

Medical knowledge management: research proposal examples

[Business](#), [Management](#)



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An Investigation into the Effective Transference of Medical Knowledge from Human Minds into Digital Minds

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Introduction

Knowledge is a key resource in organizations, whether in business or in the field of medicine, where the proper management and development of knowledge can result in innovations and process improvements. This is especially important in the field of medicine or healthcare as the optimized utilization of knowledge can lead to improved patient care, in particular, and improved public health, in general. However, with the vast amounts of medical knowledge being amassed on a daily basis, the challenge lies on how to make the most of such knowledge so that it can benefit both the healthcare organizations and the patients whom they care for.

In this regard, this research proposal provides the details on a research regarding the effective implementation of knowledge management initiatives

in healthcare organizations. This proposal provides a review of the literature and the background of the study. In addition, the proposal describes the research aims, as well as the methods to be used in achieving these aims.

Literature Review

Medicine is a field that's growing at a rapid rate in terms of the information being gathered (Lieberman & Mason, n. d.). Such information includes symptoms, patient history, functions, lifestyle, drugs, diagnostics, diseases, and treatment methods. According to Stroetmann & Aisenbrey (2012), the volume of medical knowledge being gathered doubles every seventeen years. With this vast amount of information, the challenge for medical practitioners, researchers, and medical administrators is how to find and use relevant information in a timely manner. Aside from the rapid growth of medical fields such as genetics and bionanotechnology, the information gathered also comes in various formats and is located in various disparate locations, which add further to the difficulty in their use.

According to recent studies, the inability of doctors to access and apply relevant and current knowledge has led to the delivery of a lower quality of care to patients (Abidi, 2008). More specifically, the US Institute of Medicine indicated that about ninety-eight thousand patients die each year as a result of errors that could have been prevented (Abidi, 2008). Similarly, a study of two British hospitals showed that 11 percent of the inpatients experienced adverse events where 48 percent of the said events could have been prevented with the application of the correct knowledge (Abidi, 2008). These findings show that the under-utilization of healthcare knowledge can lead to

high healthcare delivery costs, the poor utilization of resources, medical errors, and inappropriate clinical decisions (Abidi, 2008).

This highlights the importance of knowledge management in the field of medicine where knowledge management is defined as “ the system and managerial approach to the gathering, management, use, analysis, sharing, and discovery of knowledge in an organization or a community in order to maximize performance” (Chen, Fuller, Friedman & Hersh, 2005, p. 6). Abidi (2008) also characterized healthcare knowledge management as “ the systematic creation, modeling, sharing, operationalization, and translation of healthcare knowledge to improve the quality of patient care” (Abidi, 2008, p. 2).

In this regard, the healthcare industry now aims to form knowledge-based communities, which enable customers, doctors, pharmacies, clinics, and hospitals to connect with each other and share knowledge (Stroetmann & Aisenbrey, 2012). In turn, this can lead to an improvement in the quality of care and to a decrease in administrative costs. Stroetmann & Aisenbrey (2012) asserted that the success of healthcare depended on the collection, exchange, and analysis of billing, clinical, and utilization knowledge or information across and within the boundaries of organizations. Abidi (2008) also proposed that the appropriate and timely use of knowledge could lead to the transformation of healthcare practices so that high levels of cost-effectiveness, patient-centeredness, team care, care quality, and patient safety may be achieved.

According to Bali (2005), a healthcare organization can succeed in the fulfillment of its mission by excelling in key processes such as care

treatment, patient diagnosis, and others. He suggests that if processes are repetitive then they can be automated (Bali, 2005). However, he opines that modern healthcare application software are incapable of meeting the present needs of healthcare institutions as they are unable to provide accurate, precise, and contextual information to a certain caregiver within a certain timeframe (Bali, 2005). As such, he proposes the use of the knowledge management paradigm in the effort to address the increasing growth of information in the healthcare industry (Bali, 2005). He asserts that only the knowledge management paradigm is capable of providing healthcare stakeholders with a view of the various perspectives involved in the healthcare continuum, which include technology, organizational processes, and people (Bali, 2005).

In particular, knowledge management aims to make knowledge transparent and to show the role that it plays in an organization. This can be achieved through the use of hypertext tools, handbooks, and maps (Stroetmann & Aisenbrey, 2012). In addition, knowledge management aims to develop a culture that is knowledge-intensive through the encouragement and aggregation of behaviors such as the proactive offering, seeking, and sharing of knowledge. Moreover, knowledge management aims to build a knowledge infrastructure, that is, a network of connections among people who have the encouragement, the tools, the time, and the space to interact. Overall, knowledge management ensures that the knowledge in an organization is used in a productive manner that benefits the organization.

