KNOWLEDGE MANAGEMENT PROCESS IN ORGANIZATIONS AND ITS LINKAGES WITH FLEXIBILITY: A CASELETS BASED INDUCTIVE STUDY

Sumant Kumar Bishwas[1] & Sushil[2]

Abstract: *Knowledge management is a well-defined concept and is a matter of interest for organization for nearly last two decades. Initially, the focus was more on the technical side but slowely the importance of soft aspects of knowledge management has been realized. Some of the studies are also available in case study form to explain the implementaion process of knowledge management in any organization. This paper is based on the integrated methods of literature review and caselets study method that relate the conceptual thinking with the real implementation of this in various organizations. Knowledge management and its interrelations with other aspects like innovation, culture, and flexibility has been discussed. Secondary data has been used for caselets study. Finally, interpretive structural modelling (ISM) has been used for defining the interlinkages between the dimensions identified.*

Keywords: flexibility, innovation, knowledge management, knowledge sharing, top management support

[1] Research Scholar,Department of Management Studies,Indian Institute of Technology Delhi,skbiswas.iitd@gmail.com

[2] Professor,Department of Management Studies,Indian Institute of Technology Delhi,profsushil@gmail.com

Introduction

Concept of knowledge management has been sifted in the current knowledge era. It is becoming more segmented such as knowledge management for marketers, for HR functions and integrating many other activities such as best practices, organizational learning etc. In early stages, knowledge management was largely considered as IT solutions for business activities but off late it has also incorporated social factors such as communities, personal development, working environment etc. This second generation of knowledge management considers other concepts like innovation and organizational learning as an integrated part of knowledge management (Gloet and Terziovski, 2004).

Knowledge is considered as one of the strategic resource of the organization, which can be used for managing the crises. Organizations need different kind of knowledge strategy for different crisis situations. Wang and Belardo (2009) have defined the interrelationship between the crisis management strategy, knowledge management strategy and the performance of the organization.

This study is an attempt to understand the relevance of knowledge management (KM) process for organizational success, identify the key dimensions in the implementaion process of KM in various organizations, and to find the interlinkages between these dimensions and other issues like cuture, flexibility etc., which is largely based on content analysis of select caselets. Total eight cases have been considered for this study that is largely focused on the knowledge management issues. The final interpretive structural model (ISM) (Singh and Kant, 2008) explains the relationships between the dimensions identified after the content analysis of caselets.

Literature Review

For achieving performance excellence worldwide and sustaining that position, it is not enough to focus only on the quality aspects. In current scenario, knowledge management aspects are the ones that organizations cannot avoid if they want to sustain their competitive position (Ribière and Khorramshahgol, 2004). To become successful and sustaining growth in this competitive era, organizations need to understand its capabilities and about its competitors and external environment (Gloet and Terziovski, 2004).

Knowledge management (KM) is a modern phenomenon; its importance is acknowledged by over 90 per cent of the companies surveyed for knowing importance of KM

in their respective organizations (Call, 2005). Organization knowledge has been defined primarily of two types: tacit knowledge and explicit knowledge (Nonaka and Takeuchi, 1995). Tacit knowledge is personal knowledge and is difficult to communicate fully to others whereas explicit knowledge is the knowledge that can be articulated, coded and recorded. One can externalize tacit knowledge into explicit knowledge by creating documents, e-mails, reports, memos etc.

Interaction among individuals is one of the prerequisite for knowledge creation and transfer in organization. Four modes of knowledge conversion (Nonaka and Takeuchi, 1995) take place during interaction among individuals. These fours modes are defined as socialization, externalization, combination, and internalization (SECI).

There are also indications that many projects are started without clear objectives or managerial support, and being managed by people without experience or appropriate measures (KM Review, 2003). Cultural issues are one of the critical issues for success of knowledge management process and act as the first barrier for KM implementation (Akhavan *et al.*, 2006; Spender, 2006). Mathi (2004) has also defined culture as one of the key success factors for implementing KM in organizations.

To better manage the knowledge in any organization one needs to build a knowledge infrastructure in the organization. The three core elements of knowledge infrastructure are knowledge culture, technology, and knowledge processes (Sivan, 2000). While technology is the most efficient way of managing information, for example documents, records and email, leveraging tacit knowledge requires a much stronger focus on the cultural and behavioral aspects of an organization (Vuuren and Jansen, 2008). The interaction for the creation or transfer of knowledge is performed by the individual employee rather than by the whole organization (Nonaka and Takeuchi's, 1995).

