

APPLICATION OF INFORMATION TECHNOLOGY IN KNOWLEDGE MANAGEMENT: A GLOBAL PERSPECTIVE

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Abstract

This paper reviewed the application of information technology (IT) in knowledge management: A global perspective. Information technology (IT) has become a potent force in transforming social, economic, and political life globally. Without its incorporation into the information age, there is little chance for countries or regions to develop. Knowledge is considered a valuable asset to organizations. Effective Knowledge Management is an increasingly important source of competitive advantage, and a key to the success of contemporary organizations, bolstering the collective expertise of its employees and partners. This paper establishes the role of IT in sharing, transferring and storing of information. Knowledge is very important especially for document management, storage, search and knowledge sharing to improve organizational effectiveness. Knowledge Management without IT is useless for competitive ends. The paper also listed the three (3) categories of Knowledge Management Technology such as groupware software, workflow system and content management system. The paper highlighted the characteristics of knowledge which includes; knowledge is personal, knowledge is highly experiential and difficult to document and communicate. The paper also discusses the three main types of knowledge such as personal, procedural, and propositional. The paper gave the role of IT in knowledge management and information technology tools. The paper gave the implication of the role of IT in knowledge management that before developing an IT strategy; firms must develop a knowledge strategy to provide the basis for the IT strategy, not the other way round. Conclusions and recommendations were also provided.

Key words: Information Technology, Knowledge, Knowledge Management, KM Infrastructures and IT competency.

Introduction

Information technology (IT) has become a potent force in transforming social, economic, and political life globally. Without its incorporation into the information age, there is little chance for countries or regions to develop. More and more concern is being shown about the impact of those left on the other side of the digital divide the division between the information "haves" and "have nots." Information technology is the use of any computer, storage networking and other physical devices, infrastructure and processes to create, process, store, secure and exchange data. It is also the technology involve in the development, maintenance, use of computation systems, software and network for the processing and distribution of data. (Alavi, 1999).

Humans have been storing, retrieving, manipulating, and communicating information since the Sumerians in Mesopotamia developed writing in about 3000 BC. The term is commonly used as a synonym for computers and computer networks, but it also encompasses other information distribution technologies such as television and telephones. Several products or services within an economy are associated with information technology, including computer hardware, software, electronics, semiconductors, internet, telecom equipment, and e-commerce. (Chandler, 2011). In today's highly competitive marketplace, knowledge is the important source of improving performance and it is the structural asset that allows sustainable competitive advantage in competitive environments. (Bolisani, 1999).

Concept of Knowledge

Knowledge is considered a valuable asset to organizations. Knowledge is the dominant, and probably the only, source of an organization's competitive advantage. A paradigm shift has changed the way that knowledge is viewed. Employees use to stay at organization for their full career lives. Now, however, employees are switching jobs several times. When they leave, they take their knowledge with them. Therefore, knowledge hoarding among individuals can hurt the organization; while knowledge sharing and collaboration can benefit the organization by allowing the knowledge to stay within the organization. (Butler, 2012).

Characteristics of Knowledge

Organizations must be able capture the knowledge and experience of their employees to be able to change their **Tacit Knowledge into Explicit Knowledge**, so it can be used even after the employee is no longer with them.

Tacit Knowledge: "Tacit Knowledge is the knowledge of experience, tends to be subjective and physical. It is about 'here and now', relates to a specific practical context." Characteristics of Tacit Knowledge

- Tacit Knowledge is personal, known by an individual and is context specific;
- Tacit Knowledge is highly experiential and difficult to document and communicate;
- Tacit Knowledge sharing involves learning;
- Tacit Knowledge cannot easily be codified but can only be transmitted via training & experiences; and
- Tacit Knowledge is about, 'know-how', 'know-what', 'know-why' and 'know-who'.

Kinds of Knowledge

Philosophers often divide knowledge up into three broad domains: personal, procedural, and propositional.

Personal knowledge relates to firsthand experience, idiosyncratic preferences, and autobiographical facts.

Procedural knowledge refers to knowledge of how to do something, such as how to play basketball or ride a bike.

