

COMPLEMENTARITY OF INFORMATION TECHNOLOGY TO KNOWLEDGE MANAGEMENT

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Abstract

Knowledge Management (KM) is presently the key factor for the growth and success of any organization that cannot operate solely by the traditional manual methods. The use of information and communication technologies (ICTs) and the different supporting platforms are dependable for knowledge management to uphold its specific principles, particularly knowledge sharing. The paper identified the significance of information and communication technologies (ICTs) in Knowledge Management (KM) to organizational effectiveness.

INTRODUCTION

In the modern world, organizations have identified the significance of knowledge management to help them explore new opportunities offered by innovative technology such as the web technology to expand and manage knowledge generated within and from outside it. Information and communication Technology(ies) (ICTs) have embedded knowledge management systems (KMS) that was developed to support basic processes of knowledge management, knowledge creation and exchange because knowledge management is strategic to the other two tiers of organisation activities (tactical and operational). The KMS is aimed at developing awareness of the interactive role of technology and organizational success (Drosos & Tsotsolas, 2014).

This makes the adoption and use of ICT to collapse boundaries and enhance persons and institutions to harness new methods, tools and techniques in the development of

Knowledge management system frameworks, knowledge processes and to promote effective management of knowledge for improved service deliveries. Information and communication technology (ICT) enables and provides the infrastructure and tools to support knowledge management and thus a crucial asset in the success of knowledge management.

This complementarity significantly influences the traditional ways of understanding organizational behaviors and their effect particularly how organizations tackle the challenges of managing knowledge diversity. Information systems developed for KM can directly influence the knowledge management processes and also indirectly affect knowledge management by affecting factors such as structure and culture. Reiterating the benefits of ICT to KM Subashini, Rita and Vivek (2012) itemized creation, storage and sharing of knowledge within or around organizations as vital roles needed to

strengthen the self-action of employees and make them effective when using organizational resources.

New knowledge management products are introduced in the market and the existing products are being modified so that they can be reintroduced as knowledge management products because these products cover aspects of organizational learning, information science, training, change management, business process analysis, motivation and interpersonal communication (Chugh et al., 2013). Similarly, Drosos and Tsotsolas (2014) accorded the position of knowledge management as influencer of organization strategic, innovative and operational levels in decision making. They averred that KM help to develop and create necessary awareness of the interactive roles towards organizational successes.

Conceptual Clarifications- Information Communication Technology

Information and Communication Technology are termed as the different set of technological tools that are used for establishing communication, creation, dissemination, storing and managing of information. Information and Communication Technology has been classified into hardware and software and it helps in processing information. The hardware consists of a computer machine- infrastructure facilities, while the software includes different program packages (Supriya, 2020).

Information and communication technology (IT) is the acquisition, processing, storage and dissemination of information by a technological based

combination of computing and communications (Randuic, 2011). In today's world, it is common to use information and communication technology (ICT) because ICT is an extended term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage, and audiovisual systems, that enable users to access, store, transmit, and manipulate information.

Knowledge Management

Knowledge management is a procedure that enables people to share access and update the business learning and information so that reduction in operational cost, increase in customer loyalty, and innovation practices will take place adequately. Eidizadeh, Salehzadeh & Esfahani (2017), and Jelenic (2011) opined that knowledge management helps companies to gain a competitive advantage, increase business intelligence, enhances the ability to make decisions, selects, organizes and present the information so that the understanding of the employees will get developed. Knowledge sharing is routinely practiced by organizations to open up employees towards knowledge, consciousness, and agreeableness for their benefits and that of the organization (Inkinen, 2010).

Knowledge is of two types, explicit and tacit. Explicit knowledge can be articulated in formal language and transmitted among individuals while tacit knowledge involves more intangible factors and is personal knowledge embedded in individual

Complementarity of IT to Knowledge Management

experience. Knowledge Management (KM) as a system is designed to create, validate, present, share and apply knowledge to the success of the organization. Knowledge management is the systematic management of an organization's knowledge assets for creating value and meeting short term strategic requirements (Sefollahi, 2018). According to Sefollahi (2018) dealing with knowledge is the main theme of knowledge management through initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.