The flexibility in an organization is the outcome of an interaction between the controllability or responsiveness (Volberda, 1997) of the organization and the dynamic control capacity of management. This interaction should be made in a way that there remains a balance between the two.

Small firms are more flexible in their initial stage to attract new customers in the market and when they go up to intermediate stage the flexibility level decreases (Grau and Aranda, 2006). This is because of the difficulty to make a balance between attracting new

customers and providing services required by them. This problem can be handled by way of making a balance between change and continuity.

Eppink (1978) has defined the relationship between environmental changes and flexibility and classified it into operational, competitive, and strategic flexibility. Organizational 'flexibility mix' defined by Volberda also includes operational and strategic flexibility with structural flexibility (Volberda, 1997). Customer interaction and customization are the dimensions that imply the degree of flexibility in the service sector. Customers are more interested in integrated solutions from the same organizations rather than a single solution. In the service indutsry, operational strategy and flexibility are interrelated with each other.

Flexibility has been also defined as the capacity to change and develop new products and strategic issues such as entering into new markets or industries (Volberda, 1998). A common problem faced by the managers when dealing with flexibility in organizations is to make a balance between the change and the continuity process in the organization. Sushil (2006) has suggested a strategy known as "Flowing Stream Strategy" for managing change and continuity forces (which is one of the key issues in flexibility) in the organization.

Managerial capabilities are the critical factors for improving flexibility condition, which leads to innovation. Management is responsible to develop dynamic capabilities that enhance flexibility. Workplace-related flexibility and innovation performance are interrelated with each other (Sanchez *et al*., 2009). High innovative firms are normally more flexible compare to low innovative firms.

Successful innovation is more than research and development, which is to be transformed into products and services that will add value to the stakeholders. Although the innovation pattern or process are not same for all the industries. Innovative organizations exhibit some common characteristics like they are competitive innovators, understand the fact that it is not the organization which is innovative but innovation is the result of some of the individual efforts in the organization, posses a culture which is proactive in nature, made decisions in the past to become innovative, and are able to leverage resources (Dobni, 2008).

Managers' perception about innovation depends on the level of customer satisfaction. Innovation should be customer driven for gaining profits and that is possible if the organization has better knowledge of markets and its customers (Ruggles and Little, 1997).

Nagura and Honda (2001) have given importance to the organization culture for innovation in organization.

Methodology

This study has been done in two phases. First phase is based on the brief review of literature on knowledge management (KM) issues in general and to identify the dimensions for successful implementation of KM process. The second phase of this study is based on the inductive caselets study, which includes cases of various companies that have successfully implemented KM process. For this study, secondary data sources like journal papers and websites have been used. The case data has been updated whereever possible. The references for the cases and its related keywords have been mentioned after each case. The key issues during implementation of KM process have been identified and discussed taking support from real life practical case examples. Finally, the key dimensions and its interpretation have been discussed.

The content analysis of each caslet has led to the identification of keywords that have been used to identify dimensions of KM process and linked issues such as innovation and flexibility. These are, finally, summarized in a tabular format and the linkages of these dimensions as observed in case situations are also mentioned. Finally, an interpretive model has been developed using ISM method for defining the linkages between these dimensions.

Caselets Study

The cases selected for this study are mostly concerned about the knowledge management issues with some other perspectives like innovation and flexibility. The cases are selected with a broad overview of literature and not limited to a particular sector or geographic region. Most of the cases are summarized in one page discussion.

Caselet 1:

Advanced Semiconductor Engineering Group (ASE): ASE was established in 1984. It is one of the world's leading providers of semiconductor manufacturing services, including IC packaging, IC testing, and IC materials. ASE has classified its business strategy into three parts. First focuses on the continuous innovation, diversification, and flexibility perspective to exceed customer expectations and satisfy their needs. Second was on emphasizing execution, having effective quality assurance, controlling cost and discipline in order to achieve high quality growth, and to build up the contents of the knowledge management system. The third

and last part was related to the personal and culture perspectives. The focus is on strengthening the training and evaluation system, elevating personnel quality and loyalty, raising the contribution of every personnel, and establishing a culture of enthusiasm and a keen sense of responsibility.

ASE gives emphasis to the "cultivation of environments" for the knowledge management strategy. ASE has started knowledge management in 1998 and has formally established a knowledge management center (as a part of knowledge infrastructure development) in January 2001 with a focus on planning and implementation of knowledge management for the ASE Group's engineering, R&D, and quality assurance departments. The center first educates and promotes the implementation model of knowledge management to every department and then based on its own culture, each department adjusts the implementation and evaluation process. This kind of system helps to gain the support from the senior managers and to reach a common understanding of knowledge management. The key problem in initial phase was to communicating continuously to the top management about the relevance of knowledge management in organization.