Propositional knowledge refers to general truth claims about the world and how we know it. An important

difference between philosophy and psychology can be seen in these various kinds of knowledge. Whereas

philosophers have generally been concerned with general propositional knowledge (Booker & Bontis, 2008)

psychologists have generally been concerned with how people acquire personal and procedural knowledge

History of Knowledge Management (KM)

Knowledge management efforts have a long history, including on-the-job discussions, formal apprenticeship, discussion forums, corporate libraries, professional training, and mentoring programs. With increased use of computers in the second half of the 20th century, specific adaptations of technologies such as knowledge bases, expert systems, information repositories, group decision support systems, intranets, and computer-supported cooperative work have been introduced to further enhance such efforts. In 1999, the term personal knowledge management was introduced; it refers to the management of knowledge at the individual level (Gupta & Sharma, 2004)

In the enterprise, early collections of case studies recognized the importance of knowledge management dimensions of strategy, process and measurement. Key lessons learned include people and the cultural norms which influence their behaviors are the most critical resources for successful knowledge creation, dissemination and application; cognitive, social and organizational learning processes are essential to the success of a knowledge management strategy; and measurement, benchmarking and incentives are essential to accelerate the learning process and to drive cultural change. In short, knowledge management programs can yield impressive benefits to individuals and organizations if they are purposeful, concrete and action-orientated. (Wright, 2005).

Knowledge may be accessed at three stages: before, during, or after KM-related activities. Organizations have tried knowledge capture incentives, including making content submission mandatory and incorporating rewards into performance measurement plans. Considerable controversy exists over whether such incentives work and no consensus has emerged. Codification focuses on collecting and storing codified knowledge in electronic databases to make it accessible. Codification can therefore refer to both tacit and explicit knowledge. In contrast, personalization encourages individuals to share their knowledge directly. An information technology play a less important role, as it only facilitates communication and knowledge sharing (Hall, 2006).

Knowledge Management

In order to understand knowledge management we must first understand what knowledge is. Different authors have proposed different definitions of knowledge. According to Liebowitz and Beckman (1998), "Knowledge is applied information that actively guides task execution, problem solving and decision making. According to this definition, "Knowledge, unlike information, is about beliefs and commitment. Knowledge is a function of a particular stance, perspective, or intention. Knowledge, unlike information, is about action. It is always knowledge "to some end." Knowledge, like information, is about meaning. It is context specific and relational." Both definitions emphasize the applied nature of knowledge, i.e., it must serve some organizational goal. Both suggest that knowledge is created out of information.

KM is a discipline that is concerned with the analysis and technical support of practices used in an organization to identify, create, represent, distribute and enable the adoption and leveraging of good practices embedded in collaborative settings and, in particular, in organizational knowledge processes. Effective KM is an increasingly important source of competitive advantage, and a key to the success of contemporary organizations, bolstering the collective expertise of its employees and partners. ICT uses in KM provide us with the potential for greatly enhanced access to knowledge combined with the challenge of how to manage the access. In addition, it promises improvements in the quality, efficiency, and effectiveness in organizational process; and draws solutions from and contributes to multiple disciplines including management, information retrieval, artificial intelligence, and organizational behavior. (Hawkins, 2000).

Information Technology and Knowledge

Effective KM is an increasingly important source of competitive advantage, and a key to the success of contemporary organizations, bolstering the collective expertise of its employees and partners. There are several perspectives on KM, but all share the same core components, namely: People, Processes and Technology. Management and information science studies have documented a continued evolution toward a *knowledge society* where public and private organizations are no longer viewed as merely processing or using information for problem solving but also as creating new information and knowledge in a dynamic process that involves interaction and adaptation to a changing and turbulent environment (Bason, 2010).

Since the 1990s, organizations have invested significant time, financial, and other resources in KM systems and practices in the hopes of achieving increased performance, innovation, and improved decision making. The outcomes of many of these initiatives within policing have failed to meet organizational expectations as governmental support has been mixed and mere information passing does not constitute collaboration or knowledge creation within this context. In addition, a number of academics have challenged the notion that knowledge, or "what we know," can in fact be "captured" or embedded within an information technology (IT) process or whether it can be "objectified" due to the nature of interpretation and the divergent "world views" of those knowing and those receiving. Butler (2011) poignantly noted, if information technology is to be utilized to give voice to organizational narratives, then it must be recognized that it will be a conduit for data only. And, because gaps in comprehension will always exist, no matter how sophisticated the technology and its power of representation, IT must enable dialectic to take place between social actors and the phenomena they wish to understand (Butler, 2011).

