IMPACT OF INFORMATION TECHNOLOGY (IT) ON KNOWLEDGE MANAGEMENT (KM) : A STUDY

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Abstract

Information and Communication Technologies (ICT) are simultaneously the cause and the effect in the growth of knowledge. For this reason, they play an important role in Knowledge Management (KM) but do not constitute a panacea and their establishment must be accompanied by determining actions on the part of management. Unlike some choices of implementation solutions, the selection of Knowledge Management(KM) tools cannot make do with a compartmentalized classification according to the functions of the software. It is more a question of relying on a global vision of the organization rather then focusing on software categories that are not always stripped in effects. This vision must be connected to an infrared image, pointing to knowledge flows as well as to obstacles to their diffusion, from which optimization, classical domains, these solutions must be based on organizational, human and sometimes technological actions, build with coherence.

Keywords : Knowledge Management/ Information Communication Technology

1. Introduction

The present era is the era of knowledge explosion and in the present Informative World both Knowledge Management and Information Communication Technology (ICT) played a vital role in the communication of information to the society. The World is in the throes of a new and highly potent revolution. This revolution will forever change the way we live, work, play, organize our societies and ultimately define ourselves. Unlike previous technological resolutions, which were focused on energy and matter, this fundamental change involve our understanding of time, space, distance and knowledge.The drastic acceleration in the development and use of Information and communication technologies (ICT) during the last few years has set in motion a world-wide process towards the "Information Society".

The complexity and interrelation of today's world problems defy traditional explanations and solutions and require a fully new approach, which must be both comprehensive and interdisciplinary. Moreover, individuals, groups and communities will need to develop not only new tools of analysis but also very different thinking and attitudes in order to adapt to the emerging "new" civilization based on information and knowledge.

The last few decades have witnessed an unprecedented flow of information across the globe consequent to the emergence of various technologies. The information and communication technology (ICT) has played a significant role in this dynamics which has not only made access across the globe easier, but has facilitated integration of thought processes, synergy in working methods and places, participative and democratic functional approaches, team learning and in enhancing organizational transparency,. Increasing awareness to and application of e-governance has opened newer vistas of management systems and facilitation strategies.

2. What is Information Technology

According to UNESCO, "Information Technology cannotes as assemble of technologies." It covers:

- Computer capability to store

- Process Information

- Tele-Communication Technology

- Transfer, record, edited, stored , manipulated and disseminated the information

- Basically, Information Technology is one aspect of Information Science.

3. What is Knowledge

Knowledge is an intellectual capital when people out of creation add value to information, knowledge is generated. Davanport and Prusak defined knowledge as :

"Knowledge is fluid framed experiences, values, contextual information as expert insights that provides a frame work for evaluation and incorporating new experiences of information."

It originates in and applied in the minds of knowers. In organizations, it often becomes embedded not only in the documents or repositories, but also in organizational routines, processes, practices, and norms. (Davanport-1998).

4. Types of Knowledge

Knowledge has three types:

- Explicit Knowledge

- Tacit Knowledge

- Cultural Knowledge

Explicit Knowledge: This is simple form of knowledge, which is formal and easy to communicate document. This is the knowledge of rationality i.e. policies, rules, specifications and formulae. This is also known as declarative knowledge or sequential.

Tacit Knowledge : This is complex form of knowledge, which lies most of time as implications. It has two dimensions, technical and cognitive dimensions. This is personal knowledge, which in the human mind and hard to formalize, and often difficult to communicate. This is the knowledge of experience, which is also known as simultaneous knowledge.

Cultural Knowledge : It is the knowledge which includes assumptions, and beliefs that are used to understand, describe and explain the reality, well as conventions, value and significance to new information. These shared beliefs, norms, and values form the framework in which organizational members, construct reality, recognize the new information and evaluate alternative interpretations and actions.(Banka Behari Chand 2001).

5.   Knowledge Management

It is a complex process, which deals with knowledge creation and application or   reuse of knowledge. Knowledge Management basically consists of five steps:

- Knowledge collection

- Organisation

- Data protection

- Preservation

- Dissemination

The emergence of knowledge society and need for enhanced competency building among knowledge workers as a continuous process has necessitated not only the introduction of Information Communication Technology(ICT) in the information processing but also in the learning strategy.

6.   Diffucsion Vehicle of Knowledge

Since the appearance of language, about 100 million years ago, knowledge has been transmitted orally, or much later (5000 BC), at the copy speed of scribes and monks. And as for nuclear reaction, printing will create the critical mass necessary for the beginning of the process. Each piece of knowledge could be communicated quicker and further, to be used or provided by other men, inspire them with new knowledge, just as each neutron gives birth to several others in the nuclear explosion reaction chain.

