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KNOWLEDGE MANAGEMENT ASSESSMENT- A CONCEPTUAL RESEARCH STUDY IN SELECT INDIAN COMPANIES

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ABSTRACT

Knowledge Management (KM) is a process through which organizations generate value from their knowledge-based assests. Various organizations are talking about this concept in terms of intellectual capital, intellectual property, knowledge assets and business intelligence. Corporate knowledge is being viewed in recent research studies as one of the most important sustainable untapped source of Business Excellence. KM Assessment becomes very important concern for organizations to continuously understand and improve the status of KM Strategy Implementation in their respective companies for gaining a sustainable competitive advantage. This paper looks at the Knowledge Assessment Tool (KMAT), designed by the American Quality and Productivity Center, USA and Arthur Consulting, USA. This instrument consists of five major areas of Knowledge Management Assessment like, Knowledge Management Process, Leadership in Knowledge Management, Knowledge Management Measurement. This paper is an outcome of the preliminary study done for 16 companies operating in India including multinational companies and very respected private and public sector companies. The companies, who have participated in this research study, are representing the IT-Enabled Service Companies, the Manufacturing and Power Generation and Distribution related sector. This paper attempts to look at the methodology of this research study in progress. The 16 companies, who have participated in this research study is part of the research project, sponsored by the Ministry of Communication and Information Technolgy, Government of India, where the researchers are involved in the study.

Keywords: *Knowledge Management (KM), Knowledge Management Assessment Tool (KMAT), Knowledge Management Strategy Implementation, IT- Enabled Services, Manufacturing and Power Generation and Distribution Companies in India*

Introduction

Karl Wig is considered by many researchers to be the founder of Knowledge Management (KM) as “the systematic, explicit and deliberate building, renewal and application of Knowledge to maximize an organizations knowledge – related effectiveness and returns from its knowledge assets”. In terms of output, knowledge management is about getting the right knowledge to the right people, in the right form in a timely fashion, so they can do their best work.

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Some of the issues describe by Karl Wig on KM are: -

- Knowledge sharing is not a natural instinct.
- Knowledge is intertwined with organizational culture. Implementing KM in hierarchical, bureaucratic culture is extremely hard.
- Knowledge is of little use unless it is turned into products, service, innovations or process improvement.
- Organizations must strive to balance the collection and organization of available knowledge with learning, innovation and the creation of new knowledge.
- Too much measurement can demoralize people and keep from effectively using and sharing their tacit knowledge but measurement system for KM is important.
- The people generating and using the Knowledge should be the ones to capture and structure it.
- Information Technology (IT) is a key part and is an enabler for Knowledge Management, but it is more important to understand how people actually use knowledge on the job.

Literature Review and the Need of the Research

In the old economy firms had a choice between three generic strategies leading to the development of a competitive advantage i.e. cost leadership, market differentiation and nice orientation (Porter, 1985). The globalization of business activity gradually led to an erosion of traditional sources of competitive advantage, demanding the adoption of complementary and or supplementary strategic approaches (Diamitriades, Zoe S., 2005). Strategic assets comprise both tangible and intangible assets. Tangible assets, such as property, production facilities, raw materials and physical technologies are now days easily accessible, imitable and substitutable.

Now the focus has been gradually shifting form tangible to intangible assets as strategic assets capable of generating sustainable competitive advantage and superior performance. As a part of a KM initiative, it is important to generate and share tacit knowledge in the organizations.

In today's knowledge economy, there is a paradigm shift in focus towards intangible assets, which has resulted in improvement of business processes. Learning organizations competently manage knowledge as one of their central factors of success in this knowledge economy.

But Knowledge Management does not happen by chance. A culture, which promotes knowledge creation and provides for appropriate support processes, is a must. Therefore if organizations are to fully benefit from the principles of Knowledge Management, they must focus on how the cognitive capacity of their employees and support processes for Knowledge Management can be measured to provide timely information for improvement. The cognitive (in the form of heuristics and intuitions) and the support processes (such as culture, products and services) are the two most important constructs with Knowledge Management.