As a part of its culture, ASE requires every employee to produce one to two teaching materials within six month of employment according to the reference sample. These materials are being used in KM platform after the approval from expert. This process not only increases the feeling of accomplishment as the employees share their knowledge but also facilitates mutual knowledge management enablers. This kind of sharing culture increased the amount of knowledge transfer and strengthened the quality of the knowledge structure, which ultimately reaches to effective sharing, and flowing of information. For encouraging innovation among the employees, ASE used the method of expert evaluation. The proposal by the employee is first placed in the knowledge management platform, and then it is being evaluted by the experts and after approval; it further promoted for execution among the employees. The proposed employee has been cited and rewarded. ASE setup the knowledge management center as a dedicated unit to promote knowledge management in order to show the support from top management concerning the company's policy and determination in executing knowledge management in the company (Yeh *et al.*, 2006, [1]).

(*Keywords:* culture, customer satisfaction, flexibility, growth, innovation, knowledge infrastructure, knowledge management strategy, knowledge sharing, top management support)

Caselet 2:

VIA: VIA was established in September 1992 with an investment capital of US $ 0.405billion. It operates in the area of core logic chipsets, low power x 86 processors, advanced connectivity, multimedia, networking, storage silicon, and complete platform solutions that are driving system innovation in the PC and embedded markets. The aim behind implementing the KM process was to provide" anytime, document in hand" in order to meet the demands of the customers and to satisfy there needs.

It initiated various ways of knowledge management (patent management, proper documentation etc.) to meet the different knowledge needs in different departments without anouncing it in a formal way. The belief was that the first step of knowledge management implementation is to have all the top managers to agree and recognize the importance of knowledge management and support it. After getting the top management support, various methods can be used to help the department heads to reach an agreement on the strategy of knowledge management.

A flexible corporate culture inspired the employees to work on new projects with freedom and provide support to each department manager to act as a supporter to help the employees. It fully utilizes its corporate culture in facilitating knowledge management. First, it lets the department managers identify the importance of knowledge management, and then allows each manager to implement it within his/her own department. Every department has different indicators to evaluate the extent of knowledge management. VIA believes that the implementation of knowledge management varies depending on the type of industry and corporate culture. The implementation of knowledge management in VIA is mainly because of the acceptance of the top management (Yeh *et al.,* 2006).

(*Keywords:* culture, customer satisfaction, flexibility, knowledge strategy, top management support)

Caselet 3:

Ernst & Young: This organization was formed by Arthur Young and Ernst and Whinney in 1989. Some of the services offered by this organization are in the area of Audit, Tax, and management consulting. According to its new strategic plan, announced in 1993, operational vision has been defined into five key processes; i) sales; ii) service; iii) delivery; iv) people; and v) knowledge. Goals had been defined for knowledge process some of which are like

capturing and leveraging knowledge from consulting engagements, every consultant contribution to the firm's stock of knowledge, to known by clients as a valued source of knowledge and thought leadership. E&Y believes that there is a requirement to make a balance between stability and rapid change. Being a flexibile organization, this balance can be made easily [2]. This organization recognized as a leader in knowledge management strategy, culture, processes and infrastructure.

E&Y had created three centers to create new knowledge (the Center for Business Innovation), structuring the knowledge into methods and tools (the Center for Business Technology), and gather and store the knowledge acquired by the firm as well as external knowledge and information (the Center for Busness Knowledge). The accessability to knowledge resources and technology helps to develop a culture of teamwork. A continuous improvement in infrastructure, incorporating new technology leads to better idea exchange. This kind of knowledge infrastructure helps members to levereage all kind of knowledge from anywhere in the world.

Some new designations and committees were made for development purpose of these processes like John peetz had been appointed as first Chief Knowledge Officer and was responsible for looking over the knowledge related processes and technologies of the firm. A Knowledge Process Committee, consists of senior consulting partners, had been formed for advising the directors of the three centers. Commitment of people, who address the importance of managing knowledge, who leverage knowledge to support productive, practical service for customers, participation in knowledge sharing networks, rewards for knowledge sharing, training in knowledge-sharing as a part of new hire orientation program and at each level, are some of the dimensions of its knowledge culture.

