KNOWLEDGE MANAGEMENT:
A Catalyst for Organizational Innovation and Development

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Abstract

The modern business world is characterized by dynamic, changing markets and continuous technological advancement. Knowledge-intensive value creation requires a reassessment of the weighting of factors of production and increased recognition and understanding of the economic influence of Knowledge. Effective knowledge management not only forms the basis of successful innovation processes, it also greatly enhances an organization's ability to innovate. The importance of Knowledge Management has grown up world wide. Organizations that are currently facing the challenges of restructuring, outsourcing, globalization and innovation must have an effective knowledge management system and knowledge management tools.

Introduction: Seeking and Managing Knowledge:

The modern business world is characterized by dynamic, changing markets and continuous technological advancement. To cope with these trends, organizations must become more flexible, and one certain way for them is to strengthen their potential for learning as organizations. [1]

> *"Knowledge management has inspired a shift from a transaction to a distributed knowledge management (DKM) perspective on inter organizational information processing... Each player in the network acquires specific knowledge from other players for decision support. "(Pederson & Larson, 2001)*

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Thus, "knowledge" becomes an essential organizational instrument and a key factor in value creation. Increased focus is needed to be placed on expanding the organizational knowledge base, either by learning from others (e.g. colleagues, partners, third party content, etc.) or by creating new knowledge through reflection and innovation. Both processes help secure sustainable competitive advantage. Knowledge management can be seen as an integrated approach to achieving organizational goals by placing special emphasis on "knowledge", now widely considered as the new factor of production. Knowledge Management is the targeted coordination of "knowledge" as a factor of production and the management of the organizational environment to support transfer of individual knowledge and the subsequent creation of collective knowledge.

> *"Knowledge is power and its acquisition makes people powerful. That is why Prophet Muhammad (PBUH) said that "Seek knowledge from the Cradle to the Grave ".*

In fact, Knowledge leads & action succeeds. Prior knowledge is indispensable for informed actions.

Importance of Knowledge Management has grown world wide: The *Web of Science* was searched; from 1981 to 2002 for papers with the term 'knowledge management' .The result is shown in **Figure 1:**
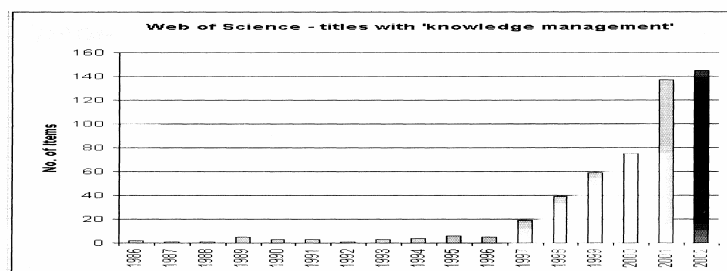

Figure 1: Web of science search for knowledge Management

Source: Information Research, Vol. 8 No. 1, October 2002

After 1996, the growth for KM has grown exponentially, however the data for 2002 suggest that the rate of growth has slowed down considerably. The details manifest that in the first eleven years (1986-1996) a very wide range of subjects represented under the heading 'knowledge management' was found.

To determine the current nature of 'knowledge management' title wise the result Web *of Science* has the following results.

Subject Area	No. of titles
Computing & Information systems	26
Information Science, Information Management & Librarianship	18
Management	13
Artificial Intelligence	10
Engineering	8
Medicine	4

Table 2: Subject range of journals
Source: Information Research, Vol. 8 No. 1, October 2002

Only 41 journals carried more than one paper with the relevant phrase in the title in the year, and only 10 journals carried more than four. These were:

Journal Title	No.
Decision Support Systems (SI)	12
Journal of Management Information Systems (SI)	10
Wirtschafts informatik (SI)	10
European Journal of Information Systems (SI)	9
Expert Systems with Applications (SI)	9
Nfd Information Wissenschaft Und Praxis	8
IBM Systems Journal (SI)	7
Journal of Strategic Information Systems (SI)	7
Journal of Management Studies (SI)	6
Journal of the American Medical Informatics Association	5

