ABSTRACT

Economy and management strategy has changed multifold during recent years due to rapid change in globalization. Knowledge management has played the main driving force to the organizations in this change. As Druker (1994) and others such as Evans and Wurster (2000) have argued that in the new economy, knowledge has become the primary resource for competitive advantage for individual, managers and their organizations.

The knowledge based economy is indeed, a new economy. The IT sector in India is in the mature-growth stage, hence challenges are coming from many ways. Big players have already implemented KM in their organization and others are thinking of restructuring and cultivating their organization with KM practices. Today knowledge management is not alien to any IT company and they are practicing the same without really calling its name as such.

There has been a lot of discussion in this decade about knowledge and knowledge management in national and international literature. There are various views on knowledge and knowledge management. These views are based on the author's point of view, some of which are based on the organization theory and practice.

Davenport et al., (1998) defined knowledge as information combined with experience, context, interpretation and reflection. Nonaka and Konno (1998) defined it as intangible, boundary less and dynamic and if is not used at a specific time in a specific place, is of no value. Some suggest that data storing process determine by knowledge (Tuomi, 1999). Spiegler (2000) suggests, yesterday's data are today's information and tomorrow's knowledge, which in turn recycles back through the value chain into information and then into data, Nonaka (1994) explains that knowledge is created and organized by the very flow of information, anchored on the commitment and beliefs of its holder. A detailed classification of knowledge based on the review of literature published in between 1926 to 1999 has been provided by Maier (2002).

Tiwana (2000) says that knowledge is not a new concept at the strategy level. He describes that in the 1950s and 1960s Management by Objective (MBO), Program
Evaluation and Review Technique (PERT) and Centralization and Decentralization techniques tools were used by the managers. In the 1970s and 1980s there were great expectations that knowledge based computer systems (expert systems) could harness knowledge to solve many business problems. Up to 1990s learning, unlearning and experience are taken into account and learning organization, core competencies, reengineering, strategic information systems, intranets & extranets as well as market valuation theory generate. Ultimately in 2000s knowledge management word emerges as the unifying goal and till then knowledge management, intellectual capital, enterprise integration and knowledge sharing culture tools started.

The present research focus is to study of select KM practice tools in Indian IT sector. These included organizations involved in the IT consulting, Business Process Outsourcing (BPO), Information Technology Enable Services (ITES), Software and Hardware, Networking, Product Design and System Security, Application Development and Maintenance, Package Implementation and IT Education etc. There are other sectors also important from the KM point of view but are beyond the scope of present study. This is mainly due to time constraint to consider all set of sectors operating in India.

THE PROBLEM

Growth of any industry in any country indicates the growth of that country's economy. According to survey of NASSCOM (2007), there is potential of exponential growth of IT industry in India. To remain the pace of growth there must be unique strategy and practice should be adopted by IT industries in India. IT industries are most knowledge sensitive than any industry; therefore they must encourage best practice of knowledge management.

KM practices in IT organizations are the backbone for accessing corporate knowledge. The most important part for IT industries that the use of KM practices should be ROI driven.

Under this scenario, it is of paramount significance to study the KM practice tools using by various IT industries in India. With the aforesaid scenario, the present research is conducted to study the KM practice tools using in IT industries in Indian context.
JUSTIFICATION

Many IT organizations are facing knowledge based competition, therefore they have started to re-examine and rearrange their culture and business process, restructuring and reviewing their technological infrastructure to compete with the trend. By implementing KM initiative they expect to gain the capability of managing their knowledge.

The purpose of the research effort is to identify whether KM practices are rightly been adopted by IT companies or not, equal emphasis been given to knowledge-acquisition, knowledge-codification, knowledge-mapping, knowledge-sharing, knowledge-creation and knowledge-storing. It further would develop an interpretive structure (ISM) model for ideal KM practitioners.

IDENTIFIED GAPS IN LITERATURE

Tradition of knowledge management practices that organizations typically address knowledge management from a social or technological point of view. The social perspective view that employees are their best assets, whereas those who favor the technological approach deal with that information technology is needed to support knowledge management. Abeck et al., (1999) advocate that effective knowledge management requires a hybrid solution, one that involves both people and technology. On the basis of literature review, some of the issues that have not been adequately address in the literature have been identified. These issues would be covered in this research. Literature review of KM practices identified gaps in literature are follows.