In **figure 1**, the importance of cognitive and support processes in Knowledge Management are shown using a model. The level of Knowledge Management in an organization whose employees perform organizational tasks routinely can be determined from whether they are able or unable to contribute to any improvements of their organizational business processes. Equally, the support from the organization in providing the facilities that support and optimize knowledge management is also important. Based on the level of cognitive capacities of employees and support services existing in the organization the condition can be classified as Integrated

Knowledge Management, Partial Knowledge Management and Absence of Knowledge Management.

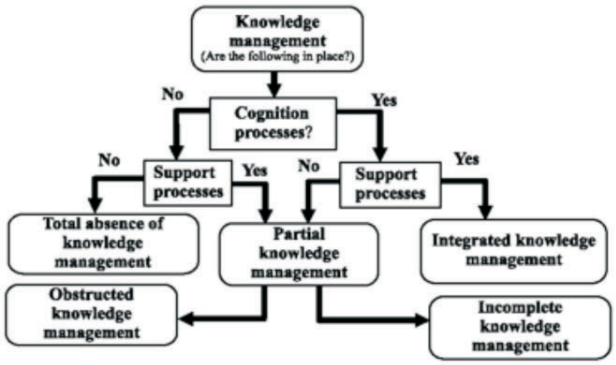

Figure 1: Knowledge Management with Respect to Cognitive and the Support Processes (Adapted from "Measuring Knowledge Management for Construction Organizations", Kululanga G. K. and McCaffer R., Engineering, Construction and Architectural Management, 2001)

Therefore effective Knowledge management requires not only addressing the mindset of their employees but also putting in place the necessary support services that facilitate an environment for knowledge creation and learning. An organization should always seek employees who demonstrate stimulating behaviour, acquire knowledge and know how to adapt to change. Similarly, cultural and technological support must be interwoven with their organizational processes.

Knowledge acquisition process is twofold, inward and outward. Internal knowledge acquisition owes much to Total Quality Management (TQM) idea of internal benchmarking and learning from experience. External knowledge is acquired to bring in innovative ideas and develop effective operating systems. The ability to learn from the internal and external business environment has become one of the principle value adding resources for learning organizations.

Rao (2005) identifies the following actions through which knowledge management can occur in companies: 1) Identify intangible assets; 2) prioritize critical knowledge issues; 3) accelerate learning patterns within the organization; 4) identify and diffuse best practices; 5) increase innovation; 6) increase collaborative activities and a knowledge sharing culture as a result of the increased awareness of the benefits of knowledge management. Santosus and Sumarcz (2006) define Knowledge Management as the process through which organizations generate value from their knowledge based assets. Generating value would involve sharing these assets among employees and departments so as to formulate best practices.

In order to understand the status of implementation of KM within the company it is important to have metrics for KM assessment. A tool that incorporates a number of metrics and is used widely for strategy implementation is the Scandia Navigator.

In the Skandia Navigator (Edvinsson and Malone, 1997) measures are organized into five categories. These are: 1) financial – this includes standard financial measures of performance; 2) customer – this looks at measures of customer satisfaction and retention; 3) process - this focuses on the company's processes and how they are organized to deliver value; 4) renewal and development – how the organization is preparing for the future considering such areas as customers, markets and products; and 5) employee related – this considers such issues as productivity and values.

Rao (2005) considers five types of KM metrics, which would help assess the level of KM

implementation within a company. These are: 1) technology metrics – number of emails, number of online forums, website traffic, number of search queries; 2) process metrics – response time to queries, meeting international certification standards; 3) knowledge metrics – number of employee ideas submitted, best practices created, active Communities of Practice; 4) employee metrics – peer validation, feeling of empowerment; and 5) business metrics – reduced cost, increased market share, improved productivity.

Jha, Joshi etal (2006) have looked at conceptual Assessment Dimensions of Knowledge Management

Jha and Joshi (2007) have looked at Developing Strategic Flexibility for Moving towards Business Excellence and have looked at the role of Human Resource Flexibility in the Indian Context. In 2007, they have also looked at the issue of transforming Knowledge Assests for creating a Learning Organization as a conceptual approach to move towards Business Excellence. They have linked the issue of KM, Learning Organization and Business Excellence.

There are two major Knowledge Management Assessment Tools (KMAT) for assessing the level of KM implementation in a company in the management Literature. The American Productivity and Quality Centre (APQC) and Arthur Anderson (1995), and the other by Maier and Moseley (2003) developed one of them.

