

A Discussion on the Role of Knowledge Management in Aged Care

Vijaya Gururajan, Raj Gururajan, Abdul Hafeez
Department of Information Systems
The University of Southern Queensland
Toowoomba, QLD 4350

Abstract

Knowledge Management is a new tool in the Information Systems area and in recent years many articles have been written to highlight the importance of different forms of knowledge, how to capture, integrate and then benefit from them. In aged care, knowledge management can play a vital role as medical history needs to be carried over through different stages of a patient's life to guarantee service. This discussion paper provides a brief introduction to the role of knowledge management in the aged care domain.

Introduction

In the past 15 years, healthcare systems have undergone some major changes both locally and globally. The driving force for these changes include demand for services, quality of services, reduction in cost, economization, developments in information technology and increased competition (Awad & Ghaziri, 2004). These changes have affected aged care, who are in the business of providing healthcare to aged people. In many cases, there are strong links between aged care and healthcare as the medical records are transformed from healthcare to aged care for service purposes. Given the current status of our population, it appears that there is a demand for aged care services in Australia and the current aged care providers are looking for ways through which the aged care operations can be effectively managed.

Many organizations in the management domain have understood the importance of 'knowledge' in order to enhance management capacity to compete and adapt to a changing environment. This has generated a number of models that are suitable to varying contexts of management. Inferences collected from various studies, ranging from a variety of service related industry such as medical, law, IT, engineering have clearly indicated that the inclusion of Knowledge Management (KM) in organizations would make organizations responsive by improving the organizational knowledge, skills, and abilities to achieve advancements in service delivery (Davis, 1998; Fayyad et al, 1996; Liaw et al., 2001). These studies state that knowledge management concepts applied to health care would benefit this sector as the health care is predominantly service oriented. Further, many studies agree that knowledge management has a profound effect on the ability to create, disseminate and share knowledge throughout the organization and health care organizations would greatly benefit by these characteristics as they are service oriented.

An anatomy of aged care organizations in Australia indicates that the organizational structure is hierarchical, decision making is often central and the organizational model often slows down the overall processes involved in the decision making. The health care and aged care problems are often related to existing confusion, necessity for an information standard and good organizational structure can all have an affect ranging from personal and professional identity, competence, responsibility, accountability, satisfaction, and motivation of this service industry. Some of these problems can be alleviated by the inclusion of knowledge management in aged care organizations.

Knowledge Management

In recent years there has been growing interest in the area of knowledge management theory and practice (Swan & Newell, 2000); (Garrick & Clegg, 2000); (Marshall & Brady, 2001); (Darroch & McNaughton, 2002); (Zhou & Fink, 2003) as knowledge has become a critical resource for organisation. Knowledge management is the process of effectively acquiring, creating, storing, transferring, sharing, retrieving knowledge and allowing for a continuous process of creating, organising, updating and using knowledge to achieve specific goals (Alavi & Leidner, 2001). Knowledge for example can be best practices, know-how, experience and skill. The purpose of knowledge management is to effectively manage various types of knowledge which are embedded and carried in multiple entities such as policies, procedures, routines, systems, culture and identity, documents and as well in the minds of people (Alavi & Leidner, 2001). Thus knowledge is multi faceted and different approaches to manage this resource provide different perspectives. Best approaches to manage knowledge will in return improve effectiveness, efficiency and competitiveness (Gray, 2000; Holsapple & Joshi, 2000; Massey, Montoya-Weiss, & O'Driscoll, 2002; Nidumolu, Subramani, & Aldrich, 2001; Schultze & Leidner, 2002). There is however no consensus amongst researchers, practitioners and academics as to what constitutes good knowledge management, as knowledge is multi faceted and thus complex. The reasons are that Knowledge Management combines technology, human expertise and the so called two dimensions of Knowledge: Explicit¹ and Tacit². The two types of knowledge, explicit and tacit, do not exist independently or operate independently, but are mutually dependent and work side by side reinforcing the generation of new knowledge, expansion and transfer of knowledge. The expansion of knowledge can happen only when either an individual interact with another individual or an individual interact with a group of individuals or interaction happens between groups or across groups (In this context between aged care or health care organizations). By this knowledge interaction, knowledge can be transferred from an individual (individual knowledge) to groups which then become collective knowledge. Effective transfer of knowledge depends on types of knowledge that is being transferred. Effective transfer of knowledge depends on finding the balance between Information Technology, techniques and people that form the basis of any knowledge management system. Effective transfer of knowledge also depends on finding the balance between Information Technology, techniques and people that form the basis of any knowledge management system.