Knowledge management process

The concept of knowledge management is used to describe the process of gaining, shaping and connecting both explicit and tacit knowledge of human resources so that other individual might find it useful in their work (Juan et al., 2016). By using knowledge management organizations could adapt to and respond to the ever-changing business environment. It also enables these companies to be innovative to improve decision making and efficiency. KM on process is the epicenter of KM in organizations. Some scholars have termed it as the knowledge management cycle because it describes knowledge creation, storage, transferring /sharing and application stages (Hajric, 2018).

Complementing roles of ICT to knowledge management information technology

Effective KM is an increasingly important source of competitive advantage, and key to the success of contemporary organizations. 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).

The Role of IT in knowledge management

Technology plays an important role in knowledge management because it provides a system that supports the functions of information creation, construction, identification, capturing, acquisition, selection, valuation, organization, linking, structuring, formalization, visualization, distribution, retention, maintenance, refinement, accessing, search, and application (Hamad, 2018).

Duffy (2010) considers IT as key in managing, storing and accessing documents and databases. IT when integrated with knowledge management facilitate processes of generating, harnessing and sharing information in organizations, institutions and companies to manage uncertainty and complexity where information is more factual and when a high degree of interaction is not required (Chanopas, 2013).

Knowledge formation and distribution are upgraded by IT for improving communication, transfer, storage and sharing of organizational knowledge in explicit form. Current and emerging ICT tools are enabling

information managers to better source relevant information that are implicit, and to better organize, store, provide access to, guide and protect the use of information materials in responsive and responsible ways. ITs also promote faster feedback from end-users and facilitate knowledge sharing among wider audience (Hall & Andriani, 2012).

Information technology can be used during KM to improve the communication process through improving access to the information thereby increasing transparency. However, IT has had the net effect of making knowledge more explicit, thus facilitating a more rapid transmission and robust standardized decision-making procedures that can also be used to codify knowledge (through the use of expert systems) (Hall & Andriani, 2012).

Information and communication technology has elevated the need for organizations to come up with fresh procedures, rules, tools and methods to develop frameworks, processes and technologies so as to promote effective management of knowledge for decision making (Rosenthal-Sabroux & Grundstein, 2014). This implied that it plays significant role in knowledge management innovations.

Role of ICTs in Knowledge Creation

Knowledge creation is referred to as knowledge generating or capture. Sağsan (2006) describes this as the process of retrieving either explicit or tacit knowledge that resides within people. The aim of managing knowledge within an organization is to increase profit, improve efficiency of processes (Hislop, 2013). However, this expected benefit cannot be

accomplished without proper knowledge creation by an organization (Dul et al., 2011).

The role of ICT is found to have more essential gears in knowledge creation even though it is primarily a human process. ICT provides tools used to facilitate knowledge creation process and cannot replace people (human) (Omotayo, Funmilola & Olubunmi, 2015). The role played by ICT in this process is to support and enhance the organizational processes of knowledge creation (Chang & Lin, 2015). According to Chang & Lin, (2015) ICT provides the tools that support information gathering, processing/creating, distribution and usage. Dedrick, Gurbaxani, and Kraemer (2003) opined that it is an enabler of organizational changes.

Knowledge storage

Knowledge storage is a vital stage of the KM cycle as it creates a crucial link between the captured knowledge and sharing of the same. This may entail retaining more codified forms of knowledge into corporate portals and encapsulating knowledge artifacts and tools through prototyping. Incidentally, more tacit forms of knowledge may be stored in the form of knowledge audits, maps, models, and taxonomies. Hence, this stage must involve codifying the knowledge (putting in a form that communicates to others) and organizing (establishing relationships, classifying) (Evans et al., 2014).

With the onset of information explosion ICT is crucial to knowledge storage because it is pivotal in organization for the capturing and knowledge both internally and externally through networks and databases (Wei & Yeganeh, 2013).

According to Wei and Yeganeh (2013) ICT empowers organizations to acquire knowledge which they capture electronically, store, manipulate and make accessible for responsive and effective decision making.

Knowledge transfer and sharing

Knowledge transfer has several dimensions; from persons to explicit sources, from persons to sets, between sets, transfer and sharing of knowledge between persons and from the set to the business. Knowledge transfer in organizations drive the communication processes and information flows. ICT enables knowledge transfer by creating collaborative tools for formal communication such as SharePoint, email, teleconference, social media, intranet and internet.

