geographies.	Commitment thru rewards and recognition, investments in technology.	Commitment with CTO leadership, adopting Business Excellence model, and setting co-innovation agenda.
Business models	Freehand at the bidding level, different financial models are applied	No specific mention/feedback	No specific mention/feedback	No specific mention/feedback	Gap between vision and communication leading to not realizing the goals/objectives effectively.
Organizational conversation					Conversation thru Town halls, communications : 6 to 7 on 10
Importance of Innovation culture	??	Culture of learning and sharing.	Organization has created a culture of learning and sharing as the focus of KM	Promoted thru road shows, capture of lessons learnt that are leveraged for continuous improvement. Ideas for cost reduction, process improvement, reengineering are encouraged	Practice of Tata Business Excellence Model provides 360 deg view promotes unique culture.
Manifestations of Market orientation			Is focused on technology adaptation, creating unique solutions and cost advantage.	Work jointly with Customers to create innovation, ideas are also generated with customers	Coinnovation with customers and product vendors. Focus on meeting customer expectations in delivering lowest level of value addition.
Manifestation of Technology orientation		Advanced automated KM system are available , Intelligent system are available at some of client's organization	In the form of technology labs to develop and test new solutions.	Collaboration is strong with the help of strong process & tools in place	Implementation of Digitization and also setting up of various technology labs.
Manifestation of Entrepreneurship orientation	Risk taking is generally not encouraged.	Risk taking - predominantly low - however promising ideas are encouraged - organization infrastructure supports - even hand holding - passive support	Only calculated risk is entertained if it has an idea & value and does not greatly impact P & L.	Risk taking constrained by customers.	Moderate risk taking.
Manifestation of Learning orientation	A lot of emphasis and commitment to training - online programs, certifications, access to online books.	Peer - mentoring - educate - pep talk - provide perspective - enlighten on the new developments - motivates people - this practice is followed by some lenders.	A lot of focus on L&D, Project specific training, new technologies and processes	There is focus on continuous learning.	Learning from the market and technology vendors. Learning thru alliances with academic institutes (IIT, MIT...)
Relationship between KM and innovation culture on performance	Results visible in the form of process improvements and better trouble shooting.	KM allows for - technical collaboration, learn from other projects, improves cycle time in delivery of proposals, solutions to production problems and improves productivity	Platform innovation. Incremental innovations in the areas of Project management, conflict management, effective communication, people management.	Incremental innovation leading to y-o-y improvements	continuous improvements at process level.

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The may require 15 -20 minutes to compete and I sincerely value your time & participation.
Knowledge Management & Innovation Culture

Personal Information

Name

Position/Level

Industry/Sector

Please provide the following information:

Qualification

No. of years of experience

Unit Size

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Email Address

Pl. provide yours responses as per the scale as below:

1. To an extent
2. To a small extent
3. To a moderate extent
4. To a great extent
5. To a very great extent

The Role of Knowledge Management

1. Peter Drucker had said “Knowledge is the business”, do you think this philosophy is being endorsed in your organization?

1	2	3	4	5
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2. Recently it is observed that in many of the organizations new ways & approaches are necessary to get best out of human capital, do you often come across such a focus in the organization?

1	2	3	4	5
---	---	---	---	---

3. Do you also come across initiatives being implemented to bring best out of the human capital that may encourage knowledge management initiatives?

1	2	3	4	5
---	---	---	---	---

4. Can you please mention some of the initiatives taken in the past to develop human capital at your organization?

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5. Do you often see some positive impact on performance as a result of knowledge management initiatives in your organization?

1	2	3	4	5
---	---	---	---	---

6. Does your organization always encourage you to share, act on new information and insights?

1	2	3	4	5
---	---	---	---	---

7. Do you agree that an effective Knowledge management can lead to innovation in an organization?

1	2	3	4	5
---	---	---	---	---

8. Do you agree that for an organization to succeed in knowledge management and innovation initiatives, it should be supported by a strong culture?

1	2	3	4	5
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9. Can you pl. briefly describe in your own words, what do you understand by the term innovation culture.

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10. Do you come across any of the above characteristics/attributes of innovation culture in your organization?

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Knowledge Management & Innovation

11. Do you agree that effective knowledge management practices can lead to innovation in the organization?

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1	2	3	4	5
---	---	---	---	---

12. Do you often come across some form of innovation in your unit/organization in areas such as business processes, organization structure, products etc.?

1	2	3	4	5
---	---	---	---	---

13. Do you feel encouraged to put forward new ideas and approaches which might lead to better solutions to the problems?

1	2	3	4	5
---	---	---	---	---

14. Do you generally feel that your clients organizations encourage their employees to come up with new ideas and processes while developing solutions?

