TOWARDS IMPLEMENTATION OF KNOWLEDGE MANAGEMENT FOR EFFECTIVE HEALTH CARE DELIVERY: A CASE STUDY OF DELSUTH, OGHARA, NIGERIA.

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ABSTRACT

As medical science advances and the applications of information and communications technologies (ICTs) to healthcare operations diffuse more and more, data and information begin to permeate healthcare databases and repositories. However, given the voluminous nature of these disparate data assets, it is no longer possible for healthcare providers to process these data without the aid of sophisticated tools and technologies. It is against this backdrop, that persistent calls have been made for the application of knowledge management within the context of hospital management in order to help hospitals achieve sustainable competitive advantage. From interviews, it was found for instance, that a specific clinical care problem may be attributed to the patient's personal condition, disease specifics, disease history, family background, treatment history, medication history, or other factors. The complexity of clinical care knowledge, in other words, often derives from a great number of factors, and, in making a treatment decision; one must consider the subtle relationships among these many factors. The ability to distinguish between relevant and irrelevant factors and to identify the relationships among them is a core competence of true experts. It was also found that, although theoretical knowledge gained from books and journals is valuable in developing medical expertise, it is practical experience in dealing with specific cases that truly builds a medical doctor's professional expertise and the hospital's knowledge repository.

Keywords: Knowledge management, Healthcare, Intelligence continuum, DELSUTH, Spine unit, Disease specifics, Treatment history, Data mining

1.0 INTRODUCTION

Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include

databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers (Duhon, 1998).The operational origin of KM, as the term is understood today, arose within the consulting community and from there the principles of KM were rather rapidly spread by the consulting organizations to other disciplines. The consulting firms quickly realized the potential of the Intranet flavour of the Internet for linking together their own geographically dispersed and knowledge-based organizations. Once having gained expertise in how to take advantage of intranets to connect across their organizations and to share and manage information and knowledge, they then understood that the expertise they had gained was a product that could be sold to other organizations. A new product of course needed a name, and the name chosen, or at least arrived at, was Knowledge Management (Benedict, 2013).

Knowledge Management Infrastructure

Knowledge management offers organizations many strategies, techniques and tools to apply to their existing business processes so that they are able to grow and effectively utilize their knowledge assets. The KM infrastructure not only forms the foundation for enabling and fostering knowledge management, continuous learning and sustaining an organizational memory (Drucker 1999) but also provides the foundations for actualizing the four key steps of knowledge management as aforementioned. An organization's entire "know-how", including new knowledge, can only be created for optimization if an effective KM infrastructure is established. Specifically, the KM infrastructure consists of social and technical tools and techniques, including hardware and software that should be established so that knowledge can be created from any new events or activities on a continual basis.
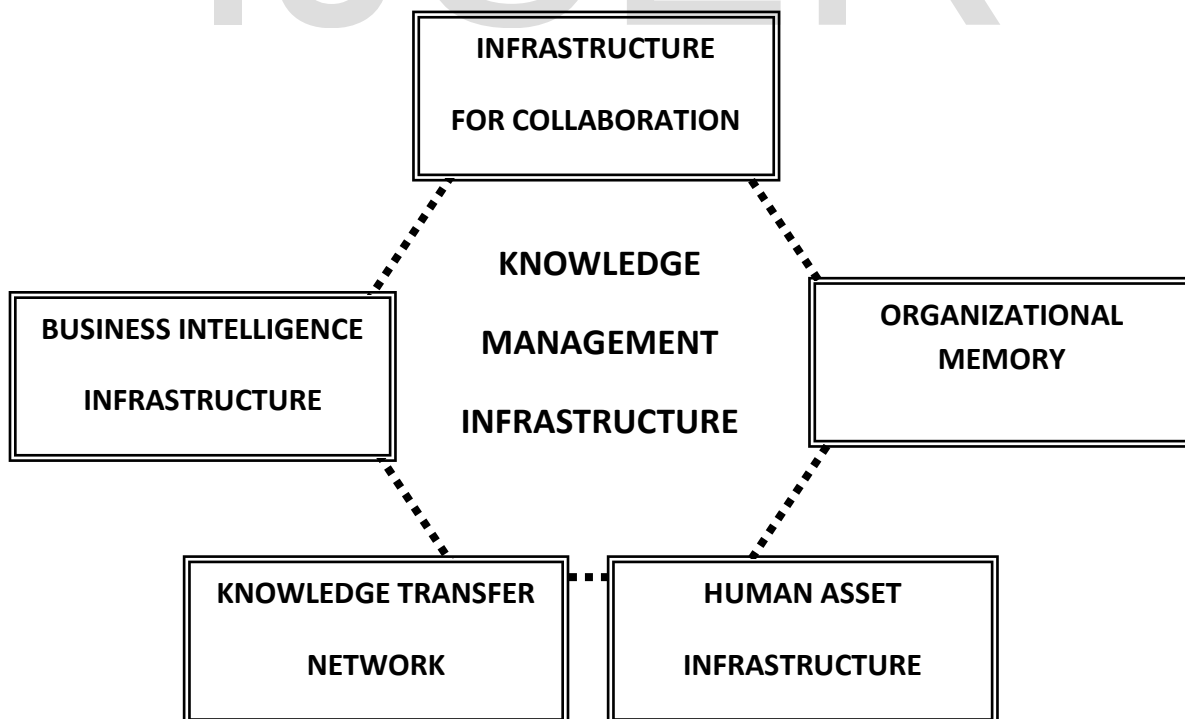