The Center for Business Knowledge (CBK) expanded its functions and became more focused towards knowledge strategy and tactics. Another key task of the CBK was to develop a knowledge architecture and classification to focus on knowledge acquisition and retrieval. It was important to focus KM in specific domains with the maturity of the initiatives taken. The knowledge architecture would help to specify the categories, terms in which the organization needed to gather and store knowledge, and it could be used also in searching databases and document files and helped the consultants and knowledge facilitators (Akhavan *et al*., 2006, [2]).

(*Keywords:* culture, innovation, knowledge application, knowledge architecture, knowledge creation, knowledge sharing, knowledge strategy, resource allocation, reward)

Caselet 4:

Knowledge Management at Siemens: Siemens' Information and Communication Networks (ICN) Division provides telecommunication solutions globally and is active in more than 100 countries. Since mid-1990s, Siemens ICN was facing problem with its old business model because of the massive change in market scenario. The members who were on the front lines of the organization are more familiar with the latest development and changes and the company was forced to rely on these people to deal with the change forces. Sales people had to act more and more like consultants. The skills like business analysis, business development, network planning, and outsourcing were on high demand suddenly. Solution selling had been considered as an important value-adding activity for the organizations. Doing these things rightly means identifying best practices quickly, sharing them on a global scale and making sure that they were reused for profit in similar settings.

A "global knowledge sharing network" named as ShareNet was developed within the organization for sharing the knowledge globally. This covers both explicit and tacit knowledge, related to sales value creation process including project know-how, technical and functional solution components, and the business environment. This has both structured and less structured spaces like chat rooms, community news, and discussion groups on special issues, for promoting knowledge sharing.

The focus is more on experience-based knowledge, i.e. its not in the format of official "brochureware" rather knowledge willl be available in form of personal statements, comments, field experience gained during sales projects or about the real-life solution.

The knowledge elements that are related to each other can be linked with each other and stored in better-managed form. This knowledge can be from within ShareNet and any other web-based system inside the organization or with other network outside the organization. The whole community can comment on the contribution made by any person in the same manner like the book reviews in online bookstores. This method of virtual collaboration via a web site complements the traditional ways of co-operation using telephone conferences and personal meetings. This kind of network provides even richer exchange of knowledge and helps to build trust and a sense of teamwork among the community members.

To support and foster the development of knowledge management efforts in the organization some new designation has been set up. A 'ShareNet Manager' was there in every local company who was responsible for supporting the members in his organization and to ensure that ShareNet remains an integral part of their work. Providing training to the new users, fostering intra-organizational re-use, promoting the "philosophy" of this with all stakeholders in his country, and promoting success stories to attract more "power users" are some of the steps which can be done to get the maximum benefit from this. A global editor is the main contact partner for the ShareNet Managers who is responsible to coach them for success, trigger the content quality review process and serve as a community manager with regular news and updates.

Combinations of individual and organizational measures drive knowledge contributions in Siemens. Members are benefitted from ShareNet for their daily business in terms of saving time and receiving quick answer for a problem and have an inclination to give something back to the community. Often, it may happen that the real subject matter experts may not be identifiable on a simple organizational chart rather than they work hidden somewhere in the world without much publicity. With the contributions by these experts, ShareNet makes these "hidden champions" visible to the global organization and to the board, who have the responsibilty for regular checking and promoting of these experts. A web-based incentive system has been developed for promoting the contribution. For any valuable contribution, members have been given ShareNet "Shares" or bonus points that can be redeemed for prizes and can be used for acquiring more knowledge by way of participating on conferences, courses and seminars depending on their own interests. Both contributors as well as re-users of knowledge are rewarded for sharing their experiences (Akhavan *et al*., 2006).

(*Keywords:* change force, collaboration, customer value, knowledge sharing, reward system, sharenet (KI), top management support, trust)

Caselet 5:

Company A: The Company A was an international consulting firm. The focus was on the key areas of infrastructure and transportation. The company has given the responsibility to specific individuals for coordinating the knowledge management activities. Company A has the strong continued support of top management in establishing formal policy on knowledge sharing, encouraging employee participation through rewards, and committing substantial resources to the learning effort.

This company because of its diverse geographic locations faced problem of cultural differences. The information system was developed to focus on individual business sectors rather than overall organization requirements. Due to different cultural backgrounds, company A was facing difficulty in implementing the knowledge sharing process in the whole organization. In this kind of environment, information systems may not provide the final answer for establishing learning strategies in the organization. They can erect the barriers that prevent the implementation process of strategies. As a key strategy, to enhance the knowledge sharing in the organization it has given extensive importance on working with individuals. In each case, communication of goals, objectives, and long-term plans are considered the core of successfully obtaining its objectives (Chinowsky and Carrillo, 2007).