1	2	3	4	5
---	---	---	---	---

15. Do you want to highlight any other aspect from your own experiences?

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Interactions

16. How effective are your interactions with the team members in/across the unit while addressing the business problem/solutions?

1	2	3	4	5
---	---	---	---	---

17. Do you interact with external specialist/experts and organizations to get more insight about the business problem and perspectives and apply it for business solutions?

1	2	3	4	5
---	---	---	---	---

18. Do you often catalogue the insights/perspectives gained from the interactions with colleagues and clients so that they can be retrieved by others and applied in similar situations?

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1	2	3	4	5
---	---	---	---	---

19. Do you prefer one to one connect for sharing any insight/expertise than putting it in a repository where people can access?

1	2	3	4	5
---	---	---	---	---

20. To what extent the attributes such as creativity, adaptability, and entrepreneurship are encouraged in your organization.

1	2	3	4	5
---	---	---	---	---

21. Can you please mention some of the organization wide activities, initiatives that have supported orientation towards knowledge management and innovation in the past?

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Knowledge creation: is a process of making available & expanding the existing knowledge, and also linking it with knowledge systems in the organizations.

22. To what extent the practices, facility locations, resources etc. are aligned towards knowledge creation.

1	2	3	4	5
---	---	---	---	---

23. How effective are the “knowledge creation” activities towards meeting the value creation objectives of the organization.

1	2	3	4	5
---	---	---	---	---

24. To what extent you find strategic priority towards knowledge management systems & innovation?

1	2	3	4	5
---	---	---	---	---

25. Are you satisfied with the focus provided towards entrepreneurship, flexibility, risk taking?

1	2	3	4	5
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The may require 15 -20 minutes to compete and I sincerely value your time & participation.

Organizational conversation is a new development today, where leaders engage with employees, it resembles more of a person-to person conversation, like a normal, friendly, two-way conversation than compared to traditional command and control style.

26. To what extent organizational conversation is practiced in your organization?

1	2	3	4	5
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27. Can you mention any unique information circulating process (ideas, images, and organization contents passed between leaders and employees or from employees to employees) that you have encountered in your organization?

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28. To what extent entrepreneurship is encouraged in your organization?

1	2	3	4	5
---	---	---	---	---

29. Are you satisfied with the current level of risk taking ability at the organization level?

1	2	3	4	5
---	---	---	---	---

30. To what extent innovation is encouraged at the organization by the leadership?

1	2	3	4	5
---	---	---	---	---

Market Orientation :Research suggests that organizations with higher market orientation have positive impact on business performance.

31. To what extend your organization/unit captures market intelligence to meet the present & future needs of the customer?

1	2	3	4	5
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32. Are you satisfied with the process of dissemination of the market intelligence across the unit and organization?

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The may require 15 -20 minutes to compete and I sincerely value your time & participation.

1	2	3	4	5
---	---	---	---	---

33. Is the process of acquiring knowledge from customers, business partners, suppliers is effective for providing best solutions?

1	2	3	4	5
---	---	---	---	---

34. Is your organization in comparison to others, believe in that a focus towards market orientation can lead to better competitive advantage?

1	2	3	4	5
---	---	---	---	---

35. Would you like share any of your insight/experiences regarding market orientation?

--

Technology Orientation

36. Does your knowledge management initiatives in the organization are determined by the investments in technology?

1	2	3	4	5
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37. Do you consider social interactions more effective than IT solutions when it comes to implementing knowledge management initiatives?

1	2	3	4	5
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38. To what extent knowledge sharing and collaboration into the flow of work are facilitated by technology?

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The may require 15 -20 minutes to compete and I sincerely value your time & participation.

1	2	3	4	5
---	---	---	---	---

39. Do you agree that first the focus should be on designing the process, then technology selection when it comes to deciding on knowledge management initiative?

1	2	3	4	5
---	---	---	---	---

40. Can you briefly mention knowledge management initiatives and tools deployed in your organization?

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Entrepreneurship Orientation

41. Does your organization look at long term impact of knowledge management initiatives?

1	2	3	4	5
---	---	---	---	---

42. Are you able to achieve some degree of innovation in business process, problem solving ability, and effective customer solutions as a result of your knowledge management initiatives?

1	2	3	4	5
---	---	---	---	---

43. To what extend risk taking is encouraged in supporting new ideas, experimentation, and creative processes?

1	2	3	4	5
---	---	---	---	---

44. Do you aggressively pursue a new technology trend which may facilitate individual interactions within the organization?

1	2	3	4	5
---	---	---	---	---

Disclaimer: The survey is intended to capture the views and experiences of practicing managers of the industry for the purposes of use in the academic research. The names of the survey participants and their companies will not be used.

The may require 15 -20 minutes to compete and I sincerely value your time & participation.

Learning Orientation

45. Do you agree that at your organization learning by interactions with the team members, business partners and customers are contributing towards performance improvement?