According to (Alavi & Leidner, 2001)) Information Technologies can play a vital role in explicating (interpret, infer, translate), enhancing, systemising and expediting knowledge in an organisation. Some examples of advanced Information Technology are the Internet, Intranet, Extranet, browsers, data

¹ Explicit knowledge Explicit knowledge is acquired through formal education (e.g.) academic knowledge and from writings, books, rules, procedures, and documents such as reports and manuals ((Smith, 2001). Explicit knowledge can be expressed in print, electronic media, transmitted through formal systematic language. Explicit knowledge can be stored in databases or repositories such as data warehouses and shared between individuals and group of people through network such as the Internet, Intranet and Extranet (Alavi & Leidner, 2001).

² Tacit knowledge is highly personal, subjective form of knowledge that is usually informal and can be inferred from statements of others (Sternberg, 1997). Tacit knowledge is personal, context-specific and therefore hard to formalize and communicate (Nonaka & Takeuchi, 1995). Tacit knowledge is experience, personal interaction, craftsmanship, intuition that is difficult to be articulated in rules or procedures (Bhatt, 2000) and hence generally is considered to be difficult to capture, codify, adopt and distribute. Tacit Knowledge is made up of both technical and cognitive elements. Technical tacit knowledge consists of know-how's, skills, and craftsmanship specific to a field. Cognitive tacit knowledge is made up of mental models, maps, beliefs, perceptions, assumptions, insights and paradigms (Alavi & Leidner, 2001).

warehouses, data mining techniques and software agents. Data mining techniques and software agents³ can analyse data and documents stored over several years to identify hidden risks, to identify interdependencies, to spot special trends, data characteristics, to discover anomalies and to find special phenomenon under exceptional circumstances not shown in ordinary report generation and difficult to detect automatically (Fayyad et al., 1996; Prather et al., 1997). Advanced Information Technologies include Information Communication Technologies (ICT)⁴ which are helpful in disseminating such knowledge to a wide group of people such as the users of the Internet, Intranets, Extranets, Email and wireless communications.

As mentioned earlier, technology alone cannot help to accumulate knowledge, but the combined effect of people's interaction, underlying process or techniques support to be a successful KM system.

KM Aged Care

Literature indicates that healthcare and aged care are yet to embrace the concept of knowledge management and a quick survey into state of these two fields reveal that a lot more needs to be done. Both these fields are filled with many different types of chaos, lack of support in terms of funding and qualified people, lack of IT infrastructure and signs of losing control. While it is beyond the scope of this paper to discuss all relevant Aged care issues and the level of attention required for specific problems, this paper limits itself to identifying gaps where Information Technology and KM can help to alleviate the problem.

This paper identified seven major issues of concern to aged care and provides some insights in using knowledge management techniques. The emerging themes are only conceptual stage and yet to be explored and elaborated using an appropriate research framework.

Addressing the need

One of the emerging concerns in the aged care sector is addressing the need for acute care through an assessment within residential care, home and community care program. Due to lack of support for the aged care institutions, the concept of home care is rapidly becoming popular. Currently there are limited published reports within aged care system to precisely understand the specific issues in this domain. For a country like Australia which has well developed technology and network facilities, there are no common databases or information systems that capture these details for purposes of restructuring the ailing aged care system. There exist no continuum between health care i.e. hospital care to post care of older people.

