

The Role of Knowledge Management in Digital Education

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Abstract

Educational organizations are required to overcome the new challenges, especially the changing nature of the enhanced dynamism, digital disruption and complexity of the requirements from the educational organizations. One of the current strategic philosophies assisting educational organizations to develop strategic capabilities dealing with uncertainty is knowledge management (KM). Through the systematic acquisition, creation, sharing, and use of knowledge, organizations develop, renew and exploit their knowledge-based resources, thereby allowing them to be proactive and adaptable to external changes and attain competitive success. KM is the technique of using the information and knowledge that is supplied to, generated by and inherent in any organization or institution, to improve its performance. This paper focused on the KM in organization, major categories of KM roles, implications of learning theories on KM on digital educational organizations, applying KM in digital education, KM model in digital educational organizations and the future of KM in educational organizations.

Keywords: *Knowledge Management, Digital Education.*

Introduction

Knowledge has become a precious property and Knowledge Management (KM) has been widely practiced by many organizations as one of the most promising ways of achieving success in the information age. For the last couple of years the knowledge management stream is gaining significant attention within the management literature. Stepping on the theoretical fundamentals of various fields – public administration, economics, organizational science, management, sociology, law and the like, many authors adopt the assumption that the knowledge is gradually turning into a major resource center for the organizations (Martensson, 2000). As basic factors contributing for that change are distinguished globalization, rapid development in the fields of information and telecommunication technologies, increase in complexity, volume and scope of the contemporary organizations, ever expanding competition, changes in the volumes and structure of demand and the ensuing changes in the political and economic structures. As a result of these changes

the competitive advantages of the organizations alter as well and the knowledge more and more is shaping as such advantage. From a KM perspective the research focus is shifting towards the practices and methods the organizations are employing in order to manage the accumulated knowledge. The process of intentional KM used to improve the organizational performance can be traced in the design, development and application and automated means for collection and processing of information as well as in the interaction between the people and units of the organizations (Roxanne Helm Stevens, 2010).

KM has been the subject of much discussion over the past decade. Organizations are told that they will not survive in the modern Knowledge Era unless they have a strategy for managing and leveraging value from their intellectual assets, and many KM lifecycles and strategies have been proposed. KM refers to practices used by organizations to find, create, and distribute knowledge for reuse, awareness, and learning across the organization. KM programs are typically tied to organizational objectives and are intended to lead to the achievement of specific outcomes such as shared intelligence, improved performance, or higher levels of innovation (Yu, Zhang & Shen, 2017).

Organizations are starting to understand and appreciate knowledge as the most valued asset in the emerging competitive environment. The objective of KM is to improve the quality of the contributions people make to organizations by helping stakeholders to make sense of the context within which the organization exists, to cooperate and share what they know and learn, and to effectively challenge, negotiate and learn from others. Business organizations worldwide are implementing techniques and technologies to better manage their knowledge. These concepts, tools, and techniques of organizational KM can be applied in the education sector.

With the growing importance of the knowledge economy, KM has been recognized as a facilitated tool for sharing and utilizing knowledge in educational organizations: universities or colleges and elementary or secondary schools. We could ask whether this popularity is in spite of uncertainties about the idea of KM and how it can be applied to foster professional learning. Its uses in different organizations show that it means different things according to different authors and is used in different ways. KM is the field that is concerned with the analysis and technical support of practices used in an organization to identify, create, store, share and use knowledge to adopt and leverage good practices embedded in collaborative settings in organizational knowledge processes. (Phongsak Phakamach, 2019)

Currently in the process of transforming from a traditional educational school to a more knowledge-based education, Thailand has experienced the increased learning economic cooperation and integration policies that have created a more intensive and dynamic competition landscape in the country. This situation provides both great opportunities and daunting challenges for digital education. To develop,

education should consider developing a proactive strategy towards new resources and capabilities to achieve a well-coherent transformation to knowledge society. Educational organizations, in the meantime, have been transformed from traditional organizations to learning organizations in digital era. Information and Communication Technology (ICT) provides the potential for enhanced access to knowledge combined with the challenge of how to manage the access to knowledge. Furthermore, ICT promises improvements in the quality, efficiency, and effectiveness of education process; and draws solutions from and contributes to multiple disciplines including management, information retrieval, artificial intelligence, and organizational behavior.