(*Keywords:* culture, information system (KI), knowledge sharing, knowledge strategy, resources, rewards, top management support)

Caselet 6:

3M: 3M has given more importance on the "tacit to tacit" knowledge conversion process. The 3Ms are said to stand for 'meetings and more meetings' itself explain the extent of focus of this organization towards KM process. The organization believes that one can't order its members to share their knowledge and become creative. Motivation is the factor which pushes people to come forward for KM, and innovation process. Effective knowledge management and innovation are parallel to each other. It has developed a kind of culture that is flexiblle enough for the employees to use there time in some innovative process other than their regular work. Further a successful innovation works as a catalyst for others to work in a flexible manner for contributing more. An atmosphere of generosity, freedom and safety flourish the innovation process.

3M belief that for successful innovation, organization needs vision (what it wants to be), foresight (a knowledge of where the world I going), understanding core competencies (which will assist in setting knowledg management priorities), stretching of goals (which in the case of 3M requires every single business, no matter what its history, to have at least 30% of its sale from products not in the line four years ago), giving more freedom to its employees, and setting an enabling atmosphere. Top management in the organization encourages the knowledge linkages as their major duties. Trust is one of the important factors for innovation and KM process.

3M has a learning and experiment supportive culture. It bring people together (activities like technical audits of the various labs regularly) from diverse background which results in the generation of new ideas. Its well-known 15 per cent rule has supported the growth of innovation process a lot. Money and time are the two basic requirements for innovation. The 15 per cent rule deals with the time issue and two grants (Genesis and Alpha) were being given for meeting the money issue. A number of award programs were there in the organization to promote the innovation process (Brand, 1998).

(*Keywords:* culture, flexibility, innovation, knowledge management, knowledge sharing, motivation, reward, top management support, trust)

Caselet 7:

Deloittee Touch Tohmatsu*:* Deloitte LLP has a single focus towards customer satisfaction, i.e. "serving clients and helping them solve their toughest problems" . In USA, the organization has about 45,000 professional organizational members. It works mainly into four key areas; i) audit; ii) financial advisory; iii) tax; and iv) consulting. It believes that its strength comes from combining the group talents to address client's needs.

The organization had brought knowledge management, HR and leadership, and learning functions together under "People and Knowledge" group. It created opportunities (like organizing informal lunch) for supporting the informal communication among the members like developed learning programs, organized knowledge-sharing lunches etc. As a knowledge audit process the organization focused on the client and partners both. What kind of services partners are providing and how, what are their key strength areas, what are the requirements of the client's side etc were some of the issues taken in the audit process.

It also improved its reward structures; it was alighned with knowledge sharing, and collaboration activities for promoting the conversation, feedbacks, concern and trust among members. This kind of cultural shift helped in knowledge sharing. The awareness in senior level was increased which was also a positive point for KM. TANGO a knowledge simulation game was developed as a part of learning process and to determine the knowledge-based strategy for the company ([3], [4]).

(Keywords: colloboration, culture, customer satisfaction, knowledge audit, knowledge sharing, knowledge strategy, learning, rewards, TANGO (KI), trust)

Caselet 8:

Mahindra Satyam: It's a leading company in area of information, communications and technology (ICT). It's a part of Mahindra Group, an $11.1 billion group and one of the top 10 business houses based in India. The company provides services in the domain of business consulting, information technology and communication services. The interests extend to automotive products, aviation, components, farm equipment, financial services, hospitality, information technology, logistics, real estate and retail. The company has its presence in more than 35 countries with development centers in about 10 countries.The company has more than 28,000 employess and serve a large number of clients, including several Fortune 500 companies..

The company's values focus on customer first, good corporate citizenship, individual dignity, professionalism, and quality aspects, which leads to customer satisfaction. It has a dedicated KM team for continuously recording the organization's knowledge, upgrading and disseminating it across the enterprise. It helps the professionals to develop and maintain the capabilities and to know the way to succeed in a rapidly changing business environment. The other key consideration in KM process is a company's ability to transform its knowledge into stakeholder value.

