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# **How does Knowledge Management improve the Service Industry?**

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## **Abstract**

In twenty-first century, the industry competes heavily. Entrepreneurs try to use technology to develop their business. However, using technology generates high costs. So companies need to find a new way to survive by using the existing resources to gain maximum benefit. Knowledge management is one of interesting alternatives as it can deliver competitive advantage such as greater competencies and synergy, more balanced decisions and less errors, more creativity and innovation, broader collaboration and knowledge sharing, and easier links to expertise and deeper understanding.

This paper deals with various aspects of knowledge management particularly concentrating on knowledge sharing in service industry. Issues in the context of different data sources and the research with qualitative methodology create the in-depth knowledge to understand how to do knowledge work for gaining competitive advantage. The emphasis is placed on analysis and evaluation of problems and barriers of both cases as applied from all data collection.

In the paper, each chapter has the following set-up. Chapter 2 highlights methodology. The qualitative approach has been used to obtain information and provide data analysis. A complete analysis of knowledge management has been developed by using a case study method with secondary data to analyze how service industry uses knowledge management to manage in its sector. Chapter 3 gives theoretical frame of reference. The definitions of knowledge and culture are explained. Problems and barriers of knowledge sharing are also presented. Chapter 4 gives analysis. Conclusion is presented in the final chapter. The findings show that to improve service and customer satisfaction, the industry has to find out and use knowledge management appropriately. Knowledge management helps reducing time to find information and sharing decision making. For the last part, the discussion and recommendation from culture and knowledge affecting knowledge management in the companies has been reported.

Because of the time limitation of the study, the paper focuses only on the section of service industry. An area for further study would be using other research methods such as interview to gain more in-depth understanding and survey to increase reliability and validity of this topic.

# 1. Introduction

Competitive advantage is important for a company's performance in emerging markets. Many companies lost sight of competitive advantage to grow and compete with domestic and global competitors. Thus, many companies try to gain it from managing knowledge. However, while the companies have to leverage their knowledge internally and externally to create and sustain a competitive advantage, they have to face many problems to manage knowledge.

This thesis takes a critical look at problems and barriers of managing knowledge as well as how the service companies use knowledge management to improve their efficiency.

## 1.1 Problem Discussion

At the present, many companies have to face high competition. Some struggle to implement corporate strategies to response to existing markets. To gain high benefit, these companies use knowledge management to compete with other companies. Knowledge management is very important for all kinds of business because it can help the companies improve their service, increase quality of product, reduce cost and faster response to their customers. However, the major challenge of managing knowledge in the companies is capturing and integrating knowledge to share among all organizational members (Grant, 1996). The successful company has to gain the ability to collect, store, and distribute specialized knowledge to create and sustain competitive advantage (Davenport and Prusak, 1998; Grant 1996).

As markets and organizations become more global, the traditional knowledge creation and transfer such as face-to-face contact, job rotation, and staff training program may prove to be too slow and less effective (Alavi and Leidner, 1999). The need to develop more efficient means has led to implementing information systems that are designed specifically to facilitate coding, combining, and applying of organizational knowledge (Alavi and Leidner, 1999).

Knowledge management has been used in most product-based companies and it has also extended to use in service sector. However, there are not many studies looking closely to explain the situation in the service industry while service sector is continuously growing. Thus, it is necessary to understand the situation and how the service sector develops knowledge management strategy. Knowledge management can play an important role to make companies compete productively.

This thesis has attempted to explain why knowledge management is essential for service companies and show how the service companies use knowledge management to gain competitive advantage. The main problems and barriers that service companies might anticipate during the knowledge management implementation will be discussed.

## **1.2 Purpose**

There are three main objectives for this thesis:

1. The study presents which aspects help create and sustain successful managing knowledge work.
2. The study focuses on the utilization of knowledge management for the company in service sector.
3. Further aim is to analyze problems and how the company in service sector handles these problems.

## **1.3 Research Questions**

1. Why is knowledge management important for companies in service industry?
2. How do the companies in service industry use knowledge management to gain competitive advantage?
3. What are problems and barriers that service companies anticipate during implementing knowledge management?

## **1.4 Keywords**

Culture, Corporate culture, Service industry, Knowledge Management, Knowledge Sharing, Knowledge Work

## **2. Methodology**

### **2.1 Qualitative research**

Qualitative research approach is one of the main approaches of research methodology. It studies about experiences, behaviors and attitudes from the respondents. Qualitative methods include interview, participant observation, case study, ethnography, content analysis and so on. Opposite to quantitative research approach, it does not use mathematical and statistical methods. However, qualitative research method uses logic to interpret gathered data. When compared to quantitative research, it has weak points which are more expensive and difficult to measure. The qualitative methods are based on smaller sample sizes and are often not representative of the population, which makes it difficult to achieve reliability and validity (Wikipedia, 2006). Although qualitative method usually cannot be replicated or repeated, which gives it low reliability; the research is more intensive and more flexible, allowing the researcher to search since he or she has greater latitude to do so (Joppe, 2000). Moreover, it can give in-depth detail in some more specific issues than quantitative method. Due to my research questions asking “Why” and “How”, using qualitative methods will be the best solution to define the answers.

### **2.2 Case study: definition**

A case study is one type of qualitative research method. Case study method involves an in-depth examination of a single event: rather than using large examples and following a rigid protocol to examine a limited number of variables. It uses many methods to collect information from one or a few units such as people or organizations. The borders of the event are not obviously clear at the beginning of the research and no experimental control or management is used (Wikipedia, 2006).

Many researchers have mentioned that each research approach has advantages and disadvantages. There is no approach that is more suitable than all others for all purposes. Case study is particularly suitable for certain kinds of problems.

These are main characteristics of case studies categorized by Myers and Avison (2003).

- Event is observed in a natural setting.
- Data are collected by many ways.
- One or few units are tested.
- The complication of the unit is examined seriously.
- Case studies are more appropriate for the exploration, classification and hypothesis development phases.
- The researcher should have an open attitude for exploration.
- No experimental controls or management are concerned.
- The researcher may not identify the set of dependent and independent variables before.
- The derived outcomes rely on the combined powers of the researcher.

- Data collection methods can be changed when the researcher develops new hypothesis.
- Case study research is suitable for 'how' and 'why' questions
- The researchers want to focus on current events.

## **2.3 Single-case vs. multiple-case designs**

For aim of case study design, researchers have to decide to choose one or many cases in the project. Most researchers try to use multiple cases, but single-case is suitable in specific case. Yin (1984) advises single-case designs are appropriate when:

1. It is a case that cannot previously access to scientific investigation.
2. It shows a critical case for testing a well-formulated theory.
3. It is a great or unique case.

Researchers use a single-case study at the beginning of theory generation and late in theory testing. A single case is used for exploration after that may be followed by a multiple-case study. A single-case design may be used to test the limitations of theory Myers and Avison (2003).

For multiple-case designs, Myers and Avison (2003) mention that the multiple cases are useful when the goal of the research is description, theory building, or theory testing. Multiple-case designs allow researchers do comparative case analysis and the extension of theory. And multiple-case also brings more general research outcomes.

In this thesis, I have chosen to analyze two cases that represent some parts of service industry because they are the examples of the service companies that use knowledge management. One is in health care sector that uses knowledge management to improve its service. And the other one is in financial sector, a large bank that uses knowledge management to compete with other banks in its service industry. Deploying the multiple cases will help to compare how the companies manage knowledge sharing to gain competitive advantage.

## **2.4 Reliability and validity**

Reliability refers to the consistency of a measure. A test is considered reliable if the researcher can get the same result repeatedly and an accurate representation of the total population. If the results of the study can be reproduced under a similar methodology and will not fail to perform within specified limits in a given time while working in a stated environment, the research instrument is considered to be reliable (Van Wagner, 2006; THCU, 2005; Kwaliteg Management Services)

Validity is the extent to which a test measures what it claims to measure. It is vital for a test to be valid in order for the results to be accurately applied and interpreted. Validity is not determined by a single statistic, but by a body of research that demonstrates the relationship between the test and the behavior it is intended to measure. (Van Wagner, 2006).

Reliability and validity are mostly found from conducting quantitative method. To measure reliability and validity in qualitative method, it is important not to seek only for frequencies but to focus on meanings or interpretation as well (Kirk and Miller, 1985).

In this study, the reliability and validity will be obtained through acquiring and analyzing data from many sources. The data from different sources can help crosschecking the information. If all sources from two case studies provide the same findings, this study will gain the validity. At the same time, the reliability will gain during the analysis part when those proved information can be interpreted in the consistent manner.

## **2.5 Data collection methods**

There are many methods of data collection usually used in case research studies. Data from two or more sources will help to support the research answers. Yin (1984) gives the ways to find sources of data that work suitably for case research.

- Documentation
- Archival records
- Interviews
- Direct observation
- Physical artifacts

The goal of data collection is to gain rich data that suit for the research. Collected specific data depends on the research questions and the part of analysis. Myers and Avison (2003) suggest that the researchers should plan what data they will collect. For example, they should list resources to be gathered such as documentation or they plan for questions to interview. These plans will help researchers when they have to work with other researchers. The goals of this stage are to ensure that researchers can collect data that they want and spend time appropriately.