1	2	3	4	5
---	---	---	---	---

46. Does your organization encourage individuals learning, knowledge transfer and collaboration activities on an ongoing basis?

1	2	3	4	5
---	---	---	---	---

47. To what extent do you reflect on the new learning from the experiences and try to incorporate in providing business solutions?

1	2	3	4	5
---	---	---	---	---

48. How frequently you have brainstorming sessions, one to one interactions and other knowledge sharing activities in your unit?

1	2	3	4	5
---	---	---	---	---

RELIABILITY

```

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/STATISTICS=ANOVA COCHRAN.

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Reliability**Notes**

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Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	112	76.7
	Excluded ^a	34	23.3
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.765	7

ANOVA with Cochran's Test

		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		269.709	111	2.430	90.386	.000
Within People	Between Items	59.066	6	9.844		
	Residual	380.077	666	.571		
	Total	439.143	672	.653		
Total		708.852	783	.905		

Grand Mean = 3.54

REGRESSION

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Regression

Notes

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Descriptive Statistics

	Mean	Std. Deviation	N
Positive impact on performance as a result of KM initiatives	3.73	.827	112
Commitment towards knowledge	3.72	1.067	112
Knowledge application for business processes, organization structure, products etc.	3.58	.834	112
Knowledge acquisition through interaction with client's orgs	3.54	.909	112
Knowledge storage & retrieval	3.36	.938	112
Knowledge Sharing	2.97	1.052	112
Knowledge application for business problem/solutions	3.86	.721	112

Correlations

		Positive impact on performance as a result of KM initiatives	Commitment towards knowledge	Knowledge application for business processes, organization structure, products etc.
Pearson Correlation	Positive impact on performance as a result of KM initiatives	1.000	.497	.397
	Commitment towards knowledge	.497	1.000	.486
	Knowledge application for business processes, organization structure, products etc.	.397	.486	1.000
	Knowledge aquisition though interaction with client's orgs	.411	.296	.328
	Knowledge storage & retrieval	.507	.495	.435
	Knowledge Sharing	.033	.146	.172
	Knowledge application for business problem/solutions	.434	.381	.453
Sig. (1-tailed)	Positive impact on performance as a result of KM initiatives	.	.000	.000
	Commitment towards knowledge	.000	.	.000
	Knowledge application for business processes, organization structure, products etc.	.000	.000	.
	Knowledge aquisition though interaction with client's orgs	.000	.001	.000
	Knowledge storage & retrieval	.000	.000	.000
	Knowledge Sharing	.365	.063	.035
	Knowledge application for business problem/solutions	.000	.000	.000

Correlations

		Knowledge aquisition though interaction with client's orgs	Knowledge storage & retrieval
Pearson Correlation	Positive impact on performance as a result of KM initiatives	.411	.507
	Commitment towards knowledge	.296	.495
	Knowledge application for business processes, organization structure, products etc.	.328	.435
	Knowledge aquisition though interaction with client's orgs	1.000	.456
	Knowledge storage & retrieval	.456	1.000
	Knowledge Sharing	.072	.092
	Knowledge application for business problem/solutions	.367	.382
Sig. (1-tailed)	Positive impact on performance as a result of KM initiatives	.000	.000
	Commitment towards knowledge	.001	.000
	Knowledge application for business processes, organization structure, products etc.	.000	.000
	Knowledge aquisition though interaction with client's orgs	.	.000
	Knowledge storage & retrieval	.000	.
	Knowledge Sharing	.226	.168
	Knowledge application for business problem/solutions	.000	.000

Correlations

		Knowledge Sharing	Knowledge application for business problem/solutions
Pearson Correlation	Positive impact on performance as a result of KM initiatives	.033	.434
	Commitment towards knowledge	.146	.381
	Knowledge application for business processes, organization structure, products etc.	.172	.453
	Knowledge acquisition through interaction with client's orgs	.072	.367
	Knowledge storage & retrieval	.092	.382
	Knowledge Sharing	1.000	.185
	Knowledge application for business problem/solutions	.185	1.000
Sig. (1-tailed)	Positive impact on performance as a result of KM initiatives	.365	.000
	Commitment towards knowledge	.063	.000
	Knowledge application for business processes, organization structure, products etc.	.035	.000
	Knowledge acquisition through interaction with client's orgs	.226	.000
	Knowledge storage & retrieval	.168	.000
	Knowledge Sharing	.	.026
	Knowledge application for business problem/solutions	.026	.

Correlations

		Positive impact on performance as a result of KM initiatives	Commitment towards knowledge	Knowledge application for business processes, organization structure, products etc.
N	Positive impact on performance as a result of KM initiatives	112	112	112