The companys' KM initiatives have built hard and soft infrastructure for reflection, idea exchange, knowledge documentation, and formation of horizontal networks of practice communities. Some of the KM initiatives taken by Satyam are; i) K-Window- includes a knowledge repository that contains documents related to best practices, case studies, offering services, projects, customers, competitors and alliance partners; ii) Pathshalas (Learning Sessions) - Highly interactive, informal knowledge-sharing sessions for capturing and sharing tacit knowledge; iii) Blog- A powerful communication medium that enables associates to share best practices/ideas and express opinions.

Based on the eight criteria listed below Satyam was enlisted in top 16 out of 69 organizations among the winners of Asia's Most Admired Knowledge Enterprise Awards (MAKE) for its lead in KM process and for creating value using its knowledge through innovation, product or service excellence and operational effectiveness.

The eight criteria are; i) Transform enterprise knowledge into shareholder value; ii) Deliver knowledge-based products/solutions; iii) Create a knowledge-driven culture; iv)

Develop knowledge workers through senior management leadership; v) Maximize enterprise intellectual capital; vi) Create an environment for collaborative knowledge sharing; vii) Create a learning organization; and viii) Deliver value based on customer knowledge ([5], [6], [7]).

(*Keywords:* customer satisfaction, knowledge infrastructure, knowledge sharing, knowledge transformation)

Synthesis and Discussion

The dimensons for successful implementation of KM process in organizations have been represented in Table 1:

Table 1: Dimensions Identified from Caselets

Dimensions	**Organizations**								
	ASE	**VIA**	**E&Y**	**Siemens**	**Company A**	**3M**	**Deloittee**	**Mahindra Satyam**	**Total no. of caselets supporting this dimension**
KM Strategy	Y	Y	Y		Y		Y		**5**
Knowledge Sharing	Y		Y	Y	Y	Y	Y	Y	**7**
Top Management Support	Y	Y		Y	Y	Y			**5**
Knowledge Application			Y						1
Trust				Y		Y	Y		**3**
Knowledge Audit							Y		1
Knowledge Arch/Infra			Y	Y			Y	Y	**4**
Knowledge Creation			Y						1
Culture	Y	Y	Y		Y	Y	Y		**6**
Innovation	Y		Y			Y			**3**
Flexibility	Y	Y				Y			**3**
Resource Allocation			Y		Y				2
Change force				Y					1
Reward			Y	Y	Y	Y	Y		**5**
Motivation						Y			1
Colloboration				Y			Y		2
Learning							Y		1
Knowledge Transformation								Y	1
Customer Satisfaction	Y	Y					Y	Y	**4**
Total no. of dimensions in each caselet	5	4	7	7	6	6	7	3	

*Y- represents that these dimensions are reflected in the respective caselet

Nature of Relationships

Out of eight organizations choosen for this study, KM strategy, knowledge sharing, top management support, trust, and knowledge infrastructure are some of the issues that are considered more important dimensions for success of KM process. Other than these dimensions, the organizations have further identified the importance of culture, innovation, reward system, colloboration, allocation of resources, and flexibility. Table 2 shows the dimensions selected (dimensions having presence in three or more than three cases) for ISM model development and Table 3 represents the interrelationships between the dimensions identified from the cases.

Table 2: Dimensions choosen for ISM development

Dimension Code	Dimension
K1	Knowledge Management Strategy
K2	Knowledge Sharing
K3	Top Management Support
K4	Trust
K5	Knowledge Infrastructure
K6	Culture
K7	Innovation
K8	Flexibility
K9	Reward
K10	Customer Satisfaction

The interrelationship presented in Table 3 explains that knowledge infrastructure is strongly affecting the knowledge sharing process in the organizations. Similarly, organization culture affecting the knowledge sharing process in a strong way and reward system is having a high impact on the knowledge sharing and innovation process in the organization. The interrelationships have been shown in Table 3.

Table 3: Interrelationship between KM Dimensions

Dimension Code	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**K7**	**K8**	**K9**	**K10**
K1		Company A			E&Y, Deloittee	ASE				
K2							3M			
K3	VIA	Company A			Siemens			VIA	Company A	
K4		Siemens					3M			
K5	Deloittee	E&Y, Siemens, Mahindra Satyam		Siemens		A, ASE	ASE			Siemens
K6	ASE, Deloittee	ASE, Company A, Deloittee, 3M,E&Y			E&Y		3M, ASE	VIA		
K7		3M						3M		ASE
K8							3M			ASE
K9		ASE, E&Y, Siemens		Deloittee			ASE, 3M, E&Y, Siemens, A, Deolittee			
K10										

Figure 1 shows the Final ISM model representing the relationship among the dimensions. The details of the step by step outcome are given in the Appendix. The steps for this model deveopment are:

i. First, we make a reachability matrix from Table 3. If there is any relationship than that block has been filled with 1 else the value given is 0 (Appendix-1).
ii. This matrix has been checked for transitivity and a transitive reachability matrix has been created (Appendix-2).
iii. From this transitive reachability matrix, reachability and antecedent sets have been defined and partitioning has been done. The factors which has common reachability and intersection sets marked as level 1 and repeat the steps 3 after removing that dimensions from the table. The first and the final partitioned table has shown in the Appendix (Appendix-3)
iv. The final partitioned table and Digraph are given in Appendix-3b and Appendix-4.