Most information in this thesis is from secondary data which are collected from textbooks, web sites of knowledge management and corporate culture, and documents that related with the research topic. Also, using multiple-case design can help me gather various information and examples to analyze and compare different companies in service industry.

## **2.6 Data analysis and exposition**

Myers and Avison (2003) state that the main parts of data analysis are important to the outcomes of case research. The richness of data of the research should be presented. The reasoning of researchers should be clearly stated and defended in establishing hypotheses. The research should begin from purposes and questions, to assumptions and design choices, then to specific data discovered, and to results and conclusions. These stages make readers can follow easily.

There are many ways to analyze the data including using templates, grounded theory and discourse analysis. Secondary data analysis is also one of qualitative data analysis. Due to my time limitation, I have chosen to use the secondary data analysis because this approach is the reanalysis of data. The concept of this approach is that the present researcher has intended to use the data that was originally compiled by another researcher for other purposes. Secondary analysis will often involve adding another variable to an existing dataset. This variable will be something that the researcher collects on their own, from another dataset, or from a common source of information. Secondary data analysis is only limited by the researcher's imagination (O'Connor, 2006).

## **3. Theoretical frame of reference**

### **3.1 Service industry**

Service industry is the one sector of industry involves the provision of services to other businesses as well as to final consumers. Activities are mainly concerned with providing services rather than tangible objects for the benefit of the end users and/or other industries. It includes insurance banking and finance, provision of gas and electricity and water, health care, transport, communications, entertainment, retailing and wholesaling, and central and local government. (London Borough of Richmond upon Thames, 2005; the Geographical Association Fieldwork Code of Practice, 2006; WordNet; Wikipedia).

The economy is developing rapidly and the significant change on economic structure is progressing. Therefore, the importance of service industry in economic system has been increasing steadily so to become one of principal drivers for most developed countries' economy.

As I recognize that the services sector is now of central importance to advanced economies, studying in knowledge management to enhance the understanding of this sector would be necessary.

### **3.2 The concept “Knowledge”**

Knowledge is quite different from data and information in nature, although sometimes people use the three terms interchangeably. (Becerra-Fernandez, Gonzalez & Sabherwal, 2004).

#### **Data**

Data consists of facts, results from observations and explorations and doing experiments. For alone data, it just shows raw numbers or claims so it does not have meaning by its own. However, data is still needed for any organization. It is important for workers and companies because it is the raw material for analysis to create information. For example, sales order is just data; it does not have meaning for anyone if it is not transformed to other things that have meanings. Although data does not have meaning or goal, it is easy to be captured, stored, transferred and communicated by using electronic or other media (Davenport & Prusak, 1998; Becerra-Fernandez et al., 2004).

#### **Information**

Information is a part of data. It generally involves about transforming, sorting and organizing raw data to gain a more meaningful indication of patterns in the data that information has an impact on people's decision or behavior (Becerra-Fernandez et al., 2004). For example, after transforming sales order into daily sales, daily sales report can be used to give meaning for manager to make a decision what to do next.

## Knowledge

Becerra-Fernandez et al. (2004) judge knowledge to be at the highest level in a hierarchy with information at the middle level, and data to be at the lowest level. According to this view, knowledge cites to information that enables action and decisions, or information with direction. Davenport and Prusak (1998, p.5) give another definition of knowledge.

“Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.”

Knowledge helps producing information from data or more valuable information from less valuable information. Thus, knowledge is basically similar to information and data, although it is the richest and deepest of the three, and is consequently also the most valuable. This aspect of the relationship between data, information, and knowledge is represented in Figure 1 (Becerra-Fernandez et al., 2004).

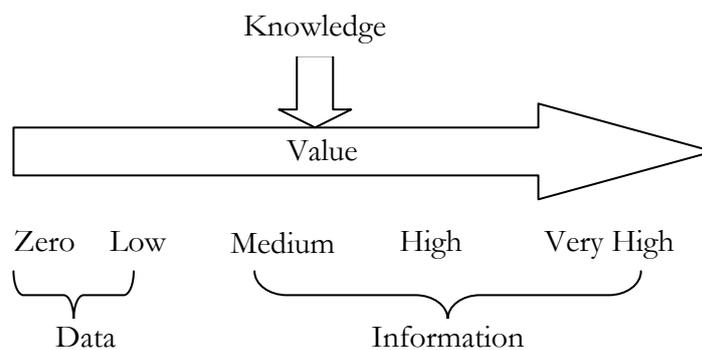


Figure 1 Data, Information, and Knowledge Source: Becerra-Fernandez et al., 2004

### 3.2.1 Knowledge creation

All strong companies create and use knowledge. When these companies have to interact with their environments, they get information, transform into knowledge, and use to make a decision based on their experiences, values, and internal rules. If a company does not have knowledge, it cannot manage itself to be a strong company. To create knowledge, Davenport and Prusak (1998) give five ways of knowledge creation; acquisition; dedicated resources; fusion; adaptation; and knowledge networking.

- **Acquisition:** The most effective way to get knowledge is to buy it. A company can buy from another company or hire individuals that have knowledge.
- **Rental:** Some companies can have knowledge by renting it. It means renting a knowledge source.
- **Dedicated resources:** Some companies generate knowledge by establish units for specific purpose.
- **Fusion:** Fusion is a method to create new synergy by bringing people from different departments to work together on a project.

- **Adaptation:** Due to new products, new technologies, and social and economic changes drive company to change and adapt to survive in business.
- **Networks:** Informal networking among people can create knowledge.
- **Common factors:** space and time.

When a company creates knowledge, it has to concern about interactive teamworking process. This process involves different backgrounds, cutting across organizational boundaries, and combining skills, artifacts, knowledge and experiences in new ways. There is an assumption that when people work together, they can produce more creative results than they work individual. It is hard to establish effective teamwork because people come from different backgrounds and have different knowledge bases.

Teamworking is a key factor to create knowledge with mutual understanding of deep tacit knowledge based on shared experiences together for a long time. Tacit knowledge is knowledge that is in people's heads and it is hard to explain or communicate with other people. For explicit knowledge, it is knowledge that can be expressed in text form or by speaking. Explicit knowledge is easy to explain and communicate. Good personal relations are necessary for the sharing of tacit knowledge (Newell et al., 2002).

Although different knowledge from various sources tends to make a conflict of ideas, this conflict can create creativity. This creativity will be built when the individuals work together and communicate each other. It is not only just social skills that make people understand each other, but it also depends on cognitive skills that make them can comprehend each other Leonard-Barton (1995).

### 3.2.2 Knowledge codification

This method is about making knowledge accessible for whoever wants it. This process will transform knowledge into a code to make it as structured, explicit, transferable, and easy to understand as possible. Each of these codes has its own particular set of values and limitations, and they can be used single or in combination. New technologies have a vital role to codify knowledge and make the prospects for these activities (Davenport & Prusak, 1998). Davenport and Prusak (1998) also give four rules for companies to follow when they want to codify knowledge.

1. Managers have to identify what business goal that the codified knowledge will supply.
2. Managers can specify knowledge that exists in many forms to achieve those goals.
3. Value and suitability of knowledge must be evaluated by knowledge managers.
4. A proper medium must be identified for codification and distribution. In the companies.

### 3.2.3 Knowledge transfer

Knowledge is naturally transferred in every organization whether or not the process has been managed at all. For example, when a practitioner asks the senior employee about

the needs of a particular customer, they are exchanging knowledge. (Davenport & Prusak, 1998).

It is difficult to transfer tacit knowledge from the resource that creates it to other parts of the company. The company should use knowledge transfer that suits the organizational culture.

Davenport and Prusak (1998) recommend that the company should encourage knowledge sharing among business units by creating places and giving opportunities for employees to interact formally. Knowledge transfer should be supported in personal meetings in addition to more structured forms mentioned above.

Normally, to transfer tacit knowledge, it requires strong personal contact. Suitable knowledge should be stored in procedures or described in papers and databases and transferred accurately.

### **3.2.4 Knowledge work**

Naturally, knowledge is needed for all works in every occupation, even simple work. However, the term 'knowledge work' tends to be applied to refer to specific occupations exploiting theoretical knowledge, creativity and social skills (Newell et al., 2002).

Knowledge work is used to refer to as professional work, such as accountancy, scientific and legal work. This type of knowledge work depends on the application of both tacit and explicit knowledge. Employees who involve this type of work need to make their decision by themselves about what and how to do their work. So these knowledge workers should have high education and specialist skills. (Newell et al., 2002: p.18)

### **3.2.5 Some possible problems in Knowledge Management**

#### **Space and time limitations**

While advance computer and technology have helped people to link with each other, people also concern about geography affecting them in the new knowledge economy. The emergence of virtual space does not decrease significance of physical space (Kimble et al, 2000). Even though people have the fast pace of technology to communicate and the ability to transfer data across distances, they still want to contact with others in person by gathering together for events, hand shaking and hugging (Sherron and Boettcher, 1997).

Time is another factor that needs to be considered because virtual communities or online societies make people work with their colleagues anytime and anywhere. For example, an employee can work at four o'clock in the morning with other employees from other continents (Kimble et al, 2000).

Another aspect of time is obsolete knowledge. Although sharing knowledge over time is seen as important, people should not overestimate past knowledge. Knowledge from the past cannot always serve as a basis for the work of today; things can change quickly and radically in innovating industries (Barnard, 2005).