	Commitment towards knowledge	112	112	112
	Knowledge application for business processes, organization structure, products etc.	112	112	112
	Knowledge acquisition through interaction with client's orgs	112	112	112
	Knowledge storage & retrieval	112	112	112
	Knowledge Sharing	112	112	112
	Knowledge application for business problem/solutions	112	112	112

Correlations

		Knowledge acquisition through interaction with client's orgs	Knowledge storage & retrieval
N	Positive impact on performance as a result of KM initiatives	112	112
	Commitment towards knowledge	112	112
	Knowledge application for business processes, organization structure, products etc.	112	112
	Knowledge acquisition through interaction with client's orgs	112	112
	Knowledge storage & retrieval	112	112
	Knowledge Sharing	112	112
	Knowledge application for business problem/solutions	112	112

Correlations

		Knowledge Sharing	Knowledge application for business problem/solutions
N	Positive impact on performance as a result of KM initiatives	112	112
	Commitment towards knowledge	112	112
	Knowledge application for business processes, organization structure, products etc.	112	112
	Knowledge acquisition through interaction with client's orgs	112	112
	Knowledge storage & retrieval	112	112
	Knowledge Sharing	112	112
	Knowledge application for business problem/solutions	112	112

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Knowledge application for business problem/solutions, Knowledge Sharing, Knowledge acquisition through interaction with client's orgs, Commitment towards knowledge, Knowledge application for business processes, organization structure, products etc., Knowledge storage & retrieval	.	Enter

a. All requested variables entered.

b. Dependent Variable: Positive impact on performance as a result of KM initiatives

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635 ^a	.403	.368	.657

a. Predictors: (Constant), Knowledge application for business problem/solutions, Knowledge Sharing, Knowledge acquisition through interaction with client's orgs, Commitment towards knowledge, Knowledge application for business processes, organization structure, products etc., Knowledge storage & retrieval

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.585	6	5.098	11.795	.000 ^a
	Residual	45.379	105	.432		
	Total	75.964	111			

- a. Predictors: (Constant), Knowledge application for business problem/solutions, Knowledge Sharing, Knowledge acquisition though interaction with client's orgs, Commitment towards knowledge, Knowledge application for business processes, organization structure, products etc., Knowledge storage & retrieval
 b. Dependent Variable: Positive impact on performance as a result of KM initiatives

Coefficients^a

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	1.012	.396
	Commitment towards knowledge	.198	.073
	Knowledge application for business processes, organization structure, products etc.	.055	.093
	Knowledge acquisition though interaction with client's orgs	.140	.080
	Knowledge storage & retrieval	.197	.085
	Knowledge Sharing	-.062	.061
	Knowledge application for business problem/solutions	.211	.103

Coefficients^a

Model	Standardized Coefficients	t	Sig.	Collinearity Statistics	
				Beta	Tolerance
1	(Constant)	2.559	.012		
	Commitment towards knowledge	2.726	.008	.650	1.538
	Knowledge application for business processes, organization structure, products etc.	.594	.554	.646	1.547
	Knowledge acquisition through interaction with client's orgs	1.755	.082	.742	1.347
	Knowledge storage & retrieval	2.333	.022	.619	1.616
	Knowledge Sharing	-1.026	.307	.953	1.049
	Knowledge application for business problem/solutions	2.043	.044	.703	1.423

a. Dependent Variable: Positive impact on performance as a result of KM initiatives

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index
1	1	6.735	1.000
	2	.103	8.094
	3	.050	11.574
	4	.040	13.052
	5	.031	14.791
	6	.025	16.385
	7	.017	20.168

Collinearity Diagnostics ^a

Model	Dimension	Variance Proportions				
		(Constant)	Commitment towards knowledge	Knowledge application for business processes, organization structure, products etc.	Knowledge acquisition through interaction with client's orgs	Knowledge storage & retrieval
1	1	.00	.00	.00	.00	.00
	2	.00	.02	.00	.02	.04
	3	.02	.50	.01	.35	.01
	4	.08	.00	.14	.06	.53
	5	.01	.44	.12	.44	.40
	6	.21	.03	.72	.12	.02
	7	.68	.00	.01	.00	.00

Collinearity Diagnostics ^a

Model	Dimension	Variance Proportions	
		Knowledge Sharing	Knowledge application for business problem/solutions
1	1	.00	.00
	2	.82	.00
	3	.01	.01
	4	.13	.08
	5	.00	.02
	6	.03	.13
	7	.01	.76

a. Dependent Variable: Positive impact on performance as a result of KM initiatives

FACTOR

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Factor Analysis

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	FAC3_32	Component score 3
	FAC4_32	Component score 4
	FAC5_32	Component score 5

[DataSet1] I:\Data folder 0513\150 response finla 180513.sav

Correlation Matrix^a

--

a. Determinant
= 7.77E-005

