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A Case Study on the Application of Wiki Technology for Knowledge Management in the Corporate Setting

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DECLARATION

"I certify that all material in this dissertation which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me"

..............................(signature of candidate)

Lin Bian (Submitted electronically)

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ABSTRACT

In our current world of postindustrial generation, knowledge has been considered as one of the most significant production resources. More and more organizations realize the importance of leveraging and retaining employees' knowledge in order to create their competitive advantages. As a result, knowledge management (KM) initiatives in organizations are becoming increasingly important and firms are making significant information technology (IT) investments in deploying different solutions with the aim to make knowledge building and sharing among employees more efficiently.

Wikis, as one of the popular Web2.0 toolsets, have provided new possibilities for collaborative knowledge building, knowledge capturing as well as easy interaction among employees. Wiki distinguishes itself for its simplicity and its "open" and "free" principle for usage. The most active wiki site – Wikipedia, allows everyone to edit everything in order to build up an online encyclopedia together. Those features have made the wide acceptance of Wikis as an effective knowledge management application by many prominent companies.

However, compared with adopting Wikis for the public use, the company should consider its special environment first and notice some potential risks Wikis might bring to their business. Meanwhile some also argue that Wikis are just another technology fad and not worth of implementing if the company has other KM solutions in place already. To examine those questions, the researcher conducted a case study in a business-type organization who has just recently adopted wiki technology to enhance its already matured KM program. By interviewing the Wiki project leader, team members, as well as some general users, the researcher tried to find out why the company adopted wiki technology, what changes they had to make for Wikis to be more suitable for their business, and what new benefits Wikis had brought to their KM program. In addition, through the interviews, the researcher also explored the company's key KM initiatives so that to understand the important role that a solid KM program had played in the successful technology

implementation. In the end, the researcher provided a set of recommendations for those who may want to build up a wiki-based enterprise KM program for their organization as well as some suggestions for further researches on this topic.

Keywords: knowledge management, wikis, wiki technology, wikis for knowledge management, wikis in corporate setting

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LIST OF ABBREVIATION

ACM – Association for Computing Machinery

A&OI – Asset & Operation Integrity

BU – Business Unit

CEO – Chief Executive Officer

CG – Computer Graphics

CMS – Content Management System

EBSCO – Elton B Stevens Company (Electronic Journals Database)

E- LIS – EPrints in Library and Information Science

FET – Functional Excellent Team

GIS – Global Information Services

GUI – Graphical User Interface

ICT – Information and Communication Technology

IT – Information Technology

KM – Knowledge Management

KS – Knowledge Sharing

LNG – Liquefied National Gas

MOSS – Microsoft Office SharePoint Server

NOE – Network of Excellence

PROFET - Precursor to Operations Functional Excellent Team

SST – Subsurface Team

U.S. – United States

U.K. – United Kingdom

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CHAPTER 1: INTRODUCTION

1.1. Rationale

Knowledge management (KM) has come of age. From the earlier informal on-the-job discussions, apprenticeship, corporate libraries, professional training and mentoring programs, to the more recent technology-enabled online knowledge bases, repositories, expert systems, intranets, community of practices, more and more companies have realized that it is possible for firms to gain competitive advantages when they utilize knowledge assets. (Sharkie, 2003) However there is proof that knowledge (and thus its management), is affected by several factors, since it consists of "a fluid mix of framed experience, values, contextual information, and expert insight" according to Lin, Jong-Mau & Shu-Mei (2005, p. 36). There is evidence from literature that there are two categories of knowledge, namely the tacit and explicit knowledge. (Lin, Jong-Mau & Shu-Mei, 2005) Through the cycles of combination, internalization, socialization and externalization that transform knowledge between tacit and explicit modes, organizational knowledge is created (Nonaka, 1994) which is now recognized as a key resource for the organizations to gain their advantages. (Teece, 1998; Tsai & Ghoshal, 1999) Knowledge management initiatives in organizations are consequently increasingly becoming important and firms are making significant information technology (IT) investments in deploying knowledge management systems (KMS). (Hahn & Subramani, 2000)

Knowledge management, then, in nowadays' organization setting, refers to the systematic and organizationally specified process for acquiring, organizing and communicating knowledge of employees so that other employees may make use of it to be more efficient and productive in their work. (Alavi & Leidner, 1999) In other words, it is the process and system which turn employees' tacit knowledge into explicit knowledge so that it can be adopted by others in the organizations. However, a firm may also experience a gap when its capabilities needed for KM and its current one are compared due to the complex of the system as well as the lack of motivations within employees to share their knowledge. (Lin, Jong-Mau & Shu-Mei, 2005)

In the meantime, the ever-increasing globalization makes many firms displace their teams into different locations and even in virtual environments. That amplifies the importance of a more effective and efficient knowledge management system. (Tilley & Giordano, 2003) The emerging Web 2.0 technology and all the changes it has brought up to the world also have posed new challenges to the existing KM. According to Giles (2010), employees are all immerged in this digital age and as they are much more used to connecting and sharing with others at anytime and anywhere using the various social medias and smart phones, they have come to the expectation that their workplaces can be open and flexible with the knowledge and information sharing too.

Wikis, as one of the emergent Web 2.0 toolsets, have entered the scene and been adopted by several prominent firms, such as Google, Nokia, Motorola to build up their intranet sites for knowledge management. (Leuf & Cunningham, 2001; Buffa, 2006)

Wikis were developed by Ward Cunningham in the 1990's and named after the Hawaiian word for "quick". According to the founder, a wiki is a website that allows the creation and editing of any number of interlinked web pages via a web browser using a simplified markup language or a text editor and thus provides an extremely fast and efficient way to collaborate and communicate knowledge among virtually anyone interested without the constraints of place or time. (Leuf & Cunningham, 2001; Bairstow, 2003) Wikis allow many authors to contribute to an online document or discussion; they also enable the coordination of teams and projects through a shared online space.

Several of Wiki's distinguished features support the collaboration and leveraging of knowledge among employees. First of all, Wikis do not require any special software and thus are very easily accessible and simple to use compared with other content management system (CMS) adopted by firms. (Désilets, Paquet & Vinson, 2005) Wikis are more open for authorship. The support for authorization and authentication in wikis is less sophisticated than in a CMS. (Todorov, 2005) Wikis allow the version check for each of the entries; users can also modify the existing entries and add new information which may

encourage the users to examine other people's opinions more closely and increase their knowledge more deeply as well. (Moskaliuk, Kimmerle & Cress, 2009). These characteristics make wikis the valuable tool for organization's knowledge management from the technology perspective.

Louridas (2006) extended the definition of a wiki to be the software which makes it possible for anyone to edit the websites and the philosophy surrounding how users edit these web pages. Wikis promote the "open" philosophy, that is, anyone can edit anything and the overall direction of the content and style of the wiki is set by the readers. (Anderson, 2004) However, according to the author, this philosophy as well as some of the wiki features does not apply in a corporate setting. He suggests that the managers in the corporate who seek for the adoption of wikis should make sure that wikis are used for what they are best for when they are used by the corporate.

Interestingly, even though both knowledge management and wikis have been given more and more attention in the research and the discussions; however, according to Buffa (2006) the literature dealing with the wiki usage in corporate intranet is still quite small. Therefore, the researcher of this study has chosen to conduct a case study on the application of wikis in a multi-national petroleum company with the hope to contribute to the study of this field. During the case study, the researcher will explore how wikis have been designed, implemented and utilized in the corporate setting to meet the needs of their knowledge management initiatives. It is with the aim that this study can provide some reference for those organizations who want to build up a wiki-based enterprise knowledge management system in the Web 2.0 era.

1.2. Aim, Objectives and Research Questions

The aim of this research was to explore the impacts that wikis have on the KM initiatives and to find out how wikis could be best adopted in the business corporate setting.

The objective of this study was to explore the features of the wiki technology, its application in the business environment and the benefits wikis could bring to the corporate KM initiatives.

Research Questions:

> ➢ What factors encouraged the company to adopt Wikis?
> ➢ What changes the company had to make to the wiki software in order for it to fit in the corporate setting?
> ➢ What differences or new benefits it has brought to the company's KM or users after the utilization of the wiki technology?
> ➢ How important a solid KM program is to the successful implementation of wikis?

1.3. Purpose of the Research

Those research questions were crafted with the aim to help the researcher achieve the ultimate goal of this study, which was to develop a set of recommendations on how wikis could be utilized in the corporate setting for their KM efforts. Since there was already a very solid KM program in that organization (which was selected as the case) before the implementation of wikis and that has been regarded by the participants as a key factor for the successful project of the wiki implementation, therefore, the researcher also introduced the KM strategy, key initiatives, systems and the measurement methods adopted by that organization as the part of the recommendation for those who would like to establish or improve their existing KM program as well as to utilize wikis to enhance it.

1.4. Research Design

The methodological approach of this research was a qualitative case study. Instrumental case study had been selected as the purpose of the research was to use the case as the tool in order to find out the answers to the research questions and to examine a particular phenomenon. According to Stake (1994, 1995) the instrumental case study was mainly used to investigate a particular phenomenon or theory and the case was served as a vehicle for the investigation. In another word, the case itself was not the interest of the research, but what it could represent or prove would be. In this study, the case itself, a business-type corporation, was served as an instrument for the researcher to conduct a study on its KM program and recently- implemented OneWiki project. It was with the aim that it could provide a representation for the similar activities carried out in other corporations of the same type.

The data collection method was semi-structured interview which allowed the researcher to learn about the insights and different perspectives of the participants. Questions were constructed based on the aim and objectives of the study, as well as the issues identified from the literature review. Since the ultimate goal of the study was to provide recommendations on how wikis could be best adopted for KM in the corporate setting, both of the users' perspectives about the knowledge management as well as the utilization of the Wiki technology in their organization had been covered.

A sampling strategy of this study was purposive and the sample was limited to certain employees of the organization who were involved in the Wiki implementation project or acted as the heavy users. The justification of this choice would be further elaborated in the section of "Methodology". A pilot interview was conducted to test the suitability of the questions and the selection of the participants. After that, another 14 participants were interviewed including one project leader, two IT engineers, three project team members and eight users from the business side who were not directly involved in the implementation process. It was believed that they could provide the best knowledge about

the decision-making, design and the implementation processes of wikis in that particular organization. The participants were located in the United States (US), the United Kingdom (UK) and China. Due to the limited time and funding, it was difficult for the researcher to conduct face-to-face interviews by traveling to all of those places, therefore, the researcher used Skype as the main tool to conduct the interview and the "iFree recorder" (http://www.ifree-recorder.com/)   had been downloaded which enabled the recording of the entire conversation conducted via Skype.

The data analysis approach was discourse analysis. The recordings were transcribed manually immediately after the interviews. Significant parts of the conversations had been cited in the narrative forms and quoted directly from the recordings. Quotations were kept in their original form and were not edited by the researcher.

Meanwhile, the researcher had tried to find the similarities and differences in their opinions by comparing them from the people assuming different roles in the project or positions in the company. Since both of the questions about knowledge management and the wiki project had been asked to all of the participants, their familiarization with the questions and the amount of the answers that they had given to each of the questions could also reflect their understandings on the KM program and the Wiki project in the organization.

1.5. Limitation

Since the researcher adopted the purposive sampling strategy, therefore, only a limited number of participants were involved in this research process. Some of them participated in the wiki implementation project or had been working in the KM related functions for several years, therefore, their levels of understanding on this topic could not speak for the 30,000 employees in that organization across the world. However, on the other hand the researcher believed that the participants' points of view could help to fulfill the answering of the research questions and that their responses were quite significant in the way that they represented the foremost thoughts in the company about this topic. The purpose of

this study was not to examine the satisfactory rate about the wiki technology among all the employees or the opinions of the massive employees towards this project; instead, it was to understand some of the root cause of this project as well as the detailed technical designs and the features. The other aspects mentioned above could be explored by a separate research in the future.

Another potential risk might occur from the interview process itself. Since it was very difficult to maintain the anonymity with the interview method, therefore, it might hinder some interviewees to give their honest or full opinions about some particular questions, especially with the concerns that their opinions might be quoted as the "official" viewpoints from their organization. Thus the good design of the questions and the appropriate methods to ask those questions during the interview process became very crucial to eliminate this risk and might eventually influence the results and the quality of the research. The researcher also tried to explain the purpose of the research clearly to the interviewees beforehand to make them feel rest assured about their disclosed information.

1.6. Outline

This research thesis consists of five chapters. The first chapter provides the background information as well as the rationale for this research followed by the research aim, objectives, research questions and the purpose of the study. The research design as well as the limitation was explained as well.

The second chapter is a literature review which is to provide a theoretical frame for this study. Different aspects on the relevant topics have been explored, including the various definitions of knowledge and its management theories presented in previous studies; the likely benefits and the challenges of implementing knowledge management in the organizations; the comparison of open source software with the proprietary ones as the knowledge management tools; and lastly is the focus of the literature review, which is to investigate and provide an up-to-date picture of the researches which have already been

conducted about the application of wikis in the corporate settings, including different usage of the wiki technology, its technical features and the performance requirements. Three cases of specific organizations which are using wikis are described to show how the wiki technology has helped them to accomplish their goals and objectives. The literature review is by no means to be exhaustive, but it provides a basis for the researcher to go about with the case study.

The third chapter is the research design which explains the methodology selected, the data collection method, sampling strategy and data analysis methods for this study. In this chapter all of those choices are justified. The ethical consideration, the limitation of the study as well as the trustworthiness of the enquiry is elaborated.

The fourth chapter is devoted to summarize the data collected from the interviews. It presents the detailed quotation from the participants' interviews in a narrative form which aids in the interpretation of the data. After that, a discussion is presented which explains the data collected as it is related to the four research questions. Some comparison of the responses has also been made based on the different roles assumed by the participants in the wiki implementation project. The discussion part also explains the similarities between the data collected from the interviews to those that have already been identified in the literature review.

The last chapter is the conclusion of this thesis. It offers the conclusion to the research questions as well as how the conclusion can meet the objectives and aim of the study. Meanwhile it reflects on the limitation of this study and suggests on the ways and directions which may be taken by other researchers in the future to conduct further researches on this topic.

1.7. Summary

This introduction chapter provided the background as well as the rationale for this research. First, the rapid development of knowledge management and its importance to today's organization were discussed, followed by the new needs generated from the ever-increasing Web 2.0 usage. Then it described how wikis, as one of the Web 2.0 tools had been adopted by some organizations to help with their KM initiatives. The opportunities and challenges of wikis were discussed as well. The author then pointed out the limited researches that had been conducted for these areas, which was the motivation for the researcher to conduct this case study research. After that, the research aim, objectives, purpose, research questions, and limitations were outlined. Next, the outline of the entire thesis was presented. Further background and the detailed theoretical framework will be discussed in the next chapter.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In this chapter, I will review and analyze existing literature that deals with the features of the wiki technology, its rapid development in the modern world, and its burgeoning application and usage for knowledge management in the corporate setting. Since the focus of this research is on the relationship between wikis and knowledge management, various literature sources that define KM and its benefits and advantages to organizations will also be included. The objective of the literature review is to establish the foundations of the study from which the analysis of data will later be based on.

The literature review consists of three parts: (1) a discussion of KM, its definition, how it affects the quality of work and relationships in the organizations, and its contribution to the organization's success; (2) a discussion of wiki technology, its history, how it works, and its important role in facilitating KM in organizations; and (3) a discussion of wiki technology and its practical application in the organizational setting. The third part of the literature review will focus on cases of specific organizations that are using wiki technology to accomplish their organizational goals and objectives.