### **The lack of face-to-face communication**

In any cultures the face-to-face meeting is the perfect example for the meeting of minds. When people meet physically each other, communication is smooth and sound. However, the space and time limitations in online society make face-to-face communication impossible. Knowledge Management researchers support the presence of other members in the community which is the important key for knowledge creation and sharing.

Today people have a lot of activities to do, such as working and learning, from other part of the world. In order to solve the problems, they can use technologies such as video conferencing to create a telepresence that they can communicate anywhere and anytime. They can create virtual teams to work efficiently when having the face-to-face communication where they can overcome the issue of trust and ambiguity surrounding in the virtual world (Hildreth et al, 1998; Kimble et al, 2000).

### **Language and cultural barriers**

Not only the physical distance and time difference limitations problems that members in online society have to confront, but also they may face other obstacles to communicate each other, such as language and cultural barriers. They have to meet that language that can hinder to interact in online society where the companies can find people from different countries and different languages. Although people normally use English to communicate or do business worldwide, many people do not have the ability to understand and communicate in English (Van den Branden, 2001). Therefore, language can be a cause of barriers that hinder people in online society to transfer and share their knowledge to others. When people have to share knowledge with someone from another culture, they have to use additional effort (Barnard, 2005).

Culture may also hinder people in online society to create and share knowledge each other. People who come from different parts of the world may have different cultures, behaviors, goals, and motivation that make it difficult for them to communicate and get knowledge from what other people try to explain.

### **The problem with trust**

Trust has played an important role in knowledge sharing. It plays a more essential role when it has to be created in an online or virtual environment. Handy (1995) has emphasized the importance of trust in an online society. He considers that trust can occur when people are not complete strangers to one another. He also maintains that establishing trust is hard if people have not worked together before, or they have no face-to-face contacts. People increase the sense of trust that allows them to create new knowledge and share that knowledge to other people in the community through good relationships.

### **Low level of teamwork**

Online communication in virtual communities differs from face-to-face communication. As mentioned above, due to the space and time limitations, the lack of face-to-face communication may result in the problem with trust, identity and commitment in online societies. These can make people feel reluctant to share their knowledge and work together. Knowledge that is not shared will lose its relation quite quickly. There is an evidence that the environment that supports trust, care, and personal networks among employees is one of the most important conditions for high level of collaboration, knowledge creation and knowledge sharing (Nonaka, Von Krogh and Ichijo, 2000; Kimble et al, 2000).

### **Lack of time and heavy workload**

One of the barriers to knowledge sharing is that people are too busy to share their knowledge and to answer the questions they are asked. Many people cannot deal with overloaded information from many sources such as e-mails. When some people are too busy to answer the questions, others who ask the questions will feel suffer from inadequate knowledge (Barnard, 2005).

### **3.2.6 Knowledge management sharing**

Knowledge has become one of the important parts of any companies. The companies face the challenge about using and creating knowledge. When the technology that has been used to manage knowledge growing fast, it means that the knowledge can be collected, stored and accessed to improve the job. While human knowledge may be an organization's most valuable asset, much of this knowledge has never been shared. Harnessing critical knowledge and using it to create a common vision and objectives can move an organization closer to high performance workplace. Many researchers maintain that it is essential to create a knowledge sharing culture as part of a Knowledge Management (Harris, 2006).

### **3.2.7 The Importance of Sharing Knowledge**

Nowadays the creation and application of new knowledge is essential to the survival of most companies. There are many reasons why knowledge sharing is important as follows: (Gurteen, 1999):

- Intangible products - ideas, processes, and information - are growing in the share of global trade from the traditional, tangible goods of the manufacturing economy.
- The application of new knowledge is increasingly important in the society. The continuous innovation process will sustain the competitive advantage.
- Increasing in turnover of staff. People do not take a job for life any more. When they leave an organization their knowledge is gone with them.

- Large global or even small geographically dispersed organizations do not understand what they know in the whole picture. Expertise learnt and applied in one part of the organization is not leveraged in another.
- Fast changing in technology, business and society can cause the obsolete knowledge. As things change so quickly, in some companies, their knowledge base declines. As much of 50 per cent of what the staff knew five years ago is probably obsolete today.

### 3.2.8 Barriers of knowledge sharing

These are some barriers that obstruct companies to transfer knowledge in their companies Davenport and Prusak (1998) give barriers affecting knowledge transfer in companies and they also give possible solutions for each barrier.

Knowledge sharing barriers	Possible solutions
- Lack of trust	- Build relationships and trust through balancing between virtual and face-to-face meeting - Confirm that the communication's approaches supports knowledge transfer
- Different cultures, language and frames of reference	- Create common ground through team work, job rotation and other types of collaborative working
- Lack of time and meeting places; narrow idea of productive work	- Establish time and places for formal and informal knowledge sharing
- Status and rewards go to knowledge owners	- Evaluate performance and provide rewards those who share and reuse knowledge
- Lack of absorptive capacity in recipients	- Educate people on the advantages of flexibility; employ for openness to ideas
- Belief that knowledge relates to specific groups	- Establish an environment where quality of ideas are more important than status of source
- Intolerance for mistakes and lack of help	- Tolerate and reward errors from creative collaboration and help a person learn from these

Table 3.1 Barriers of knowledge sharing Davenport and Prusak (1998)

### **3.3 The concept “Culture”**

#### **3.3.1 Culture definition**

Many researchers have given different definitions of culture from past to present.

Tylor (1871) cited about culture in his book, *Primitive Culture* that culture is "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society."

Matthews (2001) defines culture as the system of shared beliefs, values, customs, behaviors, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning

Unesco (2002) defines culture as “the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and belief.”

#### **3.3.2 Corporate Culture**

Jackson (1995) states that corporate culture is a phenomenon of a different order from national cultures, if only because membership of an organization is usually partial and voluntary, while the membership of a nation is permanent and involuntary. His research describes about national cultures differ mostly at the level of basic values while corporate cultures differ mostly at the level of the superficial practices: symbols, heroes, and rituals. Corporate cultures consist of practices rather than values, they are somewhat manageable: they can be managed by changing the practices. The values of employees cannot be changed by an employer, because they were acquired when the employees were children. However, sometimes an employer can activate values which employees were not allowed to show earlier, like a desire for initiative and creativity, by allowing practices which before were forbidden.

Buellens, Kreitner and Kinicki (2001) argue that corporate culture is, in fact, a byproduct of national or societal culture. They also state that while culture has an impact on organizational behavior through employees' customs and language, at the same time, corporate culture effects on each individual's attitudes, values and expectations.

A good corporate culture is important to succeed in managing knowledge. A company that is lack of trust and fails to reward or promote the cooperation and teamwork will suffer its bureaucratic culture. Moreover, the company that cannot gain trust from its workforce will have troubles to share knowledge among workers within the company Zand (1997).

Corporate cultures are hard to change and manage because these cultures have developed into general habits. The task to change these cultures belongs to top management. The top managers have choices to select either accept and use the existing culture or try to change it. If the top managers would like to change corporate culture, they have to assure that they receive sufficient support from key persons from different levels in the company. The process of changing corporate culture has to continually be monitored. It takes the top manager for several years to maintain the attention and assess the culture (Jackson, 1995). The lack of culture awareness will be one of the key factors that made knowledge management fail.

### **3.3.3 Knowledge Management and the Role of Culture**

Knowledge management is a new branch of management for the company to gain competitive advantage by combining people, processes, information, and technology together. It focuses mainly on the management of change, uncertainty, and complexity (<http://www.brint.com/km/>). The companies can obtain knowledge by identifying, extracting and capturing the knowledge so that the companies can utilize it effectively.

Malhotra (1997) describes "Knowledge Management caters to the critical issues of organizational adaptation, survival and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings."

Sveiby (2001) identifies two broad categories of knowledge management: the first is how to use information and technology, another one focuses on how to manage people. The first approach which is the management of information considers knowledge as objects that can be managed by information management systems. The main goal of this approach is to increase access of information through improved methods of access and reuse of resources such as database, hypertext linking. The key solutions are new developments in IT. This approach will work by using technology to control information. The second approach is the management of people which considers knowledge as a process - a complex set of dynamic skills and know-how that is constantly changing. This approach focuses on assessing, changing and improving human individual skills and/or behavior. The goal of this approach is to make people share their knowledge.

Newell et al (2002) also divide the approaches to manage knowledge into two ways. One is the ICT (Information and Communications Technology) -based approach or the cognitive model and another one is the ICT-led approach or the community model. These two approaches are quite similar to that of Sveiby mentioned above. The followings are characteristics of these two approaches by Newell et al (2002):

#### **The Characteristics of ICT- based approach**

- Knowledge is equal to objectively defined concepts and facts.
- Knowledge can be codified and transferred through text: information systems have a important role.
- Gains from Knowledge Management include utilization through the recycling of existing knowledge.
- The main function of Knowledge Management is to codify and capture knowledge.
- The critical success factor is technology.
- The dominant metaphors are the human memory and the fitting pieces of knowledge together to produce a bigger picture in predictable ways.