Table *2: Journal titles with more than four papers on 'knowledge management'
in 2000 **Source:** Information Research, Vol. 8 No. 1, October 2002*

Assuming that these journals constitute the 'core' of the field (at least for the year 2001), it is interesting to note the strong orientation towards the field of information systems. At least six of the journals are in this area, seven if we include medical informatics within information systems.[2]

Contemporary organizational issues and Knowledge Management:
Following are the three major issues pointed out by (Davenport and Prusak, 1998) facing organizations:

Globalization: Globalization is the creation of international strategies by organizations for overseas expansion and operation on a worldwide level. The process of globalization has been precipitated by a number of factors, including rapid technology developments that make global communications possible.[3] Globalization-enabling knowledge management infrastructures increases the amount of knowledge shared across the multiple geographies. This knowledge can be captured through the recording of collaborative interactions, and organized, shared, displayed, and disseminated on the company's portal.[4]

Downsizing: Companies implementing a downsizing strategy aiming at increasing cost efficiency and operational effectiveness may face the fact that their innovative ability; which is directly related to knowledge management is hampered.[5] Careful consideration by managers of the potential impact of the popular strategy of economic restructuring (downsizing) on organizational structure and culture could improve the quality of organizational knowledge.[6]

Outsourcing: In the context of outsourcing, knowledge management can be one of the most challenging issues. It is crucial to have a thorough understanding of how an outsourcing affects knowledge management. In particular, the enterprise should understand how it will manage its knowledge with or without an outsourcing.[7] Knowledge management is key to a successful outsourcing strategy, it can increase the odds of outsourcing success by reducing the need for agent training, guiding agents to the right information. A knowledge-powered outsourcing model can drive service efficiencies and allow you to negotiate lower prices for outsourced services, making its ROI even more compelling.[8]

All the above three issues have significant implications for knowledge sharing and management.[9] Organizations have come to realize that they take with them valuable knowledge. Globalization is a separate issue which affects most organizations in some form (Castells, 1996). Many organizations are now undergoing some form of structural change to cope with the increased internationalization of business. For example, Castells (1996) has observed the emergence of what he calls the Network Enterprise, made up of several organizations of different sizes working together. These changes mean that information and knowledge have to be shared between individuals and companies who perhaps never expected to work together. As globalization impacts upon organizations, they are finding they have to turn to international teams to maintain an essential flexibility (Manheim, 1992). These teams may find themselves operating in different locations, which mean that groups need to share knowledge asynchronously between different locations. The challenges posed by downsizing, outsourcing and globalization are those of Knowledge loss and distributed working. There is clearly a need to manage such Knowledge and Knowledge Management (KM)

claims to address this. Knowledge management is not a sole discipline. Rather, it an integration of numerous endeavors and fields of study.[10]

Knowledge management supports and coordinates the creation, transfer and application of individual knowledge in value creation processes. This can only be realized in a corporate culture that promotes knowledge management and actively supports information and documentation processes (e.g. through the systematic application of innovation and quality management tools and methods). However, to manage an organizational knowledge base, it must also be measured. The inclusion of intellectual assets in this measurement adds a further dimension to the assessment of traditional factors of production. In this way, other factors (including traditionally elusive "soft factors") become more readily available for value creation processes. Comprehensive knowledge management should ensure that "knowledge" is used as effectively and efficiently as traditional factors of production in achieving organizational goals.

Added benefits include an improved capacity for organizational learning and a greater potential for action.
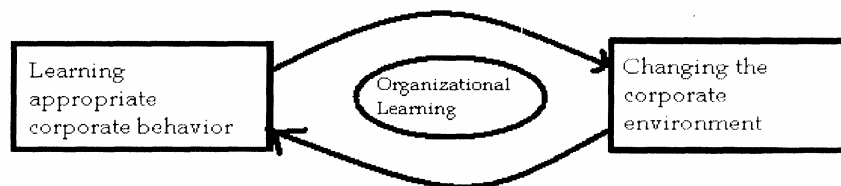

Figure 2: The cycle of organizational learning.