KM in Organization

Over the past ten years, KM concept has become an integral part of work processes in organizations of all types, including business, education, health care providers, management consulting firms, and government. Technology has changed to create an explosive interest in knowledge, specially, KM. Additionally, the recognition that organizations need a leading edge approach to providing product and service differentiation to customers, combined with technological advances, has aggressively driven organizations to further pursue a better understanding of KM. KM is expected to improve and create organizational innovation and competitive advantage for business enterprises. In addition, KM as a long term attempt is well recognized in business excellence models around the world. The models directly or indirectly include KM as a key success factor. International role models of organizational excellence usually demonstrate superiority in the application of KM in their day-to-day operations.

Phongsak Phakamach (2011) argue that the framework of KM is based on the view of organizations as knowledge systems that include four knowledge processes: creation, storage and retrieval, transfer, and application. The knowledge-based perspective postulates that organizations existence facilitates the generation, transformation and the application of knowledge through implementation in organizational setting. Hence, organizations can be viewed as systems created for creating, storing and retrieving, transferring and sharing, and applying the knowledge required for development and delivery of organizational practice products and/or services. The aforementioned knowledge exchange modes of knowledge in organizations are: (1) exchange knowledge between individuals; (2) exchange between individuals and knowledge repositories; and (3) exchange among existing knowledge repositories. The three terms of knowledge transfer or sharing indicate knowledge exchange. A successful KM initiative requires a systems' design approach to incorporate and integrate the necessary critical elements of codification, collaboration, convergence, and coherence is shown in Fig. 1.

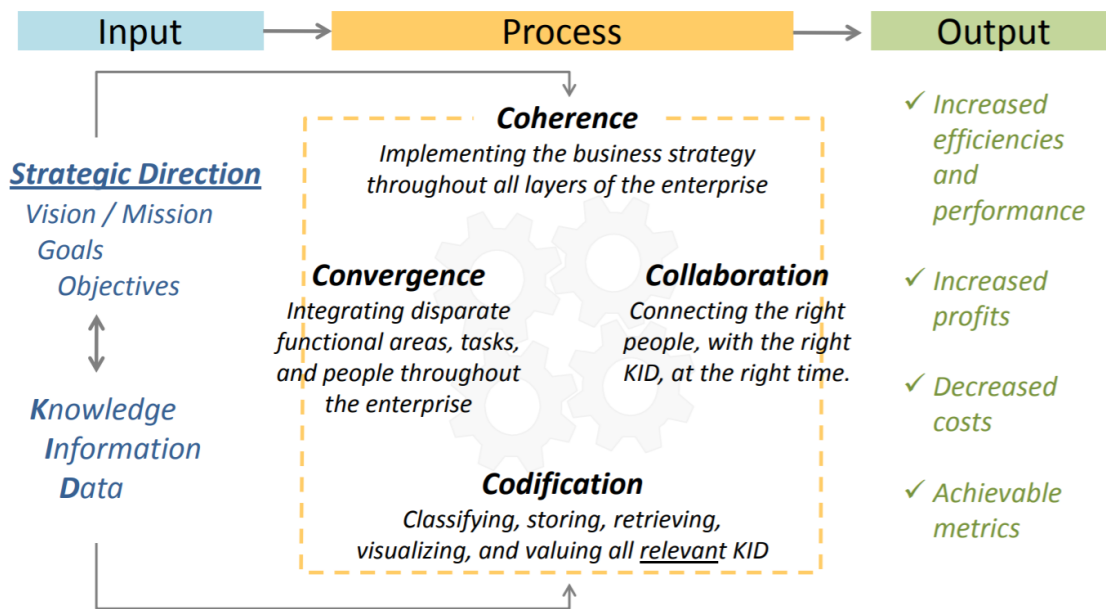


Figure 1. A successful KM initiative systems.