The primary sources used were books and scholarly journals that covered KM, wiki technology, and how wikis were practically used in organizations. Journal publication databases were primarily useful in searching for cases that discuss the practical use of wikis in organizations. The search was conducted mainly in the EBSCO databases available through the Tallinn University's digital library system. Searches in the journal databases, such as Emerald, ACM and EBSCO were performed as well. In addition, some articles were retrieved from Google Scholar, E-LIS and World Wide Web. The keywords used in the search were "knowledge management", "wikis", "wikis and knowledge management", "the wiki technology" "wiki software" and "wikis in organizations". The queries were made to retrieve the full texts articles published from 1990 to present since

research and analysis for wiki technology began in the turn of the 20th century. The literature review will provide a theoretical foundation for the researcher to understand the major studies that were conducted regarding the topic in the study and establish the significance of it in the particular field.

2.2. Knowledge Management

2.2.1 Definition of Knowledge

The definition of knowledge that will be discussed in this section is about knowledge within the context of management and how it is used in organizations because it can be defined in so many ways and has been the object of debate due to its evolving meaning. In this study, it is important to frame knowledge within the context of management to establish the relevance of knowledge to management. Knowledge in KM has various definitions. According to Davenport and Prusak (1998), knowledge is "an evolving mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information". (Jennex, 2007, p. 2) Nonaka (1994), on the other hand, defined knowledge as: "about meaning in the sense that it is context-specific… users of knowledge must understand and have experience with the context, or surrounding conditions and influences, in which the knowledge is generated and used in order for it to have meaning to them". (p. 2) Knowledge taxonomies are also used to define knowledge. Knowledge taxonomy is widely used in organizations that implement KM because it allows the categorization of knowledge definitions based on specific function and contexts. Knowledge taxonomy fixes the debate of what knowledge really means because its many definitions are classified based on specific factors. (Kawaguchi, 2000, p. 115)

The most commonly used definition of knowledge based on taxonomies is tacit and explicit knowledge. Explicit knowledge is defined as classical knowledge or the kind of knowledge that we all know. If someone asks us if we know how to check emails in an iPhone 4, for instance, and we answer by saying yes and discussing the steps of how to

check emails, or answer by saying no, it is explicit knowledge in play. Tacit knowledge, on the contrary, is not something that one can explicate or articulate. Tacit knowledge is learned or acquired, but it cannot be tangibly explained or taught. (Jost, 2010, p. 3)Thus, explicit knowledge can be readily transmitted to others while tacit knowledge is difficult to be taught from one person to another. Explicit and tacit knowledge are important in understanding KM since research studies about the management strategy suggest that KM should be able to convert internalized tacit knowledge into explicit knowledge so that individuals in the organization can share it. At the same time, efforts in KM must also permit individuals to internalize explicit knowledge and attach meanings to this knowledge to make it tacit knowledge. Specifically, for knowledge to be made explicit, it must be translated into information (i.e., symbols outside of our heads). (Serenko & Bontis, 2004)

Another way to define knowledge is to differentiate its meaning from information. Pauleen (2007, p. 24) defines information as data interpreted into a meaningful framework, whereas knowledge is information that has been authenticated and thought to be true. Robinson, Carrillo, Anumba and Patel (2010, p. 123) suggest that information is comprised of processed raw numbers and facts, while knowledge is the actionable information. Khosrowpour (2001, p. 504) discussed the difference between information and knowledge explicitly, such that

> Information can be seen as messages that can become knowledge when its receivers can interpret these messages. Though data may be interpreted as being cognitive as well, it is proposed here to regard data as technological in nature, being stored bits and bytes that may become information.

The definitions that differentiate knowledge from information emphasize an essential aspect of knowledge that relates to human action – that knowledge is a cognitive process that occurs when contextual meanings are attached to data or information.

A common theme in KM literature about knowledge is the combination of various forms and types of data to create information and then the information is combined to create

knowledge. (Van Bommel, 2005, p. 29) Alavi and Leidner (2001, p.109) stated that "information is converted into knowledge once it is processed in the minds of individuals and knowledge becomes information once it is articulated and presented in the form of text, graphics, words, or other symbolic forms." In other words, the same unit of knowledge becomes information when it is stored in a computer, but then becomes knowledge again when it is interpreted by another human being. Such process is important in understanding KM.

2.2.2 Knowledge Management Concepts

Desouza (2006) posits that different disciplines guide researchers in their effort to exploit the topic of knowledge management. These disciplines include engineering, communication, and economics, among others. In addition, different methodologies were implemented to study KM. However, different stances in research may have prevented advance for research. Desouza criticizes the mono-disciplinary methodological approach to researching KM and suggested that the topic should be viewed, analyzed, and studied through a multiple perspective and approach. Moreover, Desouza believes that in reviewing previous studies to study KM, the differences in the studies should be the primary priority for analysis, and not the common results or recommendations, especially since KM is a volatile subject. According to Desouza, knowledge management can help in solving problems in various disciplines, and that it should act to bond social and engineering fields. Desouza also focuses on a number of shortcomings existing in the research areas regarding knowledge management. According to the author, it is important to consider "knowledge dynamics at the societal and economic level" (p. 287). Based on his study, knowledge-based sectors such as IT and software technology have been utilized by such economies as India and China, which are almost turning to be superpowers. Socio-economic perspective should inform researchers of studying these changing powers. This research study is expected to shed light on how policies can be shaped in this line

Some studies regarding knowledge management in business organizations have tried to link the importance of retaining knowledge in organizations. Studies have associated the amount of damage a firm can incur by loosing knowledge with the employee knowledge loss. For instance, Alavi and Lidner (2001) report a loss of income when an employee leaves a firm. Other dangers include loss of strength of relationships between firms and suppliers or clients, or the exposure of these relationships to loss, when employees leave organizations. The need for knowledge management was first sparked by such pressure as the need to avoid loss of employee knowledge during lay-offs and retirements (Gonzalez-Reinhart, 2005). Other varied findings and recommendations in previous studies will be the point of discussion.

2.2.2.1 Knowledge Management and Culture

Alavi and Leidner (1999) posit that KM may be more attached to organizational culture than the structure, indicating that firms may need to do more than invest in structures and technology of KM. The notions regarding the importance of culture that supports KM implementation and its possible impact on organizational change are discussed in various studies. Dougherty (1999) conducted a study to prove that KM is not about the type of technology used in organizations, but the quality of connection among individuals working in the organization. "Knowledge transfer is about connection not collection, and that connection ultimately depends on choice made by individuals" (p. 262). Since the quality and type of connection among individuals in an organization are dependent on the choice of individuals, the kind of culture that exists within the organization comes into play because the decision-making process and the priorities of individuals also depend on organizational culture. Tseng (2011), for instance, studied the effect of a hierarchical culture on KM processes implemented within the organization. The research was carried out through the interpretive approach in reviewing various case studies about hierarchical organizations and KM processes. The results of the study revealed that a hierarchical culture in an organization would serve as a catalyst in the conversion of knowledge and the movement of KM processes. As a result, Tseng (2011) suggested that leaders within the

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organization should display specific traits that represent proper behavior like "trust, common cultures, vocabularies, meeting times and places, the belief that knowledge is not the prerogative or particular groups, and tolerance for mistakes", among others in order to create culture that "motivates their employees to create, codify, transfer, use and leverage knowledge". (Tseng, 2011, p. 605)

In relation to the hierarchical culture and its role in KM, Hicks, Ronald, and Stuart (2006) developed a 5-tier hierarchy of KM, including the two-individual and innovation tiers in other tiers, namely solutions, influences and facts. The researchers used a methodology of extending knowledge hierarchy to include new aspects of hierarchies into the KM model. However, the investigation lacks quantitative analysis and thus, lacks comprehensiveness. By including the individual tier, they seem to agree with a variety of authors such as Gonzalez-Reinhart (2005), as well as Alavi and Leidner (2001), regarding the role of individual employees in affecting KM implementation. They also seem to agree with Alavi and Leidner (1999) on the importance of technology as far as KM capability is concerned. The researchers posit that the individual 'owns' some knowledge, he/she can influence the others, and must participate in the process. The researchers agree with other researchers that individual knowledge is the base required for the success of KM, as other tiers depend on it. By figuring out the different tiers present in KM, the researchers agree with other studies that KM is an idea comprising of more than one aspect. The researchers also recognize the role of knowledge in leading to innovation, when it is combined with strategy and the role of person-to-person interactions in sharing this individual knowledge.

2.2.2.2 Knowledge Management and Interpersonal Relationships

Colin (1999) emphasized that KM involves collaboration to gather the best available knowledge. Thus, the discussions posit that knowledge management is a selective process. This may as well mean that a firm seeks to choose what knowledge is best and use it for achievement of its goals. He agrees with several authors who recognize that several cycles of knowledge search are involved in KM. This notion seems to add to that held by Boyd

(2003). He indicates that organizations must consider the kind and nature of knowledge, which exists among employees and its importance in achieving the organizational goals. Therefore, not all knowledge can be beneficial in helping an organization achieve its goals. Although they seem to agree with the notion held by some researchers such as Sharkie (2003) that firms can gain competitive advantage by using KM, they contest for the need to measure it through robust mechanisms. They also posit that KM can help and be applied in all organizations, including those not classified as rich in knowledge. Although their discussion lacks quantitative and methodological approach, they identify the various possible advantages that can accrue to firms through use of KM. These include improvement of customer service, improving on performance, and informing their product design processes by knowledge-based rather than physical-based resources.

Desouza (2006) has proposed that the research needs to focus on how social problems such as poverty can be eliminated through knowledge management. He also indicates the need for the research to focus on what he refers to as the "age of co-opetition" (p.287) where there seems to be a slight difference between collaborators and competitors. The discussion features modern environments in business, where a firm, for instance, may be collaborating and competing with another one, just at the same time. It is more complicated to decide whom the firm should share its knowledge with. Observing that industry-academia cooperation has aided developed nations in achieving their goals; the author is of the opinion that researchers need to focus on this important topic as far as the creation and commercialization of knowledge is concerned.

2.2.2.3 Knowledge Management and Information Technology

In several studies, Information Technology (IT) is considered as an important factor in KM. Dragoon (2004) emphasized on the importance of IT in aiding KM. Dragoon carried out an investigation into the current practices regarding KM in firms and engaged 109 non-randomly selected participants (executives of firms) in the study. The research involved executives from firms in 12 different developed countries like the United States, the United

Kingdom, Canada and Spain, among others. They passed a questionnaire to selected executives. The findings indicate that different managers or business leaders had different conceptions regarding KM, with some regarding it as an information-based solution, some as technology-based, and others as culturally-based. Considerably, the findings indicate that some managers were aware that knowledge management could help them result in reducing information overload, and that information could help them gain competitive advantage. The managers were aware of the factors that could affect cultural-based perspectives of knowledge management, including communication and learning. The research revealed a number of gaps existing among the perceptions or knowledge held by managers and business leaders regarding the aspects and use, or even the benefits of KM.

The research study by Sandhu, Jain, and Ahmad (2009) also revealed the various factors that could influence KM in public sectors in Malaysia, including IT. In the study, the goal was to identify what factors public sector employees found important in facilitating KM in their respective organizations, identify the barriers to knowledge sharing (KS), and identify other factors that would motivate employees to participate in KS. The results of the study revealed the importance of IT, specifically Information and Communication Technology (ICT) in motivating employees to share their knowledge, and thus, contribute to KM. The research study was limited, because it only focused on the public sector in Malaysia, which created the non-applicability of such findings to other institutions around the world. However, the literature contributes to the idea that IT or ICT is highly important in accomplishing the goals and objectives of KM.

Other researchers have concentrated on the exploration of the importance of IT departments in organizations, or the IT systems in helping manage knowledge in organizations. For instance, knowledge procurement is seen to be the responsibility of IT departments as the IT management is regarded as knowledge management and ensuring that right information is provided to the right people at the right time (Dragoon, 2004). IT departments, according to Gonzalez-Reinhart (2005), have a responsibility of selecting and implementing the appropriate technology to facilitate KM. According to Alavi and Leidner

(2001) IT can facilitate knowledge creation, effective communication of knowledge and utilizing this knowledge.

Some other researchers have sought to explore the benefits and challenges that can arise as a result of knowledge management and the related software. It appears from this two-sided investigation that knowledge management, or what has been referred to as KM, is not an area free of shortcomings. However, it appears from such literature that KM delivers both measurable and hard-to-measure achievements, the latter being non-financial in nature. Questions need to be raised on how such benefits as increased "effectiveness and competitiveness" as posited in Schultze and Leidner (2002), are measured within the domain of the impacts of KM implementation. This may suggest that measuring the impacts of KM is not an easy task. Such literature focusing on the income advantages accruing to a variety of companies that have implemented knowledge management may be grouped in this category.

2.2.3 Proprietary and Open Source Solutions for Knowledge Management

Some literature sources discussed the available IT solutions for KM. Gonzalez-Reinhart (2005) posits that these solutions can be grouped into proprietary and open source solutions. According to McKeller (2004), there are over 1,500 options for the proprietary solution available. It appears that there is an agreement among authors that cultural change or attitude towards KM is more important than the application system as far as knowledge management is concerned. (Gonzalez-Reinhart, 2005) There are various characteristics of proprietary knowledge management solutions. For instance, they include forums that allow people to discuss a matter and collaborate, allow storage of documents, as well as have searching capabilities. (Microsoft, 2004) These systems also have different prices (Microsoft, 2003).

Markus, Majchrzak, and Gasser (2002) have focused on a number of challenges that may accrue to proprietary knowledge management systems regarding knowledge accumulation and handling. According to these authors, it appears that various firms, even after having

implemented KM, are yet to fully utilize the advantages. For instance, they are not adapted to suit the needs of users in a world that is experiencing constant evolution of knowledge. Therefore, the knowledge accumulated in these systems need to be improved through constant updates, according to these views. In addition, efficiency for work processes may be compromised in situations where there is no integration between these processes and KM system. These tools may also be rejected by the user. (Gonzalez-Reinhart, 2005) Information scattering may affect results in situations where integration does not exist. Thus companies need not regard KM projects as technology implementations, according to Kotwica (2003). This has been expressed by Larry Prusak, a business head at IBM, through an illustration of a firm, which encountered a loss after viewing its KM implementation process as technological implementation. They wasted a lot of money in investment over a long time, and only to realize slight benefits for KM. (cited in Gonzalez – Reinhart, 2005)

One of the interesting aspects about knowledge management systems is that they can come as open source systems. This will be crucial discussion to the understanding of the benefits that accrue from usage of the Wiki. Open source KM software has been applied by a variety of firms which are less costly and providing almost the same benefits as proprietary software. According to Koch (2003) open source provides a solution with minimal front-end cost. These have been favorable than proprietary software, which require extra payments for support and upgrades. One illustration of a company that has realized some benefits in considering open source than proprietary is Sabre. This company saved a lot while avoiding upgrades and support payments. Some authors have also debated additional advantages that may accrue from the usage of open source software. For instance, according to Mishra et al. (2002), these systems may also help companies by improving performance, since software performance stands to improve as a result of code inspection by many eyes. These notions appear to be shared by Wheatly (2004). Since it is easier to get and alter the software code, these systems also stand to benefit due to added customization abilities that are likely to occur. (Mishra et al. 2002)

2.2.4 Challenges to Successful KM

In an attempt to deliver its promise, there are challenges that have been found by researchers, which seek to challenge the KM implementation. Although literature does not group these challenges, it seems clear that they can be grouped by the owners of knowledge (the employees) and those touching on the business processes such as gathering of individual knowledge; and those attached to top leadership. Geisler and Wickramasinghe (2009, p. 204), for instance, consider academic training in KM as a challenge in the field, such that the primary concern of academic institutions should be the development of an accurate, appropriate, and practical KM approaches in education. According to Geisler and Wickramasinghe (2009, p. 204), "the first of these challenges is the basic difficulty of defining knowledge and KM. The inherent conflict between knowledge as a tacit dimension and the need to share and diffuse it continues to be a pressing issue of intellectual importance and a key ingredient in any plan for advancement in the scholarly pursuit of KM". Learning the proper and advantageous use of KM should begin during learning and training. On the other hand, Awad (2004, p. 43) described that the greatest challenge in KM is the selection of tools or methods that will be used in implementing KM within the organization, such as "Internet and intranets, data warehousing, document repositories, best-practice repositories, database mining tools, work-flow tools, work-flow applications, and online application processing". Jennex (2007) focused on performance measurement as a challenge in KM, while Dalkir (2007, p. 318) emphasized the development of culture within the organization as crucial in implementing KM. The implementation of KM, as well as the control of knowledge and how it shared, are influenced by various factors, controlled and uncontrolled.