Organizations at large have placed importance in isolation by researchers.

- Some studies are more focusing on knowledge creation and knowledge sharing but not showing any relation with knowledge acquisition, mapping, storing and coding.
- Some researcher identified relation among knowledge mapping and knowledge sharing but they did not find any relation among knowledge storing, coding, acquisition and knowledge creation.
- It has also been observed that some studies are more inclined towards knowledge acquisition and knowledge sharing but not on knowledge creation, mapping, storing and coding.
Purpose of present research effort is carrying out an empirical study on select issues in knowledge management practices in Indian IT firms. The knowledge management practices will study with respect to: knowledge codification, knowledge storing, knowledge mapping, knowledge sharing, knowledge acquisition and knowledge creation. It further would develop a model for ideal KM practitioners.

STATEMENT OF THE PROBLEM

Statement of the problem of any research gives the purpose of the study. The statement of the problem of this research is described as follows.

A knowledge friendly culture of an organization determines the success of a company. Knowledge management tools and techniques need to be well deployed in the organizations. The research addresses issues related to adoption of these tools in Indian IT sector.

The present research has been designed to gain an insight into the KM practices being followed in Indian IT sector. The focus is to understand the select issues of KM practices tools. In short the research aim to carry out an empirical study on knowledge management practices in Indian IT sector with respect to knowledge creation, knowledge sharing, knowledge acquisition, knowledge mapping, knowledge coding and knowledge storing.

RESEARCH OBJECTIVES

The relevance of the research is both from industry and academic viewpoint. The research aims to cater following objectives.

- To assess current state-of-art for KM practice tools being followed in the Indian IT industry.

- To explore competitive priorities, major enablers, critical knowledge require for success of organizations and major obstacles for introducing new ideas and technology used in KM practice by IT industry.
➢ To analyzing major tools used for knowledge creation, knowledge codification, knowledge mapping, knowledge acquisition and knowledge sharing process.

➢ To find out the perception on checking tools used for knowledge storing, knowledge acquisition and knowledge mapping process.

➢ To assess knowledge intensity and depending factors on knowledge sharing process.

➢ To ascertain KM practices and perceptions of Indian IT sector.

With the objectives, the researcher developed an ISM framework to find the interrelationship among KM variables for an Indian IT industry.

In short this research aim is to gain an insight into the KM practices being followed in Indian IT sector. The focus is to understand the select issues of KM practice tools. This can provide an important input to the practitioners to deciding the right path in KM.

**SCOPE OF PRESENT WORK**

This research is focused on knowledge management practices tools in Indian IT Sector. Scope of present work is as follows.

1. The research is focused to carry out an empirical study on select issue in knowledge management practices in Indian IT firms with respect to: knowledge codification, knowledge storing, knowledge mapping, knowledge sharing, knowledge acquisition and knowledge creation.

2. The select issues in KM practices are being examined in the context of Indian IT sector to ascertain KM practices and perceptions.

3. The study also develop direct relationship model for different variable of KM practice tools.
4. The driving power and dependence of some of the important knowledge management variables are explored in this research.

5. The relevance of the research is both from industry and academic viewpoint. The research aims to consider issues related to encapsulation, sharing, dissemination and application of knowledge asset in Indian IT sectors.

HYPOTHESES OF THE STUDY

The process of establishing hypotheses is the basis for tracking the possible reasons for existing problem. Accordingly, forty eight hypotheses based on seventeen major aspects related to selected KM practice tools have been formulated and verified in this research. These hypotheses include following aspects.

1. Obstacles for introducing new ideas and technologies
2. Competitive priorities of organizations.
3. Type of knowledge critical to the success for the organizations.
4. Tools used for knowledge creation.
5. Technological enablers used for knowledge creation.
6. Tools used for requirement of knowledge codification process.
7. It tools used for knowledge codification process.
8. Tools used for knowledge storing process.
9. Tools used for checking knowledge storing process.
10. Tools used for knowledge acquisition process.
11. Obstacles for knowledge acquisition process.
12. Tools used for knowledge mapping process.
13. Tools used for checking knowledge mapping process.
14. Tools used for knowledge sharing process.
15. Obstacles for knowledge sharing process.
16. Intensity for knowledge sharing process.
17. Factors dependent for effective knowledge sharing process.