KM is upgrading the organization's abilities and reflect its knowledge in performance. Moreover, through KM, the institutionalized knowledge is reserved and not lost by employees turnover. The status of KM in organizations reveals that they do not value knowledge creation, easily lose the knowledge they already own, forbid knowledge sharing, and do not invest in knowledge. And most important, because of lack of proper knowledge organizing, they are not aware of what they already know. Consequently, knowledge is a living value, its dynamic and smooth flow of specialized experiences and insights makes it essential to the development of the organization. Usually, knowledge is hidden in documents, reports, files, procedures, norms and values. Employees need to grasp the hidden organizational knowledge to achieve better competitive advantage. Organizational leadership should understand that knowledge is a human capacity. What exists in files, documents is not by itself knowledge. Knowledge creation needs efforts from the teamwork through proper organizing. It should be noted that this knowledge is useless unless applied by the teamwork of the organization. It is the duty of the organizational teamwork to organize, share, apply and convert information into organizational knowledge (Saweeya Prathanadi, 2011).

The aforementioned arguments emphasize that the different kinds of knowledge: tacit knowledge and explicit knowledge. Tacit knowledge consists of one's mental models, beliefs and opinions, and is rare, irreplaceable, inimitable, and recious. Knowledge sharing changes tacit knowledge to explicit knowledge. Explicit

knowledge is a kind of knowledge which can be defined and shared easily through information technology.

Major Categories of KM Roles

Most organizations are still defining their KM roles. Some are repurposing or extending existing roles in order to better accommodate knowledge work. While KM in every organization is unique and necessarily tailor-made, there are a number of “generic” KM roles that can be identified. Phongsak Phakamach (2019) identified a number of KM roles which are quite diverse. They include such categories as:

a) Strategic roles: Chief human capital officer, human capital retention manager;

b) Senior and middle management roles: Chief knowledge officer, knowledge manager;

c) Knowledge leaders: Also referred to as KM champions, who are responsible for promoting KM within the organization;

d) Knowledge managers: Responsible for the acquisition and management of internal and external knowledge;

e) Knowledge navigators: Responsible for knowing where knowledge can be located, also called knowledge brokers;

f) Knowledge synthesizers: Responsible for facilitating the recording of significant knowledge to organizational memory, also called knowledge stewards;

g) Content editors: Responsible for codifying and structuring content, also called content managers; roles involving capturing and documenting knowledge researchers, writers, editors;

h) Web developers: Electronic publishers, intranet managers, content managers;

i) Learning-oriented roles: Such as trainers, facilitators, mentors, coaches including those with responsibility for developing information and knowledge skills;

j) Human resources roles: Specific responsibility for developing programs and processes that encourage knowledge-oriented cultures and behaviors;

k) Knowledge publishers: Responsible for internal publishing functions, usually on an intranet, also called webmasters, knowledge architects, knowledge editors;

l) Coaches and mentors: Responsible for assisting individuals throughout the business unit or practice to develop and learn KM activities and disciplines;

m) Help desk activities: Delivery of KM and information related to training, also called KSO (Knowledge Support Office).

In seeking to recruit relevant professionals for KM raise, a key challenge lies in defining the objectives and deliverables of those roles and in specifying the skills and experience of the people needed to fill them. Some of these roles may be newly created, while others may involve redefining or extending existing roles.

Different organizations will necessarily have different approaches describing knowledge management roles. A sample KM job description may look something like the example given here.

KM professionals require a multidisciplinary skill set that consists of such competencies as finding, appraising, and using knowledge, reformulating questions, navigating content, evaluating the relevance of content, filtering out what is not needed, and synthesizing from diverse sources to apply the knowledge (e.g., to make a decision). Last but not least, they must contribute to recording such valuable experiences to organizational memory systems.

Implications of Learning Theories on KM on Digital Educational Organizations

KM leads educational organizations to identify all the needed processes that add value to learning experience, through the use of intellectual capital. Starting from the hypothesis that KM and organizational learning are the link between the intellectual capital development and how these concepts are inter-related. Knowing is an integral part of broader changes of being, it is a way of participating and of relating. In educational organizations KM is considered as synthesizing the information processing technologies and the abilities of the people to allow the organization to survive on knowledge-economic base society. It is not just knowing everything the organization knows. It is creating a synthesis between the people and the information to the point that the whole is the full picture of all parts. Hence, the value of KM is the effectiveness with which the managed knowledge enables the teamwork to deal with the existing situations effectively. Organizations must challenge themselves to engage as many people as possible in the experiences, such that the organization learns to the depth and breadth that will sustain its growth in knowledge and ultimately its survival.