Information Technology (IT) and Competency

Firms need internal information about their financial situation, the effectiveness of their products, their production costs, and so on. And they need external information about the environment in which they operate competitors, customers, suppliers, etc. that helps them to get to know their customers and satisfy them immediately and effectively, and so gain sustainable competitive advantages. Getting information is no longer the problem. The difficulty lies in obtaining quality information, where quality is measured in terms of accuracy, reliability, precision, and timeliness, and the extent to which the information is relevant in the decision making (Maier et al., 1997).

Information Technology and Knowledge Management

Let us first consider the role of IT in supporting the knowledge creation spiral proposed by Nonaka & Takeuchi. Socialization requires interaction between two or more persons with similar and/or overlapping interests. Communication, coordination, and group process support functions offered by IT are useful in facilitating the socialization process. Many organizations set up yellow pages that list experts and their field of expertise. Such yellow pages facilitate socialization by pointing to the source of tacit knowledge. The yellow pages use the storage and retrieval function. The search process associated with these pages may be enhanced through information location function. Externalization converts tacit knowledge into explicit knowledge. Knowledge acquisition techniques and tools can facilitate this process to some extent. Combination process creates explicit knowledge through transformation, analysis, and integration of available explicit knowledge. (Hansen et al. 1999).

Knowledge Management (KM) Technologies

Knowledge management (KM) technology can be categorized into the following; Groupware Software that facilitates collaboration and sharing of organizational information, Such applications provide tools for threaded discussions, document sharing, organization-wide uniform email, and other collaboration-related features. Workflow systems; Systems that allow the representation of processes associated with the creation, use and maintenance of organizational knowledge, such as the process to create and utilize forms and documents. Content management and document management systems Software systems that automate the process of creating web content and/or documents (Zano, 2014)

Proprietary KM technology products such as Lotus Notes defined proprietary formats for email, documents, forms, etc. The Internet drove most vendors to adopt Internet formats. Open-source and freeware tools for the creation of blogs and wikis now enable capabilities that used to require expensive commercial tools. Some commentators have argued that after many years the Semantic Web has failed to see widespread adoption, while other commentators have argued that it has been a success (Cagle, 2016)

The Role of Information Technology (IT) in Knowledge Management

Knowledge management (KM) is the process of creating, sharing, using and managing the knowledge and information of an organization. It is a multidisciplinary approach to achieving organizational objectives by making the best use of knowledge. An established discipline since 1991. KM includes courses taught in the fields of business administration, management, library, and information sciences, Other fields may contribute to KM research, including information and media, computer science, public health and (Bellinger, 2013).

KM Infrastructures

Organizational KM structures provide the backbone for power, coordination, and control within an organization and essentially serve to guide and coordinate the tasks and activities of individuals as they work toward a common organizational goal, these structures, whether at the unit or organizational level, serve to align and coordinate lines of responsibility, authority, communication as well as implement institutional rules, policies, practices, and processes. Therefore, the transfer and utility of knowledge within the organization may be helped or hindered by organizational structures that are in place at any given point in time, thereby affecting, positively or negatively, the desired goals and outcomes of the organization (Liao & To 2011).

The technological aspect of KM, however, has had its critics. Some described it as a management consulting or as creating a technological dependency that ignores existing work or group needs. Notwithstanding such criticisms, KM technology support systems to continue to be used within the public and private sectors as knowledge transfer remains a goal for many organizations that wish to improve performance within their market and local context. Therefore, the technical infrastructure needs and application must be given careful consideration in relation to the KM needs and goals of each organization (Malhotra, 2004).

Information Technology (IT) Tools

Information technology tools is about software and hardware that can be used for connections between individuals over such tools as email, video conferencing, chat rooms, and online learning and also for storing information such as databases and data mining and data warehousing. Important point for using IT tools is managing knowledge and also IT tools are responsible to gather, process, store and transfer the information in order to help managers and personnel for supporting decision making and improving competitive advantage. Considering about IT tools could be applied to the managing of organizational knowledge and can be useful to approve a framework of organizations (Rasli & Maseri, 2008).