The KMAT developed by APQC and Arthur Anderson is divided into five sections: KM process; leadership; culture; technology; and measurement. Within each section four to six questions are used to assess the KM capability within that area. This is a widely used instrument for Knowledge Management implementation assessment in an organisation. In the KMAT developed by Maier and Moseley, the implementation of KM is assessed in five dimensions: identification and creation; collection and capture; storage and organization; sharing and distribution; and application and use. This tool consists of 30 statements on which respondents have to give their response.

Key Issues and Concerns for Knowledge Management Implementation and Assessment

Two main types of issues need to be considered while implementing KM. These are: Cultural and Employee Issues; and Issues Related to Technology.

Cultural and Employee Issues

Without the active participation of employees, a KM program would be difficult to start. In many organizations, employees are valued for their expertise and their knowledge of markets, customers, suppliers and processes. This knowledge helps generate value for the company. If employees are asked to share these very knowledge-based assets, which make them valuable to the company, they may resent. They may not feel like participating in a KM program. Therefore, it is very important to set up adequate incentives for employees to share knowledge-based assets, while implementing KM. These incentives should be tied to the performance appraisal of the employees. Also employees need to be sensitized to the fact that sharing knowledge-based assets with other employees generates more value for the company. This can be done through games, simulation exercises, and workshops and by relating anecdotal evidence of how value was created by sharing knowledge-based assets. For employees to share information it is important for them to know whom the experts are in any particular area, and how they can be located.

Technology is an Enabler but Technology alone is not enough

KM is implemented by having Communities of Practice, wherein experts in a particular

specialized area gather to share their experiences of what worked and what did not, and also experiences on how to improve processes. This is a way of sharing tacit knowledge. In addition there are expert locator systems and directories wherein experts in each area are identified and their contact information stored. There are knowledge repositories with search capabilities, wherein many white papers; business plans and technical documents are stored for easy access by all employees. There are chat forums and bulletin boards, wherein employees can raise queries and experts can reply. Technology to implement KM includes intranets, off-the-shelf e-mail packages and collaboration tools to implement community building. There are data mining and data warehousing tools and search engines for implementing expert locator systems and knowledge repositories. Finally, there are discussions and chat technologies to implement chat forums and bulletin boards. While this technology is essential to implement KM, having technology solutions alone will not start the KM program. Employees need to have incentives to share information. At the same time, there should not be an information overload. The quality of data and information should be monitored so that only those knowledge-based assets are stored and maintained which would help managers make good decisions and add value.

Companies today are generating a lot of data as part of their daily operations. A lot of this information may not be timely or accurate. The problem is how to isolate knowledge-based assets from this enormous amount of data. Knowledge-based assets are those, which would help managers make good decisions. Good decisions result when analyzing these knowledge-based assets forms insights into business operations and internal processes.

Knowledge-based assets take many forms. These include information about the external business environment, internal business processes and customers. A lot of information about the external environment is important to make decisions at the strategic, tactical and operational level. This would include information about the market, suppliers, competitors, substitute products and emerging technologies that would impact either the production or the delivery of the good or service. Information about internal business processes includes their Standard Operating Procedures, i.e. the set of actions necessary to maintain processes at the current desired quality level. It includes information about those input parameters of the process, that most impact the quality level of the output. These critical parameters are called CTQ's (or Critical to Quality). It includes information contained in control charts, which set upper and lower limits on key process parameters. If parameters are outside these limits then it implies that with a very high chance the process is out of control and will produce more than the allowed margin of defective products.

Knowledge about customers is a key factor for profitability of companies. Customer preferences and buying patterns need to be monitored. This knowledge will help in designing pricing and promotion schemes that will generate sales. It will help in choosing distribution channel configurations that provide better service while lowering costs at the same time. Analyzing customer data, and acting upon it, will help in creating customer loyalty and generating repeat purchases from customers. It will help in identifying the most profitable customer segments and then designing special products for their needs. It will help in finding those customers who are about to leave and then providing incentives to retain them.

Research Methodology

Introduction and Literature Review

- Extensive literature survey has been done on the issues of Knowledge Management. Some of it is given in this paper.
- In this study, Knowledge Management Assessment Tool (KMAT) developed by the American

Productivity and Quality Center and Arthur Anderson, 1995 **(refer Annexure 1)** has been used to assess the Knowledge Management in select Indian Companies.