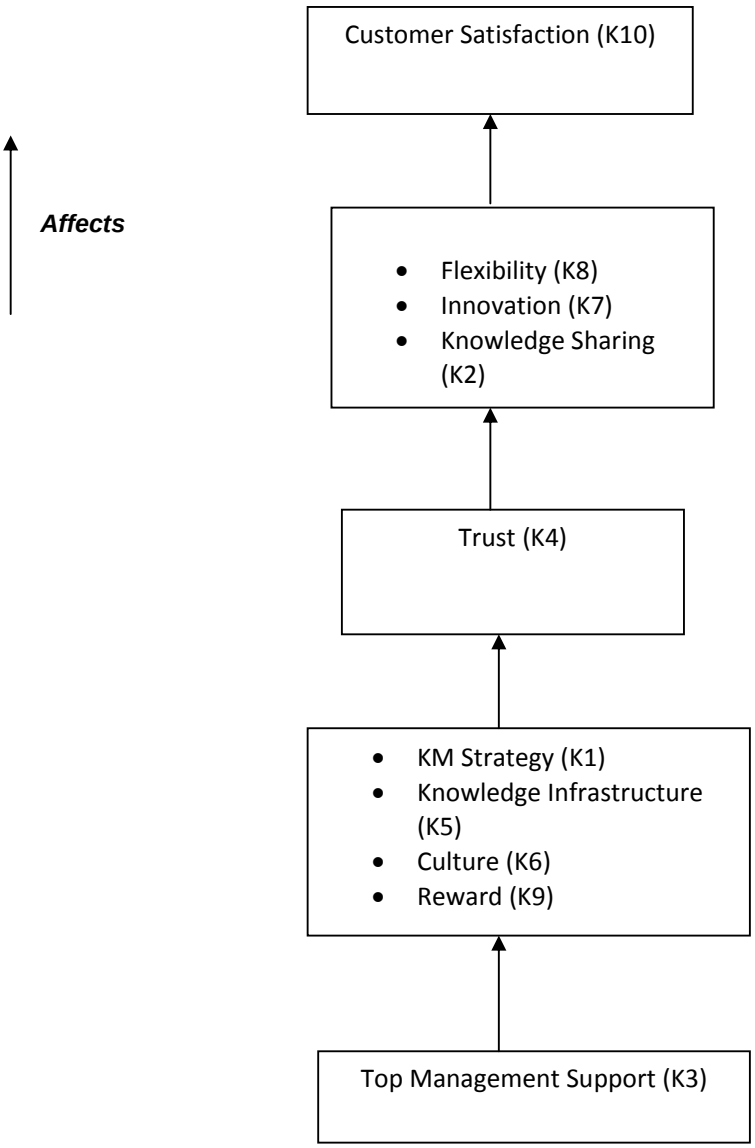

Figure 1: Interpretive Structural Model: Key Knowledge Management Issues

The model shows that top management support is the top most driving factor while customer satisfaction is the major depending factor. Knowledge management strategy, knowledge infrastructure, culture, and reward system come in the second level of driving forces and are interlinked with each other. These four factors enhance more trust among the organizational members, which leads to knowledge sharing.

Knowledge sharing, Innovation and flexibility come at the same level, i.e. they are interrelated with each other. In one-way innovation, effects the flexibility in the organization and an organization having more flexibilility are tend to more innovative in nature (Sanchez *et al*., 2009).

The more sharing of knowledge will increase the possibility of more innovation in the organization and high innovation level will motivate people to come forward and participate in knowledge sharing process. Flexible work environment provides enough time to participate in activities other than the daily routine work that leads to more knowledge sharing and innovation. These all finally leads to the customer satisfaction. These findings support the statement of Ruggles and Little (1997) that innovation and flexibility should focused on customer satisfaction.