KM procedures enhance learning theories with different processes to capture and integrate newly gained knowledge into the existing one. In order to be successful, educational organizations must first concentrate on changing the mindset of its employees. The goal in using knowledge management is to aid them in the performance of their duties. It must have practical application to organizations – human organizations. Knowledge and learning come from people and their relationships with each other and their experiences. The real challenge comes in the form of developing a culture that embraces learning, sharing, changing, and improving, all through the collective intelligence and knowledge of people.

The organizations that learn how to be smart, quick and responsive are the ones that will survive long into the future. Organizations are made up of people who need time to experience, reflect and learn. Knowledge is derived out of human

relationships and experiences. Hence, the assurance that knowledge will prevail by ensuring that knowledge workers are given “voice” – sometimes referred to as shared leadership. Knowledge workers as people who know more about what they are doing than their managers do while many knowledge workers have years of education and experience in training for their positions, they often have little training in how to effectively influence upper management. Sometimes, the great majority of people tend to focus on efforts rather than results. The answer lies not in focusing on efforts or results, but rather focusing on shared purpose. The responsibility for having “voice” within an organization does not necessarily rest with a perception of permission from upper management but with courageous followership. That shared leadership has its limits when given a top-down approach. Instead, that both the follower and leader share a common purpose and that the “loyalty of each is to the purpose and to helping each other stay true to that purpose something that can only be done holistically, by giving knowledge workers “voice” within the organization (Tantray, Sehgal & Sharma, 2017).

As discussed above, there are five areas of KM sharing knowledge

1. Systematic problem solving.
2. Experimentation with new approaches.
3. Learning from one’s own experience and past history.
4. Learning from the experiences and best practices of others.
5. Transferring knowledge quickly and efficiently throughout the organization.

These five areas need to function in harmony and balance with one another. Effective KM can be increased. The challenge facing the organization comes in maintaining the dynamic nature of the interrelationship of these five areas of KM. These areas should be treated as a scientific method rather than on guesswork when it comes to problem solving. On decision making areas the treatment should be based on data, not assumptions. In the organization and communication, knowledge should use simple statistical tools.

Furthermore, KM can improve an organization’s ability to achieve development results. In its most basic form, KM is all about converting the available raw data into understandable information. This information is then placed in a reusable repository for the benefit of any future need based on similar kinds of experiences. KM contributes towards streamlining the ideas, problems, projects and deployment in light of organizational goals driving towards productivity.

Applying KM in Digital Education

Sugunah Supermane & Lokman Mohd. Tahir (2017) described KM is best known for its effectiveness in solving knowledge hoarding and limited expertise problems in educational institutions. Typically, KM is aligned to the objectives of

educational institutions in order to achieve expected outcome through integration with innovation to strengthen capabilities of the lecturers and qualities of teaching and learning activities. The truth is that realizing effectiveness and significance gains requires continuous effort of the lecturers in executing KM in their teaching and learning activities. Such practices generate positive outcomes in producing various knowledge and new ideas to develop innovation in teacher education.

Nguyen Ngoc-Tan & Aleš Gregar (2018) said that KM in education as management activities that frame and guide knowledge creation in educational organizations. The knowledge creation process is of retrieval, combination, creation and erasing of knowledge. Knowledge creation discards of old knowledge, yet whatever is discarded, it will always be partial of the new created knowledge. KM in education has two main dimensions. First, knowledge creation practices are carried out within a frame of management, information systems, organizational and human resource policies and practices. The knowledge creation resides in several organizational cultures and takes the form of political processes of negotiating knowledge claims. Second, knowledge creation relies not only on information systems, but several systems supporting finance and accounting, document handling, educational practices, internet communication (Intranet) and Web based projects which all need to be integrated together to support the knowledge creation process.

Based on the definitions of KM, the researcher considers that KM is a method, a tool and technique by which knowledge can be created and shared. Profitability and productivity of knowledge is achieved through sharing knowledge with to acquire the ability for gaining competitive advantage. Hence, knowledge management in educational organizations is every activity of knowledge creating, sharing, and applying for the purpose of better learning and improved performance. It is in the form of a four processes: effective learning process blended in creation, organizing, sharing and applying knowledge, which leads to upgrade of organizational intellectual capitals and performance improvement.

