An Overview of Need of Knowledge Management in Various Fields

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Abstract :   Knowledge is generated from processed information and clear wisdom is based on knowledge. In 21st century, knowledge is managed by various ways using various tools and technologies in an organization. Many organizations are already doing knowledge management in their day to day work for achieving their goals successfully. Organizations are using different methods, tools, techniques for knowledge management which are generally information technology based. Still there are some fields which are to be focused for knowledge management. This paper gives an overview of need of knowledge management in various fields and challenges faced while managing it.

Index Terms – **Knowledge, Knowledge management, need of knowledge management, information technology.**

I. INTRODUCTION

Knowledge is present in concept of every individual. Knowledge resides in brain of individual and it is used in organization's processes, products, services, systems and outcomes. Knowledge is a result of learning. It comes after data and information. Knowledge is authenticated information and thought to be true. For knowledge to have value it should be tested, focused, shared, used and maintained. The sequence data $\rightarrow$ information $\rightarrow$ knowledge $\rightarrow$ wisdom represents an emergent continuum as shown in Figure 1.
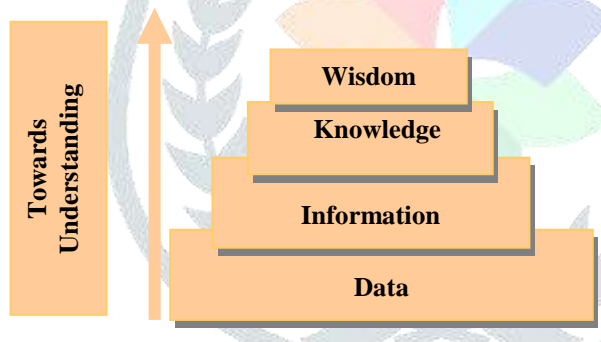

Figure 1 Data, Information, Knowledge and Wisdom

Data: Data is raw. Data can exist in any form; symbols, facts or figures obtained from experiments or surveys, used as a basis for making calculations or drawing conclusions. In computer science, a spreadsheet generally starts by holding data.

Information: This is that kind of data that provides relational connection and it provides answers to "who", "what", and "when" questions. In computer science a relational database makes information from the data stored within it.

Knowledge: application of data and information; answers "how" questions. Knowledge is a deterministic process. When someone "memorizes" information then they have acquired information. For e.g. elementary school students memorizes tables. They know table of 1 to 30, but if you ask them what is 823*3, then they cannot answer. When they learn the rules of multiplying number from 1 to 10 and the rules for extending it two large numbers, they will not only be able to generate multiplication tables upto 30 but also give the result of multiplying any two numbers however large. This is possible because they have acquired the knowledge of multiplication. In computer science we use modeling and simulation methods –these methods use some kind of knowledge.

Wisdom: It means evaluated understanding. It is an extrapolative and non-deterministic, non-probabilistic process. It is the process by which we also discern, or judge, between right and wrong, good and bad. Computer systems don't have this state. Wisdom is uniquely human state [1].

Knowledge management is introduced to help companies create, share and use knowledge effectively. It is explicit and systematic management of vital knowledge. So it is a process of capturing knowledge, understanding knowledge by using information technology systems in order to maintain reuse and deploy that knowledge in order to achieve organization's goals. Knowledge management systems are generally IT based systems used for managing knowledge in organization.

Knowledge management is done differently in different organizations like health care, front line staff, software engineering.

II. AN OVERVIEW OF NEED OF KNOWLEDGE MANAGEMENT IN VARIOUS FIELDS

Many organizations have opted for knowledge management considering its several benefits. Before discussing some such success stories we will explore the reasons behind success of KM. Some interpretations of knowledge management are provided to have a better understanding of its organizational impact.