SURVEY INSTRUMENTS

Questionnaire based survey is the main research instrument in this research. Some structured interviews have also been conducted to identifying issues related to the research.

RELIABILITY

The items for selected KM practice tools scale were formulated specifically for this research because there was no published reliability or validity data available. Questionnaire reliability was established prior to sending it to organization. A pilot
study was carried out in few Indian IT organizations. They were asked to review the scale and answer specific questions regarding any ambiguities. The idea behind carrying out the pilot study was:

- To have fruitful feedback from the executives working in the area of KM.
- To add missing question, if any, missing in the questionnaire.
- Delete any irrelevant question.
- Refine/rephrase the language of the existing questions to bring in more clarity in the questionnaire.

A total of ten executives were personally contacted. Accordingly the questionnaire was modified and a final questionnaire was freezeed. It was then mailed to different organizations. A copy of the questionnaire is attached as Annexure 1 at the end of the thesis.

ASPECTS COVERED IN QUESTIONNAIRE

Aspects covered in questionnaire included the different characteristics of the organization, level of use of information technology, competitive priorities of the organization, various tools for KM practice generally used by organizations, obstacles encountered in the KM practices, various technology enablers, obstacles for introducing new innovation and technology, specific process problems, knowledge critical to success, things creating competitive edge of organizations, issues need to be measured in organizations, tools supporting for KM process, checking rightfulness, and checking option for various KM tools.

DESIGN OF STUDY

This study is exploratory in nature and conducted in phases. The first phase focuses with developing a view among different KM practice tools with facts and theories accessed from literature survey on IT sector.

The second phase of the study is an empirical study of IT firms, the research approach is survey Research, through structured questionnaire and Interviews. The
standardized and validated questionnaire has been used for this. Hypotheses
formulated and tested using SPSS (ver. 13.0) statistical tools.

For modeling the enablers and inhibitors of KM practices in IT firms, Interpretive
Structural Modeling (ISM) approach has been used.

**SAMPLING DESIGN**

**Sampling Unit:** The existing IT firms situated in Indian Geographical location has
been used for the Survey.

**Sample Size:** A total sample of about 650 IT firms covered.

**Sampling Procedure:** The sampling plan is non-probability sampling from the
Indian IT firms. Judgment and convenience sampling employed.

**DATA SOURCE**

**Primary Data:** A survey method was adopted as a primary source for collecting
information from respondents. A well structured questionnaire send to them. The
researcher developed a dynamic website of questionnaire and send link to all IT
companies.

**Secondary Data:** Existing sources of secondary information tapped to supplement
the primary data related to IT Organizations. Such possible sources are
NASSCOM.CII, ASSOCHAM, PHD-CCI, Ministry of Information Technology and
in house research by Service Organization and studies conducted by various
organizations etc.

**DATA ANALYSIS**

The data collected through above process has been compiled and appropriately	abulated. The analysis of quantitative and qualitative data done using statistical
techniques, keeping in mind overall objectives of research. Finally, the finding from
the primary sources as well as secondary resources has been utilized keeping in view
the research objectives and sub objectives. Statistical tools like SPSS (ver.13.0) have
been used to analyze the data and test for hypothesis, ANOVA and reliability
analysis test conducted on the data set.
SUMMARY OF THE WORK DONE AND KEY RESEARCH FINDINGS

The main work undertaken in this research includes the followings.

- A literature review was conducted to identify the gaps and relevant research issues in the knowledge management. More than 200 studies reviews publicized by national and international journals, magazines etc.
- Based on the literature review and discussions with the academicians and industry professionals, a set of research hypotheses were formed. These research hypotheses are related to the tools specific practices in knowledge management.
- An exhaustive questionnaire was developed to elicit responses from industry professionals. It was analyzed for its reliability, descriptive statistics and hypothesis testing.
- An ISM modeling was done to understand the interrelationship among KM variables.

The major findings of this research are summarized as follows.

Findings from survey

1. IT consulting and service organizations and software organizations are the two organizations extensively using KM practice tools compare to other organizations surveyed.

2. Major competitive priorities of the IT organizations are cost reduction, improvement and quality. Different business, transfer of knowledge and best practice, personal responsibility for knowledge and organizational culture are the most important obstacles for introducing new ideas and technologies in any IT organization.