According to Dev Raj Adhikari (2010), KM in educational institutions can be defined as the organized and systematic process of generating and disseminating information, and selecting, distilling, and deploying explicit and tacit knowledge to create unique value that can be used to strengthen teaching-learning environment. Phongsak Phakamach (2019) believed that, by its nature, university environment is suitable for the application of KM principles and methods. This can be explained by the following reasons: (1) universities usually possess modern information infrastructure; (2) knowledge sharing with others is natural for lecturers; and (3) the desire of students is to acquire knowledge from accessible sources as fast as possible. Furthermore, Arthur Shelley (2014) said KM in higher education has three objectives: first, developing tasks for better quality and effectiveness; second, developing human resources in all operating levels; and third, developing knowledge

bases of organizations or sectors towards the enhanced knowledge investment or wisdom investment of the organizations.

Although educators might assert that they have been managing knowledge, this has traditionally been on a personal level rather than an organizational basis. The knowledge has normally been managed in an incomplete manner allowing knowledge loss (e.g. key members of the design team leave and people remaining in the organization do not know why a certain aspect of the practice has been designed in a particular way). Some of these knowledge in digital education areas are:

a) Acquiring knowledge: The development of new technologies makes product development more efficient only if educators (users) are proficient with the new technology and they understand its impact. When educators use a technology that they are unfamiliar with, they often resort to the learning by doing approach, which can result in serious delays. So, organizations must quickly acquire knowledge about new technologies and master them.

b) Sharing knowledge Every organization has its own policies, practices, and culture, which are not only technical but also managerial and administrative. This knowledge is usually transferred to new educators informally from experienced educators. Passing knowledge informally is an important aspect of a knowledge sharing culture that should be encouraged. Nonetheless, formal knowledge capturing and sharing ensures that all educators access it. So, organizations must formalize knowledge sharing while continuing informal knowledge sharing.

c) Capturing knowledge Educational organizations depend heavily on knowledgeable educators. Knowing what educators know is necessary for organizations to create a strategy for preventing valuable knowledge from disappearing. Knowing who knows what is also a requirement for efficiently staffing projects, identifying training needs, and matching educators with training offers.

d) Collaborating and sharing knowledge Group members are often geographically scattered and work in different time zones. Nonetheless, they communicate, collaborate and coordinate. Communication in educational organization is often related to knowledge transfer. Collaboration is related to mutual sharing of knowledge. Group members can coordinate independently of time and space if they can easily access their work artifacts.

Education institutions (schools, colleges, universities) have significant opportunities to apply KM practices to support every part of their mission. It is with KM that education institutions will be better able to increase student retention and graduation rates; retain a workforce in the face of severe employee shortages; expand new program offerings; work to analyze the cost effective use of marketing, technology and other strategies to meet more enrollment; transform existing processes and systems to provide information, not just data, for management; and

compete in an environment where institutions cross state and national borders to meet student needs anytime/anywhere (Omigie, Ikenwe & Idhalama, 2019).

KM Model in Digital Educational Organizations

Educational organizations embrace vast amounts of explicit and tacit knowledge in areas that are critical to achieve their goals, such as knowledge related to product development and process integration. Managing this knowledge effectively promises to allow educational organizations to save time and money, improve quality and performance, and provide a competitive advantage. Therefore, organizations need to successfully implement KM to capitalize on their knowledge and achieve those benefits.

Mansour Alosaimi (2016) suggests that implementing KM involves a number of challenges and obstacles. Three issues are particularly important in digital education:

1. Technological issues: Software programmes support KM, but they are not always possible to integrate all different subsystems and tools to achieve the planned level of sharing. Information security requirement is not fully provided by the existing programmes.

2. Organizational issues: Both technology and methodology are essential for the implementation of KM. Unfortunately most organizations focus only on technology and neglect methodology. This exercise may lead to devote all resources to technology development without planning for KM implementation.

3. Individual issues: Some cultural behavior may prevent knowledge sharing. For instance, some educators do not share their knowledge with others or they do not ask about new information or they do not want to reuse someone else's knowledge.