## **The characteristics of ICT- led approach**

- Knowledge is socially created and based on experience.
- Knowledge can be tacit and is transferred through interactive social networking processes.
- Gains from Knowledge Management include discovery through the sharing of knowledge among different functional and/or cultural backgrounds.
- The main function of Knowledge Management is to encourage people to share their knowledge through networking.
- The critical success factor is trust and collaboration.
- The dominant metaphors are the human community and the interaction to produce new knowledge in sometimes unpredictable ways.

Many studies support that not only managing information is one of the success factors, but social factor is also another key factor that the companies have to concern. Managers need to acknowledge and accept the differentiation of their employees and recognize that they are only in a position to loosely manage organizational culture. So the company will be a good place to work which will aid retention and promote responsible autonomy within the company.

### **3.3.4 Creating a Knowledge Sharing Culture**

To create a Knowledge Sharing Culture, it is about making knowledge sharing the norm. The company which wants to create a knowledge sharing culture needs to encourage its staffs to work together more effectively, to collaborate and to share - lastly to make organizational knowledge more productive. However, Gurteen (1999) comments on a few issues which need to be concerned:

- Sharing knowledge is not just sharing information.
- The purpose of knowledge sharing is to help a whole organization to reach its business goals. It is not sharing for only the benefit of one department.
- Sharing knowledge is as significant as learning to make knowledge productive.
- It is hard to change a culture.

### **3.3.5 Motivating and Rewarding Knowledge Sharing**

Direct and indirect rewards must be put in place to encourage knowledge sharing. Knowledge workers might be financially or admirably rewarded for contributing to knowledge work. However, it might not be true in all cases because it is not possible to make people share their knowledge by only rewarding them. Some employees are motivated by more than just money such as more experiences and knowledge they can gain by themselves during doing knowledge work. Hence it needs to ensure that appropriate rewards are in place.

Behavior of knowledge sharing can be encouraged when the employees realize that knowledge-sharing is valuable for them. Sharing knowledge helps employee do their jobs more effectively. Moreover, it helps them keep their jobs; helps them in their personal development and career progression; rewards them for getting things done (Newell et al., 2002).

## **4. Analysis**

### **4.1 Summary of the case studies**

#### **4.1.1 Case study 1**

##### **The WISECARE Project**

(From <http://wisecare.nurs.uoa.gr/>)

The WISECARE, a European Commission funded project, was created by many European partners including the Glasgow Caledonian University, Katholieke Universiteit Leuven, Teallach Limited, the University of Kuopio, HISCOM from the Netherlands, the University of Athens, and Arthur Andersen Inc. This joint venture was named from "Work flow Information Systems for European nursing CARE".

The project began in January 1997 and ended in June 1999. The main purpose of WISECARE was to develop the systematic use of electronic patient records for clinical nursing data and to improve cancer nursing practice across Europe through the utilization of state of the art information technology. Cancer nurses from 10 countries and 17 units (in-patient, out-patient, ambulatory care, medical and surgical oncology) were participated in the project. These European partners tried to pool information together and share among them. This has led to the development of knowledge-based "best practices" in nursing care. It also allowed partners to compare and measure their performances against the best practices of other institutions.

WISECARE is an information technology tool. Benefits that associated with information technology are higher efficiency, error reduction, better communication and easy documentation. The real potential was not only found in the information technology systems, but in its benefits to organise nursing in new and creative ways that has never been done before. Three ways that have been changed from utilizing WISECARE are as follows:

1. The change from knowledge dissemination to knowledge sharing.
2. The change from individual knowledge to organizational knowledge.
3. The change from deductive prescriptive knowledge to inductive experience-based knowledge.

In WISECARE, tools will be developed for the exploitation of clinical databases to support clinical decision making.

## WISECARE Project

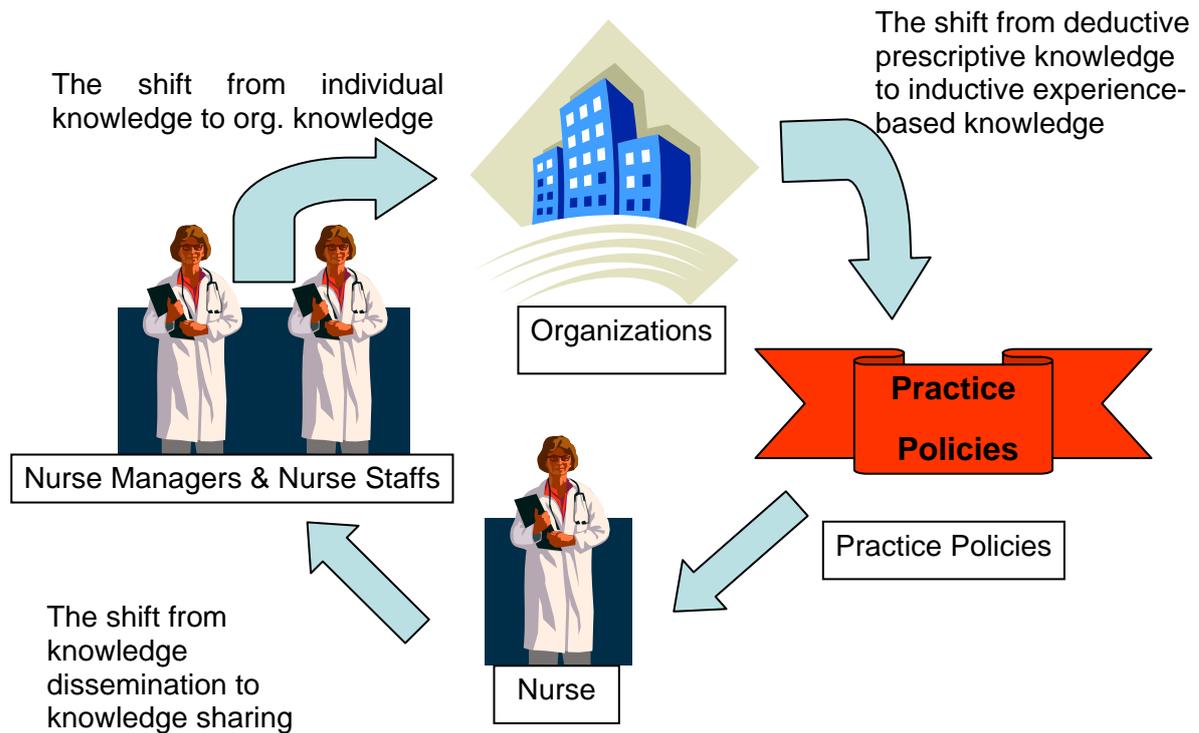


Figure 2: Wisecare project developed by Paween.

### 4.1.2 Case study 2

## HSBC

(From <http://www.ikmagazine.com>)

HSBC is one of the largest banking and financial services organizations in the world. Its Headquarter is in London, UK. HSBC's international network consists of over 9,500 offices in 76 countries and territories in Europe, the Asia-Pacific region, the Americas, the Middle East and Africa.

Through an international network linked by advanced information technology and the rapid growth in e-commerce, HSBC provides a comprehensive range of financial services including personal financial services; commercial banking; corporate, investment banking and markets; private banking; and other activities.

With a highly successful tradition dating back over 150 years, the firm is now ranked the number two after Citigroup. In 2002, HSBC created a small specialist KM unit. It is located within a new reorganized human resources function.

HSBC is not an organization in crisis to use KM for solving problem. Knowledge management is brought to improve an already very well-functioned business that delivered \$6bn pre-tax profit at the last count. The size and power of HSBC should have had potential to use the collective wisdom. Moreover, the ability of its global workforce is an area where KM should be able to have a key contribution.

One year later, the strategy of driving KM through an autonomous unit disappeared. There is no KM unit. However, the organization did not stop working on knowledge management.

The short-termed KM unit was launched to introduce an electronic expertise-location tool and the development of the e-directory. The unit also conducted the first ever knowledge audit, and introduced several knowledge-acquisition projects to reduce business risks and capture expertise. The knowledge-audit process was involved knowledge mapping and filled key knowledge gaps in a particular business unit. These activities increased the recognition of KM issues.

Knowledge-acquisition projects (Kaps) continue to be used to download experience and wisdom from existing staff before they leave the business into an accessible database format so that their organizational memory remains current. The benefit is twofold. It made the senior staff feel valued during their outstanding careers. It also helped newcomers in the organization to learn faster.

However, the unit was unable to manage the KM tools and techniques successfully because most managers believed that they had enough to handle already. In addition, the time limitation for most commercial organizations to deliver beneficial results within one quarter is a pressure to the project as the utilizing time can take up to three to five years.

There is a range of restricting factors to be dealt with by the pioneering KM practitioner as follows:

The first problem came from the lack of understanding on the non-KM senior managers. In the early stage, the unit had to spend most of its time explaining what it is before it can get on and do it. The unit later published a KM brochure to solve this problem. This helped raising awareness.

The second problem is the investments in KM programs fail to meet the criteria of the requirement to show a positive return on investment in short-term perspective in many commercial organizations.

The final obstacle for KM in large organizations is the culture. In traditional organizations, organizational culture still depends on the established and highly respected hierarchy and procedures still dominates.

## **4.2 Data analysis**

The analysis has divided into three main parts to answer three research questions.

### **4.2.1 The importance of knowledge management in service companies**

Service industry is complex, and involves highly specialized professional knowledge (Nah, Siau and Tian, 2005). In the case of WISECARE, it is categorized in the health care service sector. The project utilized knowledge management by allowing nurses to communicate and compare their current practices and patient outcomes across Europe.

