Projects the concept of ‘Tacit Knowledge’ [TK]. Further discusses the types of tacit knowledge that exists in any organization and also outlines some of the steps that can be taken to manage this resource. Also discusses some of the expert systems like KnowledgeMail and Groupware used for the management of this form of knowledge.

INTRODUCTION

During the industrial age, the organizations that made use of cost-effective, efficient and advanced technologies were having the competitive winning edge. However, with the emergence of the knowledge-based economy, the importance of managing and utilizing organizational knowledge just like any other corporate resource started gaining popularity. Today, the organizations are realizing the importance of their intellectual assets, i.e., the knowledge possessed by the employees of the organization and are now devising ways to harness this previously unforeseen power for organizational success. Knowledge Management [KM] enters the scenario at this point. A lot of work has been done in this direction [1] and presently there are several organizations that have taken the leverage of this unforeseen resource and transformed themselves into Knowledge Organizations.

However, most of the efforts till now have been only partially successful in using this asset. This is because majority of the efforts have been centered around application of information technology in providing electronic access to documents or databases. This approach can be beneficial only in managing ‘explicit knowledge’ or recorded information. It has now been recognized that some of the most valuable knowledge within an organization is essentially ‘hidden’ or ‘tacit’-residing not in documents but in the experience and skills of human beings. This valuable resource presents certain management problems due to its non-physical existence and these have been discussed briefly in this paper.

KNOWLEDGE

There is a disagreement over a comprehensive definition of the term ‘Knowledge’. However, for the present, the term knowledge may be understood by using a pyramid analogy [Fig 1]. At the base of the pyramid is ‘Data’, which is basically raw facts, ideas collected as a result of observation, experimentation, measurement or survey. When a collection of this data is processed by human or automatic means, we get ‘Information’. The top of the pyramid is occupied by ‘Knowledge’ which can be thought of as the process of seeing information and applying it to make decisions. This knowledge is of two types, firstly, ‘Explicit Knowledge’, which is the traditional form of knowledge and is available in the documented form, and secondly, ‘Tacit Knowledge’ or ‘Implicit Knowledge’, which exists with individuals. Another type of lesser-known knowledge is ‘Private Knowledge’, which is basically the knowledge that people do not want to publish but are willing to share with certain specific individuals.

TACIT KNOWLEDGE

Michael Polanyi [2], a Hungarian physical chemist turned philosopher was the first to introduce the concept of tacit knowledge, however the reference to this undocumented form of knowledge...
inaccessible to the consciousness can be traced to Helmholtz’s work in the 19th century.

According to Polanyi [3], all knowledge is either tacit or rooted in tacit knowledge and is involved in each activity at two different levels or dimensions which are mutually exclusive. Firstly, ‘Focal Knowledge’, which is the knowledge about the object or phenomenon that is in focus, and secondly, ‘Tacit Knowledge’, which is used to handle or improve what is in focus. Both these dimensions are complementary to each other. The tacit knowledge functions as a background knowledge that assists in accomplishing a task that is in focus. For example, while reading this article, word and linguistic rules are the tacit subsidiary knowledge while the attention of the readers is focussed on the meaning of the text.

Tacit knowledge is present in hunches, intuition, emotions, values and beliefs [4]. At the individual level, tacit knowledge forms a mental grid - a unique set of beliefs and assumptions through which one filters and interprets what is seen and done. These non-intellectual qualities form the basis of how one behaves and acts, the filter through which one sees the world. At the organizational level, tacit knowledge is made up of the collective mindsets of everyone in the organization. Based upon the previous experiences, the organization develops certain beliefs and assumptions, which form a lens that guides its interpretation and understanding of its environment around it. Based on this, the organization makes its decisions and sets future goals. Tacit knowledge is subjective, cognitive, and experimental in nature, whereas explicit knowledge is more objective, rational and technical (data, policies, procedures, software, documents, etc.). All the fuzzy information that goes unrecorded like the values, insights and judgments stored within an individual also falls in the category of tacit knowledge [5].

**TYPES OF TACIT KNOWLEDGE**

Tacit knowledge may exist in any of the following two forms:

**Embodied Knowledge**

The knowledge that cannot be easily detached from its knower is called embodied knowledge [6]. Embodied knowledge is difficult to articulate. Such type of knowledge may also exist across a group of people. Consider the example of employees working in an organization. After years of working together and following the same routine, they develop an unspoken understanding for each other's working style and will take this into consideration while working together. Thus, groups that have worked together for a long time tend to produce better results than others by virtue of the mutual understanding that has developed among them over the years.