One of the challenges brought about by the idea of KM is that it involves gathering subjective knowledge, whereas, many people actually value the objective. (Schultze, 2000) It is not possible to avoid any of the two: objective and subjective knowledge while dealing with KM. This is because the environments involving KM involve both. Schultze (2000) has suggested that subjective knowledge of an individual should be objectified by KM.

According to Alavi and Leidner (2001), tacit knowledge or the "know-how" is never exposed in the business setting, either through verbalization or capturing, but exists in the minds of workers. According to these authors, what is commonly expressed is explicit knowledge. This is another challenge presented by KM because the conditions dictate that one's objective and tacit knowledge both need be known.

An appropriate knowledge sharing culture is required to aid an organization to go past this barrier. This means that organizations may need to make some changes in culture, which may have negative effects on the implementation of knowledge management projects. If this culture establishes that individuals may need to share knowledge, these same individuals may fear that they are surrendering to what they may think as crucial value that they brought into the firm. (Gonzalez-Reinhart, 2005) It appears that, because knowledge seems to be owned by employees, the firm may need to develop a very efficient strategy to transferring this knowledge to their advantage or pool. For instance, some authors have focused on strategies that can help firms to overcome a situation where they cannot acquire knowledge from employees as a result of inefficient knowledge sharing culture. For instance, Hayduk (1998) and Paul (2003) appear to agree that it is important to establish a reward system that is based on knowledge disbursement, rather than one based on individuals and self-promotion. This means firms must incur extra costs to manage knowledge. Yet it appears that knowledge itself may be termed as originally owned by individuals, who may even decide to share it or not to. It is required that organizations need to promote a culture through which collective knowledge, knowledge that is shared by all or majority within the organization, can be adapted by individuals and applied in the firm, for the benefit to be reflected in the knowledge management project, otherwise negative effects may be experienced.

Some researchers have discussed the conditions that are necessary, or the behaviors which must be encouraged for effective knowledge management in the firms. According to Nelson and Cooprider (1996), such conditions include ensuring mutual influence and trust in the firm. These two factors are influenced by the nature and effectiveness of

communication. Poor communication, which can be caused by other factors such as interpersonal characteristics may impact KM. Communication, is a manner through which individuals can influence others as well as be influenced. Sharing tacit knowledge among individuals in the firm may be a challenge when firms do not understand, because it takes place as a process. KM fails when individuals and groups cannot communicate effectively. Knowledge creation begins with socialization through which internal knowledge is communicated and shared, and thereafter, the same knowledge is internalized by another individual. This knowledge is then shared with others, which leads to creation of what has been termed by Gonzalez-Reinhart (2005) as conversational knowledge. Expansion of the latter is then used to develop wisdom. It has been indicated that firms may incur failures in KM if they fail to be attentive on the initiatives to capture and share knowledge among employees. Knowledge creation, sharing and management appear to be very important for those firms which rely on information, according to Kotwica (2003).

2.3. Wikis

2.3.1 Application of Wikis in Various Organizations

One of the uses of wikis in an organization setting include ad-hoc collaboration, where members of the community are free to carry out business brainstorming, share ideas on any matter, as well as generate work product drafts. (Majchrzak, Christian & Dave, 2006) Bairstow (2003) posits that almost everyone is able to quickly and efficiently "collaborate and communicate knowledge" despite of their place of location or time. Different user and worker groups and communities for firms have been created and they collaborate through wikis. Through wikis, companies have also been able to effectively manage resources. This is because wikis provide the possibility of sharing machines and information amongst several collaborating staff. Organizations have also applied wikis for the purpose of research and development (R&D). Wikis offer a strategic and powerful means of collecting information regarding the requirements of their products and tracking information. (Majchrzak, Christian & Dave, 2006) Companies can also quickly and efficiently carry out market surveys and research by utilizing the masses they have access to.

Customer relationship management is an important aspect of every business. Through wikis, companies have been able to leverage on technology to manage these relationships, which have a turnaround on their sales and overall performance. Companies are using wikis to track important market trends according to Majchrzak, Christian & Dave (2006), who indicate that companies can also collect data through daily login counts and leverage on the information to improve the partnerships. Wikis can be used by companies to inform customers on new features and marketing materials. Technical support is an important part of some businesses. And wikis can be utilized in an organizational setting to offer customer support and share information with their customers. Wikis can be beneficial to customers by offering information on how to download software, best techniques and systems regarding technical applications, requesting for new hardware, among other things. (Majchrzak, Christian & Dave, 2006).

Project management can also be improved through wikis, where companies are able to get status reports, communicate on meeting agendas, as well as helping in creating deliverables. Another important application of wikis in organizations include software development, where companies are able to manage software design, monitor the development process and quality, track the internal workflow, achieve technical documentation, offer installation advises, as well as maintain different company software (Majchrzak, Christian & Dave, 2006). According to Thoeny (2004), companies are able to manage knowledge through wikis by achieving document management, through enterprise collaboration, project development and ensuring collaboration between groups of software for serving various needs within the organization.

As far as minimization of costs and benefits of software is concerned, there has been arisen second and third generation wikis. Whereas first generations were open source and free, second and third generation come at a cost for organizations. However, the latter also allow incorporation of both the proprietary and open source code as compared to first generation, which use open source code only. For companies wanting to implement proprietary wikis, they may be required to pay extra costs. An example is a Socialtext solution which costs

companies an extra amount for assurance. The nature of the company (profit or not) determines the price, together with whether there will be hosting of the service or not. According to Socialtext (2004), KWiki can be used together with Socialtext. It is also possible to customize Socialtext, which also allows upgrades. According to Gonzalez-Reinhart (2005), the business world has implemented Socialtext. Evers (2004) has also posited that many companies accepted implementing a third generation version of wikis, termed as Application Wiki, when it emerged. JotSpot Application Wiki has also emerged to help organizations to manage customer support, manage projects, and achieve collaboration among workers, among other benefits (Evers, 2004).

2.3.2 Application of Wikis to Facilitate KM

One of the widely implemented applications of wikis in the corporate setting is knowledge management. Wikis have supported information sharing through private blogs, posting of company information, offering collaborative pages of information resources, supporting sharing of innovative ideas, distributing human resource information and guidelines and disbursing information on insurance among other applications (Majchrzak, Christian & Dave, 2006). Wikis are also applicable for e-learning, where they help companies to distribute information about website design, offering requirements and procedures of jobs, training and testing.

Wikis have been applied in the organizational setting for conversational knowledge management (Gonzalez-Reinhart, 2005). Open source code was applied for building first generation wikis. Conversational knowledge management could turn to be very beneficial as far as virtual teams are concerned, according to Gonzalez-Reinhart (2005). There are a number of factors that favor conversational knowledge management systems. According to Wagner (2004), these systems suit decentralized environments. They do not demand firms to invest a lot in technology and finances; hence, they may be regarded as favorable to businesses. Some wikis can support many features and languages that can help to achieve conversational knowledge management. For instance, Wikipedia has evolved to include

more than the English version and many editors and contributors are now involved. A number of business firms which have implemented wikis have reported success with wiki implementation in different areas. In this case, many companies appear to have widely used the TWiki and FlexWiki according to Gonzalez-Reinhart (2005). Examples of companies which have employed TWiki include Motorola and Yahoo. Companies such as Yahoo and Motorola have reported benefits of implementing the free Wiki software. Such benefits, according to Thoeny (2004) and Cleaver (2004), include saving time and finances, availing appropriate knowledge to their teams distributed in various places, as well as increasing their efficiencies. Microsoft's has also applied its FlexiWiki technology.

Anderson (2004) has explored application of Wiki technology on the Wikipedia website. According to the author, Wikipedia came as a solution to the difficulty of collecting information for an online dictionary. Through the Wikipedia, wikis have been used to achieve collaboration for better performance. The wiki implementation in Wikipedia is simple and its evolution has been worked out well with the collaboration technology according to Anderson (2004). Wiki has been applied in the Wikipedia to allow creation of new web pages where every page can be edited through HTML-base editor. All pages are easily connected in the Wikipedia and all editions can be tracked for all pages. According to Anderson, wikis are still evolving and being extended to publishing and collaborative technology.

Open nature of conversational KM applications has influenced wide acceptance of Wikis as an effective knowledge management application. Wikis, according to Krause (2004), have eliminated the need for constant communication as people try to convey messages about requirements and for purposes of settling issues. It has eliminated the need for companies to hold conferences and meetings for these purposes. According to Dickerson (2004b), it is possible for individuals to communicate in real time and collaborate to draft, design and edit projects using Wikis. Other benefits that could accrue from the use of Wikis, according to Hof (2004), include faster completion of assignments as well as inclusion of so many collaborators or employees. This has been through the use of aperture

technologies. Conversation knowledge creation and sharing such as that supported by the Wikis is definitely supported in the inclusion of socialization and communication systems adorned in the modern communities.

Through open aspect of the Wiki system, contributors are able to socialize and tie to one another, in their attempt to modify contents and syntax presented. Another aspect that has been embraced by conversational knowledge management systems is the organic nature of it. Some authors have featured the benefits this aspect brings as far as knowledge management sharing (KMS) such as Wikis are concerned. According to Boyd (2003), this aspect enabled the constant evolution of Wikis which is important to capturing dynamic aspect of knowledge. In addition, it is possible to customize the KM system according to needs. Wikis also foster constant communication among contributors, an aspect which is empowered by the need to write words, so as to keep in contact. The Wiki online environment also has the advantage of reducing the challenge of documenting tacit knowledge since dispersed teams share knowledge through explicit forms (Griffith, Sawyer & Neale, 2003). In addition, contributors are able to have mutual trust as a result of these communications, guided by the rules and structures of Wikis.

2.3.3. Examples of the Application of Wikis in Organizations

2.3.3.1 Sun Microsystems

Sun Microsystems is a network developer that manufactures UNIX-based servers. The servers are used to allow organizations to operate their computer networks and websites daily for 24 hours. Moreover, Sun also creates workstation computers and storage systems for organizations. The most notable work of Sun is its Java program. Java is "a cross-platform programming language used to create applications for computers, Web browsers, mobile phones and other consumer electronic devices". (Yahoo! Finance, 2011) Wikis are used in the company because the goal of Oracle, the parent organization of Sun, is to provide the most useful and effective technology solutions that are "open, integrated, and complete" (Oracle, 2011a). The company values openness and considers the integration of

ideas from the company's stakeholders. As a result, the company takes advantage of wikis to establish a community that involves building ideas aimed at improving the current system in all aspects at Sun through collaboration. Sun launched wiki.sun.com, where "contributors inside and outside Sun Microsystems can share information with each other, and with the world". (Oracle, 2011b) Knowledge sharing between software developers is the primary activity in the site where they talk about new projects and developments in technologies.

Sun does not only use wikis to engage software developers and other professionals that are involved with the development of Sun's offerings for its clients. According to Schwartz, the CEO of Sun Microsystems, wikis are used by the company to provide a venue for its clients or consumers to talk to Sun directly about their problems and concerns. Moreover, wikis provide a means for the company to speak directly to employees. This side of wiki use in Sun constitutes the company's implementation of wiki as a KM tool. Sun hosts a blog for this purpose. "Blogs provide the double-edged sword of direct contact with employees who may have been previously walled off… Sun Microsystems… discussed how blogging allows them to speak directly with users, thereby giving them a clearer picture of what customers want" (InfoWorld, 2005, p. 44). Thus, for Sun Microsystems, wikis as a KM tool as a foundation for the company's innovation and product development plans.

Aside from building a Wiki for Sun, the company also contributes to other institutions by providing wiki-based platforms. Sun Microsystems is actively involved in utilizing wikis as a KM tool in order to improve learning in various institutions. For instance, Sun Microsystems created Curriki.org, a wiki-based website that "allows teachers and students to distribute curriculum information around the globe freely" (Chatfield 2009, p. 61). Curriki.org contains various information and ideas about curricula and materials that teachers and students can take advantage of to improve learning and practice. Chatfield (2009) discussed the impact of these Wikis, like the one developed by Sun Microsystems to the pedagogical practice. According to Shanks, a teacher in a middle school, there are

various online tools like Curriki.org that make it easy for teachers to distribute information to their learners and improve collaboration between the teacher and the learners even outside the classroom environment. Sun, in partnership with Second Life has also developed another wiki-based platform called Project Wonderland. The infrastructure is for users "to build three-dimensional immersive virtual worlds where individuals represented by avatars socialize, explore and conduct business. Virtual worlds are proving to be effective environments where remote users can spontaneously interact with goals in the collaborative learning environments. (Becerra-Fernandez & Sabherwal, 2010, p. 250). Overall, Sun Microsystems take advantage of wikis for KM by providing a platform for collaborative sharing of company's most valuable knowledge among users to enhance learning and encourage the innovation of ideas.

2.3.3.2 Sony Ericsson

Sun Microsystems operates in the technological industry and focuses on wikis as a means of developing the company's product offerings and contribute to the improvement of learning systems in academic institutions. Sony Ericsson also operates in the same industry, as one of the world's leading distributor of mobile phones. The company's vision is to become a leader in communication and entertainment in technology and to hold a special role in facilitating communication for its consumers. Moreover, Sony Ericsson values creativity, such that the company allows its consumers to participate in helping the brand with the development of its products (Sony Ericsson, 2011a). These may be the reasons why Sony Ericsson is one of the many companies that use wiki platforms. Sony Ericsson developed a site for developers – the Sony Ericsson Developer World (Sony Ericsson, 2011b).

The company takes advantage of wikis for KM in order to facilitate organizational learning. Sony Ericsson's Developer World wiki is used to allow developers to share their knowledge and discuss about developments in Java technology, the Symbian OS, Windows Mobile, Android application development, the Web, Flash Lite technology, the

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development of themes, Multimedia, as well as other mobile phone technologies, phone specifications of Sony Ericsson mobile phones, and the Project Capuchin which applies Flash and Java mechanisms (Sony Ericsson, 2011c). Moreover, Sony Ericsson facilitates the cycle of knowledge sharing by opening content to developers like advisory services, mobile advertising, marketing, and analytics, billing-related services-products, application development, Mobile Interface/GUI/UX, games and gaming real time applications middleware, mixed/augmented reality technology, push technology, network and traffic, social media, locations based services like GPS, and overall performance of mobile phone technology that the company uses (Sony Ericsson, 2011d). Overall, Sony Ericsson utilizes wikis for organization learning by allowing developers around the world to share their knowledge about the technologies that the company uses. KM at Sony Ericsson is a means of creating value in the organization, fostering learning, creating new knowledge for product development, and for acquiring knowledge to do so. (Jetter & Kraaijenbrink, 2006)

2.3.3.3 Pixar

Sun Microsystems focuses on software development and Sony Ericsson focuses on mobile technology development. This illustrates how Wikis can be used in various industries. Wikis can also be used in the entertainment industry. Pixar, a leading animation studio, prides itself with "the technical, creative and production capabilities to create a new generation of animated feature films, merchandise and other related products" (Pixar, 2011). Pixar produces computer animated films for entertainment, and the company's goal is to do so in order to create characters that teach lessons to people of all ages. Innovation and development are highly important to the company as it attempts to lead breakthroughs in the development of animated films. The company focuses on Computer Graphics or CG technology and is continually searching for new ways to improve filmmaking. This is the primary reason why knowledge is important to Pixar. Moreover, Pixar is involved in knowledge sharing because the company believes that advancement is the product of collaboration. "Pixar… has a long standing tradition of sharing its advances with the broader CG community, through technical papers, technology partnerships, and most

notably through its publicly available RenderMan product for the highest-quality, photo-realistic images currently available" (Pixar, 2011).