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.854
Bartlett's Test of Sphericity	Approx. Chi-Square	941.520
	df	190
	Sig.	.000

Communalities

	Initial	Extraction
LO1: Do you agree that at your organization learning by interactions with the team members, business partners and customers are contributing towards performance improvement?	1.000	.604
LR7: Does your organization look at long term impact of knowledge management initiatives?	1.000	.648
LR4: Does your organization always encourage you to share, act on new information and insights?	1.000	.550
EO4: To what extent the attributes such as creativity, adaptability, and entrepreneurship are encouraged in your organization.	1.000	.677
LR1: To what extent innovation is encouraged at the organization by the leadership?	1.000	.676
EO5: To what extent risk taking is encouraged in supporting new ideas, experimentation, and creative processes?	1.000	.635
KMP7: Do you also come across initiatives being implemented to bring best out of the human capital that may encourage KM initiatives?	1.000	.753
LR5: New ways & approaches are necessary to get best out of human capital, do you often come across such a focus in the organization?	1.000	.688
KMP5: Do you often catalogue the insights/perspectives gained from the interactions with colleagues and clients so that they can be retrieved by others and applied in similar situations?	1.000	.666

Communalities

	Initial	Extraction
MO3: Is the process of acquiring knowledge from customers, business partners, suppliers is effective for providing best solutions?	1.000	.572
MO2: Are you satisfied with the process of dissemination of the market intelligence across the unit and organization?	1.000	.614
MO4: Is your organization in comparison to others, believe in that a focus towards market orientation can lead to better competitive advantage?	1.000	.630
MO1: To what extent your organization/unit captures market intelligence to meet the present & future needs of the customer?	1.000	.645
EO1: Are you satisfied with the current level of risk taking ability at the organization level?	1.000	.650
LR2: To what extent you find strategic priority towards knowledge management systems & innovation?	1.000	.685
LR3: How effective are the "knowledge creation" activities towards meeting the value creation objectives of the organization.	1.000	.625
EO3: Are you satisfied with the focus provided towards entrepreneurship, flexibility, risk taking?	1.000	.572
TO6: Do you agree that "first the focus should be on designing the process, then technology selection" when it comes to deciding on KM initiative?	1.000	.802

Communalities

	Initial	Extraction
TO3: Does your KM initiatives in the organization are determined by the investments in technology?	1.000	.635
Do you generally feel that your client's orgs encourage their employees to come up with new ideas and processes while developing solutions?	1.000	.643

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.112	35.559	35.559	7.112	35.559	35.559
2	1.956	9.778	45.337	1.956	9.778	45.337
3	1.430	7.150	52.487	1.430	7.150	52.487
4	1.319	6.595	59.082	1.319	6.595	59.082
5	1.155	5.774	64.856	1.155	5.774	64.856
6	.918	4.591	69.447			
7	.735	3.674	73.121			
8	.657	3.286	76.407			
9	.635	3.177	79.583			
10	.590	2.950	82.533			
11	.531	2.656	85.189			
12	.485	2.423	87.612			
13	.454	2.272	89.884			
14	.388	1.940	91.824			
15	.369	1.843	93.667			
16	.339	1.697	95.364			
17	.282	1.412	96.776			
18	.248	1.240	98.017			
19	.221	1.107	99.123			
20	.175	.877	100.000			

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.509	17.547	17.547
2	2.923	14.616	32.164
3	2.683	13.415	45.578
4	2.418	12.089	57.667
5	1.438	7.189	64.856
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Extraction Method: Principal Component Analysis.

Component Matrix ^a

	Component				
	1	2	3	4	5
LO1: Do you agree that at your organization learning by interactions with the team members, business partners and customers are contributing towards performance improvement?	.606	.227	-.349		-.251
LR7: Does your organization look at long term impact of knowledge management initiatives?	.671	.304	-.306		
LR4: Does your organization always encourage you to share, act on new information and insights?	.581		-.427		
EO4: To what extent the attributes such as creativity, adaptability, and entrepreneurship are encouraged in your organization.	.714	-.308	-.262		
LR1: To what extent innovation is encouraged at the organization by the leadership?	.810				
EO5: To what extent risk taking is encouraged in supporting new ideas, experimentation, and creative processes?	.754				
KMP7: Do you also come across initiatives being implemented to bring best out of the human capital that may encourage KM initiatives?	.568	-.564	.201	.229	
LR5: New ways & approaches are necessary to get best out of human capital, do you often come across such a focus in the organization?	.434	-.597	.308		
KMP5: Do you often catalogue the insights/perspectives gained from the interactions with colleagues and clients so that they can be retrieved by others and applied in similar situations?	.673	-.365			.247