- KM can be a process of collecting, organizing, classifying and disseminating information throughout the organization so as to make it purposeful to knowledge seekers.
- KM means ensuring a complete development and implementation environment designed for use in a specific functional area requiring expert systems support.
- It means organizing and analyzing information in a company's databases.
- It also means identification of categories of knowledge needed to support the overall business strategy and transformation of a current knowledge base into new knowledge base by filling the knowledge gaps.
- KM combines indexing, searching technology to help companies to organize the data and share it and deliver the relevant information to multiple users.
- KM involves understanding the relationship of data, identifying and documenting rules for managing data and assuring that data are accurate and maintain integrity.
- It also helps in facilitation of autonomous coordination of decentralized subsystems that can state and adapt their own objectives.

Sharing of data might be prohibited, but sharing of (the hidden) knowledge is not.

Day by days Knowledge management solutions are most important strategic technologies for large companies. 67% of companies cite knowledge management /business intelligence solutions as important for achieving their strategic goals.

It creates chaos in an organization if knowledge resources are not handled properly. The concept of knowledge management addresses this issue [2]. There are a number of common situations that are widely recognized as benefiting from knowledge management approaches. While they are not the only issues that can be tackled with KM techniques, it is useful to explore a number of these situations in order to provide a context for the development of a KM strategy.

Beyond these typical situations, each organization will have unique issues and problems to be overcome [3]. A paper by Robertson James describes some of the niche areas such as call centers, front line staff, aging workforce, supporting innovation etc. where need of KM is very clear.

1) Call Centers

They are equated with 'public face' of any organization. The role of call centers is challenging as customer need to get answers to their questions within minutes of ringing up. Data stored in call centers is in huge amount. To give correct answer to customer queries database should be always in updated form.

2) Front line staff

Many organizations have front line staff that interacts with public at enquiry counters. They may operate in the field as sales staff or as trouble shooters in a maintenance team. They may be located at different branches geographically. Typically, there are also few mechanisms for sharing information between staff working in the same business area but different locations. The challenge in the front-line environment is to ensure consistency, accuracy and repeatability [8].

3) Business Managers

Manages have to filter out the information needed for business decisions. The pace of organizational change is also increasing, as are the demands on the 'people skills' of management staff. In this environment, there is a need for sound decision making. These decisions are enabled by accurate, complete and relevant information. Knowledge management can play a key role in supporting the information needs of management staff. It can also assist with the mentoring and coaching skills needed by modern managers [9].

4) Supporting Innovation

Many organizations have now recognized the importance of innovation in ensuring long-term growth (and even survival). This is particularly true in fast-moving industry sectors such as IT, consulting, telecommunications and pharmaceuticals. Most organizations, however, are constructed to ensure consistency, repeatability and efficiency of current processes and products. Innovation does not tend to sit comfortably with this type of focus, and organizations often need to look to unfamiliar techniques to encourage and drive innovation. There has been considerable work in the knowledge management field regarding the process of innovation, and how to nurture it in a business environment.

5) In Software Engineering

Each software product and process is different in terms of goals and contexts. A single software development approach cannot be assumed for all projects or products. To develop software for the space shuttle is not the same as to develop software for a dishwasher [4]. Software developers are often exposed to this diversity, which makes the software discipline inherently experimental [5] and we constantly gain experience with each development project. Ideally, we would apply that experience to future projects in order to avoid mistakes and leverage successes. Development teams work on similar kinds of projects without realizing that results would have been achieved more easily if they followed a practice adopted by a previous project [5]. The bottom line is that development teams do not benefit from existing experience. Instead they repeat mistakes over and over again. This was manifested by the fact that "a large number of cases showed a lack of knowledge in the specific project, while this knowledge was actually available in the company" [6]. Knowledge Management addresses the issues of capturing and sharing knowledge, while the problems of project diversity and product singularity make it clear that such a system must be flexible enough to encompass variations on the same theme.

Knowledge Management can never tap the brains of the employees, but it can help build structures and frameworks for capturing key information that can help retain some knowledge when employees leave. This key information would at least help in understanding what the employee who left knew and what profile his successor needs to have to fill the position.