**Embedded Knowledge**

The tacit knowledge that resides in the things created by individuals may be known as embedded knowledge. It may reside in products or product prototypes, as well as in processes.
Consider the example where a product or equipment has to be designed. The designers first tend to develop a prototype by eternalizing their tacit knowledge and then again by the application of ideas, assumptions and judgments tend to improve upon it. Similarly they may apply their experience or ideas into improving the existing processes of developing a particular product or providing a service. Thus, in this way, their tacit knowledge gets embedded in the products or services designed by them.

**KNOWLEDGE MANAGEMENT**

Knowledge is a fundamental factor in present day knowledge driven economy. Its successful application helps organizations deliver creative products and services. Though there is lot of knowledge within an organization this knowledge is diffused and mostly unrecognized. There is thus a need for knowledge management systems in all organizations to allow them to identify and access worker’s skills and expertise [7].

KM can be defined as the management of corporate knowledge that can improve a range of organizational performance characteristics by enabling an expertise to be more ‘intelligent acting’ [8]. It is a process that helps an organization to find, select, organize, disseminate and transfer important information and expertise necessary for activities such as problem solving, dynamic learning, strategic planning and decision making.

KM techniques are based on two-fold principles, firstly to measure the intellectual capital of an organization by developing measurement ratios or indexes and benchmarks, and secondly, for knowledge mapping [9], i.e., capturing knowledge gained by an individual and disseminating it throughout the organization, mainly through information technology. However, the main drawback in the KM strategy used nowadays is that it only takes into account the management of explicit knowledge within an organization whereas the implicit or tacit knowledge that forms a major chunk of the intellectual resources of the organization is ignored. There is a need to incorporate certain techniques or strategies into the KM principles used within an organization in order to manage the undocumented form of knowledge viz. tacit knowledge. The intangible assets of an organization like insights, intuition, hunches, and analogies must be properly managed in order to utilize this tacit knowledge effectively [10].

**MANAGING TACIT KNOWLEDGE**

All tacit knowledge may not be useful and hence a set of standards must be devised according to which a piece of TK may be considered useful for the organization and hence a subject for management. In order to decide what is useful, one must have an in-depth understanding of the purpose of the organization, what constitutes organizational success, and what kind of knowledge contributes to individuals and organizational effectiveness. This understanding helps to make decisions about what knowledge should be retained as part of the corporate memory for later reuse and what is it that employees need to know to do their jobs effectively and efficiently.

Given below are certain techniques to manage the various forms of tacit knowledge available within an organization.

- Seminars, meetings, symposiums, conventions and other informal social activities amongst the employees must be promoted. It is generally at these gatherings that the employees share their experiences and views of their day-to-day work. In this way, the tacit knowledge of the employees is shared amongst themselves, which improves their performance in turn benefiting the organization.

- The overall process of knowledge flow in organizations should be improved with emphasis on avoiding the formation of ‘knowledge islands’ in a sea of useless information. The working environment in the organization should be made conducive for the exchange of knowledge and any barriers should be actively removed.

- Information technology also has a vital role to play in this respect. The use of modern IT in many ways may provide automated and efficient means of harnessing tacit knowledge. In fact expert systems and relational databases using XML techniques
are being used to convert implicit knowledge into explicit knowledge.

The human resource department of an organization should also participate actively in this process. It should use 'lure-and-cure' techniques by offering various incentives like cash rewards or professional recognition for the employees who contribute something concrete to the knowledge based activities of the organization. Added to this, the employees must get the feeling that their suggestions do influence the organizational strategy. They should be made a part of the 'big-picture' and the importance of their tacit knowledge in achieving organizational success must be highlighted.

However, the first and foremost of all the steps should be to envisage a vision of a common organizational purpose amongst the employees. They should have feeling of oneness with the mission of the organization in view and should strive to work as a team for achievement of the organizational goals and objectives. 'Winning' and 'Team Work' should become a part of the work culture. The personal goals of the employees should be synonymous with the organizational goals. Efforts must also be made to change the mindset of the employees from a 'Winner Takes All' attitude to an 'If I Win, We All Win' attitude.