There is a clear indication that a supportive culture is one of the important dimensions for knowledge sharing in organizations. A good infrastructure like accessable database, proper maintanence of documents etc leads to better sharing of knowledge in the organizations. Rewards and innovation process are closely related. Rewards give a recognition to the person and a feeling or proudness, who conctributes in innovation process. This kind of culture pushes the innovation in the organizations.

Knowledge infrastructure also contributes in strategy development process for knowledge management implementation in the organizations. KM strategy should be developed keeping in mind the available and required infrastructure.

Conclusion

This study has been done to identify the key issues in knowledge management implemenation process and its relationship with other dimensions like innovation, flexibility, culture etc. Knowledge management strategy, top management support, knowledge sharing, knowledge infrastructure, trust, and reward system are the key issues identified for knowledge

management implementation process. The other issues, which effect the KM process and having strong relationship, are organization culture, innovation, flexibility, and customer satisfaction. Out of these dimensions, top management support has come as the key driving factor while cutomer satisfaction is the highest depending factor. All the knowledge management components finally lead to innovation and flexibility in the organization, which helps to satisfy the cutomer needs/expectations and achieve the highest customer satisfaction level.

This study is based on literature review and caselets study only. The study is based on secondary data. Eight cases are taken for this study; more number of cases can be taken in future for further generalization. This result can be further tested empirically using primary data. A detailed case study can be done to validate the current model and generalized it in a detailed manner.

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Appendix

Steps of Interpretive Structural Modeling

1. Reachability Matrix

Dimension Code → ▼	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
K1	1	1	0	0	1	1	0	0	0	0
K2	0	1	0	0	0	0	1	0	0	0
K3	1	1	1	0	1	0	0	1	1	0
K4	0	1	0	1	0	0	1	0	0	0
K5	1	1	0	1	1	1	1	0	0	1
K6	1	1	0	0	1	1	1	1	0	0
K7	0	1	0	0	0	0	1	1	0	1
K8	0	0	0	0	0	0	1	1	0	1
K9	0	1	0	1	0	0	1	0	1	0
K10	0	0	0	0	0	0	0	0	0	1

2. Transitive Reachability Matrix

Dimension Code → ▼	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10
K1	1	1	0	1*	1	1	1*	1*	0	1*
K2	0	1	0	0	0	0	1	1*	0	1*
K3	1	1	1	1*	1	1*	1*	1	1	1*
K4	0	1	0	1	0	0	1	1*	0	1*

K5	1	1	0	1	1	1	1	1*	0	1
K6	1	1	0	1*	1	1	1	1	0	1*
K7	0	1	0	0	0	0	1	1	0	1
K8	0	1*	0	0	0	0	1	1	0	1
K9	0	1	0	1	0	0	1	1*	1	1*
K10	0	0	0	0	0	0	0	0	0	1

*Transitive Link

3. Partitioning

a)

Dimension Code	Reachability Set	Antecedent Set	Intersection Set	Level
K1	1,2,4,5,6,7,8,10	1,3,5,6	1,5,6	
K2	2,7,8,10	1,2,3,4,5,6,7,8,9	2,7,8	
K3	1,2,3,4,5,6,7,8,9,10	3	3	
K4	2,4,7,8,10	1,3,4,5,6,9	4	
K5	1,2,4,5,6,7,8,10	1,3,5,6	1,5,6	
K6	1,2,4,5,6,7,8,10	1,3,5,6	1,5,6	
K7	2,7,8,10	1,2,3,4,5,6,7,8,9	2,7,8	
K8	2,7,8,10	1,2,3,4,5,6,7,8,9	2,7,8	
K9	2,4,7,8,9,10	3,9	9	
K10	10	1,2,3,4,5,6,7,8,9,10	10	**I**

b)

Dimension Code	Reachability Set	Antecedent Set	Intersection Set	Level
K1	1,5,6	1,3,5,6	1,5,6	**IV**
K2	2,7,8	1,2,3,4,5,6,8,9	2,7,8	**II**
K3	1,3,5,6,9	3	3	**V**
K4	4	1,3,4,5,6,9	4	**III**
K5	1,5,6	1,3,5,6	1,5,6	**IV**
K6	1,5,6	1,3,5,6	1,5,6	**IV**

K7	2,7,8	1,2,3,4,5,6,7,8,9	2,7,8	**II**
K8	2,7,8	1,2,3,4,5,6,7,8,9	2,7,8	**II**
K9	9	3,9	9	**IV**
K10	10	1,2,3,4,5,6,7,8,9,10	10	**I**

4. DiGraph indicating relationships of KM Dimensions