# Knowledge management models and frameworks commerce essay

The purpose of this paper is to critically review the various knowledge management models and frameworks. The review found that various knowledge management models and frameworks varies in perspectives ranging from the basic assumption of the articulation and transfer of tacit and explicit knowledge to the more complex and complicated assumption that knowledge is intellectual capital and it is mechanistic in perspective as well as an important asset that has to be managed efficiently for firm's success. In this paper, knowledge management models are divided into three categories: knowledge category models, intellectual capital models, and socially constructed models. Besides, two knowledge management frameworks will be discussed in this paper. Finally, a KM model and framework is tentatively suggested to act as a useful guide for further research and organizational application.

## Introduction

Nowadays, the world is fully experiencing an era, namely: " knowledge age" or the " knowledge economy". In knowledge economy, knowledge is the crucial commodity due to the rapidly technological advancement. The technological innovations are eliminating the gap between competing companies and the collective knowledge of the employees become the key factor in producing innovative and competitive products or services (Sunassee and Sewry, 2002). Since previously managers did not encourage diffusion and sharing of knowledge among employees, changing in mindset is required for managing the knowledge effectively. The knowledge-driven activities in organizations and of the broader economic and social life lead to the management of knowledge become very important (Sunassee and

Sewry, 2002). In general, this managerial activity has been known as Knowledge Management (KM).

Previous research on knowledge management indicates the existence of various definitions of knowledge management. According to Nonaka and Takeuchi (1995), knowledge management is “ the capability of a company to create new knowledge, disseminate it throughout the organization and embody it in products, services, and systems.” Duffy (1999) defines knowledge management as “ the identification, growth and effective application of an organisation’s critical knowledge.” Knowledge management has been defined in another term, which is an organized and explicit process to generate, renew, and apply knowledge to maximize an organization’s knowledge-related effectiveness and returns from its knowledge assets (Wiig, 1997). Alavi and Leidner (1999) define knowledge management as “ a systemic and organizationally specified process for acquiring, organizing, and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work”. Besides, O’Dell et al., (1998) define knowledge management as “ a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance”. For instance, Beckman (1999) define knowledge management as “ the formalization of and access to experience, knowledge and expertise that create new capabilities, enable superior performance, encourage innovation and enhance customer value”. In general, KM is the process of creating, storing, distributing, and applying knowledge.

By reviewing the significance of knowledge management and the complexity of its nature, it is timely to try to understand the latest theories underlying knowledge and knowledge management. Hence, this paper will critically study the latest models and frameworks of knowledge management and discuss on the assumptions and views of each model and framework. The aim of this paper is to examine the current understanding of the theory and practice of the emerging field of knowledge management by critically evaluating existing knowledge management models and frameworks. Therefore, employers or practitioners in organizations can understand their concepts and improved approaches can be developed and applied to organization and to those who need to work and implement knowledge management.

This paper will begin by presenting the aims and objectives and followed with a short discussion on the types of knowledge. This is followed with the discussion on some of the existing knowledge management models and frameworks.

## Types of Knowledge

In today’s competitive business environment, only the knowledge of an organization can provide the basis for organizational renewal and sustainable competitive advantages. Organizational knowledge can be classified into two distinctive types of knowledge: explicit and tacit. According to Polanyi (1967), explicit knowledge is the knowledge which is easily to formalize, transfer, and store; documented, articulated into formal language, formally expressible and easily to communicate; tacit knowledge is pertaining to

ideas, feelings, and individual experience, which is more complicated and difficult to share with each others.

Explicit knowledge is the fact and can be codified and transmitted in a systematic and formal language. It is usually data, which is internal to an organization and can be easily collected. Tacit knowledge is the personal experiences, context-specific knowledge that is difficult to formalize record or articulate. It actually resides in the heads of the people, behavior and perception (Frid, 2000). Examples are intuitions, hunches, insights, beliefs and values. Both tacit and explicit knowledge are needed for an organization to achieve greater performance (Sanchez et. al. 1996).