Since knowledge, knowledge sharing, and collaboration is Pixar's priority, the company utilizes wiki platforms. According to Bidgoli (2010, p. 345), "Pixar uses wikis for film production, software development, and the internal IT… In film production, where skills and technologies are highly specialized, Pixar has used Confluence for knowledge-sharing and learning". Knowledge-management systems are heavily used at Pixar as a means to "retain corporate information for collaboration and for training" (Safko, 2010, p. 159). The company's inclination to the use of wikis is primarily brought about by its reliance on knowledge and skill. Pixar views filmmaking as more than the use of technology to create films, but also as a knowledge-, skill-, and competency-driven profession. As a result, Pixar utilizes wikis to enhance the knowledge, skills, and competencies of its staff. For instance, Pixar uses wikis in order for staff to collaborate during film productions. Through wikis, film makers and developers and other professionals around the world are able to share their knowledge about filmmaking. Pixar considers wikis as a venue for hiring and recruiting a capable human capital and retaining its staff to continue the company's growing performance (LTL, 2010).

2.3.4. Increasing User Participation in Wikis in the Business Setting

Research may have also delved into the issue of how individuals can be motivated to contributing to knowledge sharing through knowledge management systems. For instance, Gonzalez-Reinhart (2005), has posited that the advantages of KM usage can be achieved through enticing individuals to participate. Individuals, according to the author can contribute to non-existence knowledge or pages pointed to by hyperlink via the incremental principle. According to Barbrook (2003), community recognition is a method of paying back to those individuals who have donated gifts of knowledge to missing pages. Continued collaboration is a method of paying to the community the moral debt, when an individual makes contribution of his/her gift. According to Hann et al. (2002), individual

contribution to the knowledge management systems may be interpreted as a desire to get skills or knowledge which can be marketed. Consideration of the signaling theory, according to Hann and colleagues, could help understand why individuals contribute in wikis, namely, desire for recognition and prestige and to market ones' gift to employers. These ideas may be utilized in encouraging participation of users.

A collaborative wiki technology (Boyd, 2003) encourages user participation and fosters a group culture. Wikis can carry out automated functions as well allow a great deal of human effort and judgment. Thus, effective wikis used in the corporate settings need to differentiate what features can be automated and those which can be attended with human intervention. Some wikis allow individuals to edit content, discuss what should be incorporated into specific article content and keep history for edited contents, so that it will be possible for individuals to track changes made on specific pages. User culture is also important to engaging the participant towards knowledge contribution in wikis. For instance, Wikipedia has ensured collaborative culture among participants (Krause, 2004; Gonzalez-Reinhart, 2005). Through collaboration, contributors feel absorbed to accomplish common goals and feel that they have been given the opportunity. A number of authors agree that social integration is achieved in wikis. According to Gonzalez-Reinhart (2005), Wiki KM solution goes beyond what has been implemented by organizations for group discussion purposes, email messaging and conversations. Boyd (2003) appear to agree to these notions by pointing out that Wiki KM may offer social integration, where contributors feel they belong and are free to contribute. Realization of personal goals is an important aspect to ensuring the sharing and creating or developing knowledge (Boyd, 2003). This may be created through voluntary participation of individuals in social networks such as Wiki.

Another important feature of Wikis which may increase group and individual participation is the fact that individuals can track their own work and various contributions. This makes it possible for them to monitor and evaluate their own work, in addition to monitoring and evaluating other people's work. It is possible for contributors to define themselves through

separate home pages, and other viewers can see who they are. Thus, wikis allow building one's profile and this makes them participate even more. The constructivist learning theory expresses how individuals may build trust to the point of sharing knowledge. The motive of sharing this knowledge is so that individuals can construct new knowledge by sharing and analyzing information. Wiki success is based on trust building. This helps all to believe that no person wishes to have malicious act through the contribution, and it has been termed as an important driver of the Wiki success (Gonzalez-Reinhart, 2005). Wikis also has criteria which limits individual freedom and enhances cohesion amongst employees. According to Wagner (2004) and Boyd (2003), this is ensured through the Wiki capability to roll-back to previous versions of discussions as well as the freedom to edit the content and script. These roll-back versions are provided through Wiki histories.

2.3.5 Gaps, Challenges in Wiki &KM Application and Requirements for Performance
There are some challenges to wikis and how they are applied in KM, which have been featured in literature. For example, the challenges on inexistence of rules that may help maintain order (Gonzalez-Reinhart, 2005), organization and management incapability of firms, as well as the shortcomings in the wiki technology itself. According to Dickerson (2004a), people become apprehensive because of the freedom allowed for open removal, editing and addition of materials on the Wikis, although it does not mean that people do not follow rules while using modern Wikis. A gap may exist between KM enactment plan and the perception by the firm leadership. This is as a result of unclear definition of what leaders want. These perception aspects of the gap also include the difference in perception between employees and leadership, which may be influenced by such factors as their knowledge differences, as well as role and position differences. The perceptions of individuals, especially how they value knowledge, will more likely influence the effectiveness of KM. For instance, "if employees feel that knowledge should only move through the hierarchical structure or if groups perceive knowledge from other sources to be irrelevant, then you will see no breakdown in organization barriers. Furthermore, embracing knowledge management principles will be "fragmented and short-lived" (O'dell & Leavitt, 2004, p. 63).

A knowledge gap may exist when a firm's capabilities needed for KM and its current capability are compared. Trans-situational and socio-economic attributes may also exist in knowledge gaps, with the former (trans-situational attributes) referring to socio-economic factors, and the latter (socio-economic attributes) referring to motivations within individuals (which are relevant to policy). A firm may also experience knowledge gaps at the time of implementing new products and services, such that the existing knowledge differs with the requirements. According to Lin, Jong-Mau and Shu-Mei (2005), it is important for firms who are willing to implement KM to first consider the gaps and resolve them before implementation. The authors indicate four aspects that are crucial to understanding the existing knowledge gaps, namely strategic aspects, perception, planning and implementation aspects. As far as the strategic aspects are concerned, companies seek to develop a knowledge competitive advantage by considering what internal and external environment exists. Existence of a knowledge gap means that the organization does not have a competitive advantage, or is not as it should be.

Gaps in KM may also result due to lack of managers to understand the internal and external environments, and use this to plan for KM implementation. Implementation aspects of the gap arise when there is no congruence between plan and implementation itself (Lin, Jong-Mau and Shu-Mei, 2005). The authors utilize a qualitative analysis and a case study research design to analyze the gaps for KM. the gap causes are understood through the use of the case study by the authors. The authors find that a good amount of knowledge is brought into the firm from the outside. Companies, according to the researchers, obtain their information from their relationships with customers, partners and other networks in the market. They find that R&D systems hold crucial valuable knowledge development for firms.

They find that firms may need to carry out an honest self-diagnosis while attempting to manage knowledge. They should target those knowledge and skills beneficial to achieving the objectives of the firms. They find the importance of providing a standard code in order to quicken the process of accessing the information needed with the KM. The researchers

find the need for a culture and conditions that support knowledge management, so as to achieve positive results for large-scale nature of changes. They find that leaders on the top level need to communicate with employees to have them understand the benefits of KM, which could help them to eliminate fear of change. They find a low participation of employees as far as database in KM initial implementation is concerned. Again, many companies, according to the researchers, do not measure the impact of KMS.

It appears that even though Wikis avail freedom to users via contributions, this freedom is up to limitation. Yet it appears that this limitation of freedom is only crafty. Consideration of literature reveals that this kind of limitation may be grouped according to rules ensured and observed while using the systems, those cultural accepted norms and practices that are written nowhere, as well as those that relate to the system itself-those which the system input does not allow (Gonzalez-Reinhart, 2005). While the system allows editing of content, addition and removal, sometimes in the business context, users need to register to do this. Other aspects fostered such as need for individual accountability to comments and need for registration of users within the business context, have controlled of freedom of contribution in wikis. Responsibility for comments posted limits giving of comments (Randall & Salembier, 2010). The freedom of contribution, however, raises questions on the credibility and reliability of content that are posted online (Metzger, 2008).

Many shortcomings of open ended soft code for building wikis have been focused upon in literature. It appears that many authors or researchers recognize the shortcomings of the open source wikis. According to Senf and Shiau (2003) one of the shortcomings is the likelihood of encountering costs and support in an unpredictable manner. Koch (2003) agrees with the aforementioned researcher that these systems may also realize unguaranteed and variable integration capabilities. According to Wheatley (2004), companies may fear or drag about implementing open source knowledge management due to the fact that they are unsure of the licensing issues surrounding these software. They may therefore fear making associated losses. According to Mishra et al. (2002), these software solutions require that there are efficient coordination and management to which

efforts for knowledge creation may end up being duplicated. Under normal circumstances, detection and deletion of repetition is supposed to be captured by the capability of convergent principle, but it always fails working as a deterrent and thus, inefficient.

Anderson (2004) mentioned that is dangerous for contributors to hide their identity and maintain anonymity in some knowledge management wikis. This means that any organization could face certain challenges regarding application of wikis where it needs to identify contributors. This may be the case for Wikipedia in earlier days. It closed out the fact that wikis can allow autonomous freedom. Such freedom (allowing anonymity) as that in Wikipedia may lead to vandalism of corporate website, although this can be dealt via reverse edit features. This may mean that the administration may have to spend more time to reverse comments and contributions. In addition, some people or certain IP addresses may need to be locked out of participation if it is realized that they are involved in unethical or undesirable practices.

Allowing everybody to participate through the wiki technology may add an interesting aspect to business collaboration but it introduces the difficulties to police knowledge. For instance, it may be hard to avoid people posting commercials and links as has been witnessed in Wikipedia case. This should be ruled out as far as implementing a Wiki in a corporate setting is involved. According to Anderson (2004) implementers of wikis in a small group corporate environment may need to keep it simple, as compared to the case of Wikipedia, where such characteristics as automatic insertion of text and use of 'Random Page' is tolerated. However, this does not mean that such features may make their way into the small group wiki applications.

Wikis appear to be generally applied in the corporate settings by small teams that are distributed across the geographical divide, according to Anderson (2004). These teams are those requiring discussing complex topics where personal judgment is allowed for content. It appears, according to the author that the application of wiki to facilitate KM is mostly used among those highly skilled individuals who are knowledgeable in use of computers.

This includes journalists and people who have formed the habit of expressing themselves, architects and software developers. It appears that Wiki is therefore yet to widely develop for many companies across the world.

Based on the authors such as Wheatley (2004), there have been efforts to remove these inconveniences, such as the introduction of third-party indemnification solutions which can eliminate fear among potential implementers. In addition, there has been introduction of system integrators. Some of the companies which are known for these third party and other resolutions to the already discussed shortcomings include IBM and Dell. However, knowledge management systems such as wikis continue to face various challenges such as high costs of maintenance and integration as well as unpredictable support, according to Gonzalez-Reinhart (2005). Koch (2003) specifically reports that the unavailability of support from vendors is a major challenge for open source KM. Open source code wikis have the disadvantage of lack of support and security as compared to proprietary software. This has forced organizations to boost performance through use of proprietary software, while retaining the benefits of free open source codes – through the capability of the second and third generation KM wikis- which adds the total expenses.

2.4. Chapter Summary

KM is still an idea being developed. It holds the potential to revolutionize knowledge management in the corporate setting. Wikis are technologies that can be applied to manage knowledge in corporate settings. There has been considerable application for wikis in the KM settings, but research indicates that it is an area under development. There are so many advantages that can be attached to the application of wikis in the corporate settings, including the actual financial improvement, improved communication, effective individual and team collaboration, improved customer service, effective knowledge collection and knowledge development, as well as better knowledge management. Others have reported non-admirable impacts of KM in the corporate domain. It has been posited that KM comprise of many faces such as technology or IT, cultures, innovation, people, and

management or leadership. These aspects need to collaborate for KM and wikis to be productive.

In addition, collaboration among the various aspects within KM is essential to the determination of likely and existing gaps, as well as the development of strategies for filling these gaps. For effective development of wikis in the corporate settings, it is important that the organization meet a number of conditions such as developing a culture that will support the process of acquiring, sharing, and creating knowledge in KM. This is because that it has been posited that firms mostly deal with explicit knowledge. It has been identified that knowledge in a KM setting involves both the tacit and explicit knowledge; with tacit knowledge which is intrinsic in people and explicit may exist in documents, communication and other processes among firms. Tacit knowledge may be difficult to exploit as there are related fears which may hamper its sharing and distribution. Such challenges include the fact that individuals may fear that by contributing knowledge, they are rendering what is their competitive (and sought-for) skills in the firm.

One of the ways which organizations can encourage sharing and distribution of the tacit knowledge is rewarding for mutual utilization of knowledge and having a culture that adores knowledge sharing and contribution, among other strategies. Wikis have encouraged these cultures. Wikis include first, second and third generation. First generations are open software which are free and can help companies save cost, in addition to the aforementioned advantages. Since proprietary software have advantages of support and security, they have been utilized by organization to boost performance, while retaining the benefits of free open source codes. Second and third generation KM wikis have come to link the benefits of free open source codes with the security and support features in proprietary software.

CHAPTER 3: METHODOLOGY

This chapter explained the methodology that has been used by the researcher to conduct this study. The aim, objectives and research questions were stated, followed by the data collection method, sampling strategy, and interview instrument. After that came the discussion about the ethical consideration, data analysis approach, research limitation as well as the trustworthiness of the inquiry.

3.1 Aim, Objective and Research Questions

The aim of this research was to explore the impacts that Wikis have on the KM initiatives and to find out how Wikis could be best adopted in the business corporate setting.

The objective of this study was to explore the features of the Wiki technology, its application in the business environment and the benefits Wikis could bring to the corporate KM initiatives.

Research Questions:

➢ What factors encouraged the company to adopt Wikis?
➢ What changes the company had to make to the Wiki software in order for it to fit in the corporate setting?
➢ What differences or new benefits it brought to the company's KM or users after the utilization of Wikis technology?
➢ How important a solid KM program is to the successful implementation of Wikis in the corporate setting?

The research questions were developed with the aim to help the researcher realize the ultimate goal of this study, which was, to provide a set of recommendations for organizations on how Wiki could be best utilized to enhance their KM program.

3.2 Methodology

The methodology of this research was qualitative. The case study method had been utilized, as the purpose of the study was to examine the corporate employees' perceptions toward the application of the Wiki technology in the corporate settings.

Case study has the strength of allowing researchers to understand better a complex issue or an object. According to Stake (1994, 1995), researchers have different purposes for studying cases. He suggests that case studies can be categorized into three different types, i.e., intrinsic, instrumental, and collective. Based on Stake (1994, 1995) the intrinsic case study is carried out when the purpose of the study is to provide a thorough understanding of the case itself. The instrumental case study is different from the intrinsic one in the way that it is mainly used to investigate a particular phenomenon or a theory and the case is served as a vehicle for the investigation. In other word, the case itself is not the interest of the research, but what it can represent or prove will be. The collective case study is used when the research study involves more than just one case to investigate particular phenomena or theory. For this particular study, I chose the instrumental case study, as the purpose was not to investigate the case itself. Instead, this case was served only as a supportive tool to help to find out the answers to the research questions and to examine a particular phenomenon, which was, the application of Wikis for the corporate KM efforts.

Because the aim and objective of this study were to find out how Wikis could be best utilized by the corporate to strengthen its KM program and what benefits and changes the implementation of wikis could bring to their current KM program, therefore I selected an organization which had an established KM strategy already. In that way, it could clearly demonstrate the differences that the Wiki technology could make and the advantages it had over the other KM systems.