Component Matrix^a

	Component				
	1	2	3	4	5
MO3: Is the process of acquiring knowledge from customers, business partners, suppliers is effective for providing best solutions?	.602		.355		-.243
MO2: Are you satisfied with the process of dissemination of the market intelligence across the unit and organization?	.714				-.206
MO4: Is your organization in comparison to others, believe in that a focus towards market orientation can lead to better competitive advantage?	.577	.284		.225	-.400
MO1: To what extend your organization/unit captures market intelligence to meet the present & future needs of the customer?	.732				-.309
EO1: Are you satisfied with the current level of risk taking ability at the organization level?	.565		.479	-.306	
LR2: To what extent you find strategic priority towards knowledge management systems & innovation?	.574				.558
LR3: How effective are the "knowledge creation" activities towards meeting the value creation objectives of the organization.	.383	.451	.378		.365
EO3: Are you satisfied with the focus provided towards entrepreneurship, flexibility, risk taking?	.655			-.242	.236
TO6: Do you agree that "first the focus should be on designing the process, then technology selection" when it comes to deciding on KM initiative?		.426	-.246	.669	.273

Component Matrix^a

	Component				
	1	2	3	4	5
TO3: Does your KM initiatives in the organization are determined by the investments in technology?			.288	.703	
Do you generally feel that your client's orgs encourage their employees to come up with new ideas and processes while developing solutions?	.477	-.521	-.339		

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Rotated Component Matrix ^a

	Component				
	1	2	3	4	5
LO1: Do you agree that at your organization learning by interactions with the team members, business partners and customers are contributing towards performance improvement?	.711		.280		
LR7: Does your organization look at long term impact of knowledge management initiatives?	.688		.238	.334	
LR4: Does your organization always encourage you to share, act on new information and insights?	.687	.269			
EO4: To what extent the attributes such as creativity, adaptability, and entrepreneurship are encouraged in your organization.	.608	.520			
LR1: To what extent innovation is encouraged at the organization by the leadership?	.577	.340	.314	.359	
EO5: To what extent risk taking is encouraged in supporting new ideas, experimentation, and creative processes?	.490		.367	.486	
KMP7: Do you also come across initiatives being implemented to bring best out of the human capital that may encourage KM initiatives?		.833			
LR5: New ways & approaches are necessary to get best out of human capital, do you often come across such a focus in the organization?		.766	.304		
KMP5: Do you often catalogue the insights/perspectives gained from the interactions with colleagues and clients so that they can be retrieved by others and applied in similar situations?	.245	.687		.338	

Rotated Component Matrix ^a

	Component				
	1	2	3	4	5
MO3: Is the process of acquiring knowledge from customers, business partners, suppliers is effective for providing best solutions?			.686	.220	
MO2: Are you satisfied with the process of dissemination of the market intelligence across the unit and organization?	.374		.611	.267	
MO4: Is your organization in comparison to others, believe in that a focus towards market orientation can lead to better competitive advantage?	.397		.600		.334
MO1: To what extent your organization/unit captures market intelligence to meet the present & future needs of the customer?	.481	.223	.578		
EO1: Are you satisfied with the current level of risk taking ability at the organization level?		.273	.536	.482	-.235
LR2: To what extent you find strategic priority towards knowledge management systems & innovation?	.325			.724	
LR3: How effective are the "knowledge creation" activities towards meeting the value creation objectives of the organization.			.306	.688	.213
EO3: Are you satisfied with the focus provided towards entrepreneurship, flexibility, risk taking?	.329		.279	.591	
TO6: Do you agree that "first the focus should be on designing the process, then technology selection" when it comes to deciding on KM initiative?	.227			.249	.806

Rotated Component Matrix ^a

	Component				
	1	2	3	4	5
TO3: Does your KM initiatives in the organization are determined by the investments in technology?			.290		.705
Do you generally feel that your client's orgs encourage their employees to come up with new ideas and processes while developing solutions?	.443	.638			

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

a. Rotation converged in 21 iterations.

Component Transformation Matrix

Component	1	2	3	4	5
1	.606	.450	.482	.437	.089
2	.115	-.827	.232	.366	.339
3	-.750	.157	.607	.211	-.008
4	-.092	.247	-.088	-.221	.935
5	-.221	.168	-.581	.763	.059

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

RELIABILITY