With the effective management of knowledge within the healthcare industry, the detection of predispositions becomes faster; the prevention of diseases

becomes more efficient; and more specific diagnoses are made faster. A more effective therapy that's appropriate for the particular status of the disease will also be identified. Moreover, the use of information technology can lead to the development of more efficient and innovative medical imaging and laboratory diagnostics. With the increases in healthcare costs, the changes in demographics, and the increases in chronic diseases and medical demand, the trend in healthcare is geared towards personalized medicine, which in turn is expected to result in better and more effective treatment and patient outcomes (Stroetmann & Aisenbrey, 2012).

Wyatt (2002) also asserts that doctors' decisions make up 75% of healthcare costs and that these decisions are highly dependent on medical knowledge. As such, knowledge management can enable the access of knowledge in printed or in electronic format, which in turn can enable doctors to easily find the information that they need and accurately interpret it. Knowledge management also enables the dissemination of high quality knowledge, which decision makers need, through media such as verbal presentations, printed educational material, emails, newsletters, and others. As well, knowledge management can be used to introduce changes in clinical practice through methods such as decision support systems, audit and feedback, and reminders (Wyatt, 2002).

In biomedics, knowledge management has been used for the storage, retrieval, sharing, and management of multimedia and critical explicit and tacit biomedical knowledge where data mining techniques are used for the discovery of various drug, patient care, and biological knowledge and patterns (Chen et al., 2005). In particular, such information is obtained

through neural networks methods, machine learning, and selected statistical analyses (Chen et al., 2005). More specifically, knowledge management is used to automatically extract biomedical entities such as diseases, genes, proteins, and drug names from published documents so that they can be used for mapping into existing medical ontologies and for the construction of gene pathways (Chen et al., 2005).

Background of the Study

According to Stroetmann & Aisenbrey (2012), the important features of a knowledge management project are short and efficient knowledge-sharing processes. They also claim that in order to successfully address the issues involved in the implementation of knowledge management within an organization, it is necessary for knowledge to be represented and for process and data models to be standardized; for human workflows and business processes to be automated; and for these processes to be driven across organization and application boundaries.

For Siemens Healthcare, their approach to medical knowledge management consists of a series of strategies, which include a branding strategy that focuses on the mobilization and support of the knowledge management initiative (Stroetmann & Aisenbrey, 2012). They accord more importance on the tacit knowledge of the people, which they combine with explicit knowledge; thus, resulting in the enhancement of collaboration, communication, and information transfer. They also assign a team to handle the coordination of the knowledge management activities. This team takes responsibility over the coordination of the basic knowledge lifecycle

processes, which consists of “ the identification of knowledge need; creation; sharing; collection; and storage and update” (Stroetmann & Aisenbrey, 2012, p. 558).

In particular, a healthcare organization must first identify its needs for medical knowledge. If the needed knowledge is not available then it is created by focusing on a “ human-centric view of knowledge creation” (Stroetmann & Aisenbrey, 2012, p. 559), which allows for the subjective and constructive nature of the knowledge creation process. The information that is created is then combined with the existing information, which is stored in a web-based database. Any input to this knowledge base is subjected to the evaluation and commentary of medical experts and is adapted to the organization’s needs.

Moreover, Siemens Healthcare’s approach to successful knowledge sharing involves push-pull strategies (Stroetmann & Aisenbrey, 2012). In particular, pull services or self-service allows users to contribute and access knowledge as needed. On the other hand, push services or the facilitated transfer of knowledge is prompted by the need of the organization. Lastly, individual expert advice can be shared through experts and peers working together to discuss and share knowledge.

On the other hand, Guptil (2005) proposes that knowledge management, as applied to healthcare, should consist of five major components, namely “ communities of practice, content management, knowledge and capability transfer, performance results tracking, and technology and support infrastructure” (Guptil, 2005, p. 11).

Communities of practice pertain to the collaboration that takes place among

people who share a common interest or purpose when they discuss the manner by which knowledge is communicated, used, and shared. In the healthcare setting, communities of practice may consist of people with similar roles or who experience similar problems across an organization or among member organizations. Communities of practice may also be formed to solve a particular business or clinical care problem or to address a topic of interest, such as “ the care of patients on anticoagulant medications in the hospital setting” (Guptil, 2005, p. 12). In this regard, knowledge management is used to codify the process by which a community is chartered, which involves membership definitions, the key roles that must be filled, the preferred styles of communication, and the group’s purpose with regards to the achievement of the organization’s objectives.