Basic Model of Knowledge Management:

Knowledge Management is not only the management of "knowledge" itself, but rather the management of the organization with a particular focus on "knowledge". To simplify this process, it is divided into two

fundamental levels: the data level and the knowledge level. This is based on the traditional differentiation between knowledge on the one hand and data and stimuli on the other. There are three main aspects to knowledge:

1. Individual knowledge:

Individual knowledge (i.e. the sum of an individual's capabilities and experience), determines the possible actions open to an individual and, consequently, the contributions they are able to make to a particular project or task. The concept of Personal knowledge management (PKM) has grown out of a combination of knowledge management (KM) and personal information management (PIM) based upon human knowledge, particularly, the Personal KM is focused on helping an individual be more effective: to work better. While the focus is the individual, the goal of the movement is to enable individuals to operate better in groups and in corporations as well.[11]

2.   **Action:** action, includes both physical and mental actions (e.g. problem solving). The actions required to complete an individual task often result in large amounts of data which is documented information that can facilitate action. This can be: packaged, easily codified, communicable, transferable and can be expressed in formal, shared language

   "Knowledge must come through action; you can have
   no test which is not fanciful, save by trial... "
   (Sophocles (496 BC - 406 EC)

3. **Data:** This includes both internal data (e.g. from other projects) and external data sources such as libraries or online databases. The following 10 points approach is presented by Adrian Klingel and Jeffrey Marshal of Pricedex software Inc. for internal and external data management:

    1. Understand Why You Want To Do This
    2. Identify the Processes presently in place
    3. Identify Gaps, Problems and Opportunities
    4. Amalgamate Data Needs for internal and external channels
    5. Establish a Project Roadmap and Vision
    6. Pre Implementation - Assign Ownership Groups for Data
    7. Design and Enhance Processes around the Data
    8. Implement your Vision
    9. Establish Feedback Mechanisms to measure data quality
    10. Establish Ongoing Key Performance

Levels of Knowledge Management:

There are three main levels of knowledge Management which are Knowledge level, Data level and Action level. The knowledge level is made up of the knowledge of the individual members of the organization and their interaction with each other. The data level consists of all available documented knowledge (e.g. in databases or as printed documents). The knowledge and data levels provide input for the action level. This is where business processes are enacted and represents the organization's value creating processes.

These three levels are linked with the five core knowledge processes (information, documentation, communication, application and

learning) to form a basic model of knowledge management. The major benefits of knowledge management for organizations include:

- Greater transparency of knowledge potential and gaps
- Knowledge-based value creation processes
- Increased motivation through staff involvement
- Increased competitiveness
- Long-term security and survival

Knowledge Management Systems:

Knowledge Management System (KM System) refers to a (generally IT based) system for managing   knowledge   in   organizations, supporting   creation,   capture,   storage   and dissemination of information. It can comprise a part (neither necessary or sufficient) of a Knowledge Management initiative.[12]

The idea of a KM system is to enable employees to have ready access to the organization's based documented of facts, sources of information, and solutions. For example, an engineer could know the metallurgical composition of an alloy that reduces sound in gear systems. Sharing this information organization wide can lead to more effective engine design and it could also lead to ideas for new or improved equipment.

A KM system could be any of the following:

1. Document   based   i.e.   any   technology   that   permits creation/management/sharing of formatted documents such as Lotus Notes, web, distributed databases etc.