```

/VARIABLES=Q45 Q41 Q6 Q20 Q30
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Reliability

Notes

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	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=Q45 Q41 Q6 Q20 Q30 /SCALE("Leadership's commitment towards KM") ALL /MODEL=ALPHA /STATISTICS=ANOVA COCHRAN.	
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	Elapsed Time	00 00:00:00.007

[DataSet1] C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav

Scale: Leadership's commitment towards KM

Case Processing Summary

		N	%
Cases	Valid	108	74.0
	Excluded ^a	38	26.0
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.835	5

ANOVA with Cochran's Test

	Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People	234.259	107	2.189		
Within People					
Between Items	27.752	4	6.938	65.728	.000
Residual	154.648	428	.361		
Total	182.400	432	.422		
Total	416.659	539	.773		

Grand Mean = 3.74

RELIABILITY

```
/VARIABLES=Q3 Q2 Q18 Q14  
/SCALE('KM systems & processes') ALL  
/MODEL=ALPHA  
/STATISTICS=ANOVA COCHRAN.
```

Reliability

Notes

Output Created	22-Jul-2013 14:48:31	
Comments		
Input	Data	C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
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	N of Rows in Working Data File	146
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=Q3 Q2 Q18 Q14 /SCALE('KM systems & processes') ALL /MODEL=ALPHA /STATISTICS=ANOVA COCHRAN.	
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.005

[DataSet1] C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav

Scale: KM systems & processes

Case Processing Summary

		N	%
Cases	Valid	112	76.7
	Excluded ^a	34	23.3
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.797	4

ANOVA with Cochran's Test

	Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People	228.277	111	2.057		
Within People				10.474	.015
Between Items	4.473	3	1.491		
Residual	139.027	333	.417		
Total	143.500	336	.427		
Total	371.777	447	.832		

Grand Mean = 3.52

RELIABILITY

```

/VARIABLES=Q33 Q32 Q34 Q31 Q29
/SCALE('Market orientation') ALL
/MODEL=ALPHA
/STATISTICS=ANOVA COCHRAN.
    
```

Reliability

Notes

Output Created		22-Jul-2013 14:50:34
Comments		
Input	Data	C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav
	Active Dataset	DataSet1
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	N of Rows in Working Data File	146
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q33 Q32 Q34 Q31 Q29 /SCALE('Market orientation') ALL /MODEL=ALPHA /STATISTICS=ANOVA COCHRAN.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.008

[DataSet1] C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav

Scale: Market orientation

Case Processing Summary

		N	%
Cases	Valid	108	74.0
	Excluded ^a	38	26.0
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.797	5

ANOVA with Cochran's Test

		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		241.383	107	2.256	100.707	.000
Within People	Between Items	59.585	4	14.896		
	Residual	196.015	428	.458		
	Total	255.600	432	.592		
Total		496.983	539	.922		

Grand Mean = 3.44

RELIABILITY

```

/VARIABLES=Q43 Q23 Q25 Q24
/SCALE('Strategic priority') ALL
/MODEL=ALPHA
/STATISTICS=ANOVA COCHRAN.

```

Reliability

Notes

Output Created		22-Jul-2013 14:56:36
Comments		
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	Split File	<none>
	N of Rows in Working Data File	146
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q43 Q23 Q25 Q24 /SCALE('Strategic priority') ALL /MODEL=ALPHA /STATISTICS=ANOVA COCHRAN.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.007

[DataSet1] C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav

Scale: Strategic priority

Case Processing Summary

		N	%
Cases	Valid	108	74.0
	Excluded ^a	38	26.0
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.727	4

ANOVA with Cochran's Test

	Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People	178.859	107	1.672		
Within People				24.393	.000
Between Items	11.914	3	3.971		
Residual	146.336	321	.456		
Total	158.250	324	.488		
Total	337.109	431	.782		

Grand Mean = 3.28

RELIABILITY

```

/VARIABLES=Q36 Q39
/SCALE('Technology orientation') ALL
/MODEL=ALPHA
/STATISTICS=ANOVA COCHRAN.

```

Reliability

Notes

Output Created		22-Jul-2013 14:58:51
Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	146
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY /VARIABLES=Q36 Q39 /SCALE('Technology orientation') ALL /MODEL=ALPHA /STATISTICS=ANOVA COCHRAN.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.005

[DataSet1] C:\Users\44043\Desktop\Download\150 response finla 180513 (1).sav

Scale: Technology orientation

Case Processing Summary

		N	%
Cases	Valid	108	74.0
	Excluded ^a	38	26.0
	Total	146	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.449	2

ANOVA with Cochran's Test

		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		92.833	107	.868	44.506	.000
Within People	Between Items	35.852	1	35.852		
	Residual	51.148	107	.478		
	Total	87.000	108	.806		
Total		179.833	215	.836		

Grand Mean = 3.86

```
SAVE OUTFILE='C:\Users\44043\Desktop\TCS\150 response finla 180513 (1).sav'
/COMPRESSED.
```

Nagesh Tummapudi

Performance enhancer with a focus on strategy & operational excellence

Highly skilled and enterprising Performance Enhancer leverages 20+ years of experience aligning organizations with strategic planning and an effective Balance Scorecard to increase profitability. Bolsters organizational vision and goals through development of business operations and strategies, quality management systems, operational excellence, performance management systems, and leading change management initiatives. As an executive and consultant employs a deep understanding of critical business drivers in multiple markets and industries; can see the bigger picture and think outside the box to devise strategies that drive projects to success. Has a talent for seamless collaboration and relationship development with key stakeholders. Is currently pursuing a doctoral program to study the linkages between knowledge management and innovation culture and its impact business performance.