3.2.1 Selection of the Case and the Justification

Since the purpose of this study was to find out why and how Wikis had been applied in the corporate environment and the likely benefits it had brought to its existing KM, as well as how KM was important to the successful implementation of Wikis, therefore, it was important for the researcher to select a business-type organization which had already established a solid KM structure before the adoption of the Wiki technology. In that way, the researcher was able to identify the new impacts Wikis had on the existing KM program and make comparisons between its KM program with and without the Wiki usage. In addition, it needed to be an organization which the researcher had easy access to and would be able to find all the related resources and support needed to conduct the study.

To meet those purposes, the researcher decided to choose her former employer, a multi-national petroleum company, which had recently won some rewards for its outstanding KM program and gained more and more industry recognition for that, as the case.

Many previous studies have mentioned the adoption of the Wiki technology in the corporate settings in different companies (Anderson, 2004), but few has mentioned the KM initiatives or system utilized by the petroleum company. In fact, given the size and complexity of petroleum companies, which also always utilize strategic business partners to participate in the key business processes, the petroleum companies always are in the frontier to harness their technologies to encourage knowledge sharing across and within each of their locations. (Parker, 2011)

As one of the "*Supermajors*" – a term which is often seen to describe International Oil Companies (IOC) in popular financial news media around the world (U.S. Energy Information Administration, 2009) this petroleum company operates in more than 30 countries with more than 30,000 employees all over the world. Without the doubt, knowledge sharing becomes a crucial way for the company to meet its safety, environmental and operational challenges. The global collaboration within and across job

functions and business units, including "streams" of their business, delivers significant cost savings, productivity and cash flow benefits. (Gray & Ranta, 2010)

August 2010 marked the six year's anniversary of the rebirth of the company's KM strategy. In the last five years, the KM effort, known in the company as knowledge sharing (KS), has attained numerous milestones, among them: the enterprise‐wide organizational status, external media attention and multiple benchmarking requests from industry peers and others, including several former MAKE (the Most Admirable Knowledge Enterprise) winners and finalists. (Gray & Ranta, 2010)

Even though significant achievements have been made by this company in its KM initiative, it still continuously seeks for new improvements on its program. In June of 2010, the company launched a One-wiki tool, which is a new way for employees to create, share and maintain valid, trusted knowledge content for reuse across the company. This company's online encyclopedia received more than 1,000 hits to the main page just on the first day and usage of this tool is steadily increasing. (Martin, 2010) The 7-year of working experience in this company has provided the researcher good contacts with its KS team, solid first-hand knowledge about its KM program as well as sufficient support from different levels of people in the company to conduct this research.

3.2.2 Data Collection Method

The data collection method was a semi-structured or guided interview. The semi-structured interview allowed the interviewees to have certain freedom to express their points of view to a more detailed and deep degree using their own words. It also gave the interviewer some flexibility to expand or adjust some of the questions according to the real situation. Both of the parties may bring up some new topics or ideas which were not originally included. On the other hand, the interview guide, together with the open-ended questions, which were the features of the semi-structured interview, could guarantee that the answers would be appropriate to the research questions. With the semi-structured interview, the

interviewer could probe the interviewees until they have nothing else to say about a particular topic. (Booth, 1997)

Using this method, the researcher developed a checklist of questions to guide the entire interview processes, but also had prepared for more content to be added even though it was not directly related to the questions.

3.3 Sampling Strategy

Since the purpose of this research was not for generalization, rather it was to make an investigation on the reason, the application and usage of a special tool in the organization; therefore the purposive sampling had been used in order to ensure that those who had the best knowledge of this topic could be interviewed. For that reason, the participants were chosen from those who were directly involved in the implementation project of OneWiki in the company or the heavy users. To be more specific, they were the ones who could represent various stakeholders of this project. To ensure different perspectives could be captured, the participants included the people assumed different roles in this project. The OneWiki project leader (1), IT engineer (2), member of the Project Steering Committee (3) and users (8) – altogether 14 people became the participants. The gender, age and nationalities were not the primary concern in this sampling process, as the purpose of the study was not to compare the viewpoints toward this topic among male or female employees, employees of different ages or nationalities The small number of participants also limited such kind of comparison. In addition, since OneWiki was only launched half a year ago, the researcher believed that it was too early to conduct company-wide survey or interview.

The participants were located in the US, UK and China, therefore, tele-interview using current technology such as Skype became the main interview instrument. In order to record the interview process and make it easier for the future data transcription, the "iFree recorder" (http://www.ifree-recorder.com/) was downloaded which enabled the recording

of the entire conversation conducted via Skype. The participants all agreed to this interview method as well as the recording of the conversation during the interview.

3.4 Pilot Study

In order to test the suitability of the questions and the Internet connection, a pilot study had been conducted to interview the KS director of the company. The pilot study showed that all the questions could be adequately answered within an acceptable period of time. During the pilot study, the KS director suggested the researcher to re-consider the selection of the sample groups as originally the researcher intended to interview only those who participated in the One-Wiki project. The KS director suggested replacing some of the members with the general users from the business side located in different countries. He advised that it would be better to select some users who were not directly involved in the project, but had used this system in order to make the feedback more convincing. The researcher took the suggestion and made adjustments accordingly.

The interview was started right after the installation of the "iFree recorder" and the connection was cut off every several minutes at the beginning. Later, the researcher restarted Skype and computer and this cut-off did not happen again during the rest of the pilot interview. It was suspected that there was some software conflicts between iFree recorder and Skype and at least a re-boot of the system should be performed before the start of the recording. In addition, since the recording function of iFree recorder was not automatically started, the researcher forgot to click the "start" button during the first 5 minutes after the re-boot of the system. Note-taking complimented such shortcoming and also it offered a good reminder for the researcher to always keep notes during the following interviews even though they were recorded.

The duration of the pilot was approximately one hour, which could be used as a reference for the duration of the further interviews as well.

3.5 Interview Topics and Questions

The purpose of the interview was to find out if and how wiki had benefited the company's KM program, what made the OneWiki project, how wiki had been applied and the important role that KM played in its successful implementation. Therefore, two major categories of topics had been designed. The first category was for the understanding of the company' KM initiatives; its strategy, programs and the tools that were used before, as well as the measurements of its success. Four questions were included in this category (the interview questions are presented in the Appendix 1). The second category focused on Wikis – the reason to adopt the Wiki technology, how it was made to better suit for the business environment, what changes and differences it had made compared with the other technologies. This category had 10 questions. (See Appendix 1) All of the 14 questions were asked to the 14 participants. However, depending on the roles of interviewees, some questions had more emphasis than others. For instance, to the IT engineers, the questions relating to the Wiki technology and the specific application were given more time and emphasis. Meanwhile, by asking them about the reason to adopt Wikis, the researcher could also find out if the decision was made just by the management in the company or by involving different levels of people in this process.

3.6 Ethical Consideration

A Consent and Demographic Information Form was sent to the participants by email before the interview. The participants then signed on the form and scanned them and sent back to the researcher by emails. Although it was the "Consent and Demographic Form", however, it actually did not require the reveal of the demographic information other than the job titles, the service years with the company, as well as their roles in the OneWiki project. That information was believed to be able to help the researcher better understand the different perspectives of the participants. The participants asked for the review of the dissertation for all the places where their words were quoted directly. The form stated also

that their information as well as their words would solely be used for this research and would not be given to any other third parties.

3.7 Data Analysis Approach

The discourse analysis was used as the data analysis approach for this study. People use this kind of approach based on the assumption that human experience is shaped, transformed and understood through linguistic representation. (Pickard, 2007) Through analyzing the words they spoke, we hope to be able to learn about their perception and experience with the subject that was discussed. Since the purpose of the data collection was not to find the pattern or how similar the answers were from all the interviewees, instead, it was to collect the different points of view and insights from each of them in order to get a full picture of the entire project from its decision-making phase till deployment. The answers from the interviewees have been summarized into different categories based on their relevance to the research questions. The audio recordings were transcribed into text formats immediately after the interview and major parts of the answers were quoted directly from the recordings in a narrative form. The quotation was kept in their original form and was not edited by the researcher.

Their answers either supported or disagreed with the viewpoints which were identified through the literature review. This would be discussed in the Discussion section of the Chapter 4. For each of the questions, the answers from interviewees having different roles in this project were also compared.

3.8 Limitations

The limitation of this data collection method selected was the relatively small sample for the interview. Some of the participants were the ones who were directly involved in the implementation project. Only eight were the general users and thus had the limitation to represent the more than 30,000 employees which the company has across the whole world.

In addition, the recent launch of OneWiki casts the doubts over the sustainability of this technology in the corporate environment and can only be proved by another study to be conducted after a year or so.

3.9 Trustworthiness of the Enquiry

The literature review provided a theoretical framework for the study whilst the data collected from the participants offered the real-life experience and perspective. Thus, the information combined was considered sufficient for the intended analysis. Even though the sampling group was relatively small, however, since they were the participants and the early adopters of the OneWiki system in that company, therefore, they could be trusted to have the best knowledge for this topic and represent the foremost thoughts in the company.

In addition, although some bias maybe occurred due to the fact that the interview could not be conducted anonymously, and the interviewees concerned their opinions would be quoted as the "official" viewpoints from the company, however, since the researcher was a master student in Europe and not working for the company at that moment, therefore, the interviewees should feel more free to express their opinions to a person outside of the company. The promise made by the researcher to hide their identities as well as the company's name also eliminated some concerns the interviewees would have when expressing their true points of views.

3.10 Chapter Summery

This chapter presented the methodology of this thesis. The methodological approach of this thesis was qualitative and the method for the collection of data was a semi structured interview. The sampling strategy was purposive and participants were chosen from the OneWiki project team as well as some general users of this system in an international petroleum company who had a good KM program in place already. The data analysis, the limitation of the study as well as the trustworthiness of the enquiry were explained as well.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

During the following parts of this chapter, I will present the results of the interview and make analysis especially on those comments that are relevant to the answering of the research questions. At the beginning, the demographic information of the participants will be presented but only focused on the job function and the roles they assumed in the OneWiki project. The reason for that choice was already given in the above Chapter. Following that is the citation of the interview responses from the participants. Significant parts of their responses to the interview questions are quoted in a narrative form which aid in the interpretation of that data. After that is the section for the discussion of the data. In the discussion section, I will summarize the points that can be drawn from it and make analysis on those points which can contribute to the solving of the research questions. During the discussion, I will also make comparison between the data collected from this study with the points which have already been identified from the literature review.

4.1 Demographic Information

Altogether fourteen people participated in the interview process. The 14 people include: OneWiki project leader (1), IT engineers (2), members of the project steering committee (3) and general users (8). A Consent and Demographic Information Form was sent to the participants by emails before the interview to obtain their agreement on the participation into this project as well as to collect the information which would be helpful when comparing their different points of views and perspectives towards each of the questions. The age, gender and nationalities of the participants were not the major concern for this particular research as those factors should not affect their professional knowledge and their understanding on the areas of their work.

Below is a table showing the information about the interview participants:

Table 4.1: Demographic Information of the Participants

Interview#	Years of Service in the company	Functional Group	Role in OneWiki
1	29	KS/Planning & Strategy	Project Leader
2	26	KS/Planning & Strategy	Steering Committee Member
3	25	Global Information Services (GIS)	IT support
4	15	Global Information Services (GIS)	IT support
5	25	KS/Planning & Strategy	Steering Committee Member
6	10	Operations Excellence, Drilling & Production	Steering Committee Member
7	9	Corporate Human Resources	user
8	7	LNG R&D	user
9	20	Upstream Business Information Solution Team	user
10	15	UK Production	user
11	18	UK Production	user
12	5	China Human Resources	user
13	10	China Finance	user
14	12	Subsurface	user

4.2. Data Analysis

4.2.1 The Reasons Why Their Company Adopted Wiki Technology

In response to the question "Do you know why your company decided to adopt a Wiki system for KM", all of the interviewees gave some detailed descriptions as well as their perspectives on the reasons they believed why the Wiki technology was adopted by the company as an additional knowledge management system, though the perspectives were different depending on their job functions.

The first interviewee, the leader of the OneWiki project, pointed out two main "drivers" which led to the decision to adopt the Wiki technology. The first one was to correspond to the emergence of the new technology trend which had already been used and accepted by some employees in the company. In 2008, the knowledge management team found out that some of the functional groups in the company had already started to use Web2.0 toolsets including Wikis as their group knowledge sharing platform even though it was only a very local use. Quoted from the first interviewee:

> […] there had been already another Wiki being used before the pilot of OneWiki project started around April or May of 2009 in the company […] in 2008, the SST (Subsurface Technology) group started to used Mediawiki to solve problems or as a solution for knowledge and information sharing activities in their group. They used it as a way to track the papers that people had written, the processes that had being developed […]they just rolled it out by sending an email to everyone in the group saying that they would start to use Mediawiki to share knowledge and with very few governance or rules about the usage […] so we (the knowledge management team) knew about it and decided to work together, instead of working opposite to, with the SST group and to provide the expertise to help them build up the governance piece around it. We wanted to learn from them and meanwhile to build up the expertise about Wikis. But we made the decision that the company should have "OneWiki" across the company instead of having multiple ones for each group in order to achieve the consistency. (Int.1)

Another reason given by the first interviewee about the adoption of Wikis is because of its ability for the conversation or discussions on it to be closed after a period of time and moved to the archive. There has been lots of good knowledge or ideas posted in the other systems used for knowledge sharing before in the company, but after a long period of time, people may have forgotten about those threads and may ask the same questions again or start a new thread which has been discussed already. With the OneWiki, the moderators assigned to each of the topic areas will monitor the discussion on it and when there is no new posts added to that discussion, the moderators will close the discussions and move them to the knowledge libraries so that people can search for the knowledge from them. They have even added a kindly reminder in the system before users submit a new question or discussion thread which was to ask the users to search in OneWiki first to see if it has already been discussed. This can avoid the repeated information being added to the system and allow the users to find the information they need more efficiently. As it was described by the first interviewee, this nice feature of Wikis software, such as that, became the "final seed" for the birth of the OneWiki project in the company.

> […] another driver for us to moving into the direction of adopting the wiki technology is that for a very long time, we wanted to be able to "close-out" people's discussions and move them to the knowledge library so that people can search for it later and re-use the knowledge instead of asking the same questions over and over again. We had hired a consultant (for knowledge management) who was just to keep her eyes open to the discussions and move them into the knowledge base. As some of the questions and answers on the NoE (Network of Excellence) are so deep and detailed and the consultant, who is familiar with the online Wikipedia, said "that is great wiki content", as she thinks that they can really be used to build up a corporate encyclopedia for the company. This is kind of like a "final seed" for the birth of the OneWiki project and to build it up as a nice piece in addition to the existing Network of Excellence (NoE) to make it even easier for people to search for information. […] So in April or May of 2009, a steering team was established and joined by some interested groups to launch a pilot study of OneWiki to prove the concept and the business value for an enterprise-wide wiki. One June 9th 2010, the team launched the OneWiki for company-wide use. (Int. 1)

One of the interviewees who happened to be among one of those early adopters of wikis in the SST group told us that as they were more and more used to sharing knowledge within their functional groups as well as with their peers in many different locations, they had higher requirements for the technology which was chosen to aid them in realizing their goals as well. The influence of using new technology from the younger employees also played a crucial role in it. "We have more coworkers from those "after 80's" or even "after 90's" generations and using of the Web 2.0 technology has become part of their everyday lives […] we just cannot simply ignore this phenomenon" said by the Interviewee 14. "Our industry involves lots of cutting edge technologies so we should always be on the front-end to find innovative technologies and methods to share knowledge in order to make our work more efficient and our lives easier". He said that in the middle of 2008, they had a new hire who was a fresh graduate joined their team. He told them that he thought Wikipedia was a better tool compared with what they had at that time and he would use it anyway for the quick reference and searching for information, so they asked him to give them a demo and during the demo they all thought it was really a nice system. Therefore, later they asked the company's IT department to help them create a wiki site just for their team and invited everyone in and it seemed to be working quite well then as a team collaborative and communication tool.

