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A Conceptual Framework Of Knowledge Management Implementation: Triangulation Methods For A Construction Industry

Zayed Alarabi Khalifa, Md. Yusoff Jamaluddin & Hafizah Husain

Department of Electrical, Electronics and System Engineering, Universiti Kebangsaan Malaysia, Malaysia

ABSTRACT

The growing interest in knowledge management (KM) is being fueled by a number of development trends such as globalization and virtualization. Such trends make it difficult for one method to represent a knowledge management system (KMS) that can meet not only the needs of the construction industry, but also the requirements of the end-user. Construction companies have invested heavily in the improvement of their business processes and new forms of innovative project management. Therefore, this makes the triangulation of different methods a necessity to meet the diversified needs of KMS users. The aim of this paper is to propose a conceptual framework that elaborates the combination of quantitative, qualitative and system design approaches to create a web-based KMS for construction industry activities that can be evaluated by system end users. Some guidelines and future work are also suggested.

Key words: knowledge management, knowledge management system, knowledge management implementation, conceptual framework, triangulation, Libya, construction industry.

Introduction

The growing interest in KM is being fueled by a number of development trends such as globalization which is leading to an increasing intensity of competition; virtualization or digitalization which is being enabled by advances in information technology (IT); and transformation to a knowledge-based economy which is evolving with changing organizational structures, new worker profiles, preferences and predispositions (Raich, 2000; Hall, 2003, Sulisworo, 2012).

Today, knowledge is increasingly considered the most important asset of organizations (Carneiro, 2000, Ansari et al, 2012)) and it is assumed that every experience is reusable (Basili & Rombach, 1991). Due to the evolution of the knowledge economy, all courses of actions in all sectors currently are experiencing a period of major change. This is characterized by increased complexity, uncertainty and surprises (Raich, 2000). In particular, over the last decade, construction companies have invested heavily in the improvement of their business processes and, as a result, new forms of innovative project management, supported by IT, have appeared as a response to the ever-growing pressure from clients to deliver high-quality facilities on time and on budget (Ferneley et al., 2002). As a consequence of the construction domain becoming highly information driven, a new course of action has emerged from the process of managing and implementing KM projects.

Many techniques have been developed and used in construction organizations to enhance KM implementation and reduce the effect of knowledge barriers (Bukowitz & Petrash, 1997). However, the current techniques suffer from being single view solutions. Therefore, the aim of this study is to propose a conceptual framework that enhances the implementation of a KMS in the construction industry in Libya by using triangulation methods.

Problem Statement:

Any industry usually faces challenges when attempting to construct a well-linked KMS that allows a learner to acquire knowledge. In the case of the construction industry, many challenges have been shown recently that possibly impede the success of KM projects implementation. For instance, Klicon (1999) mentioned that these challenges are the complexity of the industry, diversity of players, adversarial relationships that are encouraged by the strategy of contracting and the project nature of the work with its attendant pressure to complete, as well as the non-repetitive nature of the work. The entire above mentioned are expected reasons of such kind of “knowledge wastage” and as the result will lead to some difficulties in accessing knowledge to capture its value. The complexity of the industry cannot be expressed practically through the use of a single method. In addition, the difficulty of KM implementation for many construction organizations is caused not only by the complicated
nature of KM operations, but also by the fact that the implementation of KM initiatives is often unplanned and informal (Ahmad & Gaterell, 2008). There are major disagreements as to whether a KM initiative should be considered a technical issue, a human resources issue, a procedural issue or as part of strategic management (Handzic & Hasan, 2003). This diversity of opinion is an indication of the many problems that can be encountered when seeking to implement KM. Therefore, looking at KM from different perspectives and using a variety of methods in designing a KMS may help to solve such problems. Consequently, numerous views from different practitioners and scholars, particularly, in a construction project have confirmed the shortcoming of currently used approaches in managing the knowledge that expected to capture, share and disseminate in these projects (Rezgui, 2001).

Literature Review:

Due to the existence of the knowledge arena as crucial component in today’s businesses, the global economy has witnessed and continues to witness dramatic changes in the business environment (Bender & Fish, 2000). Knowledge management, and its manifestation in the expertise of people, is now seen as being of the greatest value for organizations (Lank, 1997). “A knowledge economy has been defined as one in which the generation and the exploitation of knowledge have come to play a predominant part in the creation of wealth” (Houghton & Oppenheim, 2010, p. 41). Similarly, an OECD report (1996) has suggested that “in a knowledge economy network society is created where the opportunity and capability to access and join knowledge-intensive relations determine the socio-economic position of individuals and firms” (P. 189).

Knowledge can be defined as the facts, skills and understanding that one has gained, especially through learning or experience, which enhance one’s ability of evaluating context, making decisions and taking actions (Lin & Tserng, 2005). Alavi and Leidner (2001) define KMS as “IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application”. Similarly, Gupta et al. (2000) state that KMS are “class of information systems that are utilized to manage organizational knowledge, which helps organizations to find, select, organize, disseminate and transfer the necessary knowledge and expertise for activities”. Recent literature classifies knowledge within an organization into two categories, explicit knowledge and tacit knowledge.

Explicit knowledge can be expressed in formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals (Nonaka, 2006). The same author argued that tacit knowledge is highly personal and hard to formalize, and includes subjective insights, intuitions and hunches. Many of the existing KM techniques and tools can only deal with explicit knowledge, but many studies have shown that tacit knowledge plays an important role in KM in organizations. Therefore, it is essential to develop a new KM model that can be used as a navigation aid to identify and allow access to explicit and tacit knowledge that can satisfy the needs of the industry. Knowledge management helps spread the knowledge of individuals or groups across organizations in ways that directly affect performance (Sureephong, 2007). These limitations are due to several technical, human, and business-related factors. However, this aim of this research is to try to overcome some of these limitations.