Guptil (2005) also asserts that knowledge management should result in behavioral changes with regards to knowledge sharing. As such, knowledge transfer, in the context of knowledge sharing, requires capability or skills transfer, which means that healthcare organizations must be able to identify the means by which they can teach people the skills that are necessary for adopting the new behavior.

In addition, the successful implementation of a knowledge management initiative requires a capability for tracking results. In particular, Guptil (2005) proposes the use of three types of measures, namely the outcomes measures, the process measures, and the satisfaction measures.

Finally, Guptil (2005) advocates for the use of web-based technology in facilitating knowledge management endeavors as this technology is capable

of simplifying the collaborative process, of making knowledge easily and instantly available on a global scale, and of providing the structure necessary for publishing content in a form that can be searched, captured, and reused. More specifically, Etienne Wenger, a pioneer in the field of knowledge management, recommends that a knowledge management system consist of the following types of technology tools: knowledge bases, access to expertise; eLearning spaces; synchronous interactions, discussion groups, web site communities, project spaces, and knowledge workers' desktop tools (Guptil, 2005).

According to Bali (2005), the successful implementation of a knowledge management initiative requires a balance between the technological and organizational aspects of the healthcare process where one cannot exist without the other. He asserts that it is important for clinicians to take a holistic view of their organization, which implies that they need to be able to understand information technology in the context of healthcare and that they should share in the organization's vision (Bali, 2005). As such, it is necessary for both the healthcare administrators and the clinicians to possess both technological and organizational insights (Bali, 2005). As asserted by a knowledge management interest subgroup of the HIMSS (Healthcare Information & Management Systems Society), knowledge management in healthcare is the alignment of technologies, data, processes, and people in order to optimize experience, expertise, collaboration, and information, which in turn drives organizational performance and growth (Guptil, 2005). In this regard, Guptil (2005) suggests that " knowledge management is not a short-term quick fix" (Guptil, 2005, p. 14); rather, it

requires a long-term commitment towards changing the culture of healthcare to make it more proactive, transparent, and collaborative.

Research Aims

It is apparent that knowledge management and knowledge management systems are considered strategic resources in healthcare organizations (Slovensky, Trimm, Garrie & Paustian, 2006). As the healthcare industry moves towards a seamless continuum of care, the need for connectivity and sharing of administrative and clinical information among various health care providers also become more emphasized. However, many healthcare organizations still have not implemented a knowledge management system. Reasons include challenges such as the speed at which information technology changes occur and the selection of the appropriate system from the vast number of products and services that are available. Another challenge is getting the buy-in of physicians, as well as recruiting and retaining their support as the main stakeholders of the system. Moreover, there's the challenge of recruiting and retaining staff that possess the required information skills and of ensuring the confidentiality and security of information, as well as ensuring a positive cost-benefit between perceptions and realities (Slovensky et al., 2006).

In addition, healthcare providers are required to provide reports on their performance in comparison to the national standards of the quality of patient care (Guptil, 2005). As well, the Institute of Medicine has called for a reform in the healthcare delivery system in order to address the high rates of hospital errors, which result from the inadequate processing of knowledge

when providing care.

In this regard, this research aims to contribute to the literature which goal is to facilitate the implementation of knowledge management initiatives within healthcare organizations in order to enable the exploitation of healthcare knowledge for the benefit of the patients and of the healthcare industry as a whole. In particular, this research aims to answer the following research questions:

- What are the applications of knowledge management in the fields of medicine and healthcare?
- How can a knowledge management initiative be successfully implemented in a healthcare organization?
- How can knowledge be effectively and efficiently transferred from the people into the knowledge management system and vice versa?

Research Methods

In particular, information will be obtained from the findings of previous researches as published in scholarly sources, as well as from the information that healthcare organizations provide - on company websites and public reports -- with regards to their knowledge management initiatives.

In addition, the researcher will conduct interviews with healthcare professionals who work in organizations that have successfully implemented knowledge management systems in order to gain insight on how their organization implemented their knowledge management system and how their organization ensures the effective and efficient use of the system. As well, the researcher will conduct interviews with knowledge management

system vendors in order to solicit their advice and expertise on how knowledge management systems can best be implemented and used. After collecting and analyzing the data, the researcher will present recommendations for healthcare organizations in order to help them in the implementation of their knowledge management initiatives and in order to help them ensure that the changes they make are sustained. As well, the findings will be used to provide recommendations for further research so that standard procedures or best practices may be developed for the successful implementation of knowledge management systems in healthcare organizations.

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