## Knowledge Management Models and Frameworks

## Knowledge Category Models

These types of model categorize knowledge into discrete elements. One of the most renowned KM models fits into this category, the Knowledge Spiral model by Nonaka and Takeuchi (1995). This model presents a high level conceptual representation of the knowledge dimensions, namely tacit and explicit knowledge. The model makes a number of assumptions, namely:

1. Tacit knowledge can be transferred through a process of socialization (everyday comradeship) to become the tacit knowledge of others – top left quadrant

2. Tacit knowledge can become explicit knowledge through a process of externalization (formalizing a body of knowledge) – top right quadrant

3. Explicit knowledge can be transferred into tacit knowledge in others through a process of internalization (translating theories into practice) – bottom left quadrant

4. Explicit knowledge can be transferred to explicit knowledge in others through a process of combination (combining existing theories) -bottom right quadrant.

One criticism of the model is that knowledge transfer in organizations is much more complicated and convoluted than this simple matrix suggests. The model also assumes an integration of tacit and explicit knowledge; often this is not the case. This model is shown in figure no. 1 below.

A simple but more elaborate version of Nonaka's model is shown in figure no. 2 (Hedlund and Nonaka, 1993). This model assumes there are four different levels of ' carriers', or ' agents', of knowledge in organizations, namely the individual, the group, the organization and the inter-organizational domain (customers, suppliers, competitors, etc.). The above model is helpful by relating the carriers to the types of knowledge; it remains problematic in that it assumes the carriers, like the knowledge, can be simply separated.

Another example of a knowledge category model is that of Boisot, (1998), as shown in figure no. 3. Boisot's model considers knowledge as codified or uncodified, diffused or undiffused, within an organization. Boisot uses the term ' codified' to refer to knowledge that can be readily prepared for transmission purposes (e. g. financial data). The term ' uncodified' refers to knowledge that cannot be easily prepared for transmission purposes (e. g.

experience). The term ‘ diffused’ refers to knowledge that is readily shared while ‘ undiffused’ refers to knowledge that is not readily shared.

The model presents the following characteristics:

1. Knowledge categorized as both codified and undiffused is referred to as propriety knowledge. In this case, knowledge is prepared for transmission but is deliberately restricted to a selectively small population, on a ‘ need to know’ basis (e. g. projected profits, share price issues) – top left quadrant

2. Knowledge that is relatively uncodified and undiffused is referred to as personal knowledge (e. g. perceptions, insights, experiences) – bottom left quadrant

knowledge that is both codified and diffused is referred to as public knowledge (e. g. journals, books, libraries) – top right quadrant

Knowledge which is relatively diffused but also uncodified is labeled common sense – bottom right quadrant. Boisot, (1998) considers such knowledge as being built up slowly by a process of socialization, harboring customs and intuition.

There are few similarities between Nonaka’s model and Boisot’s model. For example, Nonaka’s categorization of explicit and tacit knowledge has a degree of correspondence with Boisot’s reference to codified and uncodified knowledge. The horizontal dimension relates to the spread or diffusion of knowledge across the organization in both models. However, Boisot’s model experiences the same limitations as Nonaka’s model in that codified and uncodified are but two discrete categories of knowledge. In addition, the idea

of diffused knowledge is rather general and it is not clear if it includes incorporating knowledge within the organization, as well as disseminating it.

## Figure No. 3-Knowledge Category Model (Boisot, 1998)

## Intellectual Capital Models

Management gurus such as Drucker (1993) and Brooking (1997) and practitioner icons such as Edvinsson, (1997) elucidated the notion of Intellectual Capital (IC). Knowledge and capital have been linked together for many years. Knowledge is being capitalized as a resource comparable to land or oil. However, we also need to focus on the intangible elements which knowledge contains such as employee skills, experiences, patients, copyrights, brands, licensing opportunities, research and development, innovative use of assets such as databases, etc. (Quintas et al, 1997). As these type of elements are not normally recorded on the traditional organizational balance sheet they are referred to Intellectual Assets; hence the term Intellectual Capital.

KM is actively concerned with the strategic outlook and operational tactics required for managing human centered, intellectual assets (Brooking, 1997). According to Peters (1992), KM can affect intellectual capital or as recognizing or rediscovering assets that the organization are not using to full potential, ultimately employees. As these approaches imply that the key areas of KM are the management of IC it is worth reviewing a typical IC model. The model, shown below in figure no. 5, is the Intellectual Capital model from Skandia Insurance which is adopted from Chase (1997), and Roos and Roos (1997). According to Edvinsson and Malone, (1997)

intellectual capital concsists the applied experience, organizational technology, customer relationships and professional skills that provide Skandia with a competitive advantage in the market.