Currently healthcare sector is focusing in developing HL 7 standards⁵. This standard addresses the need for electronic data exchange in healthcare environments. Health care is pulled in many directions to address a smorgasbord of needs such as medical domain knowledge representation syntax, reference information model, GP data model and healthcare information systems to name a few. In this array of many needs, it is also important that healthcare and aged care need to address the lack of recognition for other alternative medicine or the so called holistic approach or service to sick people. It appears that Information systems and Knowledge Management play very small part amongst service professionals such as doctors and nurses (although in recent years there is an improved access of ICT tools by these

³ Data mining techniques or Software Agent is not the focus of this research. They are being mentioned in the process of explaining information technology playing a vital role in knowledge management.

⁴ There is no common consensus on definition of ICT, however according to 1998 OECD report, ICT in service related sector can broadly be defined as "Must be intended to enable the function of information processing and communication by electronic means"

⁵ It is beyond the scope of this paper to address HL7 standards and its related issues as the authors feel that we lack expertise in terminologies related to medical area and limit ourselves to information systems and KM concepts.

professionals). Lack of information is consistently reported for many errors that occur within this field. It is possible to implement a knowledge management system using a wireless handheld device such as a PDA to help physician from identifying potential side effects of drugs that interfere with the use of another drug. It appears that failure to use new drugs for a specific ailment results from the lack of knowledge about that drug and it is possible to get advice from a knowledge management system by displaying the new drug information, side effects arising from using such drug, number of doctors prescribing this drug, endorsement of any top level physician in the field of specialty, reported patients use and comments etc which are vital for decision making. Nurses could also potentially use the same tools for administering drugs to patients. Moreover, handheld medical PC's can assist capturing everyday experiences and thus capturing personal and professional knowledge.

Reducing the need for hospitalization

The cost of providing aged care is escalating. Therefore any reduction in the need for hospitalization through medical attention within the residential care and the post acute care would be a welcoming solution by service providers. One option in the current climate could be that these services can be achieved through extended services such as rehabilitation, supply of aids and equipment, in-house resident specialist such as dentist or doctor on call service. While this option reduces cost to the aged care providers, customer may not benefit from this option financially as there may not be significant cost savings. Information System can play a vital role through knowledge management systems. By capturing data associated with the ageing population, it may be possible to create a knowledge portal that would project the requirements of services based on the current trend as knowledge management operates at its best on historical data. By capturing medical data using current systems, and then properly integrating existing data using frontier technologies, it is possible to create a nation wide knowledge portal. Such a portal would then be able to extrapolate the available information in order to generate future requirements. This would then provide solutions to delay the need for hospital care for aged people.

Education & Training

The Aged Care Standards and Accreditation Agency Limited is an independent company whose body is established by the Commonwealth Government as the accreditation body under the Aged Care Act 1997. According to the accreditation policy, Education and Staff Development is an important indicator for receiving residential care subsidies from the Commonwealth. A quick look into this reveals that the policy may not be well implemented. Aged care service providers are highly protective of their residents and generally appear to have specific knowledge and types of care required by residents. While this may be true to a certain extent, it is important for these service providers need to educate themselves from time to time in handling the residents. Better methods or alternate methods are available and service providers need to train their staff for new knowledge in their field. It has also come to attention that most aged care givers are female and lack of men is a source of concern. Potential recruitment and training should be driven by the government. Strategies such as unemployed qualified migrants who are seeking for potential jobs could be a source of target. Educational packages with knowledge management models will assist service providers to develop innovative solutions in this domain.

Direct involvement of GP in hospital admissions

There are policy guidelines that prohibit GPs from having any admission rights into the hospital. Further, GP's do not have any direct role when elderly people are admitted into hospitals as the care transfer itself to emergency care. While hospitals are making efforts to liaise with GP using current technologies in providing appropriate and relevant information, these procedures are inconsistent and depend on the relationships that exist between the hospital and the local GPs. A constant update to a

patient's record through various integrated system right from pharmacy purchase to daily recording of the aged in the aged care/home care and hospital care could identify a variety of trends. Smaller problems could be easily resolved by GP's rather leaving it to the emergency care. Using knowledge management systems, it may be possible to relax such policies as GPs caring for aged may potentially identify the need for hospital treatment. Information available through these knowledge management systems is integral to all stakeholders.