2. Ontology based: these are similar to document technologies in the sense that a system of terminologies (i.e. ontology) are used to summarize the document e.g. Author, Subject, Organization etc. as in DAML & other XML based ontologies

3. Based on AI technologies which use a customized representation scheme to represent the problem domain.

4. Provide network maps of the organisation showing the flow of communication between entities and individuals

5. Increasingly social computing tools are being deployed to provide a more organic approach to creation of a KM system.

Administration of Knowledge Management System Maintaining Knowledge Quality

While knowledge components are crucial to a knowledge management system, experts have estimated that 90 percent of the success of knowledge management is involved with gaining the buy-in of knowledge users and encouraging knowledge sharing. One important aspect of knowledge sharing is obtaining high-quality knowledge and in maintaining its excellence.[13]

One essential aspect of knowledge quality is meaningful classification. Although it may be possible to perform some classification automatically, a considerable amount of manual effort will be required initially. "Knowledge Journalists" will be required to perform some of these activities. This is not to say that Knowledge Journalists are essential for a functioning Knowledge Management System. What it means is that those organizations that require high-quality information need to consider developing Knowledge Journalist professionals.

Knowledge Stewardship

Stewardship has been defined as the careful and responsible management of something entrusted to one's care. Knowledge does not belong to a knowledge community; it belongs to the enterprise. Therefore, selected

knowledge community members should act as stewards of the knowledge to maintain and enhance the quality of the knowledge.

Knowledge stewards need to take responsibility for both appropriate knowledge content and appropriate knowledge presentation.

One knowledge stewardship approach is to set up an Editorial Board for this purpose. The Editorial Board will be responsible for ensuring that both content and presentation of knowledge is appropriate. Presentation would consider aesthetics as well as the medium (for example, text, graphics, data, audio, video) by which knowledge is conveyed.

Knowledge Content Administration

In addition to Editorial functions, members of the organization will also need to perform Knowledge Management administrative functions. Functions that need to be provided include reviewing and maintaining knowledge, archiving appropriate knowledge, organizing knowledge etc.

Knowledge Management Tool Administration

Of course, all the tools the Infrastructure will have to be maintained. Maintenance will include common network management functions, server maintenance, as well as administration of all the KM tools.

Knowledge Management Tools and products:

Technology is a powerful enabler to knowledge management objectives. The goal of a knowledge management tool is not to manage knowledge by itself but to facilitate the automation and implementation of elements in the knowledge process. Tools such as data access, on-line analytical processing, and the use of the Internet and Group Ware systems for decision support and knowledge management are becoming the cornerstones of

modern management. Such technologies can have a significant impact on product innovation. The benefits stated by[14] are as follows:

- Automating repetitive tasks.
- Managing large amounts of information.
- Reliably executing transactions.
- Enforcing operating policies, rules or methodologies.
- Increasing user productivity.
- Reducing operating costs.

Building a knowledge management tool in order to support decision making and management should best be based on a connectionist approach. In other words, building closely connected networks of people. Such networks of individuals are lauded to generate more knowledge of a higher quality than any individual can. Furthermore, individual use of information technology is moving gradually to group use (i.e. group decision support systems, networks for exchange and electronic discussion). In recent years, the World Wide Web has enjoyed explosive growth and has become a major force in network computing.

As a result of the increasing popularity of knowledge management numerous knowledge management tools have appeared on the software market. Therefore, selecting a tool that suitably meets their requirements is difficult and confusing for many organizations. Consequently a methodology is designed that describes the issues and factors that should be taken into consideration during the selection of a knowledge management tool.[15]

Conclusion:

Learning is the only way to Innovation, the more the organization has the learning capability the more it grows. Trends show that the importance of

knowledge management is increasing day by day. The threats raised by Globalization, Outsourcing and Restructuring increases the importance of knowledge management at any level i.e. knowledge level, data level and action level - to be efficiently management otherwise it can endanger the growth of an organization. A proper knowledge management system built on up-to-date knowledge management tool such as data access, on-line analytical processing, and the use of the Internet and Group Ware systems for decision support and knowledge management are becoming the cornerstones of modern management.

End Notes:

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