One problem that can be associated with this model is the adoption of a scientific approach to knowledge. This is evident through the classification of knowledge as a commodity linking it to organization capital. This view of intellectual capital ignores the political and social aspects of KM. KM can be decomposed into objective elements rather than being socio-political phenomena from the view of intellectual capital. This is similar to the Nonaka and Takeuchi, (1995) approach.

As befits a new area of inquiry, much analytical work is focused on categorizing, mapping and measuring of knowledge types and processes. Although this is helpful, the epistemological basis of the field cannot be ignored (McAdam and McCreedy, 1999). Hence, we need to embrace socially constructed models of KM.

## Figure No. 4-Intellectual Capital Model of KM (Chase, 1997)

## Socially Constructed Models

This group of models assumes a wide definition of knowledge viewing it as being intrinsically linked within the social and learning processes of the organization. KM is concerned with the construction, capture, interpretation, embodiment, dissemination and use of knowledge. These components are represented in Demerest’s (1997) Knowledge Management model. The model is developed from the original work of Clark and Staunton, (1989) and Nonaka and Takeuchi, (1995). It can be compared to that of Jordan and

Jones, (1997) who speak of knowledge acquisition, problem solving, dissemination, ownership and storage and that of Kruizinga et al. (1997) who include knowledge policy, infrastructure and culture.

Firstly, the model emphasizes the construction of knowledge within the organization. The model assumes that constructed knowledge is then embodied. Next the embodied knowledge is disseminated throughout the organization. Ultimately the knowledge is used to gain economic value with regard to organizational outputs. The black arrows in figure no. 5 show the primary flow direction while the white arrows show the more recursive flows.

## Figure No. 5 -Knowledge Management Model – Demerest, (1997)

Demerest's model is attractive in that it does not assume any given definition of knowledge but rather invites a more holistic approach to knowledge construction. However, it does imply a simplistic procession approach to the flow of knowledge transfer, while in reality this may be extremely rapid and circulatory.

To overcome this gap a slightly modified version of Demerest's model has been developed, figure no. 6. Firstly the model emphasizes the construction of knowledge within an organization where either a scientific or social paradigm may be adopted. The scientific view of knowledge takes a " knowledge is truth" view (Morgan, 1986). This view considers that knowledge is a body of facts and rational laws thus promoting a non-personal view of knowledge, skills and tasks (Lave and Wenger, 1991). On the other hand the social view of knowledge is concerned with the social and

learning processes within an organization. However, this approach assumes that knowledge construction is inequality, conflict, domination, subordination and manipulation influences as well as more traditional behavioral questions associated with efficiency and motivation (Alvesson and Wilmott, 1996). Thus social knowledge construction is a dynamic process of contextuality rather than the assimilation of a body of facts. In the McAdam and McCreedy’s (1999) model depicted in figure no. 6, knowledge construction is not limited to scientific inputs through explicit programmes but includes a process of social interaction.

The implications of this broader concept of knowledge construction must be reflected in the embodiment/dissemination of knowledge as part of the organization’s KM approach. There is little point in widening the concept of knowledge construction only to limit the embodiment and dissemination techniques used or to force existing techniques onto new knowledge. Attempting to do so will lead to disappointing results, frustration and a negative view to KM caused by the mismatch between conception and application. Knowledge usage must also be reflected via the knowledge initiatives installed in the organization.

Demerest (1997) describes ‘ use’ (as deployed in figure no. 6) as “ the production of commercial value for the customer”. While increasing commercial value is a key objective of KM, it is not the only objective. Therefore knowledge use must be employed through the application of a complementary approach for emancipatory enhancements and organization outputs. This will permit the organization to be viewed and reformed from different perspectives that will facilitate continuous innovation, thus creating

the ultimate business benefits for the organization as a whole. While the interconnecting vectors (black arrows) show the primary flow of activity, more recursive arrows are added to reflect the circulating nature of activity flows, thus depicting that KM is not a simple sequential process.

Figure No. 6-Modified Version of Demerest's Knowledge Management Model (McAdam and McCreedy, 1999)

## Knowledge Management Frameworks

Stankosky and Baldanza (2001) developed a knowledge management framework which addresses enabling factors such as learning, culture, leadership, organization and technology (refer to figure no. 7). This framework presents that knowledge management covers a wide range of disciplines that include cognitive science, communication, individual and organizational behavior, psychology, finance, economics, human resource, management, strategic planning, system thinking, process reengineering, system engineering, computer technologies and software and library science.