Knowledge management is brought into the health care service industry with two major goals:

#### **1) Increased productivity**

Kearney et al. (2000) stated that adopting knowledge management in health care services allows complicated issues such as patient care problems to be addressed. Collaboration in information of many hospitals like WISECARE project helps to gain access to larger groups of nursing staff with varying skills and abilities. The pooling of human resources in this way can expand nursing knowledge that will impact on better patient care. In addition, acquiring larger patient sample sizes with diverse locations and several care procedures also prevents the delay in replicating the studies. The resource sharing prevents unnecessary work that can produce considerable cost which leads to the gain in financial benefits (Kearney et al., 1998).

WISECARE project was brought state-of-the-art information technology systems to assist knowledge transfer. The fast communication has impacted on improving managerial decision making and launching new nursing practice (Kearney et al, 2000).

#### **2) Mutual learning and support**

Involvement in the collaborative project like WISECARE offered not only the chances for nurses to learn but also the opportunity for nursing profession to develop (Kearney et al., 2000). As participants came from different educational backgrounds and acquire diverse working experience, mutual learning and sharing is often an outcome of knowledge sharing.

The WISECARE project collaborated through the use of a supportive network that allowed all participants to support each other. They can discuss their clinical concerns and find solutions to solve the problems via email. The flexibility of this medium suited for nurses in multiple sites as they can communicate at a time convenient for them (Alavi and Leidner, 1999). In addition, supportive links allowed them to build strong working relationships. The combined skills of the nurse team also build the complementary viewpoints to be explored within the project.

Knowledge management has initiated the new way of learning. The traditional ways of learning is through didactically driven educational program and through personal experience. This has moved away to the notion of life-long learning (Kearney et al., 1998). Via communication network, the experiences of everyday clinical practice were

shared. This enabled nurses in different health-care settings to examine their own practice and that of others and at the same time integrate their findings into their clinical practice. WISECARE project also tried to establish a knowledge database which can be accessed by all participants. This database will be updated as practice changes to ensure the similarity in care delivery.

According to Nah, Siau and Tian (2005), knowledge management is very essential for the financial service industry. In fact, the need of knowledge management in this industry might be even greater than other industries due to its heavy reliance on information systems and customer contact.

There are two main purposes of developing knowledge management in financial service companies:

### **1) Communication improvement**

Many financial service companies including HSBC utilize knowledge management as the way to improvement their communication with their customers and among their staff. They adopted online knowledge-sharing activities such as creating virtual community which involve both customers and company's staff to contact in an interactive way.

HSBC managers expressed a desire to obtain competitive advantage from information itself. Even though the vast amount of information flow and intense customer contact are received daily, it will not make a strong impact for the service companies, unless knowledge-sharing activities are developed. HSBC recognized about this issue. The company designed the state of the art information technologies to help managerial and professional workers to process the information. The infrastructure helps reducing the overload of information by filtering only the necessary information (Alavi and Leidner, 1999). In addition, developing knowledge management in the organization will help eliminating old or wrong data that is no longer recognized as valid knowledge (Alavi and Leidner, 1999).

Knowledge management can help saving time for client engagements and problem solving, enhancing staff participation, making the opinions of staff and customers more visible, and better serving customers (Alavi and Leidner, 1999).

### **2) Efficiency gains**

Knowledge management has led to cost reduction, increased sales, personnel reduction, higher profitability, ensuring consistent proposal terms for worldwide clients. For example, the financial service companies now offer service transaction via the Internet. HSBC is successfully developing this method. The firm benefits as it is faster, cheaper, and easier to customize than traditional methods. Moreover, HSBC realizes that acquiring knowledge about customers, including their demographics, preferences, and behavior patterns is useful for developing marketing campaigns as well as new promotions to maintain existing customers and reach new target markets (Nah, Siau, Tian, 2005).

To increase customer loyalty, many studies suggest the need to build a strong virtual community. This is indicated as another way of obtaining good knowledge-sharing mechanisms. In the financial service industry, this makes a strong case for developing the systematic customer services.

## **4.2.2 The utilization of knowledge management to gain competitive advantage**

Based on Behrmann (2005), the service companies develop Knowledge Management concepts into practice tasks as follows:

### **1) Recruiting and retaining top people**

Generally, the service-based organizations often compete in their sectors based on their ability to solve complicated problems and provide solutions for customers. These companies tend to organize themselves by attracting and retaining knowledgeable employees. Sustaining professional employees is very crucial for achieving competitive advantage in the long term.

From the first case, participants in WISECARE project are nurse staffs and many nurse managers in Europe who are well-educated and professional in their career paths. While vast amounts of health-related knowledge and information are generated from them, keeping up with this developing knowledge is their full-time job. Thus, sharing information relevant to clinical practice could give clinicians the opportunity to have a working knowledge of the recent developments necessary to inform their practice.

### **2) Creating structures that allow continuously enhancing and broadening capabilities**

Within the WISECARE projects, the participants realize that if the nature of the collaborative relationship is not supportive of individual group members expressing their fears and uncertainties, both the project and the individual will suffer. It is essential that team members reflect on why they feel the way they do and discuss these feelings with the team. The concepts of mutual respect and acknowledging cultural differences are integral to the project and these have allowed management teams to deal with any sensitive cultural issues.

In the case of HSBC, it created a small specialist KM unit located within a re-organized human resources department. Successes achieved in the short time that the knowledge-management unit was fully up and running included the introduction and development of a group-wide e-directory, pioneering the introduction of an electronic expertise-location tool. They also conducted the knowledge audit, and introduced several knowledge-acquisition projects to decrease business risks and capture proficiency. All of which led to significantly raising the profile of KM issues.

### **3) Requiring external sources**

The WISECARE website contains links to reputable cancer-related websites that are relevant for cancer nurses. Thus, it is saving valuable time when searching for information. Nurses visiting these sites are able to share the information that they found with colleagues. Moreover, the nurses from the clinical sites have shared their nursing protocols and guidelines for specific patient problems with others by using the communication via internet, email, and projects' data collection tool.

To benchmark, HSBC look at other companies that are considered to be knowledge-management leaders in their industry and copy their system. They also try to imitate KM of other leaders in other industries. From this point, competitors are also their external knowledge sources.

#### **4) Acquiring leadership**

##### **Shared vision**

Not only does Knowledge management have a major impact on the knowledge base of clinical nurses across Europe, it also remarks the ways the management team of WISECARE project changing their process of decision making from isolating to sharing among groups. As the nurses chat and share information among others about their experiences of the every day work and practices and therefore identify the most effective interventions. This increased knowledge has influenced clinical practice and resulted in an improvement in patients' symptom outcomes. This demonstrates the process and value of nursing.

At HSBC, while it found a good supply of people who were willing to help answer questions, many people do not want to ask the questions that would actually save a hard-pressed executive real time and effort. This situation always happens especially in large organizations where people have ego themselves and do not want to ask for help. Thus, the culture has to support people to admit failure and ask for help when they need it.

##### **Empowerment**

From WISECARE case, nurses value the opportunity and advantages of participation in the knowledge management project brought to them. They report a sense of empowerment and a vision for the future.

Human Resources rewards can help empower people at HSBC when HR rewards are tied into knowledge-management activities, such as sharing and building knowledge. It can help encouraging and motivating people to share their knowledge.

##### **Trust, ownership**

Trust is consisted of: transparency and openness. It helps creating sense of involvement and participation. In addition, it comprises fairness and transparent evaluation.

From WISECARE project, Knowledge sharing means that the experiences of the every day work are shared among others and are explicitly available for others. In traditional organizations, knowledge sharing is often done locally when teams are working together. Information technology will extend these kinds of experiences across boundaries of nursing units, hospitals and even countries. While taking care of patients, all nurses in the network can evaluate their work and results, can give some advise and can use others experience for their own work. Working and learning becomes the same experience because of their immediate transparency. When some of the partners are integrating research results that prove to be effective, these can be easily adopted by the others in the network.

As WISECARE expands in Europe, two barriers to knowledge sharing are culture and language. However, these barriers have not been impossible to solve. In the absence of a common European language, English was the language of the project. It should be recognized that this is the second language for many nurses participating in the WISECARE projects. This has necessitated local translation of nursing protocols and this task has fallen to the nurses involved in the projects to ensure that the meaning has been reconstructed appropriately. Culture also has been considered. Within the WISECARE projects, demonstrating mutual respect and value through open discussion

and acknowledgement of cultural differences has often helped to ameliorate tensions and anxieties. Discussions with members of the research team from all sites have allowed anxieties to be viewed and frustrations to be expressed, and so managed sensitively and appropriately.

Those clinical sites participating in the project were committed to the theory of knowledge sharing. Thus, there were few problems associated with obtaining support from colleagues about the process of knowledge sharing. It took some encouragement for the nursing staff to put the theory into practice. As WISECARE is an IT initiative, it primarily used e-mail communication. The clinical nurses preferred this as it allowed them to communicate with each other at a time suitable for them, which was dependent on their clinical commitments, and gave those who were speaking English as a second language the opportunity and time to compose their thoughts. Initially, project support staff had to encourage support nurses to question each other about local clinical practice in relation to patient outcomes. However, this process became much more fluid as clinical staff built relationships with one another and became more confident in the process of knowledge sharing.