Requirements of the KM Model

The needed KM model should consider all relating issues and introduce a framework that provides educational organizations with detailed requirements for successful KM implementation. (Nair & Munusami, 2019). These requirements can be summarized as follows:

1. Classification of the different types of knowledge available in educational organizations according to their knowledge processing requirements (i.e. knowledge acquisition, development, and distribution). Different types of knowledge need to be handled differently. For example, the requirements needed to acquire explicit knowledge are different from that needed to acquire tacit knowledge;

2. Identification of the steps in the knowledge management life-cycle within educational organizations and how they accommodate the different types of educational knowledge;

3. Outlining the importance of deploying a KM strategy in the organization

and describing the characteristics of such a strategy;

4. Describing how the organization's KM strategy can be transferred to the operational level;

5. Identifying the knowledge infrastructure that is essential for effective implementation of KM. Such an infrastructure should consist of culture, people, technology, and structure that facilitate the knowledge cycle architecture of identification, acquisition, development, and distribution;

6. Describing how the elements of the knowledge infrastructure facilitate the educational knowledge life-cycle and specify interrelationships.

7. Providing educational organizations with a framework that identifies the requirements which are necessary to facilitate their knowledge needs. Organizations can then assess their KM status and determine the areas of weaknesses "gaps". The route of progress then becomes visible as organizations can focus on improving their weaknesses.

The KM model will consist of three processes

1. The first process is that educators need to classify educational knowledge according to their knowledge processing requirements and places them in three categories (electronic library or respiratory which contains an organization's explicit knowledge that is easily codified; documented procedures and lessons learned which represent tacit knowledge that has been transferred into explicit knowledge; and experience and know-how which refers to tacit knowledge that educators gain through their work experiences and is not easily codified). (Adebowale I. Ojo, 2016)

2. The second process requires educators to manage the elements of the classification of educational knowledge. This process constitutes the KM lifecycle composed of: knowledge identification; knowledge acquisition and development knowledge distribution; and knowledge measurement and review.

3. The third requires educators to manage the facilitators and infrastructure that support the elements of the KM life-cycle. These are: strategy; technology; and organizational structure.

The Future of KM in Digital Educational Organizations

Educational organizations have several characteristics that provide advantages in the area of KM. For example, KM processes operate on a smaller scale and are able to have more intimate interactions among people. Knowledge created through the mechanism of these communication interactions could produce knowledge to improve the quality of learning and success of the learners. Establishing KM processes could improve the possibility of solving the learning's difficulties increase (Denise Bedford, 2013).

KM contributes differently to digital educational organizations depending upon the nature of that organization. KM is not only a technology or a set of

methodologies, but also it is a practice or discipline that involves people, processes and technology. KM improves the productivity and efficiency of an entire organization. Furthermore, KM practices can be utilized as a knowledge base, knowledge sharing, collaboration and knowledge reuse to efficiently enhancing and supporting education. For example, KM in the field of education can reduce the training time and speed new teachers ramp up. It enables them to become more confident and competent. By having access to knowledge, new teachers can get answers to common questions without having to constantly ask other more experienced ones. End-users also benefit when they have direct access to knowledge to solve their own issues without ever contacting an educational advisor. A growing number of people now prefer self-service to solve daily problem and concern rather than consulting experienced colleague.

KM process is composed of six phases: identify, create, store, share and use to achieve organizational goals, and establish an environment conducive to knowledge sharing. KM process consists of knowledge generation, knowledge representation, knowledge codification, and knowledge application. Today, a large number of organizations are putting much emphasis on the utilization of KM processes. KM main objective is to manage the most essential knowledge to the development the organization. Consequently, KM can assist knowledge users in enhancing and expanding the innovation process.

Conclusion

Knowledge Management or KM is the process of capturing, developing, sharing, and effectively using organizational knowledge. It refers to a multi-disciplinary 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, ICT systems, management, and library, and information sciences. More recently, other fields have started contributing to KM research, including information technology and media, computer science, public health, and public policy. Many large companies, public institutions, and non-profit organizations have resources dedicated to internal KM efforts, often as a part of their business strategy, ICT, or human resource management departments. Several consulting companies provide strategy and advice regarding KM to these organizations. KM efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration, and continuous improvement of the organization. KM efforts overlap with organizational learning and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on

encouraging the sharing of knowledge. It is an enabler of organizational learning as well.

In this article, we present a detailed process view of organizational knowledge management with a focus on the KM in digital organization, major categories of KM roles, implications of learning theories on KM on educational organizations, applying KM in digital education, KM model in educational organizations and the future of KM in digital educational organizations. Finally, we discuss several important topic surrounding the KM in digital education in order to improve their performances in the educational organizations management.

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