CORE STRENGTHS

Business & Operational Strategy | Strategic Planning | Performance Management (BSE) |
Organizational Development Change Management | Management Consulting | Project
Management | Technology Management
Operational Excellence | Quality Management Systems

CAREER PROGRESSION

KUWAIT NATIONAL PETROLEUM COMPANY (KNPC) ♦ MAY 2014-PRESENT

SR. ENGINEER, PROJECTS -- BUSINESS SUPPORT / IN-HOUSE CONSULTANT

As a key member of the newly formed division, provide business and technical support and consultation to ensure smooth merger and alignment with the organization.

- Directed business processes and the efficient delivery of the project management plan and played an instrumental role in the merger of the project unit with the current organization.
- Implements and monitors corporate initiatives and management systems that include quality management system, best practices, BSC, integrated management, HSSE, stakeholder and risk management.
- Oversees internal and external audit readiness for corporate initiatives and develops corrective measures for areas of improvement.
- Provides technical support in all phases of project delivery, to include design, tending & evaluation, contract review, execution of large ongoing civil construction and new projects.

OIL SECTOR SERVICES COMPANY (A SUBSIDIARY OF KUWAIT PETROLEUM COMPANY) ♦ KUWAIT ♦ JAN 2009-APR 2014

SPECIALIST CORPORATE PLANNING (JAN 2009-JUL 2011) / PROJECTS SPECIALIST (APRIL 2011-APRIL 2014)

Upon recruitment as Specialist in Corporate Planning in the newly set up corporate planning function and implemented strategic planning and performance management system that resulted in emergence as a service provider for group companies. Later joined as a Specialist in Projects to facilitate inclusion of Project Management in its portfolio of business.

- Implemented a performance management system using Balanced Scorecard (BSC); designed performance measures and initiatives and reviewed performance of affiliated functions during quarterly review meetings with top management.
- Enabled department managers to perform gap analysis and to execute strategies to bridge the gaps.
- Participated in creating five-year strategic plans, taking into account capital budget requirements and development of execution strategies.
- Provided technical support to various ongoing projects and played a key role in pre-execution of a US\$50M project.
- Instrumental in the selection of project staff; coached engineers; guided directorate managers to meet annual performance targets.

CHR GLOBAL / MANAGEMENT CONSULTANCY ♦ MUMBAI, INDIA ♦ APR 2002-DEC 2008

PRINCIPAL CONSULTANT

Provided consulting services to engineering clients on strategy formulation, plant performance improvement, operations excellence, design, and implementation of Balanced Scorecard.

Delivered the following projects:

- Using Balanced Scorecard methodology, executed a corporate initiative that involved developing strategic objectives and performance management system.
- Devised an operation excellence model in an electro graphite manufacturing engineering company, resulting in Overall Equipment Efficiency (OEE) from 0.55 to 0.80; also trained the second level management team to undertake future plant operations.
- Analyzed and streamlined the supply chain processes of a multinational organization, resulting in a 25% reduction in required manpower.
- Organization restructuring of a large public sector in the engineering, electrical, and tea plantation business; introduced modern automation tools, identified outsourcing opportunities, and recommended manpower reduction by 35%.
- Reduced manpower needs 20% through analysis and intervention of editorial processes for a leading newspaper.

KIRLOSAR BATTERIES LTD. ♦ MAR 1999-MAR 2002

GENERAL MANAGER (PLANT OPERATIONS)

Provided leadership to two plants operations with a combined manpower strength of 500, managing P&L responsibilities for an annual turnover of INR 40Cr. Accountable for purchase and logistics, quality, finance, and human resources.

- Introduced modern technology that boost efficiency and performance and resulted in company turnaround and profitability within 12 months.

- Established a new production line with know-how transfer from G S Batteries, Japanese collaborators for industrial and automotive batteries.
- Set organization with upgraded technology, recruited a team of engineers, and negotiated output norms with the union that resulted in a 15% decrease in employee costs and 20 % increase in productivity.
- Maintained the ISO 9001 certification as a management representative.

Earlier Experience:

Senior Manager - Projects & Engineering: Tudor India Ltd., Ahmedabad, India

Project Manager: Amco Batteries Ltd. / TAFE-PSD Bangalore, India

Engineer: Multiple Manufacturing Organizations, India

EDUCATION

Master in Industrial Engineering

National Institute of Industrial Engineering, Mumbai, India

Bachelor of Technology (Mechanical Engineering)

Jawaharlal Nehru Technological University, Kakinada, India

Certificate course in Financial Management for non-finance executives

Institute of Chartered Accountants of India (ICAI), Bangalore, India

Lead Auditor Certification for ISO (QMI UK), India