Technology

Technology support is the significant element of KM and IT for improving organization performance. IT processes data, collects information, stores collected materials, acquire knowledge, and accelerates communication. The most valuable role of technology in the business structure is in improving the speed of knowledge transfer. Technology enables the method of transferring and information replacing. It is coping with insecurity of knowledge. The technology part of knowledge infrastructure includes the IT that allows the combination of knowledge and information in the business. IT has allowed the whole organization to support and distribute knowledge Hence: Technology has significant effect on KM process.(Rasli & Maseri2008).

Information Technology (IT) Accessibility for Organizations

One of the main critical aspects in organization is accessibility of IT for employees. Finding persons with IT skill and maintaining them in the right place is the key to organizational efficiency. Employees are those who handle business concerns, communicate through the organization. Highly motivated employees in IT skill could provide organization to improve decision making. Employees must easily access necessary information and apply IT to create new knowledge. To reach desired business performance, the organization should have knowledgeable, skillful, and motivated employees in IT. Employees should have ability to understanding IT. Employees have to be trained in specific parts of IT and be able to easily use IT infrastructure (Azari, 2008).

Information technology is very important in organizations for achieving goals by using an appropriate IT infrastructure. Knowledge management pushes management to high investments in IT. Knowledge Management is about transmitting, sharing and storage. To manage an organization's knowledge needs a specific set of IT infrastructure and IT. Management should provide enough budgets for Knowledge management, IT, IT infrastructure and IT activities and the potential of developing technologies for an organization's business, all organizations increasingly invest in IT. Implementing IT infrastructures requires substantial financial and non-financial investment. IT infrastructure flexibility is the capability to easily support a wide variety of hardware, software, communication, data, applications, skills, abilities, commitments and the employee's factor. All of these are achieved by strong IT investment in organizations (Rasli & Maseri, 2008).

Information Technology (IT) and Knowledge Management (KM)

IT has a key role in achieving the knowledgeable organizational objectives. The role of IT in sharing, transfer and storage knowledge are very important especially for document management, storage, search and knowledge sharing to improve organizational effectiveness.

KM without IT is useless for competitive ends. IT theories are common in the current business environment. IT is a tool which can achieve, collect, and transfer basic knowledge. IT can make the knowledge warehouse accessible to staffs. Organization can extract information by using data mining in database. IT application can grow the creative abilities of creativity. IT shows a significant role in defining the achievement of the KM application. The development of KM has been closely dependent on information and communication technology. The effect of IT in KM includes the capture, storage and the transferring of knowledge. IT construction and the corresponding IT strategy can support the business strategy (Wang et al, 2006)

Conclusion

Finally, IT supports the process of knowledge codification and storage. IT facilitates the standardization and automation of certain tasks, supporting the transformation of tacit knowledge into explicit knowledge. Similarly, IT also provides the necessary mechanisms to codify and store knowledge. In order to be useful, however, knowledge stores must be accessible to firm members and must be in a form that will enable each member to interpret in a similar manner, thereby becoming a part of the whole firm's knowledge base. IT, with its protocols and platform standards, provides an ideal mechanism for connecting widely dispersed individuals via a common system and enabling firm members to access more easily the knowledge that is stored in memory bins, so that new information can be interpreted and synthesized with existing knowledge (Tippins & Sohi, 2003)

Implication of the role IT in Knowledge Management

The implication of the role of IT in Knowledge Management is that before developing an IT strategy, firms must develop a knowledge strategy to provide the basis for the IT strategy, not the other way round. Organizations lacking such a strategic foundation could fail to understand the complementarities between IT and information and knowledge resources in the organization and consequently miss out on successful innovations and improved performance. Firms need to: develop a clear policy of knowledge generation, identifying what knowledge that is important for the organization, under what circumstances it should be disseminated, foster the transfer and integration of knowledge between workers, exploiting the interrelations between workgroup and elaborate a knowledge map that determines in which people and systems the firm's accumulated knowledge base should reside. Organizations should also be aware of the potential that ICT has for favoring the development of more decentralized and flexible structures that ultimately facilitate the processes of knowledge generation and transformation

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