Just like any other companies, three generations of employees work side-by-side everyday yet dispersed across the world in the company. It is unavoidable that the new generations want to make changes to their work practices and adopt the technology they use in their everyday life in the work places too. They are more open to the knowledge sharing ideas, so the key thing is "how". Luckily in this case their needs were catered by the company and the enterprise-wide adoption of the new technology for the knowledge management was initiated.

The two IT engineers interviewed expressed the reasons to adopt wikis from the technical perspective, especially to compare wikis as the open source solution with the proprietary solutions. During the selection process, they made comparisons between several

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commercial solutions and MediaWiki, the software which had already been used by SST group. The commercial software selected included Confluence, MindTouch, MOSS (Microsoft Sharepoint.) Then they had different criteria set against each of them. Without significant advantages one had over another, there was one thing MediaWiki really stood out, which was the zero license cost. For MindTouch, the license cost was $30,000. The license cost of Confluence was $24,000 with an annual maintenance fee of $12,000. Still, there was a 3rd service provider who could provide technical support for MediaWiki, so some had argued that using the open source solution such as MediaWiki, the additional maintenance cost might be occurred which was quite unpredictable. However, the IT engineers interviewed expressed their confidence to support it themselves especially based on the previous two years of using the MediaWiki by the SST group.

> […] maintenance costs for MediaWiki will not seem to be unreasonably far from Confluence maintenance costs being in the same industry and both having publicly available source codes. It may also seem that we do not need to negotiate a maintenance contract for MediaWiki since we have supported it without incidence since April 2008. (Int.4)

Even though the cost of MOSS was not mentioned here, however, according to the interviewee 3&4, they ruled out the choice of MOSS earlier in the selection process as it failed to deliver some business requirements. For instance, MOSS did not offer hierarchical categorization, section and intra-page hyper linking, flexible version comparison. In the end, they concluded that:

> MindTouch was de-selected because of its similarity in architecture with MediaWiki while offering less vendor stability and at a non-ZERO license cost. MOSS was de-selected because it failed to deliver critical business requirements. Between Confluence and MediaWiki: MediaWiki had the advantage on cost as well as with respect to vendor stability given the dominance of Wikipedia in the Internet. Recommendation was to continue use of MediaWiki for OneWiki. (Int 3)

[…] the key business requirements though that led to MediaWiki's selection over Sharepoint 2007(MOSS) were: flexible [infinitely-hierarchical], categorization, automatically generated intra-page section hyperlinks, flexible version comparison. Furthermore, among the technologies that offered similar features, MediaWiki had ZERO license costs. Other similar technologies cost upwards of $30K. The companies for the other technologies offered some degree of support but were too small and were new to the industry which presented some risks if the companies went out of business (Int.4)

The general users interviewed seemed to care less about the reason why the company had selected certain tools, so long as they were easy to use and could help them do their work more efficiently. Normally in a hierarchical corporate, it is almost impossible to involve everyone in the decision-making process. Most of the systems are rolled out with quite minimum involvement from most employees and it seems that they are just driven by the top management. However, the OneWiki project was deemed to be more open and different from those projects which adopted the "top-down" driven approach, as it was the user group who firstly utilized the wiki technology and the concept of using wikis itself seems to encourage more participants from employees.

I think it is to encourage participation from the individuals, rather than a top down approach. This is my understanding […] Wiki will change the way people interact with each other and make the knowledge sharing process much more easy […] it will build up a new culture[…]maybe that is why the company has decided to adopt wikis (Int.7)

In summary, several factors encouraged the company to adopt the wiki technology for their KM. Firstly, the popularity of using Web2.0 technology among the employees made the company feel the urge to advance their current systems in order for the employees to be more willingly to use them to participate in the knowledge sharing activities in the company. Secondly the nice features of wikis, such as the ease of interacting with each other using the system as well as the ability to capture all the conversation history made the company choose it to compliment its current systems. Last but not the least, the significant lower cost of using wikis compared with other commercial systems made wikis

more favorable especially under the current global economy situation. In a word, from the technical standpoints, the users' familiarization and willingness to use the system, as well as the cost control perspective, wikis was the best choice for this project.

Below is an example to show the comparison the IT engineers made between one of the proprietary solutions to MediaWiki

Table 4.2 Comparison of Confluence vs. MediaWiki

	Confluence	MediaWiki
License Cost	$24,000	FREE
Maintenance Cost	$12,000 / yr	supported internally now
Vendor Reliability	Atlassian + Partners	3rd party service providers
Architecture	Windows, Websphere, MSSQL	Windows, IIS, MySQL, Linux, Apache
Source Code	Java	PHP

4.2.2 Changes that the Company Had to Make to the Wiki Software to Fit into the

Corporate Setting

To answer this research question, the participants were firstly asked about their previous experience with Wikipedia in order to make some comparisons and the differences that they have noticed about their company's OneWiki system.

Most of the participants interviewed had used Wikipedia quite often as a quick reference tool but only as readers, and none of the participants interviewed had ever been the editors of Wikipedia. They liked about the good search facility, easy GUI, clean font and layout and also the linkage between the related topics that Wikipedia could offer. Even though they were all aware of some of the issues Wikipedia may have, such as the unreliable resource or vandalism, the manipulation of information, however, since most of the times they used Wikipedia for entertainment purposes only or to satisfy their immediate information needs, they did not consider the issues to be the obstacles to stop them from using it.

> I use Wikipedia quite often since 2008 for both work and personal purposes. I like the search function which is very simple to use. It also has a daily summary I believe to demonstrate what happened on the day of the history. It has an open editing source that registered members can enter and edit any entry to start a page of information. The content usually provides both internal and external link resources for any additional search. (Int. 7)

> […] I generally have great confidence (about the information found from Wikipedia) especially in the technical articles – but I check the discussion tab to see how robust the editing process has been. I would also look at other websites as a check. (Int. 2)

> […] I used Wikipedia very often before, to search for articles, but never contributed, and never created articles. (Int. 8)

The participants' responses about the differences that they have felt about the company's OneWiki can be summarized into two categories: those related to the principles or the guidance on the usage that have been set up as well as the technical changes the company had to make in order for it to be fitful for the company IT infrastructure.

I. Principles

The governance principles that the company had built up for its OneWiki application was one of the distinguished characters it had from the public Wikipedia. In this company, the OneWiki had been made to the way that everyone who had a company user account and password could use OneWiki, but anonymity was not allowed when making edits in OneWiki. This increased the ability to audit the history of content and at the same time increased the reliability and accuracy of content.

In addition, the information published on the company's OneWiki must be for "business-purpose" only. It was not permitted to use it to write personal blogs or express personal opinions. The information should be useful for other colleagues to solve a problem or learn something useful in order to improve the work efficiency and to gain new knowledge.

The third difference was that each of the topic areas on OneWiki was assigned with a moderator, i.e., someone who was the Subject Matter Expert, to watch over information to be added or edited in OneWiki in order to ensure it remains appropriate and accurate. When people put some information into OneWiki, they must assign a category for that information so that the system could automatically alert the moderator for that topic area in order for him/her to review the content to prove the publishing or the changes. The moderators were always the leaders of the Network of Excellence [NoE], the system which had already been widely used in the company for knowledge management so they have extensive experience on this process already.

At that point of the interview after hearing about this rule, the researcher had some concerns regarding such kind of guidance, as she felt that this monitoring approach would discourage employees from expressing their ideas freely and then they would feel less motivated to participate in the knowledge sharing. She addressed this question to Int.1, the OneWiki project leader. The Int.1 expressed her viewpoints toward it as follows:

> Even though we made it such a way that the moderator can change the content him/herself if he/she does not feel the information is reliable, however, the moderator is not the final or the only "arbitrator" for the content on the web pages. Other people watch the pages as well and they all expect the information is accurate so that they will be able to use that information […] the information put there should be "business specific" and should be validated so that it can be re-used with confidence by others […] if the author of the content feels very strong about his/her information and has the different opinions from the moderator, then the best case scenario is that the moderator will take the information out from the wiki and discuss with the author in another form until they reach an agreement and then publish that information. This makes it possible for people to review their areas of the differences at forefront. […] that does not mean though that people can only put the "perfect" information out there. In fact, we have tried to teach people that sometimes they can just initiate a topic or drop one or two lines, and once they get people be familiar with the topic, they can all contribute to build up an article together […] (Int.1)

To confirm her viewpoints, the researcher also raised this concern to other participants, especially the general users and asked them if they would feel discouraged by this kind of monitoring rule to publish or edit the information on the OneWiki, and surprisingly those interviewed all expressed that it was understandable and that they felt it was for their best interests. In addition, they said that they realized now there was no such a system which was totally free of rules and regulations for everyone to use. For instance, they mentioned that they were aware of the fact that even the public Wikipedia was not totally free of any rules. People had to register in order to become an editor of the webpage. In addition, if people kept putting malicious information out there on purpose, their IP addresses could be blocked by the site administrator. They believed that there were also people who acted as the moderators of the content being published on the Wikipedia, and the only difference between the public and the Onewiki in their company was that "on the public Wikipedia,

you can publish any kind of information, but on our OneWiki, all the information you publish there should be related to the company's business or our work." (Int. 10)

Other users even said that it was "encouraging" instead of "discouraging" to know that those rules were there to monitor the usage of OneWiki, as they felt that the information they would find from the system could be trusted and reliable.

> There are so many tools which I can use for personal and entertainment purposes. I want to use OneWiki just for my work. I will only put accurate information there for others to use and I expect that everyone else does the same as well. That is the best reward for the knowledge sharing, which is, to be able to find reliable information from one reliable place. (Int. 13)

The OneWiki project leader mentioned that in the enterprise environment, if someone puts out malicious information into the system purposely, it is not just a matter of their IP address being blocked. "We can also involve the supervisors in the discussion if something like that happens […] it is certainly "career – limiting", if they do that intentionally." Said by the Int.1, "but the 'professional pride' will prevent the employees from doing such kind of things." (Int.1)

II. Technical aspect

From the technical standpoint, based on the participants interviewed, although some customization had been made to the MediaWiki for the OneWiki project, it was not overwhelming, and the customization only included some bug fixes, and minor changes. The customization was made by the dedicated IT resources (Int. 3, 4) for knowledge management in the steering committee. However, one of the hurdles they met was the operation environment that the MediaWiki ran, as not many companies who had used Wikis ran this system in a windows environment. However, they later found out that MediaWiki itself had no problem of running on Windows. The problem resided on the search engine which did not work properly in the Windows Environment. Following the

knowledge shared on the Internet by other experts and the thorough study did by the IT engineers, this problem was later solved without too many difficulties.

> There are not many companies of our size running Wikipedia in a Windows environment, which requires us to be extremely resourceful in a short period of time […] but we successfully maneuvered around each and every major obstacle and from a technical standpoint, launched OneWiki without any problem. (Int. 4)

Another technical challenge that they met before making OneWiki the enterprise-wide system was the scalability of the MediaWiki. With the size of the company, it was not surprising that the business would require the system be able to handle at least 400 concurrent users.

> We had scalability problems during stress testing of our set-up. This required our environment to have 4 load balanced servers just to be able to handle 400 concurrent users – so we had to rewrite some of the codes in order for it to be able to meet this requirement. That was just another major technical changes we had to make (Int. 3)

Based on the responses, we can come to a conclusion that the governance or the policy piece is far more important for companies to consider and pay attention to before the adoption of wikis into the corporate environment. The technical part, on the other hand, does not require very many changes. It is also very important to keep a right balance for the governance structure – it should be flexible enough to allow employees to learn, use and contribute knowledge in a fluid way, yet tight enough to ensure the reliability and accuracy of the information. The "do's" and don'ts" should be set up and communicated clearly to the employees before the launch of the system.

4.2.3 Differences or New Benefits It has Brought to the Company's KM or Users after the Utilization of the Wiki Technology

Participants expressed the various benefits OneWiki has brought to their company's KM as well as their everyday work. For instance, one of the interviewees expressed that wikis had helped him become more efficient when sharing information as well as editing it.

> Wiki has definitely made my life easier so far. I can send people links instead of attachments. People always get the latest version of an article. Because articles are very easy to edit and save, and because of the very concept of wikis […] I am not deterred to "build" articles one small bit at a time. I can invest 5 minutes here and there, if I have to, to build an article. These benefits outweigh the investment to learning - which is actually very low because it is just like writing an e-mail. (Int. 5)

Another user feels that wikis had changed her way of sharing knowledge within the company and her way of working just like the Wikipedia changed her way of accessing information as a whole. Using OneWiki had become her everyday work habit:

> It (Wiki) opens more thoughts around how we can share knowledge. And it makes me realize that knowledge sharing is not one/some one's job. It is everyone's. I find that I can always trust the information on the company's OneWiki and use it to solve my problems. I access to OneWiki almost on the daily basis. It has become a new work habit, just like how I used to do with the Wikipedia before. (Int. 10)

The easiness of using wikis has also made employees become more willingly to capture their ideas and transfer their "tacit" knowledge from their brains into the "explicit" knowledge and document it in the system. In addition, wikis connect people together no matter where they are by offering a platform for them to share and learn from each other.

> […] I feel we do not have to carry a notebook anymore […] lots of new ideas generated from everyday's work can be immediately documented on OneWiki instead of staying inside our brain and together with the help from others, a nice article may be created and becomes useful and critical knowledge for the organization. That makes us feel rewarded especially people can see who contributed that […] also it is a good feeling to feel connected with other colleagues who share the same expertise and interests to build up something together for the

company, even though they may locate on the opposite sphere of the globe! It strengthens our network and collaboration and makes ourselves feel more trustworthy too. (Int. 9)

Wikis not only has linked people together, just as it was described by this interviewee above, it also links information and documents together no matter where they are stored. Wikis does not necessarily host all of those documents, however, a thread of discussion or a topic posted in OneWiki may point to documents scattered around in many different systems. People do not have to search for them separately and not even need to know where they are, but just to be able to retrieve them all from the links available in the wiki system. That not only makes the searching of information much easier, but also, ensures that people only access the latest version of the documents and the original copies are still managed properly by the document management or content management systems with different levels of editing authority.

> Lots of information and knowledge are scattered across different systems, such as Knowledge library, NoE and CMS (Content Management System). OneWiki cannot hold them all and it is not necessary to transfer them all into OneWiki also […] but it provides linkage between a topic and all of its supporting documents which are stored somewhere […] it is very easy to browse topics in OneWiki and then find all the necessary information around it […] I do not have to search for them separately now […] sometimes I did not even know what I wanted to search for until I read about a topic in OneWiki […] that is what I liked about this new addition and new concept […] (Int 6)

One of the participants interviewed even mentioned that their company's OneWiki project altered his points of view about the online Wikipedia. As a frequent reader of it, he always felt that it would be very difficult to edit and publish information on the Wikipedia, so he never did that. After the launch of the OneWiki, he got the opportunity to take a short training about it offered by the knowledge management group in the company and he found out that it was actually very easy to publish and edit information in the system.

> […] in the back side of my mind, I always thought that it would be very difficult to publish and edit on the Wikipedia and it must be a very complicated tool that

requires special expertise and I never even bother to invest time to explore it and only to read it, but when OneWiki came to the company, there were several training programs arranged by the knowledge management team. I took the trainings and during the trainings, I was thinking 'man that is really a great tool. It is so easy! Once you have learnt some basis, it will be so easy to create articles in OneWIki. (Int. 8)

In addition, he said that in the past, he always wondered how Wikipedia could maintain its information integrity and to ensure the quality of the content, but now he understood that with the revision tracking function, he could go back to the previous versions of the article and to compare the changes which had been made and identify what was the article before, and what the changed one was. In addition, all the changes were highlighted with different fonts and different colors so it was very easy for the users to notice the difference and access the latest version. Moreover, the moderator assigned for each of the topic areas could review the proposed changes before he approved them to be published. He could even reject the changes if he did not believe they were valid. "Anyway, it is just such an easy tool for us to use, both as editors and readers," said by the Int. 8. He said so far he had created many articles already and had his network of people consisting of subject matter experts across the world that he could always reach to whenever he had questions or information needs.