Fig 1 Key Elements That Make the Knowledge Management Infrastructure

- **Infrastructure for Collaboration**

The key to competitive advantage and improving customer satisfaction lies in the ability of organizations to form learning alliances

- **Organizational Memory**

Organizational memory is concerned with the storing and subsequent accessing and replenishing of an organization's "know-how" which is recorded in documents or in its people

- **Human Asset Infrastructure**

This deals with the participation and willingness of people. Today, organizations have to attract and motivate the best people; reward, recognize, train, educate, and improve them.

- **Knowledge Transfer Network**

This element is concerned with the dissemination of knowledge and information. Unless there is a strong communication infrastructure in place, people are not able to communicate effectively and thus are unable to effectively transfer knowledge. An appropriate communications infrastructure includes: internet and intranets for creating the knowledge transfer network as well as discussion rooms, bulletin boards for meetings.

- **Business Intelligence Infrastructure**

Business intelligence infrastructures have customers, suppliers and other partners embedded into single integrated system. Customers will view their own purchasing habits, and suppliers will see the demand pattern which may help them to offer volume discounts etc.

The intelligence continuum(IC)

The intelligence continuum is applied to the output of the generic healthcare information system. Once applied, the results become part of the data set that are reintroduced into the system and combined with the other inputs of people, processes, and technology to develop an improvement

continuum. *Thus, the intelligence continuum includes the generation of data, the analysis of these data to provide a "diagnosis" and the reintroduction into the cycle as a "prescriptive" solution.*

However, for the IC to be truly effective however, the KMI must already be in place so that all data, information and knowledge assets are explicit and the technologies of the IC can be applied to them in a systematic and methodical fashion.

Benefits of Knowledge Management

The major benefit of knowledge management is that information is easily shared between staff members, and that knowledge isn't lost if someone goes on vacation, gets sick, or leaves the Hospital.

- This can result in substantial savings to an organization's bottom line. People are easily brought up to speed, and valuable knowledge assets are never lost (which means that you don't lose time and money when people have to learn new information quickly).

- Because ideas can be shared easily, knowledge management may also increase innovation and help create better customer relationships.

- Knowledge management gives staff members the knowledge they need to do their jobs better. This makes them more productive.

Knowledge Management Architecture

The graphic below shows the Knowledge Management architecture. Users access the Knowledge Management functions through the portal.
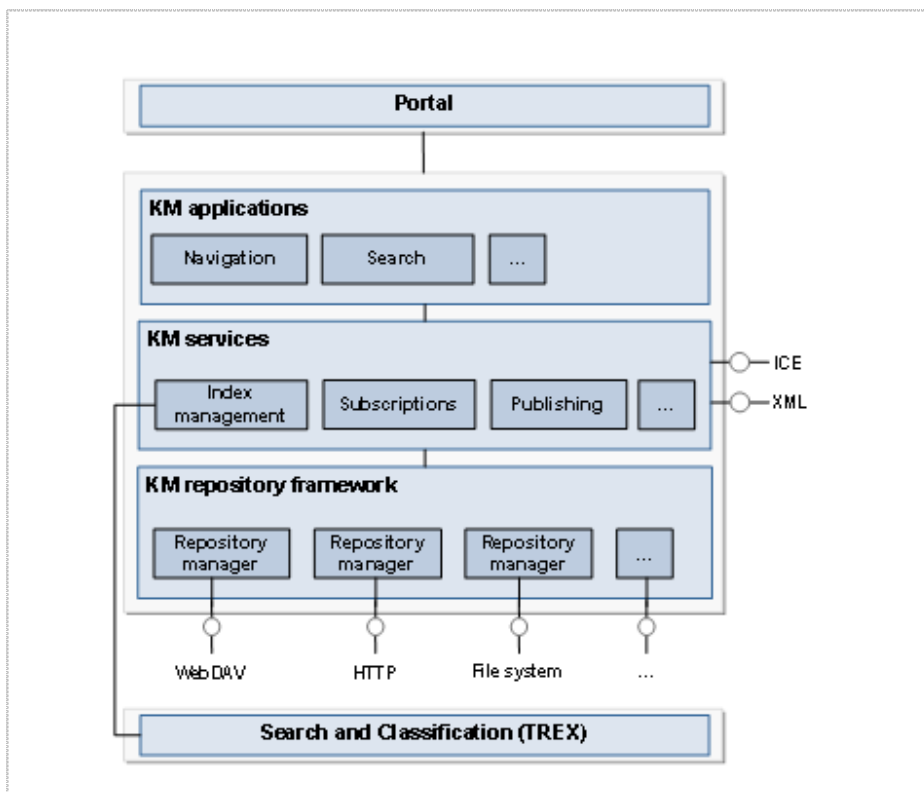
Fig. 2 General Knowledge Management Architecture