3. Core competencies, best practices and customer feedback are the most responsible level used for critical factors to success for organizations. Mostly IT organizations have either Chief knowledge officer or information officer or knowledge analyst or CEO of the company looking after knowledge department. Only 10 % of the organizations have no such position exist. They are small scale firms.

4. Innovation, customer opinion, collaborative platform content centers and integrative repositories are the main tools used for Knowledge Creation process. Reliability, good quality of document, flexibility and ease of use are the most important checking tools for KM creation process.

5. Internet and corporate intranet are commonly and importantly used as technological enablers for KM creation process. Corporate intranet/mail
server, wide area network are the main backbone of any IT organization in
terms of knowledge sharing and knowledge creation process.

6. Knowledge is lost, people do not disclose knowledge and knowledge sharing
is adverse to job security are the main reasons faced by the organization for
creation knowledge into the organizations. Electronic mail, internet and
intranet are heavily used as the enablers of KM creation process.

7. High quality products and service and customer feedback are the important
levels in the IT organizations in which KM creation process is helpful for
creating competitive edge. Lack of time, lack of formal structure and
methodology, task is labor intensive and requiring employees to have a high
level of skills are the common obstacles to the success of KM creation
process in organizations.

8. Intranet / websites and computerized databases are the two important ways in
which explicit knowledge used to manage for KM creation process by IT
organization. Accessing external knowledge is the main issues need to be
measured in KM creation process.

9. Survey is the main level used in tracking KM Creation process practices.
Microsoft project and mind manager are the two important software tools used
to creation of knowledge management process.

10. Knowledge portals and knowledge repositories are the most important
enablers of KM creation process. Intranet, K-base and groupware heavily
used by IT organizations as supporting tools for KM creation process.

11. Internal company operation, marketing and sales and human resources are
main domains use for KM creation process. Existing infrastructural
investment is the main tool for checking KM rightfulness.

12. Mostly IT organizations implementation schedule is time intensive. They
often check required knowledge of the new project can be acquired from
outside of the organization. Time factor is most important because their
budget and other financial base depend directly on time. New knowledge
either discover from inside as well as outside of the organization.

13. Past project data and existing documents as an old material reused as a part
of new project for knowledge codification process. Cataloguing knowledge
is the main level require for knowledge codification process.

14. Programming languages are the main IT tools used by the IT organizations in
knowledge codification process. Help desk technologies and web search
google are the main tools used in knowledge codification process.

15. Person to person is the suitable medium for knowledge exchange and transfer
process in IT organizations. Mostly organizations have an electronic
memory, common knowledge warehouse and proper system for knowledge recording and retrieving.

16. Dictionary and data warehousing technologies are the most involvement of tools used in knowledge storing process. Budgetary constraints are the main obstacles for introducing new ideas and technologies in knowledge storing process. Operational and product and service focus (improved deliverables), are heavily tools for knowledge storing process.

17. Mostly companies have at least once a year knowledge acquisition measurement process. Virtual organizations and document knowledge are the tools having high priorities to the success for knowledge acquisition process.

18. Data capture tools with filtering abilities and intelligent data base are the strong supporting components of knowledge acquisition process. Survey is the main tool used to measure for tracking knowledge acquisition process.

19. Organization culture and identify business needs are the main obstacles for knowledge acquisition process. Individual and technology assets are the main acquisition of knowledge base. Questionnaire and opinion of the cross area specialist are the main tools used for the knowledge acquisition process.

20. Survey is the main tool used for knowledge mapping process. Resource is the main level use for knowledge mapping process. Group proficiency and important relationship between knowledge stores and dynamics are the level helpful in knowledge mapping process. Project tracking and management by knowledge objective are the important tools for knowledge mapping process.

21. Collaboration, problem solving and elimination of temporal and special constraints on communication are strongly used knowledge asset factors involvement is knowledge sharing process. Sharing informer rewarded and knowledge repositories maintained are the most important factors used to knowledge sharing process

22. Intranet portal, video conferencing and blue pages are the most important tools used for knowledge sharing process. Establishing learning arena and internal client survey are the main tools used for knowledge sharing process.

23. Individual factor-information overload and individual factor lack of time, culture factor and quality of expectation are the most important factors are obstacles for success of knowledge sharing process. Communication, incentives, reward and revamp reward and recognition program in the organizations are the main factors for encourage knowledge sharing. Knowledge access and knowledge representation are the main factors for intensity for knowledge sharing process.