On the contrary, at HSBC it surrounds high degrees of suspicion and even a lack of understanding on the part of non-KM-literate senior managers. Any new knowledge-management function will have to spend most of its energy in the early stages explaining what it is and does before it can get on and do it in order to create trust/ownership. To solve this problem, they published an internal KM brochure which was a big success in raising awareness.

### **4.2.3 The problems that service companies might anticipate during the knowledge management implementation**

WISECARE and HSBC faced three major problems as follows:

#### **1) Handling information management**

It is essential for the companies to ensure that they have standardized information that obtained from the same method throughout the companies (Kearney et al. 2000). The big organization like HSBC and WISECARE need information that is comparable with other branches or other sites so that all the information can be measured in the same way.

As the geographical distance between branches or sites made frequent meetings for all those involved impossible, email has become the effective tool for communication, particularly for the group of people with the difference in their native languages. However, depending only on a main medium such as email can cause a problem when the system is down. The variety of communication methods available to the staff such as electronic mail, telephone, facsimile and post appears to ensure adequate communication.

## **2) Cultural difference**

In most large multicultural organizations such as HSBC the culture within and between subsidiaries will be varied. Each subsidiary may manage their organization differently. For example, in WISECARE project, health care services in France, Italy, Greece, and Belgium have high formalization, hierarchy with overall control held by one person, whereas Sweden, Denmark, the United Kingdom, and the Netherlands have another management style. Their leaders have considerably less control as hierarchy, power and status are downplayed and the focus is on tasks, merits and business (Kearney et al., 1998). This has implications for conducting a meeting and organizational culture.

To cope with the difference in culture of each department or subsidiary, the company will need to ensure that the understanding of managing knowledge is the same in all departments and subsidiaries. In the case of WISECARE, the top management needed to understand how to utilize it more effectively and allow the time for their staff to become familiar with the new system because the staff had to gain access to all resources in organization, which led them to make the right decision at the right time.

Before applying knowledge management, the managers and staff, especially in the IT department, need to be certain that they are ready to take part in the program; otherwise the organization will face some problems. IT department of HSBC spent time and energy to support the rest of the staff in the company to teach how important of the knowledge management. In addition, the differing expectations of individuals within the companies can cause conflict of interest. The mutual concept needs to be addressed since the first stage.

## **3) The availability of facilities**

The availability of facilities such as access to computers and the ability to operate advanced IT equipment was a requirement for both cases to involve in the knowledge management process. Some companies need to invest the enormous amount of money for their staff not only for the infrastructure but also for campaigning and encouraging their staff to use it. Moreover, the support program needs to be invested in the early stage so that the system can process continuously. However, access alone is not enough to develop the knowledge management. The staff needs time to learn and to be trained for this new process.

## **5. Conclusions and reflections**

### **5.1 Conclusion**

Traditionally, management consulting and professional services firms have been considered knowledge-intensive firms and therefore interested in knowledge management (Alavi and Leidner, 1999). However, knowledge management is not just for consulting and professional services firms. Knowledge has currently been recognized from other industries as the company's main asset. In cases of WISECARE project and HSBC, the advancement of information technology gives new ways to create knowledge and opportunities to improve the ability to manage and utilize knowledge. Via the Internet, information about company can be revealed to the public and information about customers, suppliers, and markets can be gathered easily (Nah, Siau, and Tian, 2005). However, these advantages may cause some challenges to the company as it may become overwhelmed by the volume of information and may not know how to use it for the company's advantage (Alavi and Leidner, 1999).

The thesis highlights the importance of developing knowledge management, which are increasing in productivity, creating new way of learning, improving communication and gaining efficiency. The thesis also focuses on how the service companies applying the knowledge management. However, some problems such as difference in culture, the availability of facilities, and the standardized information can occur during the implementation. Both WISECARE and HSBC recognized, evaluated and tried to confront their problems in different ways. In general, this thesis concludes that the advantages of developing knowledge management outweigh the disadvantages. The thesis has gained reliability from using many sources related to the case studies including web sites, journals, and books to crosscheck the data. It has also acquired the validity from finding the same common problems and barriers between the two cases.

I believe that recognizing the potential of knowledge management will encourage other companies to develop this system. However, the difference in applying the knowledge management depending on type of employees, history, structure and culture of company. The key is making sure that people, particularly in top management, understand the advantages of knowledge management and what makes it useful. The future research should determine the ways to overcome these problems and should examine how knowledge management benefits other service sectors such as education, traveling and transportation to understand the whole picture of the service industry.

### **5.2 Reflections over this thesis work**

In this thesis, I have conducted the comprehensive literature of knowledge management and culture. The information is very useful for others' reviewing as I have covered all related concepts. Besides, using comparative case studies, one kind of qualitative method, has showed the difference and the similarity of two service sectors. This can be the overview for others to understand knowledge management in practice. In addition, the notion of my analysis can help filling some gaps in knowledge management and service industry.

Developing this thesis, I have gained the in-depth knowledge of this topic and understood how to conduct the research. There are many methodologies to choose from qualitative and quantitative methods. Due to time limitation and working independently, it may not be possible to conduct the thesis by deploying many research methods. Using survey or interview needs time and access to the sample, especially if they are big companies, the chance to gain access to the data will be much lower.

One of the difficulties that I anticipate is selecting the sample from all kinds of businesses in service industry. The hospital and bank were chosen because these sectors are becoming the main players of knowledge management. However, they are only a part of representatives of service industry. There are still more interesting representatives that should be studied. I believe that collecting the information from various companies in the same industry can provide some similar patterns.

However, my thesis has some flaws. Using other people's data made it much more difficult for analysis as I could not have all the information I needed. The analysis is not completely satisfied as I could cover only the basic theoretical part. Should I have more time and resources, I will choose the method that I can collect the data by myself.

Moreover, I will deploy both qualitative and quantitative research by interviewing, observation and pilot study in some small companies. Quantitative method can help measure some concepts that individuals give different meanings to become more objectivity. For example, "improvement" in some cases mean higher customer satisfaction rate, but others probably refer to achieve beneficial results within short period. Under this circumstance, doing both methods will provide more concreted result.

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# Appendix

## Case study 1

### The WISECARE Project

(From <http://wisecare.nurs.uoa.gr/>)

In September 1995, the European Commission DG XIII launched a call for telematics projects for resource management in hospitals. The WISECARE project, meaning "Work flow Information Systems for European nursing CARE", is submitted by several European partners and is retained for funding. The project has started in January 1997 and lasted until June 1999. The goal of WISECARE is to systematically use clinical nursing data stored in electronic patient records. Electronic patient records have been used for communication purposes and individual patient care. In the WISECARE project, they are further exploited for clinical and resource management.

The project uses a work flow information model. In WISECARE the diversity of the patient population, the variability of care, patient outcomes and nursing resources are recorded. Pooling of information among partners has led to the development of a knowledge base of "best practices" in nursing care. This allows participants to compare and measure their performances against best practices of other institutions. Networking will be supported by top of the line telematics. WISECARE meets the needs of many nurse managers in Europe dealing with questions of nursing workload and nurse staffing to ensure better quality care.

The validation and demonstration of WISECARE focus on oncology care. The Centre of Health Services & Nursing Research, Katholieke Universiteit Leuven, will serve as co-ordinating partner for this project. The European Oncology Nursing Society (EONS) is actively involved and represents the users in all stages of the project.

The Glasgow Caledonian University is involved in the Data Warehousing. They are involved in data definitions, training and data collection. The Katholieke Universiteit Leuven will analyse the data and build the information feedback model in collaboration with An Teallach Limited, an innovative software firm in Scotland. The University of Kuopio is taking care of measuring patient outcomes. Patient outcomes will be defined according to self care abilities, quality of life and patient comfort. HISCOM, The Netherlands is evaluating the WISECARE model in relation to changed professional behaviour and better patient outcomes and resource use. The University of Athens will take care of the project networking. Arthur Andersen Inc. do the project management. The WISECARE model will be built and tested in 5 validation oncology sites in various EU-countries. It will be demonstrated in another 5 oncology sites.

## **Impact of information technology on nursing knowledge**

WISECARE is an information technology tool. It means that processes that traditionally have been performed by pen and pencil, classroom teaching methods and verbal communication are supported and even taken over by information technology. Benefits that often have been seen associated with information technology are higher efficiency, reduction of errors, more qualitative communication and better documentation. It is likely that the same benefits will be gained from WISECARE.

The real impact of information technology is, however, not in the automation of existing processes but on the discovery of new ways of organisation and living. It let people do important things that they couldn't do before. The difficulty is that because the new possibilities are beyond the scope of reference of most people, it is difficult to convince them of their possible use.

The real power lies not in the information technology itself, but in its potential to organise nursing in new and creative ways that couldn't be imagined before. Three shifts that are supported with WISECARE are as follows:

1. The shift from knowledge dissemination to knowledge sharing.
2. The shift from individual knowledge to organisational knowledge.
3. The shift from deductive prescriptive knowledge to inductive experience-based knowledge.