Moreover some participants interviewed felt that OneWiki had made them become more responsible people. They also felt the need to continue to study, to improve their knowledge and to learn more so that they could share more with others and contribute to the building of the knowledge base for the organization.

OneWiki has made me become a more dependable person. I have to read more, learn more, understand more, and improve myself more if I want to be part of it[…]I build up my network and my relationship with my coworkers worldwide. I also got to known by many people. They know that if they send me questions, I will always provide answers at the best I can and I am the one whom they can always get answers from. (Int.12)

Even though it is still early to measure the benefits of the OneWiki project using the measurement matrix that the company has been adopting to measure the success of KM, however, based on the participant's points of view, it is easy to summarize the benefits of using wikis as follows:

I.   Brings up employees' professional pride – OneWiki makes it easy for people to contribute their knowledge and build up articles to create critical organizational knowledge base together. Their contributions are transparent in OneWiki with the effective version tracking functionality. Their ideas and contributions are valued by their peers, their supervisor, and their organization.

II.   Promotes better collaboration– an employee in China may start a topic and then end up building up an article together with colleagues in the US; an offshore worker in Indonesia may post a question and then receive solution from their counterparts in Australia. With the easiness of editing information in OneWiki, employees feel more comfortable and more willingly to use this knowledge management system. This is especially crucial for the global company like this case.

III.   Makes people feel connected and trustworthy - when they use other's knowledge or seek for help from others, they show their trust to their peers even though they may never meet each other in person; meanwhile they are trusted as well by others no matter what the positions they are holding in the company. They feel they become dependable people and also they want to be responsible for their information and thus must keep learning and improving themselves.

IV.   Links knowledge no matter where they reside in – knowledge, no matter the tacit or explicit one, can be linked together by the OneWiki system. As it was mentioned by Interviewee 9 (no need to carry a notebook), tacit knowledge can be easily documented and thus transferred into explicit one; also by reading the explicit knowledge residing in different systems, new tacit knowledge is generated. This

nice cycle certainly allows the transfer and capture of important knowledge to be conducted more efficiently by using OneWiki.

V.   Makes their life easier and makes the knowledge sharing part of their everyday life, instead of being something they have to invest in lots of time to learn or to use. Over the past years, the company has invested many different systems for content or document management and knowledge sharing. Some of them are very complex and rich in functions that it takes time for the employees to learn how to use them. Thus they have to devote some quality time whenever they need to publish an article or to share knowledge with others. With OneWiki, they can just invest some small times here and there and it will not affect them to complete other tasks at the about the same time.

4.2.4 Important Role KM Played in the Successful Implementation of Wikis

To answer this research question, the participants were firstly asked to talk about their company's KM strategy, key initiatives, current system usage and their measurement approaches. Their responses became very important background information in the understanding of the importance of a solid KM program plays in the OneWiki project.

4.2.4.1 Company's KM Strategy

As for the knowledge management strategy and how it was started – the KS director gave a detailed description during the pilot study. Just like some of the other "*Supermajors*", today's company also evolved through a serial of strategic transactions beginning in the 1990's. Big oil companies began to merge, often in an effort to improve economies of scale, fight against oil price volatility, and lower the large cash reserves through reinvestment. The merge of the former two big oil companies into today's company provided the company a golden opportunity to re-develop a KM strategy which was taken from the best aspects of it from the formerly separate two companies. The new strategy recognized the needs to connect the over 30,000 employees worldwide across the

organizational and cultural barriers and to capture the best practices and the know-how related to each area of the business. Leaders of the company recognized the opportunity of tapping into such expertise and valued the enterprise-wide knowledge sharing as a way to meet the company's safety, environmental and operational challenges and thus has allowed the company to generate significant cost savings, deliver productivity and create cash flow benefits through this kind of global knowledge sharing and collaboration within and across job functions.

The knowledge management strategy was closely tied to the business strategy and received full leadership support in the company. The fact that the KS director was only two levels below the CEO of the company proved that KM was a top-down driven strategy and demonstrated a very visible leadership. That was one of the key factors for its success. In the end, he also mentioned that KM strategy building was a long process and needed continuously evaluation and improvement.

> We continuously look for new and better ways to connect people so that they can identify, share and re-use their knowledge to meet the ongoing challenges in the workplace and prepare to do well in the future. (KS director during the pilot study)

Those who had worked in the knowledge management function directly could also provide clear explanations about the knowledge management strategy in the company when they were interviewed:

> The Networks that have been set up in the company enable people to first break down artificial barriers, build up reservoirs of familiarity and trust, and engage in dialog and other sharing activities. From there, they are more likely to exhibit professional pride by sharing what they know to help others mitigate risk, influence decisions and increase safety. We align networks with key organizational priorities and provide clear justification for why members should invest their time in the network. (Int.5)

Although the general users could not fully describe the strategy itself, however, there was a strong sense in the users about it and the core concept and they had their own understandings about why KM is important to the company.

> One reason KM is important for the company is that there will be a lot of people retiring in the next few years, taking away a lot of knowledge along with them. It is important to systematically capture their knowledge. Also, due to the unique feature of this industry, that is - high investment and high return - it is very important for the company to pool together its knowledge and experiences globally to help with operating its assets across the world effectively (Int. 11)

> As a global company, there is recognition that best practices and ideas are distributed around the world. Capturing this knowledge base can provide continuous improvement for the company. The company's culture currently relies more heavily on knowledge rather than process for operational excellence. Given the demographics of the US workforce [Baby Boomer generation starting to retire], capturing this knowledge is key for sustaining operational excellence and migrating towards being a process based culture. (Int. 9)

> […] Although I am not 100% clear about the strategy itself however I can tell KM is a strategic initiative in the company and has been put onto a very important position. As the company is exploring business opportunities globally, it is critical that the good practices, lessons learned can be leveraged and applied across locations. (Int. 7)

Other participants also mentioned that connecting people, sustainability, building up knowledge sharing culture, linking to the business results and the leadership support seem to be some of the strategies of knowledge management inside the company. They all agreed that the KM is rucial to the business especially in today's corporate environment where the business around the world is connected with each other and competition is very severe. "Those who can seize this opportunity to effectively bring their employees' knowledge and skills together can definitely put themselves into an advantageous position in today's competitive business environment." (Int. 10)

4.2.4.2 Key KM Initiatives

Everyone, including those who were not working for the knowledge management team or directly involved in the OneWiki project could name some of the major KM initiatives the company had over the past several years. For instance, all of them mentioned the Archimedes Award, which was an annual event to recognize outstanding efforts in the knowledge sharing in the company. The company had been keeping a rather high profile for this award. The awarding ceremony, the list of winners and their stories were to be published across different company's online media, such as their internal newsletters, intranet and their quarterly-issued magazine "SPIRIT". The interviewee 1 gave a better explanation of this award:

> […] For knowledge management, we have the Archimedes Award recognition program by which we recognize individuals and teams for excellence in knowledge sharing. […] The award is highly coveted. We encourage regions and business units to conduct local celebrations of winners. At the global level, we announce the winning regions, teams and individuals on the company's intranet. We send medallions to selected individuals. Some locations conduct receptions for local winners. (Int.1)

Another KM initiative which was widely mentioned by the participants interviewed was the NoE (Network of Excellence) – the system that had been used for several years in the company. Each of the NoEs was developed strategically across the company with a clearly business purpose as reflected in their respective business tasks. Employees in networks readily engaged in peer to peer problem solving, daily sharing of their experience, best practices and lessons learnt across different geographical and time zone boundaries as well as functional lines. The number of NoEs developed from just one when it was started in 2004 to 140 as of today. As some of the participants expressed, it was NoE which made them firstly accept the KM concept and build up their enthusiasm about sharing knowledge.

> I firstly used NoE in 2006 when I was assigned the task to implement the P2P (Procure to Pay) system in our local business unit. Since it was a global system and no one in our local business had such expertise or knowledge, I had to find ways to leverage the resources in the corporate office or other business units in order to ensure that we would be in compliance with the global standard and policy. One of

my colleagues advised me to take a look at the NoE - to go to the finance sector to see if I could find related information about this topic from it. I did and was so amazed by how much I could find from there. Later, I started to post questions and the challenges which I encountered during the implementation process and there were always people gave me immediate answers […] it really prevented me from re - inventing the wheels and avoid making some of the mistakes they made before. I got to say that without the NoE, it was almost impossible for me to finish that task so successfully and within the schedule. Ever since then I became an active member of NoE and wanted to share what I know with others as well. (Int.13)

Participants interviewed expressed that they thought of NoE not only as a system, but even more, it promoted the knowledge sharing culture and thus became one of the most effective KM initiatives in the company so far.

The Networks of Excellence have been very effective for knowledge sharing across the entire company. I have been involved in at least one NoE and there have been an incredible amount of participation and knowledge sharing. The NoE has a web portal to enable easy participation, and from what I have seen, the NoEs have become part of people's jobs. […] People would check the website almost every day and whenever they have a question or when they are facing a new assignment, they would post any question they may have on the site, and there would be several responses from other business units around the world. It is truly a very effective KM program. (Int.11)

Another participant echoed that point and listed his participation into different NoEs as follows:

I participated into PROFET (precursor to Ops Excellence); Operations Excellence – I was the member of A&OI FET (Functional Excellent Team) for 5 years as both core members from the business unit as well as FET Lead here in Houston. I am the leader of Facilities Integrity NoE during 2010, in addition to FET lead role. (Int. 6)

In addition, participants interviewed mentioned other company-wide initiatives, such as the recent OneWiki project, and the efforts made by the knowledge management team to promote the usage of OneWiki in the company.

[...] I remember the knowledge management team did a lucky draw around the Christmas time of last year from all the participants to take OneWiki online training

and the prize was an IPAD! It is just a nice incentive to make people pay attention to the knowledge management program and the new system just being launched. (Int. 14)

Some other initiatives included an annual Network Leader Summit, where they brought together the leaders, sponsors and coordinators of the networks to share best practices in building and sustaining effective networks. The summit had been a blending of face-to-face meetings and teleconference-type meetings for the last two years and so far was well attended. This year, the knowledge management team also took the initiative to encourage the employees to add the knowledge sharing related goal to their performance review process to tie it to their yearly final result. That showed the support from the company's management to encourage employees to make knowledge management become part of their work and their efforts in KM were well recognized and rewarded.

> […] I wrote "to participate into at least one NoE and submit success stories" into my goals at the beginning of this year when I did the goal setting with my supervisor. I am glad that my supervisor encouraged me to do that as he knew although it would occupy some of my time, we could benefit from it […] Throughout the year, I have been quite active in attending KM related activities and now I think I want to do that not because it is a goal which I must achieve, but more importantly, I really have learnt a lot from this process. (Int. 12)

The participants interviewed can also easily name the systems which have been utilized as the knowledge management systems in the company, such as Network of Excellence, Sharepoint, Ask and Discuss, email, livelink, OneWiki, and eStream portal.

4.2.4.3 Measurement of KM Success

One of the challenges to the KM program is the measurement on its success. In this company, the measurement was initiatively tied to the company's financial gains or prevention of financial losses, but also based on other intangible measurement criteria.

> We have a number of metrics: some are the submitted success stories with hard dollar –per- barrel (of oil) amounts; others have softer measurement criteria. We also look at number of people engaged, network activity and many other metrics.

> They all have their places in our measurement matrix, but need to be kept fresh and constantly analyzed to identify the issues and adjusted as required. […] We have been flexible in this: early NoE metrics were "hard dollars" based and now we started to divert attention to the softer benefits of connecting people, so the explicit dollar metrics were dropped as a formal success measure across the enterprise, although some NoE choose to continue […] (Int. 5)

One of the "softer" measurements was the number of the NoE that has been built up and the participants of those networks. Each of the NoEs built up for a solid reason and must enable the value business knowledge to be shared and reused for the best purpose. The knowledge sharing framework in the company had grown from one to 140 fully engaged and strongly sponsored Community of Practice. "The number of the employees using the NoEs and the success stories they submitted about the benefits from using those networks are some of measurements to evaluate our program." (Int. 6)

However, still the KM is faced with the challenge to measure the KM success due to lacking of a standard industrial method. Even though the users interviewed agreed to the current measurement approaches adopted by the company, they did feel that it would be better to have the consistent measurement index for the whole industry in order to be easier for the benchmarking.

> […] I believe right now the metrics are available to measure KM's success. Taking the Network of Excellence as an example, readership and interaction levels are monitored. It is helpful to understand the progress of the knowledge sharing, however it will be even greater that a simple list of indicator can be identified when people are in the design phase of their NoE and integrate the indicator as part of the tool or technology. (Int. 13)

Another participant expressed his own way for the measurement of the success. To him, the knowledge sharing initiatives in the company were indeed very successful. The culture had already been built up across the entire company and was imbedded in people's mind. He said that he felt confident to move into any kind of new role now because he knew that "there are many people behind me whenever I need help to work in an unfamiliar area" (Int. 8) In the end, he said that he believed knowledge management would have an even brighter

future in his company and in any kind of organizations. Some people might not have realized the potential of knowledge management and what knowledge sharing could bring to the organization as well as individuals. He explained his mentality changes toward knowledge sharing throughout the years. When he just joined the company in 2004, he did not devote much time on NoEs or any other kind of knowledge sharing initiatives because he felt shy to ask questions, and he had the fear of being considered stupid, or simply had too much work to do and no time on knowledge sharing at all. But now he said he wished he would always spend time on it, because:

> […] what you can benefit from it certainly offset the time you put on learning or using the knowledge sharing tools […] you can receive lots of help from the subject matter experts and easily tackle your problems so that to save the time you have to spend onto figure out a solution by yourself! […] also, it is really a very safe and friendly environment. There is no question to be considered as "simple or stupid" at all. No one will mock at others, because they realize that someday they may all need to post questions as well and they will need help from others too (Int. 8)

Based on the responses from the participants, in addition to using the financial return as a way to measure the success of KM, the company can also adopt more innovation methods, such as to monitor the usage of the KM related systems, to interview employees to find out their opinions on KM, as well as to invite employees to submit success stories. Those "soft" measurements themselves can even become promotional tools to raise the profile of KM in the organization.

4.2.4.4 The Importance of a Solid KM program to the Successful OneWiki

It was clearly demonstrated from the responses above that having a solid KM program is the foundation for the successful implementation of any innovative technology. Employees have become used to the KM concept and using systems to search for or share their knowledge; therefore it would be very easy for them to accept any new system. The fact that the SST groups started to adopt MediaWiki themselves indicated that it was part of the culture already in the company that people were actively seeking for new ways to be more efficiently to share their knowledge.

However, whilst implementing the new technology, the purpose of the OneWiki project was not aimed at replacing the company's current knowledge-sharing tools, instead, just as the Interview 2 described: the linkage between OneWiki and the other existing knowledge management tools were an important factor when designing the OneWiki.

> The OneWiki is part of the company's award-winning knowledge-sharing framework, complementing, rather than replacing, formal networks and discussion portals and libraries. (Int.2)

In a word, to truly maximize the benefits of any kind of technology, the company should pay great attention to building up a KM culture first and make it become a core part in helping the company to achieve its business goals, rather than to make KM just about technology or system implementation.