24. Family culture model makes the suitable environment for knowledge sharing. Relationship and team are the main factors effecting the knowledge sharing.
It is mainly the large scale and the medium scale IT organizations in India which are using proper system for knowledge management practice tools effectively for boosting their corporate business. Most of small scale IT organizations did not fill the questionnaire and on the reminders they personally informed about low involvement in formal KM practice tools in their organizations.

In total forty eight hypotheses are formulated on the basis of seventeen major aspects of KM practice tools. These hypotheses indicate their perceptions for using these KM tools in different sectors of Indian IT industries. Some of the perceptions among the six categories of Indian IT industries are:

1) Considering major obstacles for introducing new ideas and technologies in their organization, all IT sectors have similar opinion about identify business needs, existing IT infrastructure, budgetary constraints and organization culture, although they are differing on understanding new technologies and cost justifying new technologies.

2) For organizing their competitive priorities they are showing similarity on innovation, cost reduction, improvement and flexibility in problem solving. They are having difference on quality and improved delivery factors.

3) For the perception of the knowledge critical to success their organizations they are indicating similarity on customer feedback and competencies.

4) Analyzing major tools for knowledge creation process they are agree on knowledge directories and innovation tool, while not showing similar interest on collaborative platform and customer opinion.

5) All the selected sectors have shown similarity and equal importance to corporate intranet and internet in their opinion on about using technological enablers of KM creation process.

6) All the selected sectors are not showing similarity on their view for using cataloguing knowledge, digitations and electronic memory in their initiative process of knowledge codification.

7) All the selected sectors have differing perception on using programming language and business intelligence as important tools for knowledge codification process.

8) Again all the selected sectors have not shown similar interest on knowledge maps and data mining IT tools used for their knowledge storing process.

9) Research findings indicates that all selected sectors have given equal importance and similarity on product and service focus and social focus and
are strongly considered these factors as the checking tools used for knowledge storing process.

10) For checking tools in their knowledge acquisition process, all selected sectors have shown similar interest on using patents but differing views on hiring talents and experts.

11) Taking existing infrastructure for obstacles in knowledge acquisition process, all IT sector shown similar interest while hiring talents and expert from outside they are like disagree.

12) All the selected sectors have shown similar and equal importance for using knowledge yellow pages in their knowledge mapping process while they have different perception for using survey method.

13) Considering checking tools used for knowledge mapping process they all have shown negative interest on using project tracking and balance scorecard.

14) All selected sectors are differing for using groupware, intranet portal, video conferencing, corporate yellow pages and white papers as tool used for knowledge sharing process in their respective organizations.

15) All selected IT sectors have been compared with respect to the obstacles for knowledge sharing process. They are agrees that they have similar obstacles for knowledge sharing process as individual factor- lack of time and culture factor- lack of support from top management, considered significantly important by these sectors.

16) Taking knowledge access and knowledge representation on their knowledge sharing process, they are not showing similar interest.

17) All selected sectors are showing similar interest and equal importance to teams and network factor depend on effective knowledge sharing process in their organizations.

**Findings from Interpretive Structural Model (ISM) development**

The ISM model provides some important insights for KM practice tools. Leadership plays significant role as a KM practice tool in IT industry. Knowledge storing, knowledge coding are those variables on which effectiveness of KM practice depends. Efficient leadership provides better knowledge culture and this provide good knowledge creation, and it makes the way of knowledge sharing into the organization and that is critical for the IT industry. Knowledge leadership also influences knowledge sharing to create better knowledge environment. Knowledge
creation influence knowledge mapping and knowledge coding. Knowledge sharing also provides the better way of knowledge acquisition in the organization. Knowledge capture and knowledge mapping both influence each other. Knowledge mapping also influence knowledge acquisition. Knowledge acquisition creates significant impact on knowledge coding and knowledge capture. Knowledge mapping and knowledge coding provide the way of knowledge storing, which is the ultimately repository of final output of KM practice in the IT industry. From the ISM, it has been observed that before starting the good practice of KM tools, IT industry should deploy effective leadership, which can be done by introducing somebody to assume the role of champion in leadership.