Such research is highly important since construction industry not only has been managing knowledge informally, but also of the challenges facing the approaches that applied to manage and implement KM (Gillingham & Roberts, 2006). The next section of this paper describes the proposed framework.

Research Design:

Research design is an important step in all research studies. It involves making various important decisions, e.g. regarding the purpose, location, type, manipulation, control, and level of analysis of the study (Sekaran, 2003). In parallel, it also provides a checklist of all the activities and procedures which have to be pursued by the researcher to accomplish the research objectives and/or to test the hypotheses (McDaniel & Gates, 1998).

Proposed Framework:

The three common research approaches are quantitative, qualitative and mixed. Quantitative research developed from the research approach used in the natural sciences. It attempts to discover existing facts under the research belief that the research act must be a neutral activity and not subject to the researcher’s viewpoint (Sekaran, 2003; Yin, 2003).
Mathison (1988) insists that strong enough research practices inevitably force the researcher to triangulate not only multiple methods and but also data sources in order to enhance the validity of research findings. Regardless of which philosophical, epistemological or methodological perspectives an evaluator is working from. Mathison confirms the necessity of using multiple methods and sources of data in the execution of a study in order. In social sciences, triangulation is often used to indicate that more than two methods are used in a study with a view to the double checking of results (Hussein, 2009). Cohen and Manion (1986) have defined triangulation as an “attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint”. Therefore, the current study mixes the system design approach, quantitative and qualitative research tools.

In the pre-design stage, the phenomena of KM and KM implementation have received considerable attention from behavioral researchers and those in the basic sciences, and the majority of the research has been focused on selecting a few variables rather than investigating multiple views. Since this research study aims to investigate the development of KM in the construction industry, it is desirable to select firms where some time has passed since the introduction of KM because these firms should show tangible and/or intangible outcomes as a result of KM implementation. These outcomes can be ascertained through a knowledge audit or “K-audit,” which is an analysis of an organization’s knowledge needs, existing knowledge assets or resources, knowledge flows, knowledge gaps, and the behavior of people in sharing and creating knowledge (Handzic et al., 2008).

While different approaches can be taken to carry out a K-audit, the methodology adopted by the United Kingdom’s National Health Service’s National Library for Health is briefly presented here. In this case the K-audit involves identifying knowledge needs, conducting a knowledge inventory, and analyzing knowledge flows.
Oliveira et al. (2012). Most of the factors mentioned in the literature are associated with the process, technology, communication, and process and organizational. Accordingly for this study, a model is proposed is to examine the effects of organizational, technological, and individual variables on KM in order to gain a full picture about their combined effects on KM implementation in the construction industry in Libya. To capture explicit and implicit knowledge, in-depth interviews with knowledge experts in the industry allow deep information and knowledge to be sought and acquired, with this information usually being related to personal matters such as values and decisions, cultural knowledge or perspectives.

In the design stage, desired features and operations are described in detail, including screen layouts, business rules, process diagrams, pseudo codes and other documentation (Kaur, Rani and Jyoti, 2012). A prototype KMS is implemented to ensure that the system meets the requirements that have been specified by end-users. In the implementation stage, this is one of the most crucial phases because it is in this phase that the analyst actually gives the system to the customer and expects positive feedback. In the last stage, an evaluation takes place in order to determine whether the KMS is working within the standards set. The current study proposes the utilization of the end user feedback to evaluate the performance of this web-based system from financial and non-financial perspectives (Kaplan& Norton, 1996).

Proposed Methodology:

The majority of previous studies have proposed a stage model for KM implementation. However, unlike these studies, the current study will triangulate system design survey methodologies. First, a survey will be conducted as a preliminary study to refine the focus of analysis, which will enable the researcher to select items worthy of investigating thoroughly to identify factors affecting KM implementation. Based on the refined focus of analysis, and on a survey of related literature, selected factors will be identified through which to explore the further details of KMS design. In terms of the survey element, the scope of this study is current employees in the construction industry in Libya. In addition, KM workers and KM experts will be interviewed.

Expected Implications:

One of the aims of this study is to make a contribution to knowledge by conducting a K-audit in order to implement a KM strategy in organizations in the construction industry in Libya. The study also aims to design and implement a suitable KMS for the construction industry in Libya.

The proposed system will provide a new integration of relationships among its attributes that will lead to valuable findings to improve the construction industry environment in Libya and will provide insights to assist future research studies in the field of KM. The uniqueness of this study is that it develops a knowledge-representation schema that allows representation of all types of knowledge in the construction field not just one.

At a practical level, this study will attempt contribute to the work of practitioners who are implementing KM in Libya such as engineers, managers, policy makers and employees in the construction industry as well as construction experts; they can all benefit from a better understanding of this issue. It is hoped that this study will help both managers and strategists to focus on new possibilities for improving KM implementation.

Concluding Remarks and Future Work:

After reviewing the literature on knowledge, it was determined that there was a need to investigate how a framework of web-based KM could be designed to understand what aspects should be managed, implemented and evaluated to achieve successful KM implementation in the construction industry in Libya. In terms of future work, this framework is part of work in progress to design and evaluate a web-based KMS for the construction industry in Libya.

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