SOME KM SYSTEMS

Discussed below are some knowledge management systems:

KnowledgeMail

This is an innovative system for eliciting tacit knowledge and providing partial managerial control over it. It is a product from 'Tacit Knowledge Systems' [11], a premiere organization in developing expert systems for managing tacit knowledge. It is not meant for storage of the knowledge, but mainly for pinpointing the 'knowledge islands'. The developers of this system recognized that reading through the e-mails, papers, memos and other documents that people created, provides a basic insight into their tacit knowledge. This understanding of the concept led them to develop KnowledgeMail, which monitors the outgoing e-mails and other documents that the employees of the organization create. An expert system based on linguistic rules identifies the key concepts and a database is automatically created. Thus a profile is created for every employee and the individual has full control over his profile. The existence of this sort of a profile helps to a large extent in problem solving. Take the example of a distress call from an employee of an organization dealing with computer maintenance. The employee has a technical question, the answer to which is neither mentioned in the technical manuals nor in the training manuals of the organization. He may then write up his question in natural language and ask the KnowledgeMail system for the e-mail addresses of people who are likely to know the answers. The system searches the database and presents a list of several people, along with small graphic indicators of the likelihood they have of that particular knowledge. A mouse-click then sends his questions to the people he had picked from the list.

Thus, in this way, the tacit knowledge of the employees of the organization is successfully used for the improvement of services.

Groupware

It is one of the most prevalent electronic means for eliciting, sharing and organizing quantities of information. A Groupware session is an online meeting in which the participants may or may not be seated in the same room. They communicate by means of networked computers.

Using this technique, the participants can share their ideas, views and suggestions with each other without any social hindrances and obstacles. This technique has been successfully used in Hewlett-Packard's Human Resources Division in Rohnert Park, California [12]. Groupware, masterfully facilitated, allows people to play around with ideas.
in a virtual space without the social and emotional barriers of conventional exchange. Dennis Hong [13], World Wide Web curriculum manager for corporate information systems at Hewlett-Packard's headquarters in Palo Alto says, "Everybody's seeing information electronically, so you do not have bullies, no shy guys, you're focussing on ideas. Everybody's ideas get equal footing. It's a great leveler. It's like a big core dump. You can get people's knowledge out and discuss it a new way."

THE XEROX STORY

There are numerous cases where knowledge management techniques are successfully applied to tacit knowledge. However a typically interesting project is the 'Eureka Project' [14], (now called Smart Service), a project created by Xerox France and Xerox Palo Alto Research Center (PARC) in California. The engineers at Xerox receive around a million customer calls every month worldwide. A study done by PARC revealed that these engineers narrated their experiences to each other about diagnosing and fixing the machines whenever there was an informal or formal gathering. Xerox found that many of the problems that they discussed were not mentioned in their training manuals. It was at this instant that Xerox recognized that the really current know-how is in the heads-and-hands of the service technicians. This led to the development of the project Eureka that aimed at facilitating sharing of tacit knowledge among the peers.

The technology aspect of this project consists of a relational database on a mainframe computer tied to a Minitel, with a simple case-based reasoner, a hypertext-based format for capturing tips and processes for validating and distributing them. However, the social aspect is the most interesting one. Any Xerox engineer who feels he has some concrete tips regarding any issue (technical or social) that may be of help to his peers, writes up and submits the same to a review board. This board consists of people who enjoy the respect of the technicians. This board then evaluates the tip and if found feasible, plants it on the company Intranet along with the name of the submitter. It was interesting to note that the incentive of having the technician's name associated with the tip was more motivating than any cash reward. Also, the management took care that the best tip offered by the technicians were incorporated into the 'work-culture' of the organization.

CONCLUSION

As discussed above, it is possible to convert the tacit knowledge that people carry around in their minds into explicitly communicable tales. However this may tend to transform 'information-as-product' services to 'informing-and-empowering' processes [15]. For the information professional, this may mean stepping out of the traditional uniflow mindset of being passive information providers in the information chain and becoming active participants in the learning and development processes [16]. It becomes imminent for the information professional to devise new cost-effective and efficient means to manage this valuable information source and in turn help the parent organization achieve its targets. There are a range of powerful tools ranging from survival tactics to high tech programs to intelligent objects available today to manage tacit knowledge. However it must be clearly understood that the conversion from tacit to explicit is a deeply personal activity made possible only in an atmosphere of trust and respect. Efforts must be made in this direction to achieve hundred percent results. To survive in today's fast changing and globally competitive world, which is becoming prone to downsizing and inflation, we have to understand that there is a need to work smartly in addition to hard work. Organizations that do this will stand through the rough weathers and emerge solidly, while organization that do not wake up to this distress-call may wither with time.

REFERENCES


10. POLANYI. Ibid.

11. http://www.tacit.com


15. LAHIRI (Abhijeet). Lecture delivered at CSIR HOLID M/5 meet held at Regional Research Laboratory, Trivandrum, 7-9 February 2001.