CONTRIBUTIONS OF THE RESEARCH

Some major contributions made through this research are listed as follows:

- The research tries to attempt a comprehensive review of the literature and provides to identify contemporary research issues in knowledge management practice tools.

- A questionnaire based survey of Indian IT industries is conducted to investigate various issues in KM practice tools. A total of 95 companies from IT sector participated in the survey. The major portion of the respondents was from the IT consulting and service sector followed by Software organizations, Business process outsourcing, IT education, Application development and maintenance, and others (Hardware, Networking and System security) organizations. The present work attempts to identify the practice of KM tools used by companies. These include following in order of priority: (i) Checking tools, (ii) Technology enablers used for particular tool, (iii) Obstacles used for practice tools, (iv) Competitive priority, (v) Obstacles for success for particular tool's process, (vi) Obstacles for introducing new idea for particular tools facilitation. Majority of the respondents strongly agree view that effective knowledge sharing within successful KM tools practicing depend on team followed by relationship and network. Reuse of knowledge is also major plus factor. Almost every company have knowledge warehouse in terms of their size and working style. The major problems in the using of KM practice tools are identified, which include not disclosing knowledge by people, non sharing of knowledge due to fear of their job security and some time applying old rules to new situations. These issues are not major issues and IT sector is playing smart way to overcome of all these problems. Even though big player does not have these problems. The numerous benefits coming from the successful of KM practices are improved efficiency, innovation, lower cost, best quality, better MIS and DSS, beforetime delivery of projects and quick decision making.
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Different KM practice tools and their use, checking rightfulness, and obstacles for implementing them have been identified and analyzed. In this work an attempt is made to understand the similarity/dissimilarity among the different KM practice tools within the IT industry. All the major seventeen hypotheses have been tested for their significance.

Interpretive Structure Modeling (ISM) has been used to model and understand the relationship among variables of KM Practice tools.

**IMPLICATION OF THE RESEARCH**

Implications of research on managerial and academic area are describes as follows.

**MANAGERIAL**

The managerial implications of the research are listed as follows.

- The current state of art for KM practice tools being followed in the Indian IT industries is assessed and insight into major tools, enablers, obstacles, competitive priorities and rightfulness etc of this sector is obtained.
- An ISM framework to find the interrelationship among KM practice tool variables for an Indian IT industry is developed. The framework comes out with identification of the KM practice tool variables which have high dependence and the high driving power. The identification helps management to give importance of these variables for good practicing of KM tools in their respective organizations.

**ACADEMIC**

The academic implications of this study are:

- The exhaustive study of major KM practice tools presented in the in the research is probably the first of its kind in Indian context. Therefore, it may serve as one of the start point for further research in the area.
- This study provides review of exhaustive literature case studies, which could serve as a base for further research.
- The comprehensive questionnaire can be used with some modifications to serve as benchmark for future research instruments in the area of KM practice tools and other related areas.
The different sector wise study of KM practice tools has a scope of further research on many other issues. The academicians may use the sector wise study as a base for further research.

RECOMMENDATIONS AND SUGGESTIONS
Recommendation and suggestion based on this research are as follows.

It has been observed that IT consulting and service organizations and software organizations are among the selected six IT sectors are the two organizations extensively using KM practice tools compare to other organizations surveyed. Business process outsourcing, IT education, application development and maintenance and others (hardware, networking, system security) should deploy KM practice tools in their business objectives for taking advantages of unexploited business opportunities.

1) Innovation should be taken in front place as IT sector is knowledge intensive sector and they should focus on motivation of employees to innovate knowledge so that they can exploit missing knowledge for their business aspect.

2) There is more attention requirement for organization culture and top management of the organizations must ensure knowledge sharing culture in their respective organizations, so that employees can not fear about knowledge sharing activities, reverse their job security for that effective incentive and reward system for knowledge sharing can be implemented in their organizations.

3) Core competencies, best practices and customer feedback are the most responsible level need to take care seriously for the critical success for organizations.

4) Organizations should fix any concerned or specific person(el) to take care all KM initiative and regular checking must be insured for achieving objectives from effective KM implementation.

5) IT infrastructure should be more intensive for checking KM rightfulness. IT organizations more seriously look on smooth functioning of internet, corporate intranet mail server, computerize database, assessing ways of external knowledge and wide area network in their organizations.
Programming languages, help desk technologies and web enabled services should be more inclined towards achieving organizational objectives.