Migrants and their problems

In recent years, many people have migrated from other countries. Two important issues that arise from such migration that have specific impact on aged care are;

Do we have knowledge of what happens to migrant people as they grow old in a different culture (i.e) Australian Culture? Currently there appears to be lack of sufficient information relating to the types of ailments that these populations are carrying within Australian context.

Does Australian government have strategies to cope with multicultural ageing or residential care which may need to offer care for specific communities? It is a well known fact that Indigenous people have special ways of taking care of their elders. Would this not apply to other cultures as well? This is an issue to think about as well as government policies which may need to address changing demographics of customers of healthcare and aged care.

Further, how do we collect the medical history of migrants in order to provide continues care? Perhaps a solution can be found in the form of knowledge management systems as it is possible to aggregate existing knowledge into knowledge management repositories. While such a problem does not arise in the immediate context, future trends are unknown and purpose is to be proactive rather than be reactive, with many information systems and standards which are still in developmental stage.

6. Improvements in healthcare standards – a lesson from India

Country with second largest population in the world, India, with more than a billion people, could provide insight into handling aged care issues. While aged care is a source of concern for this country too, with many cultural problems, due to technology advancement and utilization, it appears that healthcare standards in India have improved considerably. While healthcare costs have spiraled to prohibitive levels across the developed world, in India, it appears that the cost of treatment is still reasonable. According to Dr Naresh Trehan, executive director, Escorts Heart Institute "The medical expertise available here [India] is second to none. There are over 35,000 doctors of Indian origin from United States alone". The implication impacts two major points: (1) the improved medical technology and expertise and perhaps the implied support for such improvement; (2) the training Indian doctors obtain from developed (ie) western countries and the subsequent inclusion of such knowledge in the Indian system. Knowledge derived through such overseas training combined with Information Technology appeared to have improved the Indian healthcare system (Neelakantan, 2003).

A positive side effect:

Due to the rapid developments in the medical industry, skills generated in the recent years, affordable cost, quality service, and the overall support, it appears that that Indian tourism industry has generated a new branch called the 'medical tourism'. This industry is estimated at a growth rate of 30 % per annum with nearly 2.25 million visitors visiting India for medical treatments. The estimated income of this industry alone is close to U\$3 billion. In terms of knowledge management, this industry has profound implications. For example, such tourist flow helps the local industries to grow at a healthy rate and provides insights into the medical procedures of developed countries such as the United States.

Alternative practice

The above point on India opens up a range of issues for the Australian government to consider which have impact either directly or indirectly to health care and aged care : Is there scope for change in policy for treatment in an alternative location or privatization of these services is an issue to think about? Currently Medicare policies include only specific countries for reciprocal arrangement. With a policy shift and including countries like India, cheaper medical costs can be realized by Medicare. Obviously this inclusion does not imply that aged people are forced to travel, but rather opens the channel for younger Australians in general with the support of medical insurance thereby alleviating or relieving waiting periods. Any relief in waiting period would result in quality care for aged people who can't afford to wait. A knowledge management system would be able to identify various treatments, procedures and associated costs in order for Australians to plan their medical procedures. Also from the Indian story, Australian Government could potential look at migrating overseas trained doctors to supplement the shortage in medical professionals or have the choice of opening more private institution that has support from local business and industry. These may look as diluting the quality of medical attention provided by the professional, however for the sick and the needy that may be the choice between pain and relief. From KM perspective, currently there is no database that provides any information about the people traveling overseas for medical treatment or the reasons for such treatment as they are not covered by insurance standards. Some input into this may reveal a wide range of issues.

Conclusion

This discussion paper provided some initial introduction to knowledge management and how it can help issues encountered in the aged care area. The seven specific issues discussed in this paper are expected to provoke some thoughts among aged care service providers in Australia. This paper is conceived only at a conceptual stage and it is planned that some of the issues mentioned in this discussion paper will be progressed further in the form of research studies, exploring various factors affecting these issues and then formulating a model that would benefit both academia and the aged care providers.

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Contact:

Correspondence: v.gururajan@ecu.edu.au