### **Shift from knowledge dissemination to knowledge sharing**

The traditional way of acquiring knowledge is through education. Young people go to school and learn to read and write. They learn about history, mathematics, languages, culture. Another way of learning is by own experience. When they are babies their mothers teach them what is good and bad, what is cold and hot. Experiences are used to strengthen what they have learned. When they grow up they are learning by experience and trial and error. That is also the way it is going in real professional live. Nurses are educated and trained in nursing schools. In their professional lives, they are learning by experience. Because the body of knowledge in all domains of professional live, including nursing, is growing exponentially, emphasis has been put more and more on continuing education or "lifelong learning". The decline in the proportion of young workers means that the skills of the adult workforce will become more important: over 80% of the workforce in the year 2005 is already in the labour market. Thus, the useful knowledge has a half-life time as long as ten years, the intellectual capital is then depreciating at 7% per year with a corresponding reduction in effectiveness of the workforce. This is much higher than the 2% annual entry of young people. In the domain of information technology, knowledge is doubling every 2.5 to 3 years. So 10 years after graduation, a 32 year old engineer is working where 80% of the knowledge he is using has been discovered since he graduated. Only 2% of the active workforce is renewed every year by the annual entry of young people. All these evolutions put much weight on continuing education. Some countries, such as Belgium, even decided to reduce the duration of basic professional education to put more weight on continuing education.

Continuing education is traditionally organised in the same way as basic training. It is based on traditional knowledge dissemination techniques. Courses are organised by universities and professional bodies lead by experts in the field. Nowadays adult learning techniques are introduced giving less weight on teaching and more weight on experience based learning by interactive learning methods, project work etc.

Even when these most advanced teaching methods are used, it is still a traditional way of learning. It means that roles of teachers and learners are still kept separately. Secondly, it means that education is a process that stands beside the normal process of working and building on working experience.

Knowledge sharing is an obvious paradigm shift in continuing education. Knowledge sharing means that the experiences of the every day work are shared among others. Making these experiences explicitly available for others, make them learning experiences beyond the individual learning experience. In traditional organisations, knowledge sharing is often done locally when teams are working together. Information technology will extend these kinds of experiences across boundaries of nursing units, hospitals and even countries. While taking care of patients, all nurses in the network can evaluate their work and results, can give some advise and can use others experience for their own work. Working and learning become the same experience because of their immediate transparency. When some of the partners are integrating research results that prove to be effective, these can be easily adopted by the others in the network, when they show to be effective.

WISECARE provides a knowledge sharing environment by using network software such as Lotus Notes and Internet. The local data are stored locally but continuously exchanged on the network within a commonly agreed framework.

### **Shift from individual knowledge to organisational knowledge**

Knowledge traditionally has been seen as something that is individual. There is some theoretical 'body of knowledge' as the collection of the scientific literature on a certain domain. This body of knowledge can be summarised in handbooks and articles. The problem however is that the volume of information out of which knowledge is derived, is changing extremely quickly. The volume of new written material has long been far beyond any one person's capacity to read, learn and apply. Even for experts, it becomes impossible to have a state-of-the-art overview of the domain of interest. It leads to a wide variety of knowledge of the professionals. It has been shown that this heterogeneity in individual knowledge of healthcare workers is a key problem in health care. Knowledge has become a key resource in the health care sector and has to be managed as a strategic resource and not left to the individual initiative of health practitioners. Individual knowledge is very vulnerable. When an experienced individual practitioner becomes sick or is leaving his job, there is a big loss in knowledge for the organisation. Knowledge comes about when a person considers, understands and uses information in combination with his or her own experience and perception. The primary instruments for knowledge management are leadership, culture, technology and measurement. Leadership means that the management of organisational knowledge is recognised as being central in the organisation's strategy. An example can be that individuals are appointed, evaluated and even paid on the basis of the contribution they make to developing the organisation's knowledge. Culture means that the organisation encourages and enables the learning process and knowledge sharing. Technology means that all

individuals of the organisation are connected and a knowledge bank is created that is accessible to the entire organisation. Knowledge sharing seems to be very effective to induce collective knowledge acquisition of the whole network. Measurement means that indicators for knowledge management are developed.

One of the purposes of WISECARE is to build organisational knowledge. By making use of information technology, the every day experience of the each nurse is captured. By measuring interventions as well as outcomes, successful interventions will be documented. This will make it possible, even when a nurse is leaving her job, that her expertise, her successes are still available in the database and can be shared among health care workers, other institutions. Experiences become contributions to the organisational knowledge bank.

### **Shift from deductive prescriptive knowledge to inductive experience based knowledge.**

Knowledge in health care is for centuries being shared by practice policies. These are recommendations for the purpose of influencing decisions about health interventions. The basic problem addressed by practice policies is that most health decisions are too complicated to be made on a one-by-one, day-to-day basis. For example, if a nurse is confronted with a pressure sore problem, hundreds of questions can raise for the treatment of this problem. Ideally, doing a research will take a few months. In practice however, this patient is here and is waiting for an answer now. The hypothetical nurse may have seen ten similar pressure sores before. Maybe she knows a handful of anecdotes, but also knows that they can be very misleading.

Fortunately, the answer exists in using practical guidelines. Practical guidelines are written in textbooks, journal articles, speeches, conversations in hospital cafeterias. The problem is that practice policies are mostly not designed. Their main role is to summarise information regarding standard and accepted practices. Because a policy is based on aggregate behaviour, it pools the knowledge, judgements and preferences of thousands of professionals.

Practice policies provide a natural pathway to convey the information about appropriate practices to practitioners. They are the central nervous system of health care practice. A well designed policy - such as washing hands between deliveries - can improve the quality of hundreds of thousands of patients. A shift in a single policy - such as screening women younger than 50 years for breast cancer - can shift a billion dollars a year. Practice policies are extremely versatile. In addition to support individual decision making, they are used to specify who should perform a practice (accreditation), where it should be performed (inpatient/ outpatient), to whom it should be performed (patient indications). Because the approach requires no formal research or analysis, policies can be determined in minutes. A statement by a single practitioner in 1916 that "once a caesarean, always a caesarean" is still dominating decision making in child birth.

Practice policies have 2 major drawbacks. The first is that it rests on a dangerous tautology that what people should do (policies) is based on what some people are doing (the standard practice). A good example is the policy for the prevention of pressure sores. Lacking any better basis for a decision, most nurses, when reading in the textbook that a pressure sore prevention programme should be indicated when reaching a Norton

score lower than 12, will tend to follow that policy. This will reinforce the recommendation in the next edition of that textbook.

The second drawback is that the consequences of a policy is just determined subjectively without explicitly examining its outcomes, benefits, harms, costs. Pick up any nursing or medical textbook, it is unlikely to find an explicit description on how this practice will affect the most important health outcomes. E.g. what is the risk on developing a pressure sores when a Norton score of 11 is assessed? Are the risks for developing a pressure sore on the tail-bone or on the heels identical? The tradition in health care holds that decisions can be made and policies can be written without this information.

Whatever the validity of this assumption in the past, it is seriously threatened today. New interventions are appearing at an increasing rate, increasing the number and complexity of choices. The evaluation of evidence is becoming more and more complicated, given patient preferences, quality-of-life, patient satisfaction. There is a higher sensitivity for costs, risks. It is unrealistic to think that individual nurses and medical doctors can synthesise in their heads scores of pieces of evidence, accurately estimate the outcomes of different options and accurately judge the desirability of those outcomes for patients. Wide variations in actual practices and wide variations in beliefs among experts confirm that the complexity of health care exceeds the inherent limitations of the unaided human mind.

In the last decade, several new approaches to designing policies have begun to develop. Four main methodological approaches can be distinguished: global subjective judgement, evidence based, outcomes based and preference based. Global subjective judgement is in line with the traditional method. The only real difference is that it is organised in global consensus meetings rather than in undefined local staff discussions. Evidence based methods will check explicitly the outcomes and consequences of a certain practice. Outcome based methods are similar but differ because they would evaluate alternatives to the practice. Preference based methods include the assessment of patients' preferences for outcomes in their evaluation. All four methods have in common that the research process and writing up a practice policy is explicitly separated from the real practice for which these policies are designed.

So far, the existence of electronic records have not changed this practice. Most of the electronic patient records systems do not go further than the communicative clinical level. It means that all care for one patient is documented, communicated and stored for some time e.g. nursing records for about 6 months. Data are stored for 2 main reasons. The first reason is that the file can be reopened when the patient is readmitted. Secondly, the records are used for research purposes to investigate the effect of a certain intervention. In WISECARE the approach is somewhat different. The main goal is to go beyond the interactive level and exploit the formalised experience and knowledge in the database. When databases are linked up in the network, the body of knowledge that was in earlier stage intangible for practitioners, will become available in a complete other way. Practice policies which result out of scientific research, can be evaluated on their merits. The unquestionable 'what if' questions will be answered by simulation. Cut-off points on which value treatment is indicated, will be more refined. Risks can be evaluated on real figures.

In WISECARE, tools will be developed for the exploitation of clinical databases to support clinical decision making.