The history of inventions and discoveries, revealing the knowledge level of a civilization, show us that their growth follows an exponential curve, which rises little after the appearance of the printed book, at one time so nicely called "the Renaissance".

If so much knowledge exists today, it is not because we suddenly became cleaverer than our ancestors. The human brain has not changed for several millennia, but for nearly six centuries its power has been built upon the acquisitions of preceding

generations. It can then add its own contribution and transmit the result to its successors. In recent years, the knowledge diffusion cycle has been shortened to the extreme because any thought can incorporate contemporary pieces of knowledge where they are located in the world and even only a few seconds after their publication.

Undoubtedly, the most famous scientists would not have made the same discoveries if they had been born earlier.

- Could Albert Einstein have developed relativity theories without Maxwell's equations and Lorentz's transformations?

- Would Louis Pasteur and Robert Koch have made the same discoveries without the preceding work on bacteria, not to mention all the elementary knowledge acquired from their youth?

- Conversely, what would the mathematical genius of Srinivasa Ramanujan have found if his theories have been based on peers knowledge instead of spending part of his short life reinventing the necessary theories?

The history of inventions shows us how knowledge feeds knowledge, are forcing us to consider the "ready to think". Each person can thus directly use increasingly focused concepts by handing complex knowledge, representing some dozens of years of work and experience, in the form of elementary blocks accepted once and for all, or at least until the next discovery. The Knowledge Management is here to help him or her in this case a lot.

After printing had been invented improvements and discoveries linked together in the domain of communication technology. The tape recorder, the vedio tape recorder, cinema, telephone, radio and television not only amplified knowledge transmission but also, land implicity, its memorization. Thanks to them, the computer and the internet appeared and now absorb and bring together all those techniques in a numerical whole.

Knowledge can be available simultaneously any where on Earth in the form of speeches, documents pages and messages. It enables task forces to exchange their ideas, researchers to share their results, isolated individuals to work with an intellectual network, students to question their teachers, consumers to know about markets, etc.

Thus as example, vaccines may sometimes be developed within a few months, thanks to the collaboration of laboratories scattered over the planet in a neuronal network, whereas it would take years for a sale researcher.

Both the cause and result of knowledge explosion and the landscape change that they generate, numerical technologies transcend printing and are the allies of knowledge. They are instantaneous vehicles of transmission, memorize much(but not all) information more powerfully than the brain, add multiple dimensions to consultations, treatments and presentations. Transmitted orally for a long time, today knowledge is transmitted more and more by means of a numerical support.

In 1976, Herbert Simon proposed the principle of "bounded rationality"' he highlighted an essential operating mode of the human being, which search engines and more generally Knowledge Management will impart more deeply.

The Nobel Prize winner explained why, when confronted with a problem, man does not choose the best solution but his best solution. Limited by time, comprehension capacities and accessible information, as well as moral and more subjective thoughts, we stop our research at the conclusion that appears to the most satisfactory to our eyes.

In other words, if it were possible to consult more relevant information in a similar period of time, there are strong chances that a more relevant solution would be identified or created. That is to say that technologies not only enable us to know more but they could enable us to know better.

Moreover, computers do not only store knowledge to put at our disposal but are also able to process part of it in a dynamic way, in the form of rules and data-processing codes. While capable of replacing the brain in a number of tasks such as calculation, drawing and production, computers shows snatches of reasoning. It does not matter that a machine plays chess, extracts a square root, traces a circle with two points in a limited and repetitive way; it just does it. Only the result counts and a lot of knowledge is held today by machines which fulfill their role better than the majority of humans, e.g. welding and painting automobile robots or planes that land without visibility.

The knowledge is not longer in the brain of men but inside computer memories. In everyday life, computer anti virus software contains a lot of knowledge that enables it to detect the "signatures" of those harmful programs that no one could memorize. For this reason, carried too many premature, exports systems are returning in force to support simple but too huge a knowledge for the human spirit.

A cookery recipe is not formulated in such a different way from a programming language and it would probably be possible for computers to understand such simplified language before long. It thus appear necessary not to consider solely tacit and explicit knowledge but also coded knowledge whose volume place in everyday life is increasing.

Through computers, we have the very first unconstrained way of representing knowledge. It is evident that knowledge is dynamic while its representations, supported by numeric or paper pages, is rather static.

The photograph is not the landscape, but only its representation from a particular point of view defined by a place, a distance, a moment. As soon as a parameter changes, the photograph is no longer the same and, in the same way, knowledge changes according to time and needs.

The power of the brain is to be able to manage dynamic knowledge, adapting zoom and angle to the need, that is to say, the number and the granularity of required concepts.

The brain contains both engine and information, intelligence and tacit-explicit knowledge. This explains the success of search engines and hyperlinks, which are the first step to a dynamic view of knowledge, suited to each need, by a system other than the brain.