6) Survey method should be most flexible to use in tracking KM Creation and mapping process. Survey method should be properly maintained for KM process.

7) Cataloguing process should be more effective so that past project data can be reused effectively.

8) Budget factor play important role for introducing new ideas and technologies in any knowledge process so it should be properly utilized and distributed to increase all areas KM effectiveness.

9) Information overload, lack of time, culture factor and quality factors need to take seriously for success of knowledge sharing process.

10) Family culture model should popularize among all department of organizations so that suitable environment for knowledge sharing establish. More strengthen should be made on relationship and team building.

11) Leadership factor is most important among all KM tools. It is the base on the hierarchy of effective KM tree. It is also an independent factor among all the variables showing effectiveness on KM practice hence effective and champion leaders to be encouraged for taking KM initiative in their hands. It is because of leadership, good knowledge sharing culture originate and more knowledge can be created for more knowledge coding, mapping and acquisition. If all these will work properly then upper part of the tree called knowledge storing will show effective out put on the knowledge warehouse of the organizations.

12) It is mainly the large scale and the medium scale IT organizations in India which are using proper system for knowledge management practice tools effectively for boosting their corporate business. Most of small scale IT organizations are not using proper KM practice tools, so that they should make strategic goals to practice KM tools for their organizations effectiveness for competing in global scenario.

In short there should be holistic and standardized approach to be maintained to creation knowledge oriented culture by management support and standard
knowledge structure. Good organizational structure, specific economic benefits, suitable adoption of technology, effective way of motivation and continuous participation for employees, effective incentive, reward and recognition level, multiple channel of knowledge sharing and effective way of knowledge auditing should be ensured for effectiveness of KM practice tools in IT organizations.

LIMITATION AND SCOPE OF FUTURE WORK

- In the survey used in this research, six major categories of Indian IT industries are covered more categories of organizations can be covered in future research. In all 95 filled up responses were found usable. The response rate of the questionnaire is about 14 percent, which is quite low.
- Many of the important and big companies could not be included in the survey because of the non-response and none disclose about internal KM practice data by these companies. Most of small scale IT organizations did not fill the questionnaire and on the reminders they personally informed about low involvement in formal KM practice tools in their organizations. In future research, more companies and more sectors may be considered.
- In this research web and mail approach is adopted due to flexible filling up time by the executives of the IT companies. In the further research, attempts may be made to take up data from more than one respondent from each company and a comparison can be made on these responses. In the further research, few more sectors can be included in the survey and comparison can be made with engineering industry, consultancy industry, service industry and manufacturing industry etc. Further, to improve the response rate, the questionnaire size can be reduced in a meticulous way so as to get a higher response rate.
- For developing the ISM, only nine variables have been considered. This can be extended to include more variables and separate ISM may be developed for each category of IT industries. A comparison of their ISM may give some additional insights.
- In the hypothesis section only forty eight hypotheses based on seventeen major aspects are formulated and tested. More hypotheses and more aspects
can be tested in future research. Only, one-way ANOVA has been used to test the sartorial differences/similarity in KM practice tools. More statistical tools like regression analysis, paired t-test etc. may be attempted in future research.

To limit the scope of present work, only IT industries have been selected. More variety of industries may be attempted in future work. In this research not many responses were received from BPO, IT education, application development and maintenance and others. Attempts in future may be made to tap responses from these industries.

ISM model developed in this research considers only nine variables, more variables can be added in future research. Separate ISM may be developed for each categories of IT sector selected in chapter four. A comparison of their ISM may give some extra useful insights among KM variables.

This research work is an attempt to study select KM practice tools used by Indian industries, which are typically IT industries falling under IT consulting and service sector, software, business process outsourcing, IT education, application development and maintenance, and others etc. Scope of present research is generally not beyond these Indian IT industries though the research implications may have some bearings on the other sectors too. Some of the unexplored sectors are important from KM practice tools point of view but are beyond the scope of present study. This is mainly due to time constraint to undertake the whole set of sectors operating in India. The research gives some useful insights into the KM practices tools being followed by Indian IT industries. The focus of the research is to understand the sector wise (within IT industries) using KM practice tools. This can provide an important input to the industry in deciding the right path for their forever KM journey. The research also brings out some contributions in the ISM framework of model to get the interrelationship among different variables selected for KM practice.