People need access to knowledge in order to work, and as they work, they learn, or generate new knowledge. To make good decisions peoples need to know what the true situation in terms of relevant data or information is and able to draw the decision on past experiences.

6) Healthcare

According to NIA's report, over 7,84,000 people die annually due to medical mistakes. And over 2.2 million people are injured every year by prescription drugs alone and over 20 million unnecessary prescriptions for antibiotics are prescribed annually for viral infections. If such alarming situation is in a country like the US, where regulations regarding healthcare are most stringent in the world, the condition of a developing country like India can only be imagined, where the pharma covigilance system is not even in the nascent stage. The reasons attributed to such mistakes are many. A significant reason is that, clinicians are not able to track such massive amounts of complex information [11] So, knowledge workers cannot keep up with the knowledge being generated. Even though the failure to keep up may not result in deaths, but definitely it leads to lower chances of success in projects and products and wastage of resources (Indian Express Newspapers Limited (Mumbai, India), 2006).

7) Academics

Effective practices of sharing knowledge are essential for bringing new faculty members to the desired level of competency. Effective teaching styles, assessment techniques, do's and don'ts shared by senior teachers essentially transform a new faculty into a responsible teacher(tacit knowledge)[14]. Teachers are the pillars of the organization, but when a teacher leaves for a new position; his or her know-how also disappears. The contribution made by people when they were with the organization need to remains as a knowledge asset of the organization[15]. Long-serving staff has a depth of knowledge that is relied upon by other staff. Knowledge management can assist by putting in place a structured mechanism for capturing or transferring this knowledge when staff retires. High staff turn over is a common problem faced by all organizations and more in educational and research institutes due to their typical pay structure. There is always a need of bringing new people into projects and get them up to the speed so they can contribute quickly. A knowledge repository with a defined knowledge track can prepare new comers without losing any productive time of mentors.

8) Research

Research efforts involve aggregating and organizing knowledge related to a subject of interest. Research institutes have huge quantities of knowledge in both tacit and explicit form but improper organization and storage can restrict dissemination, transfer and sharing of this knowledge. Information about the research interests of different departments within an institution and affiliated or sister institutions can facilitate interdisciplinary opportunities [11]. Best practices of proposal writing; report templates, policies, procedures and protocols of funding organizations shared by senior researchers can reduce turnaround time of newcomers in the field. Access to people or organization contact information such as guest faculty, recruiting companies, suppliers etc. saves effort wasted on generating the information all over again or losing the opportunity because of the unavailability of information at the right time [13]. Quality practices followed by qualified staff at one institution or department need to percolate to other sister institutions or departments where there is scarcity of qualified staff.

III. CHALLENGES FACED IN KM IN VARIOUS FIELDS ARE AS FOLLOWS

- ➤ High staff turnover.
- ➤ Unavailability of information at time of need.
- ➤ Need of right information from right persons.
- ➤ Unavailability of data warehouse.
- ➤ Need of volatile storage.
- ➤ Need of historical data.
- ➤ Decision making capability.
- ➤ Potentially wide range of customer enquiries.
- ➤ Legal accountability for information provided to customers.
- ➤ Customers expect 'instant' answers to questions.
- ➤ High stress work environment for call center operators.
- ➤ Large and complex body of knowledge to be learned by new staff.
- ➤ Constant pressure to reduce call handling times.
- ➤ Need of Information technology based methods.

In all above situations knowledge management can prove to be an effective solution [7]. So, Knowledge management can be viewed as a solution for many problems faced in all these organizations.

IV. CONCLUSION

This paper gives concrete idea about need of Knowledge Management in various fields. There are already different kinds of frameworks available for knowledge management in various fields but still some issues are not addressed by the framework. This paper also presents list of challenges faced by knowledge management in various fields.

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