Numerical technologies extend the capacity of the spirit capacities of human beings, just as machines extended their muscular force in past centuries, what is true for humanity is also true for an organization, which, through its computers, networks, software and the internet, has billions of neurons potentially connected in a huge knowledge system, free of space and time. But is this potential really exploited? Of course not, and it is the knowledge Management challenge.

7.   Limitation of the Difusion of Knowledge

The above such impacts encouraged the implementation of communication technology inside the organizations. Obviously prudence is essential, for several reasons:

- First, because technology is far from being omnipotent and has consequent limits;

- Second, because a number of obstacles are related only the human beings;

- Finally, because, when dealing with more and more knowledge, technology has a deeper and deeper impact on the daily life of individuals and their relationship to work.

The minimum will be to think carefully about the roles that are shared between the worker's brain and its electronic substitute.

First of all, let us speak about the limits of technology. There is no learner technology, because memorizing does not mean learning. One can memorize a whole text without being able to draw anything as a computer does. Learning means modifying one's mental schemes, one's way of thinking, so as to act differently thanks to experience feedback, thanks to new knowledge. Of course, some software is able to provide different representations according to the user; neuron networks have some training capacities, but this is only the beginning. Unlike humans, information technology is still unable to adapt to a new context, unless it is strictly planned, and this is its major limitations.

Context, shape and semantic recognition are also out of the reach of information technology. There is, of course, software that analyses sound and video, and data-mining tools whose capacity to highlight certain phenomena as the sources of an epidemic be compared to a creation of knowledge, but they are not very widespread.

This limit notably burdens the exploitation of the huge storage capacities by not allowing an optimized search that takes into account the meaning of words and sentences, the contents of images and speeches…Because of these limitations, one can say that "too much information kills information". While working only with words and not on meaning, search engines swamp relevant answers with superfluous ones, copied one

from another, more or less for removed from the problem often even irrelevant. It is because of this semantic incomprehension that automatic translation software sometimes gives results that are amusing but completely unusable.

In the present era huge volumes have been capitalized, technology does not help much in the capitalization of knowledge itself. Brain capacities can be limited in terms of rough memorization e.g. directory.

We should add to software's disadvantages that those said to be designed for "Knowledge Management" are legion. If they were fever, that would hardly change the problem, as no software can really been excluded from this concept, because the majority of the programs can claim to play a role.

A word-processor and e-mail software help to capitalize and some assists the user in his choices more and more, etc.

There are hundreds of products, the least expensive of which are not inevitably the worst, many of which will no longer exist in a few years because they are numerous.

In our everyday lives, we make technological choices because we think that they will bring new pleasure or advantage. The mobile phone spread because it constitutes a true evolution.

Knowledge generates knowledge like neutrons in a nuclear reaction. Relationship of power and influence, disputes between collaborators or departments, geographical dispersion over sites, floors and offices, secret worship, computer networks with low output; human and sometimes technological obstacles slow down the diffusion of knowledge.

In large number of organizations, coincidence and the coffee machine are the only vectors of knowledge dissemination. Technology can cancel space and time, a simple partition or a sideways look can create insurmountable borders.

It is true that the exploit knowledge structure through various cognitive functions of reception; classification, memorization, reasoning and expression is the privilege of a single brain. It should be recognized, moreover, that the capacity for dialogue between men is sometimes worse than that of software, especially when they are grouped in a little structure called a company.

8.   Conclusion

We therefore conclude that, software plays a major role in Knowledge Management but that also, undoubtedly, it does not solve all problems as obstacles having nothing to do with the technicalities must be taken into account. As we know that things will not remain the same and that numerical technologies will still advance, in particular to overcome their weak points.

However, technology will never solve emotional problem and could rather create some. For an organizations, it is a question of preparing for a better technology that integrates human and organizational actions so that their evolution will not create new upheavals but rather facilitate Knowledge Management. In a homogeneous whole including them and their collaborators.

With this potential and these limits one can certainly detect a complementarily of the strong and weak points of the brain and technology. States in terms of cognitive functions, technologies are gifted in expression, treatment and memorization, but weak or non-existent at reception, training and reasoning, which are the fields in which the brain excels. Cognitive or intellectual functions can be divided into to four chasses:

- Memory and training allowing storage and recall of information;

- Thought or reasoning concerning mental organization and reorganization of information

- Receptive function allowing acquisition, treatment, classification and integration of information

- Expressive functions allowing communication of action

The technology then can be considered as a cement contributing to the neuronal network of the organization like a bricks need cement to become a wall. Therefore, we must learn to make strategic use of ICT's for Knowledge Organisation and end-user satisfaction.

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