2.0 METHODOLOGY

This case study focuses on a renowned Spine Unit of DELSUTH (Delta State University Teaching Hospital).The Spine Unit is part of a large multispecialty group practice and academic medical center. This Center is actually made up of surgeons and medical staff from the department of Neurology and Neurosurgery and the department of Orthopedics. Collaboration between the surgeons in these two departments led to the setting-up of the Spin Unit where more than 5,000 patients with spinal cord problems are treated annually. The multi disciplinary team in this setting consists of experienced spine surgeons, well trained psychologists, physical therapists, orthopedic personnel and laboratory pathology experts. The multidisciplinary team works with well-established proven protocols. Naturally, treatment for back and neck problems cannot be the same for every patient rather is dependent on the specific complaint the patient has.

The primary goal of this Spine Unit is to return patients to normal life activities. The following serves to furnish the key elements from this environment as they pertain to knowledge management, its benefits and applications in this setting.

Information was gathered from several sources including semi-structured interviews, numerous site visits and the direct observation of various procedures; thus enabling the triangulation among different information sources.

In order for the Spine Unit to achieve its goal of providing high quality treatment to patients suffering from various back and neck complaints many key factors must be addressed concerning both the clinical and practice management issues.

Technologies of various types play a key role in providing effective and efficient high quality treatment at the center. The clinical technologies include the laboratory and radiology facilities to enable best possible detection of the specific complaint, as well as the technologies to support the treating of this complaint especially if surgery is the course of action; for example the use of image-guided spinal navigation to facilitate the accuracy, precision and safety of spinal instrumentation and reduction in operative time or endoscopic procedures to minimize invasive spinal surgery. On the practice management side, the technologies include the HMIS (Hospital Management Information System) in place.

3.0 Results and Discussion

From the information acquired, it was observed that the Spine Unit has a significant investment in technology both at the clinical and practice management levels. On the clinical side there are various technologies that facilitate speedy detection and then enable the subsequent cure to be effective and efficient; thereby, ensuring that a high standard of quality treatment is experienced by the patient. On the practice management side the HMIS is crucial. When the SpineUnit is analyzed through the lens of knowledge management, the relevant technologies become those on the practice management level; namely the technologies that make up the HMIS. the collection of key data and information and then through various interactions of members of the multidisciplinary team with these technologies, protocols and treatment patterns are changed or developed; i.e. through the interactions of both people and technologies these raw data and informational assets are transformed into knowledge assets.