Data Collection Methodology

- Regular mail, Email, Personal visits and telephonic conversations were used for seeking cooperation and primary data collection for above research study. About 100 organizations operating in India were contacted. A follow-up with these organizations through various communication channels resulted in 16 companies finally participating in the research study giving the primary data on the KMAT instrument used for the study. Many companies have also shared their literature on the issues of Knowledge Management, which will form a part of our report. Secondary research for some of the participating companies was also carried out to understand their Knowledge Management initiatives in their respective organizations. However, secondary literature pertaining to all 16 participating companies is not available.
- Altogether 4 public sector companies and 12 private sector companies participated in the study as given in the **Table-1**

Table-1: List of Private and Public Sector Companies

Private Sector	Public Sector
○ Satyam Computer Services Limited ○ Mahindra and Mahindra Limited ○ Tinplate Company of India Limited ○ Tata Motors Limited ○ Samtel Corporation Limited ○ Aricent Inc ○ Infosys Technologies Limited ○ North Delhi Private Limited ○ International Business Machines Corporation ○ Tata Steel Limited ○ Powerlink Corporation and ○ Patni Computer Systems	○ Hindustan Aeronautics Limited ○ Bharat Electronics Limited ○ National Thermal Power Corporation and ○ Bharat Heavy Electrical Limited.

- A total of 57 respondents participated in the study.
- 14 responses from public sector and 43 responses from private sector companies were received.
- The distribution of the sample with respect to private/public sector companies, nature of industry groups and hierarchy level of the executives, who gave the responses, is given in the following **Table - 2**.

Table 2 – Number of Responses by Organization Type, Type of Industry and Hierarchy Level

		Top Level Executive	Middle Level Executive	Total
Private Sector (43)	IT Enabled Services	**8**	**9**	**17**
	Manufacturing	**17**	**5**	**22**
	Power Generation and Distribution	**3**	**1**	**4**
Public Sector (14)	IT Enabled Services	**0**	**0**	**0**
	Manufacturing	**9**	**1**	**10**
	Power Generation and Distribution	**1**	**3**	**4**
		38	**19**	**57**

Data Analysis

- The data collected has been cleaned and coded for data analysis.
- Before carrying out the data analysis reliability test for the instrument (KMAT), used in the

study was made with favorable results.

- The scores on the five dimensions of KMAT namely the KM Process, Leadership, Culture, Technology and Measurement were obtained. Each of the dimensions had further 4-6 items. The test of means using two samples, independent sample t-test was carried out to examine the difference in the average scores of these 5 dimensions for public and private sector companies, and top and middle level executives of such companies. Whenever a significant difference came on any dimension, a further analysis was carried out for determine the cause for the same.
- Further, an analysis of variance (ANOVA) was carried out to examine whether the average score for each of the dimension was same for the three industries group namely IT Enabled, Manufacturing and Power Generation and Distribution. In case of significant relationship, an attempt was made to determine which pair contributed to the differences and what the causes were for the same.

Limitation of the Study

In the research study, it was felt that getting responses from public sector companies was difficult. Though we approached several major public sector companies including many Navratnas, only few showed interest in participation. This is the limitation of this study. This research paper does not focus on the analysis of data and findings as the work is still in progress. This could be included in another paper after the completion of this ongoing research project.

Conclusion

Development and Assessment of Knowledge Management Practice in organizations is a very important aspect of Strategic Management process for any organization. The KM Assessment Tool (KMAT) As Developed By APQC And Arthur Anderson is used for the sixteen companies operating in India have participated in this national level research project on KM strategy implementation assessment in their companies. This paper is an attempt to give a conceptual understanding of KM assessment in the 16 participating companies for this research study. The 16 companies participating in this research study are all operating in India and represent companies like major global players like IBM, Aricent inc. Companies like Tata Steel, Tata Motors, Mahindra and Mahindra among the manufacturing private companies, Infosys Technologies, Satyam Computers Services in the IT-enabled service category and which are trying to compete in global market with global players have also participated in this research study. Public sector companies Like Hindustan Aeronautics (HAL), Bharat Electronics Limited (BEL) (under Ministry of Defence, Government of India, and Navratnas Public Sector companies like National Thermal Corporation Limited (NTPC) and Bharat Heavy Electricals (BHEL) have also participated in this research. It is very clear that companies, whether in private sector or in public sector or international companies operating in India have understood the importance of integrating Knowledge Management at their Business Level and Corporate Level Strategy for moving towards business excellence and compete in global markets and have a sustained competitive advantage. The limitation of this research project as given earlier in the Research Methodology, is that the findings are not part of this paper as the research project is still in progress.