This framework consists four major foundations of an organization which is important for knowledge management are leadership, organization structure, technology infrastructure and learning. The role of leadership is practicing strategic planning and systems thinking approaches, making best use of resources, fostering a culture that encourages open dialogue and team learning, and for encouraging and rewarding risk taking, learning and knowledge sharing. Organization structure should facilitate personal interactions and support communities of practice to capture tacit and explicit

knowledge within the organization. Besides, organizational structure should facilitate trust among people within the organization and encourage free exchange of knowledge. Technology infrastructure allows exchange of information without formal structures. Technology infrastructure should enhance the efficient and effective capture of both tacit and explicit knowledge. It should also support knowledge sharing in the entire organization. Lastly, learning is responsible for managing information in order to build enterprise wide knowledge and use that knowledge to organizational learning, change and performance improvement.

## Figure No. 7-Basic Disciplines Underlying Knowledge Management and its Enabling Factors (Stankosky and Baldanza , 2001)

Karadesh et al. (2009) developed a knowledge management framework that emphasizes on developing phases such as knowledge infrastructure, knowledge combination, knowledge filtering, knowledge repository, knowledge sharing, knowledge application, and finally, knowledge performance across the KM process (refer to figure no. 8).

The first element is knowledge infrastructure, which relies on building the proper culture for Knowledge Management System and establishes the awareness of the importance of KM among the individuals in the organization. The second element is knowledge combination that functions as a temporary repository of collected information from the infrastructure phase. The third element is knowledge evaluation which is used to assess the knowledge based on the value; accuracy and relevance after the knowledge have been combined from different sources (Sunassee and

Sewry, 2002). Knowledge filtering is the fourth element that prepares knowledge to be stored in the next phase, after going through classification, categorization and organization. The fifth element is knowledge repository that functions as storage for the knowledge collected in the past stages. It also can be viewed as organization memory and retention of knowledge assets. Knowledge sharing is a core process in the process of the KM that transfers and shares knowledge among the individuals in the organization. Knowledge application is the seventh element that applies and represents information to knowledge seekers in appropriate matter. The last element is knowledge performance which is used to evaluate every KM system, process, performance, and impact of KM. It is performing according to the organization goals and objectives.

## Figure No. 8-Conceptual Framework for Knowledge Management Process

## (Karadesh et al., 2009)

## Conclusion

The review of existing knowledge management models and frameworks has seen a wide spectrum of viewpoints. Knowledge management has been seen from the categorical view in which knowledge are categorized into discrete elements as seen in Boisot, Nonaka, and Nonaka and Hedlund’s models to the more complicated and complex perspective of knowledge that is mechanistic and socially constructed orientation (McAdam and McCreedy’s, 1999). Moreover, these knowledge management models have made reference to: first, the process of managing the flow knowledge; second, categorization models are mechanistic; third, the intellectual capital model

assumed that intellectual capital are crucial assets in organization and should be manage efficiently for firm’s success; fourth, Demerest’s model is intrinsically linked with the social and learning process within organizations; McAdam and McCreedy’s model is slightly modified from Demerest’s model, which seeks to address the limitations by explicitly showing the influence of both social and scientific paradigms of knowledge construction, and extends the “ use” element to cover both business and employee benefits. Stankosky and Baldanza’s knowledge management framework emphasized that leadership, organization structure, technology infrastructure and learning are important foundations for knowledge management in an organization; finally, Karadesh et al.’s knowledge management framework represents with extensive and detailed processes and tends to provide guidelines for executing KM successfully, save time and efforts and to avoid inaccuracies. Even though knowledge management models and frameworks have evolved from time to time, basically the models and frameworks provide a way of transforming managerial activities and guiding managerial efforts in managing knowledge in the organizations.

The KM model and framework that are suggested to act as a useful guide for further research and organizational application is McAdam and McCreedy’s model and Karadesh et al.’s framework. McAdam and McCreedy’s model combines scientific and socially constructed knowledge, and also the “ uses/benefits” of KM are viewed as both emancipatory and as business oriented. Karadesh et al.’s framework provides a broadest analysis of KM process that can be used to foster the development of organization knowledge and enhance the organizational impact of individuals throughout

the organizations. Therefore, it is suggested that this model and framework could act as a useful guide for further research and literature evaluation in the area of knowledge management.