The orthopedic operating room represents an ideal environment for the application of a continuous improvement cycle that is dependent on the Intelligence Continuum. For those patients with advanced degeneration of their hips and knees, arthroplasty of the knee and hip could afford the opportunity of regaining their function. Before the operation ever begins in the operating room, there are a large number of inter-dependent individual processes that must be completed. Each process requires data input and produces a data output such as patient history, diagnostic test and consultations. From the surgeon's and hospital's perspective, they are on a continuous cycle.
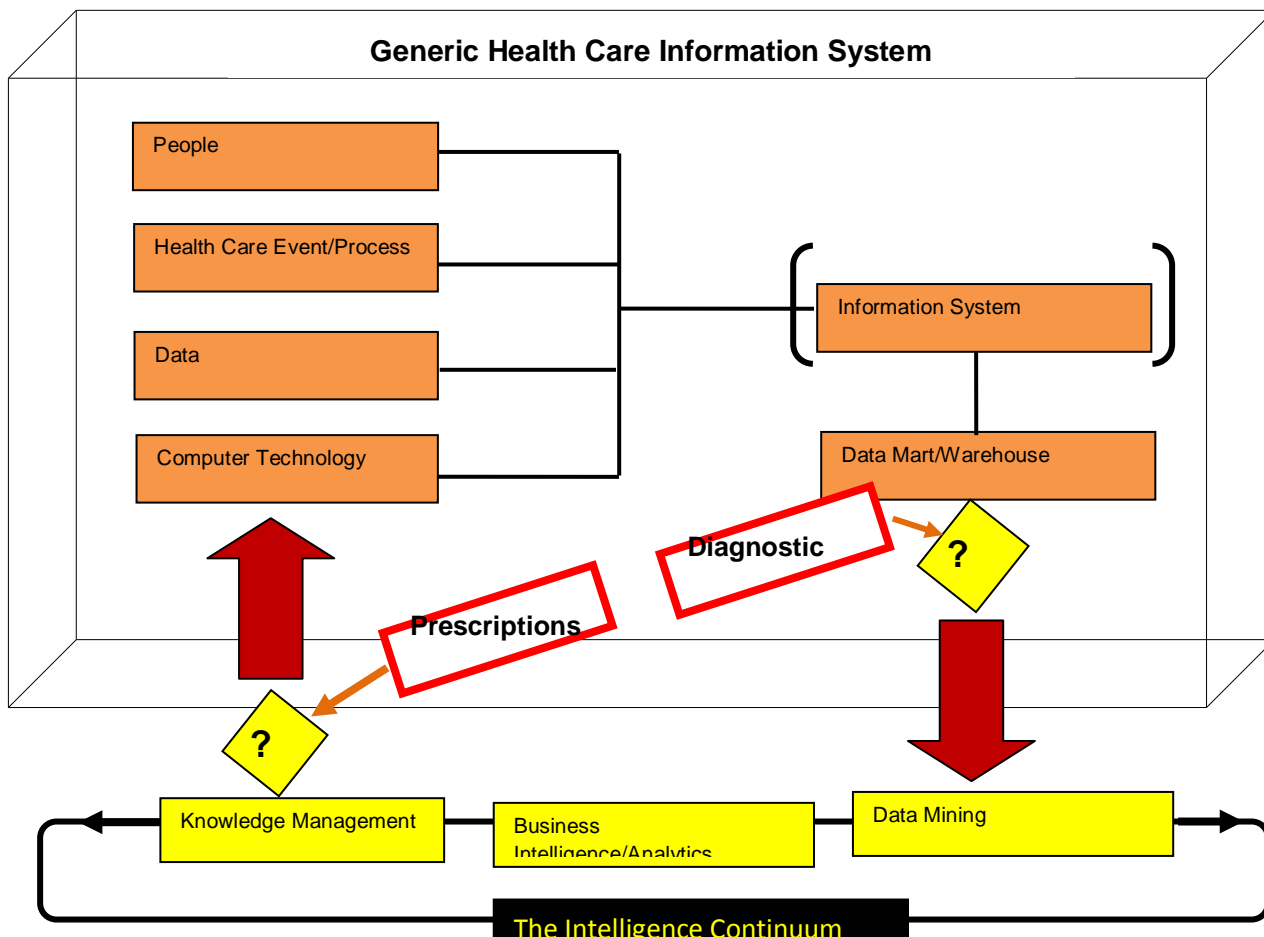
Fig. 3 Application of the intelligence continuum on the generic healthcare system

4.0 Conclusions

Healthcare globally is facing many challenges including escalating costs and more pressures to deliver high quality, effective and efficient care. By nurturing knowledge management and making their knowledge assets explicit, healthcare organizations will be more suitably equipped to meet these challenges; since knowledge holds the key to developing better practice management techniques, while data and information are so necessary in disease management and evidence-based medicine.

The case study data presented depicted the complexity of the service delivery process, driven by the complexity of the issues being dealt with by the teams, which in turn requires that many disciplines create and share knowledge to enable the delivery of a high quality of care. Thus the need for shared knowledge is a fundamental requirement. The KMI was presented and used to structure these disparate knowledge assets as explicit and integrated within a larger system, the generic healthcare information system that allowed analysis of the extent of the knowledge management infrastructure for the Spine Unit. Further, such a framework in particular supports in a systematic and structured fashion all four key knowledge transformations identified by Nonaka (1994), in particular that of externalization (tacit to explicit). To this generic healthcare information system the application of the IC ensures that maximization of appropriate and germane knowledge assets occurs and a superior future state will be realized. On analyzing the case data with the KMI framework and IC model the benefits to healthcare of embracing KM become clearly apparent. Given the challenges faced by healthcare organizations today, the importance of knowledge management, and explicitly developing and designing an appropriate healthcare information system using the KMI framework and then the IC model is indeed of strategic significance, especially as it serves to facilitate the realization of the value proposition for healthcare. Finally, it is believed similar applications of KM principles, most especially the KMI framework and IC model into other health settings would make great impacts in the health sector.

4.0 References

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