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Annexure- 1

The Knowledge Management Assessment Tool (KMAT)

Source: American Quality Productivity Center, USA and Arthur Anderson- Consulting, USA (1995)

The Knowledge Management Assessment Tool (KMAT) was developed by the American Productivity and Quality Center and Arthur Andersen in 1995 to help organizations self-assess where their strengths and opportunities lie in managing knowledge.

The tool is divided into five sections: the KM process; leadership culture; technology; and measurement. The following is a subset of the items and information in the KMAT, with a simplified scoring system.

Directions: Read the Statements below and Evaluate your Organization's Performance. The Scale is as Follows:

1 = no, 2 = poor, 3 = fair, 4 = good, and 5 = excellent

I. The Knowledge Management Process

P1. Knowledge Gaps are systematically identified and well-defined processes are used to close them.

_____1 _____2 _____3 _____4 _____5

P2. A sophisticated and ethical intelligence gathering mechanism has been developed.

_____1 _____2 _____3 _____4 _____5

P3. All members of the organization are involved in looking for ideas in traditional and non-traditional places.

_____1 _____2 _____3 _____4 _____5

P4. The organization has formalized the process of transferring best practices, including documentation and lessons learnt.

_____1 _____2 _____3 _____4 _____5

P5. "Tacit" knowledge (what employees know how to do, but cannot express) is valued and transferred across the organization.

_____1 _____2 _____3 _____4 _____5

Total of items P1 through P5_____

II. Leadership in Knowledge Management

L1. Managing organizational knowledge is central to the organization's strategy.

_____1 _____2 _____3 _____4 _____5

L2. The organization understands the revenue-generating potential of its knowledge assets and develops strategies for marketing and selling them.

_____1 _____2 _____3 _____4 _____5

L3. The organization uses learning to support existing core competencies and create new ones.

_____1 _____2 _____3 _____4 _____5

L4. Individuals are hired, evaluated and compensated for their contributions to the development of organizational knowledge.

_____1 _____2 _____3 _____4 _____5

Total of items L1 through L4. _____

III. Knowledge Management Culture

C1. The organization encourages and facilitates knowledge sharing.

_____1 _____2 _____3 _____4 _____5

C2. A climate of openness and trust permeates the organization.

_____1 _____2 _____3 _____4 _____5

C3. Customer value creation is acknowledged as major objective of knowledge management.

_____1 _____2 _____3 _____4 _____5

C4. Flexibility and a desire to innovate drive the learning process.

_____1 _____2 _____3 _____4 _____5

C5. Employees take responsibility for their own learning.

_____1 _____2 _____3 _____4 _____5

Total of items C1 through C5_____

IV. Knowledge Management Technology

T1 Technology links all members of the enterprise to one another and to all relevant external publics.

_____1 _____2 _____3 _____4 _____5

T2. Technology creates an institutional memory that is accessible to the entire enterprise.

_____1 _____2 _____3 _____4 _____5

T3. Technology brings the organization closer to its customers.

_____1 _____2 _____3 _____4 _____5

T4. The organization fosters development of “human centered” information technology.

_____1 _____2 _____3 _____4 _____5

T5. Technology that supports collaboration is rapidly placed in the hands of employees.

_____1 _____2 _____3 _____4 _____5

T6. Information systems are real-time, integrated, and “smart.”

_____1 _____2 _____3 _____4 _____5

Total of items T1 through T6_____

V. Knowledge Management Measurement

M1. The organization has invented ways to link knowledge to financial results.

_____1 _____2 _____3 _____4 _____5

M2. The organization has developed a specific set of indicators to manage knowledge.

_____1 _____2 _____3 _____4 _____5

M3. The organization's set of measures balances hard and soft as well as financial and non-financial indicators.

_____1 _____2 _____3 _____4 _____5

M4. The organization allocates resources toward efforts that measurably increase its knowledge base.

_____1 _____2 _____3 _____4 _____5

Total of items M1 through M4._____