## Case study 2

### Cultivating a knowledge culture

(From <http://www.ikmagazine.com>)

*Using experience derived from his work as a KM practitioner within HSBC, **Steve Ellis** outlines the key tactical and operational problems faced when introducing knowledge management in traditional, often highly hierarchical organisations.*

Like many organisations, HSBC has always managed knowledge, it just does not call it that. However, being able to capitalise on the technological capabilities now available to capture, develop and share knowledge globally is only half (maybe only a quarter) of the problem. Effective and intelligent working in the new 'knowledge enabled' environment is as much about the mindset of employees and their managers as it is about software tools that offer state-of-the-art collaborative working. KM has not found much success in infiltrating the hard-bitten world of financial services, where bottom-line justification for any business initiative has to be clear.<sup>1</sup> This is why KM work in such organisations can still be called pioneering even though the principles are no longer new.

The longer knowledge-management practitioners are largely unable to prove clear links between effective KM and improvements in performance, the bigger the danger that it gets tossed into the 'yesterday's fad' bucket alongside, management by wandering around, business-process re-engineering, total-quality management, investors in people and the learning organisation.

In 2002, HSBC created a small specialist KM unit located within a newly re-organised human resources function. Remember, HSBC is a true giant in the financial-services world occupying the number two spot after Citigroup, employing over 250,000 people in 80 countries, with a grand and highly successful tradition dating back over 150 years.

Unlike some of the recognised 'greats' of KM, (BP and Buckman Laboratories, for example), HSBC is not an organisation in crisis looking to KM to dig it out of a hole. Knowledge management has a more difficult remit in HSBC: it must improve an already very well-functioning machine that delivered \$6bn pre-tax profit at the last count. Any company the size and power of HSBC will nonetheless have tremendous potential to harness the collective wisdom and ability of its global workforce, an area where KM should have a major contribution.

One year down the road and the KM unit is no more, the victim of a further re-organisation. This is not to say that the organisation has stopped working on knowledge management or that the need for improving knowledge-related activities has passed. The need to effectively connect those with problems to those with solutions continues, but the strategy of driving KM through an autonomous unit is dead.

Successes achieved in the short time that the knowledge-management unit was fully up and running included the introduction and development of a group-wide e-directory, pioneering the introduction of an electronic expertise-location tool. We also conducted the first ever knowledge audit, and introduced several knowledge-acquisition projects to minimise business risks and capture expertise. All of which led to significantly raising the profile of KM issues.

The knowledge-audit process adopted was interview-based and involved careful knowledge mapping and subsequent logging of key knowledge gaps in a particular business unit, from which a prioritised development and recovery programme was created. The real secret of the success lay in the integration of a KM approach and process with an all-too-stark business need. As a consequence this project did not require a lengthy campaign to gain support; it just had to be done.

Knowledge-acquisition projects (Kaps) continue to be used to effectively download experience and wisdom from ‘old heads’ before they leave the business, into an accessible database format so that our organisational memory remains current and fresh. I have strayed a little into knowledge management ‘consultancy speak’ here and this should really be avoided. I believe that the success of Kaps is down to one thing: the desire that people – particularly, it would appear, wise old hands – have to tell their story. In an organisation as vast as HSBC, the very act of asking a senior person to ‘download’ the nuggets of learning they have picked up during their often outstanding careers makes them feel valued. And if that were not enough, it might actually help those left in the organisation to learn faster.

On a negative side, the unit was unable to translate the sparkling array of KM tools and techniques into sufficiently well-understood concepts that the conservative (although some might say overtly cynical) culture of a traditional organisation could grasp. In particular, efforts to instil a need for intellectual-capital measurement and reporting fell on deaf ears, with most executives believing they had enough to measure already. In addition, the pressure felt in most commercial organisations to deliver or achieve beneficial results this quarter, not in three years’ time, is a real impediment to large-scale KM projects where the gestation time can typically be three to five years.

## **Restrictions for large organisations**

There is a whole range of restricting factors to be dealt with by the pioneering KM practitioner, here I will detail the ones that really hindered me.

The first problem often surrounds high degrees of suspicion and even a lack of understanding on the part of non-KM-literate senior managers. Any new knowledge-management function will have to spend most of its energy in the early stages explaining what it is and does before it can get on and do it. We published an internal KM brochure to get around this problem, which was a big success in raising awareness. Be ready with answers to the following typical question from those uninitiated in KM practices:

- Isn’t KM just about doing the same stuff as always, but better?
- KM is all very well, but whose budget does it come out of?
- Knowledge management seems to mean doing more work, where are we going

- to get the resources to deal with additional workloads?
- What are the guaranteed savings in full-time equivalent employees you can deliver if we implement KM in this department?

The second restrictor is the short-term perspective that currently pervades many commercial organisations. This means that many major investments in KM programmes fail to get through the starting gate as they do not meet the criteria that requires them to show a positive return on investment within one year (however spuriously calculated).

The final typical and all-encompassing obstacle for KM in large organisations is the ‘big C’: culture. In traditional organisations – financial services in particular – a general culture of compliance to the established and highly respected hierarchy and procedures predominate. It is here where the potential results of good KM practices can fundamentally clash with the environment in which they are trying to operate. Good knowledge management should unleash knowledge and the ability to make decisions based on it. In traditional organisations, the power to act is restricted to those who are considered to have earned it, often those who are known to be a ‘safe pair of hands’. Michael Lewis gives some clear examples of how the internet age has made virtual experts of anyone who wants to offer themselves to the market.<sup>2</sup> If this situation is translated into hierarchically dominated organisations, knowledge management can quickly become a cancer – I like to think a benign one – that eats away at established, often hard-won positions of power.

If you think about it, why would those in positions of power, who are astute enough to see knowledge management as a potential threat to their position, ever actively support its development? Surely it would be better to keep the knowledge from which they derive significant power to themselves and crush any attempts by their colleagues to share. In this kind of culture KM will find little nourishment.

## Handling restricting factors

Each symptom requires a different prescription. If you encounter the ‘we don’t understand it’ problem you could potentially have a major communications project on your hands. You don’t want to be deflected by this, so before you start drawing up the Powerpoint presentations, work out for yourself how much people really need to understand about knowledge-management principles. I don’t, for example, understand how my PC works but I know it is an incredibly useful tool. This is the key: make sure people understand the benefits of knowledge management and what makes it so incredibly useful.

Overcoming the problem of short-term perspectives is going to need some cute thinking because you know the hard benefits of KM are unlikely to show through in this year’s figures. You need to find some agreed spin-off indicators that can be used to show progress along the way. Typical good examples include testimonial feedback from customers (real or internal), information on new initiatives undertaken or costs savings directly attributable to knowledge management. Also, don’t be tempted to measure your KM project through the staff-satisfaction survey, this is too risky as it can be influenced by all manner of things outside anyone’s control.

The final blocker is the real killer. If the culture is KM-unfriendly life is inevitably going to be tough. You will not be able to change the culture of a large organisation quickly enough to save you, so work with what you have. In financial services, for example, we are understandably very concerned with risk, so I used the way that KM could be used to minimise business risks as a hook for securing support for a range of activities. Knowledge management and business risk are sometimes convenient bedfellows as the better we manage the knowledge of our business and customers the less risk we are exposed to.

The relationship between these two disciplines is actually a bit more complex as knowledge management is not just about risk minimisation. All businesses take risks every day, where KM can help is through raising risk awareness, which makes risk-taking a far more conscious act.

Another technique for addressing a KM-unfriendly culture is to identify a piece that is close enough to be helpful and work with the people in that part of the business. In most large organisations the culture will be varied and some departments or functions will be better prepared for knowledge management, you just have to find them. Although I have said that technology is a fraction of the knowledge-management whole, one tip could be to start looking in the IT department, if these guys are not up for it then you really have got problems. An additional benefit is that they probably have access to some resources you can also utilise.

The culture of my organisation continues to evolve. Our marketing material is correct when it says that we 'value local knowledge'. But we still have a way to go to unleash the full potential from taking local knowledge and using it to enhance an already winning formula.

## **The knowledge-friendly culture**

The number-one feature of a KM-friendly organisation has to be trust. If I don't trust you I won't share my knowledge with you, and I certainly won't act on the knowledge you share with me. In a culture where fear pervades and scapegoats are found for each and every failure, the chances of putting together logs of lessons learnt or encouraging sharing of good practice is slim.

Hand in hand with trust is a willingness to ask for help. We found a good supply of people who were willing to help answer questions, but a lack of willingness to ask the questions that would actually save a hard-pressed executive real time and effort. Again, the culture has to support people that are willing to admit failure and ask for help when they need it.

A real indication of a KM-friendly culture is when HR rewards are tied into knowledge-management activities, such as sharing and building knowledge. This happens in some consultancies but that is the only place I have experienced it. In traditional organisations you are more likely to be rewarded (indirectly) for keeping key knowledge to yourself. The final character of a knowledge-friendly culture is one where change and not continuity is accepted as normal operating practices. For me, really effective knowledge management is not just about sharing knowledge, it is also about performing tasks in different ways as a result of the knowledge shared. An organisational culture that welcomes change and innovation is vital.

## Achieving knowledge friendliness

There are no easy steps here, but some things that have helped me include:

- Secure board-level sponsorship for some KM projects;
  - ‘Hard wire’ knowledge behaviours into new processes;
  - Look at companies that are considered to be knowledge-management leaders in your industry and copy them;
  - Look at companies that are leaders in KM in other industries and copy them;
  - Grab all the headlines for KM success, even when you weren’t directly responsible – people love to be associated with a winning philosophy;
  - Get the human-resources department on board to offer some KM-based rewards.
-