Furthermore, the role of technology is not making organization share/transfer knowledge, but to facilitate the range and opportunity of such exchanges, only if people want to share/transfer it. Document management systems for example are repositories for organization's document or explicit knowledge in an organization. These systems are mainly used for creating, processing and reviewing documents (Wei & Yeganeh, 2013)

During knowledge transfer and sharing, Wei and Yeganeh (2013) opined that organizations can benefit in building the organizational memory and knowledge, and be provided with skills to adapt to the challenges in the business environment at any given time as a result of ICT incorporation. In this regard use of ICT at this stage of knowledge capturing is an essential tool for both effectiveness to usage and

reuse of knowledge in facilitating the processes of identification, storing, classification, and selection of required knowledge. It is important to note that employees readily share knowledge more effectively and use the company's KM with more enthusiasm when their contributions are credited. Therefore organizations need to come up with strategies that ensure employee recognition to enhance knowledge sharing.

Knowledge application

This is the stage where the knowledge that has gone through knowledge storage, transfer and sharing is put to work and draw value. Knowledge application is the final stage in the cycle of KM. The application of knowledge needs consumers to request it in the required time and ability to understand how to use it (Takanashi, 2002). In this stage, knowledge management involves the usage of knowledge in adjusting the strategy, improving the efficiency, solving the problems, making decisions, and reducing costs.

Sefollahi (2018) argues that organizational knowledge must be directed towards the products, services and processes of the organization. If an organization cannot easily identify the correct form of knowledge in its proper place, it could be difficult to compete in the realm of competition where innovation and creativity are essential and applied in the right knowledge appropriately.

The role of ICT here is to enable searching through knowledge repositories to retrieve knowledge for the user in a timely manner to enhance application. These engines are evolving everyday with new features as

relevancy ranking, natural language querying, summarization, preferential searching and others being added for satisfying the needs of information seekers and precision of finding the right information to save time and increase the system's efficiency. The knowledge reuse requires the active contribution of knowledge employees that are planned in groups within the organization Hislop, (2013).

Implication of the role of IT in knowledge management

The implication of the role of IT in Knowledge Management is that before developing an IT strategy. Organizations should 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.

Organizations need to: develop a clear policy of knowledge generation, identifying what knowledge is important for the organization and under what circumstances it should be disseminated; foster the transfer and integration of knowledge between workers, exploit the interrelations between workgroups; and elaborate a knowledge map that determines the peoples 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.

Challenges of ICT in knowledge management

Despite the gains realized by the use of ICT in knowledge management, the embedding of ICT in knowledge management in organization faces numerous challenges; these challenges are caused by the human nature, organizational hierarchy and culture of the organization. Effective knowledge management may require significant change in culture and values, organizational structures and reward system for successful KM which are held with high esteem in some organizations to their detriment.

Resistance to change and lack of commitment and cooperation from employees are traits of human nature that pose a challenge to the implementation of ICT in KM (Prajapati et al., 2014). The easy availability of ICTs poses the challenge of information overload to those lacking requisite skills to categorize and navigate. This becomes a recipe for misinformation and call counter-knowledge, that is, when employees create and disseminate inappropriate or incorrect interpretations of certain events or sequences of facts.

Rumours, gossip, unsupported explanations and justifications, as well as inappropriate or false beliefs are some of the instances where employees are capable of creating and sharing counter-knowledge within the organization. Another challenge posed by the easy access to ICT is the organization's inability to have control over the shared information and knowledge, which raises concerns on security and privacy issues that relate

to operations, such as in adding and sharing information and knowledge and the need for protecting sensitive data that negate trust (Soto-Acosta & Cegarra-Navarro, 2016).

CONCLUSION

The main focus of this paper is espouse ways by which information technology complement knowledge management. From the different submissions, it can be concluded that organizations have recognized the crucial role and value of information

technology for the effective utilization of knowledge management.

Integration of technology and KM has provided a major stimulus to KM implementation as a system that provides databases decision support systems, enterprise resource planning systems, expert systems, management information systems, lesson learned systems and many others. However, it is an important facilitator for improving the dynamic capabilities of knowledge management in general.

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