4.2.5 Measurement of OneWiki Project

So far, the knowledge sharing team is also using the soft measurement criteria to monitor the progress on the OneWiki project. They have not yet though tied it to the financial return, but they did add "if this benefit which you described was realized by using OneWiki as the knowledge sharing tool" to the list of questions for employees to consider when they submit a success story.

One of the measurements, the usage of the OneWiki system, showed that OneWiki had received wide recognition among employees since the first day of its implementation. As it was described by the OneWiki project leader:

> […] We received about 1,000 hits the first day when we launched OneWiki in the company and so far about 4,500 pages of the content are available out there. People, when checking information on OneWiki, are amazed by the amount of information is in OneWiki already! We have paid attention to the usage statistics very closely and right now the usage of the system is growing at a very reasonable pace. (Int. 1)

However she did admit that it would still be a long way to go for OneWiki to be fully utilized by employees in the entire company. The system was still new and there was not

yet a wide adoption of Wiki technology in the business-type organizations for their knowledge management. The expertise was still being built up and its full potential was yet to be fully discovered.

> It was very satisfying to see that the OneWiki moved from the pilot phase into the enterprise-wide phase, especially there is no real rule book to guide us […] Now we need to make sure people fully understand how to unlock the value by creating useful knowledge content that helps others learn and reuse the information in the very best possible way […] we are still learning about the potential impact of OneWiki. The Wiki itself causes people to think, behave and collaborate differently. That is what is so exciting. We have a tool we know so much about, yet there is so much more yet to discover. (Int.1)

4.3 Discussion

The section of discussion is divided into 4 subsections which correspond with the research questions as well as the previous sections about the participant's viewpoints regarding those questions. Lots of similarities were identified from the responses to those viewpoints which were summarized from the previous research studies.

4.3.1 The Company's Reasons to Adopt Wiki Technology for KM

Participants mentioned three major reasons which led to the birth of the OneWiki project in the company. The first one was because some of the user groups had already started utilizing Web2.0 tools, such as Wikipedia for their group collaboration and knowledge sharing, therefore, it pushed the company to investigate on this new technology and then adopt it in order to satisfy the more recent requirements on knowledge sharing among people in the company. This viewpoint agreed to some of the previous studies identified in the literature review, that is, it is unavoidable that the Web 2.0 technology posed some new challenges to the existing KM. Just like what it was described by Giles (2010), employees are familiar with the various Web 2.0 tools and they expect that their workplaces can be more open and flexible with the knowledge sharing by adopting Web 2.0 technology as well. Unlike the normal "top-down" driven approach when a new system is implemented in the company, under the Web 2.0 era when the employees are more used to the

interactive ways to use the systems, they are more dominant in the selection of suitable tools in their workplace as well.

Another reason mentioned by the interviewee was the easiness of using the Wiki technology and its distinguished features compared with some other systems. Based on the responses from the participants, the company had adopted different systems in the past to manage their information and to share their knowledge. Many participants agreed to the fact that the newly implemented OneWiki made their lives easier, because it was simpler for them to search and edit information in it, compared with those previous systems. Even though the company still required authorization and authentication before employees could access OneWiki, however, just as what Todorov (2005) pointed out, compared with other content management systems (CMS) adopted by firms, the support for those processes was less sophisticated. In addition, participants mentioned that through OneWiki, they could check the version history of the articles published in the system, thus allowed them to compare the changes made to the articles, as well as for the moderator to prove those new changes before they were published. Those viewpoints about this feature expressed by the participants all supported the ones from the previous researches, such as Moskaliuk, Kimmerle & Cress. They mentioned that these characteristics make the wiki a valuable tool for organization's knowledge management from the technology perspective. (Moskaliuk, Kimmerle & Cress, 2009)

The last important factor for the company to consider when selecting the wiki technology was the minimal cost required to adopt and support the usage of wiki software.

According to Koch (2003), wikis, as open source software, provided a solution with minimal front-end cost. These had been more favorable than proprietary software, which required extra payments for support and upgrades. In addition, the company could build up its own expertise to provide customization if necessary and ongoing maintenance and support in order to avoid those high costs of maintenance incurred due to unpredictable

support later on, which was one of the concerns over the open source software by some authors, such as Gonzalez-Reinhart.

4.3.2. The Changes Company Had to Make in order for Wikis to be Suitable for Corporate Environment

In addition to some minor technical changes, the company put more efforts to build up a governance system to guide the proper usage of their OneWiki in the corporate environment. Although as the previous researchers proved, the "freedom" and the "open" principle of wikis could encourage the users' participation and contribution to the knowledge sharing so that they are considered as the advantages of wikis, however, this "freedom" may also lead to vandalism of corporate website when it is applied in the business environment according to Anderson (2004). The fact that the company changed the principle to use their OneWiki also supported the viewpoint of Anderson. Whilst it encouraged everyone who had a company account to publish, edit and search for information in the system, it did add an approval process and monitoring system so that to ensure that all the information published in the system was appropriate and business-related. Moreover, the company established different roles, such as moderators, to approve any new articles or changes before they could be uploaded into OneWiki. In that way, employees could have greater confidence to use the information they would find from the system and apply it in their everyday work. Of course, meanwhile, the right balance needed to be maintained so that the advantage of being a flexible tool could still be maintained even in the corporate setting.

4.3.3. Benefits that the Wiki Technology Has Brought to the Corporate KM

Lots of previous literature identified the benefits wikis could bring to the organization's KM initiatives. For instance, Gonzales-Reinhart (2005) pointed out that wikis have been applied in the organizational setting for conversational knowledge management. Conversational knowledge management could turn to be very beneficial as far as virtual teams are concerned. There are a number of factors that favor conversational knowledge

management systems. According to Wagner (2004), these systems suit decentralized environments. They do not demand firms to invest a lot in technology and finances; hence, they may be regarded as favorable to businesses. In addition, some wikis can support many features and languages that can help to achieve conversational knowledge management, especially when the teams are dispersed in many different locations in the world.

The participants of this research study also favored those viewpoints. The company that they were from was a multi-national company, which had offices located in different parts of the world. For lots of times, tasks needed to be undertaken by virtual teams consisting of staff from many different locations. Their newly implemented OneWiki became a great tool for them to collaborate and corporate with one another. Quite often, team members were tied up by other tasks as well. In those cases, the conversational knowledge management ensured that they could fulfill their normal job responsibilities and yet still were able to share their knowledge and collaboratively finished those tasks assigned to their teams. Just as what was described by one of the participants, he could invest just 5 minutes once in a while to write an article in OneWiki together with others, and devote some small times "here and there". This unique feature made knowledge sharing still possible and realistic in today's highly competitive and fast-paced business environment.

Another benefits mentioned in the previous literature was that "through open aspect of the wiki system, contributors are able to socialize and tie to one another …The wiki online environment also has the advantage of reducing the challenge of documenting tacit knowledge since dispersed teams share knowledge through explicit forms (Griffith, Sawyer & Neale, 2003). In addition, contributors are able to have mutual trust as a result of these communications, guided by the rules and structures of wikis.

Participants in this research study also expressed similar viewpoints on those benefits. They said that they felt better connected with their peers across the world after the adoption of OneWiki. Meanwhile, they built up trust among one and another when they shared or used the knowledge from others. They were not afraid of taking any new jobs in

the company anymore, because they knew that they had their network of people who could support them whenever they needed. Besides those, they also mentioned that they could easily document their tacit knowledge into OneWiki to transfer it to the explicit form so that to be able for it to be shared with others. In a word, OneWiki link them together and allow them to realize the transfer and creation of explicit and tacit knowledge on the same platform.

4.3.4 The Important Role a Solid KM Program Has Played in the Successful Implementation of OneWiki

According to Sharkie (2003), more and more companies have realized that it is possible for firms to gain competitive advantages when they utilize knowledge assets. However, companies should not just focus on the system implementation when they tried to use their knowledge more effectively. Tools may even be rejected by the users if there is no integration between knowledge sharing process and KM system. This has been expressed by Larry Prusak, a business head at IBM, through an illustration of a firm, which encountered a loss after viewing its KM implementation process as technological implementation. They wasted a lot of money in investment over a long time, and only to realize slight benefits for KM. (cited in Gonzalez – Reinhart, 2005).

In this case study it was not too difficult to notice that the users in that company did not "reject" KM system at all. Instead, they were willing to learn, use and even actively looked for new systems. One of the important reasons was because that they accepted and agreed to the KM concept and thus it became a natural habit for them to use any technology to assist their KM efforts. It showed that a solid KM strategy which linked closely to the business strategy, as well as a well-established program became a crucial foundation for the implementation of any KM systems. As one of the participants pointed out, the OneWiki was just one part of the company's award-winning knowledge-sharing framework. It was to complement, rather than to replace other KM initiatives or systems. With a solid KM program and culture established inside the

company, the employees had the desire for knowledge sharing, so that they were willing to use the system to help them realize it. Even so, they were eager to find better tools to meet their ever-increasing KM needs. The example given in this research study proved that KM should be driven and supported by the top management of the company in order for it to be successful; different initiatives need to be made to attract people's attention, and of course, it was very important to implement a good KM solution in order for the KM efforts to be more effectively and efficiently carried out in the organization.

4.4. Chapter Summary

This chapter provided detailed analysis and discussion on the data collected from the interview process. After a brief demonstration on the demographic information about the participants, the researcher devoted a major part of this chapter to interpret the data drawn from the interviews, which offered a basis for the discussion in the next sector. Significant parts of the quotation were cited from the participants in their original formats and reported as the results of the interviews. The discussion part following it identified the similarities in the viewpoints between what had already concluded from the previous research studies, and this current study. Both of the analysis and discussion parts were divided into the sub-sections corresponding to the research questions.

The next chapter is the conclusion drawn from the study as well as the recommendations for further research.

CHAPTER 5: CONCLUSION

5.1 Key Findings

The aim of this study was to explore the impacts that wikis has on the KM initiatives and to find out how wikis could be best adopted in the business corporate setting. The key findings from this research are as follows:

I.   The Web 2.0 technology has made significant changes on people's way of living as well as their information behavior and their way of interacting with one and another. When it comes to the knowledge management in the organization that means the employees also have new needs which the current knowledge management or content management systems can not satisfy. The employees want faster searching for information; they want more interactions with others and more participation into the KM activities but without interruptions to their other tasks. Just like people checking Facebook once in a while whilst reading an article, more and more people have developed the habit of "multi-tasking" as the result of the availability of various social media tools. Therefore, their desired system for KM should allow them to do that as well. The example given by this study, that is, the user group already started to use MediaWiki before the company-wide implementation demonstrated such kinds of new trends. Therefore, companies should actively seek for new solutions to meet these requirements instead of just resting on their current achievements on KM.

II.   Wikis can be a suitable tool for the corporate to adopt as long as a governance policy can be built up and well accepted by both of the management and the users in the organization. The governance policy should correspond to the overall culture of the company. For instance, if the company normally has a more tight policy regarding information management and its usage, then the governance policy for the wiki usage can be tight too and the same applies if the company's information

policy is very loose. In this case study, the company has adopted a well-balanced governance strategy. i.e., it allows everyone who has a company ID to read, edit, search for knowledge from OneWiki freely, yet it has added certain rules to ensure the information accuracy and reliability. That is consistent with the general culture and management style of the company so that can be easily accepted by all the employees.

III.   Based on the study, from the technical standpoints, there are not many changes that need to be made in order for the wiki software to be used by the corporate. However, the organization should build up its own expertise to support the wiki usage in order to avoid any potential and unexpected maintenance cost. As it was both illustrated in the literature review as well as this case study, although there is no front-use (license fee) for the wiki, however, maintenance cost may be occurred if the company needs the third-party support, though the cost should not be significant.

IV.   Wikis can bring lots of benefits to the company's KM. The benefits mentioned by the participants of the case study matched with the ones identified by the previous studies, especially on the aspect of allowing for better conversational KM. Whilst other KM tools need a more formal way to share knowledge, wikis, on the other hand, can be used in a relatively casual way. Just like what was described by one of the participants, he could just invest 5 minutes "here and there". That gives the possibilities for employees to share their knowledge as soon as it is generated in their heads. However, that does not mean that wikis should replace the other KM or CM systems which have already been used by the company. Each of them have their own advantages and disadvantages, so the best strategy is to take the best aspects of them and to link them all together to build up a seamless platform for the employees to share their knowledge. Just like in this company, documents and information still reside in CMS or other library tools, but their OneWiki can link them all so that people do not have to find the related materials about a topic

separately. OneWiki assembles them together and acts really like a corporate encyclopedia.

V.   The prerequisite of a successful implementation of the wiki technology is the strong KM strategy and culture. They are the foundation for any technology implementation. According to the previous studies, companies should not regard KM projects as just a technology implementation. In fact, they will waste a lot of money in investment over a long time if they only pay attention to the technology. (Gonzalez-Reinhart, 2005) This case study also showed that without a solid KM in place already, Wikis cannot bring those benefits to the organization. It is an "addition" to its already successful knowledge management strategy. The cultural aspect of KM cannot be ignored.

VI.   People assuming different positions in the company look at this project from different prospective. That can be shown from the different responses from the participants. For instance when being asked for the reasons why the company adopted the wiki technology, the KM leader would give the answers from a high-level decision making prospective, whilst the IT engineers would immediately give the reasons by comparing the advantages and disadvantage of different systems from the technical perspective. When answering the questions about the benefits of OneWiki, the general users talked more from their everyday's work point of view, but those who worked in KM team would give the reasons from the company's angle, and discussed more on the benefits that OneWiki could bring to the overall KM program in their company. In addition, management explained better about the strategy, but the users explained better about their detailed KM needs as well as their ways of sharing and managing knowledge. Thus, it is quite important for companies to involve people of different levels or roles in the decision-making process as well as the implementation of a new system so that the various needs can be attended. Companies should also use some incentives in order to attract

employees to use the new tools. That can help to maximize the potential of those systems in order for them to contribute to the company's overall KM efforts.

5.2 Implications for Future Research

Both KM and wikis are areas that are still under development. There is still a lot yet to be discovered. This study only explored the reason of adopting the wiki technology by one corporate and obtained some preliminary feedback from a very limited user group. The same method can be applied to examine more organizations and larger groups consisting of various users with different background.

In addition, the case that has been selected for this study has only launched OneWiki less than a year ago, so the opinions expressed by the participants could only represent their current thoughts about this system and they may find out more and change their points of view as they are more familiar with the system. It will be interesting to conduct a quantitative study one year later to find out the satisfaction rate about this system so that to understand if it is indeed a system that can be sustained. An anonymous survey sent to all the employees in different locations can be used as the data collection method. In addition, other quantitative data such as the log history can be retrieved to analyze the real usage of OneWiki so that to understand the acceptance of this system by the users. Moreover, it will also be interesting to read some KM success stories to be submitted by the employees after the OneWiki implementation to find out the amount of times this new system has been mentioned in those stories, as well as the kinds of benefits in those stories that OneWiki has brought to their everyday work and the organization as a whole. If it is possible, the field study can be conducted to observe the knowledge sharing behavior in the company as well as to observe people's interaction with each other and with the systems to find out the cultural aspect of its KM program. The results of this current study can be used as a starting point to design these more detailed studies and can be used to compare with the new findings or to verify the results by other researchers.

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APPENDICES

APPENDIX 1: INTERVIEW QUESTIONS

Category 1: Company's Knowledge Management Initiatives

➢ What is the KM strategy in your company? Why and how it is important to achieve company's business strategy?

➢ Can you describe some of the major KM initiatives and programs that you have experienced in your company?

➢ Can you name some of the systems or tools that you have been using to create, share or find knowledge in the company?

➢ Do you know how the company measures its KM success? Does this kind of measurement method make sense to you?

Category 2: OneWiki Project

➢ Did you use Wikipedia before, for work or personal purposes? If so, can you describe some of its features?

➢ Do you know why your company decided to adopt a wiki system for KM?

➢ Which software your company selected to build upon OneWiki and why?

➢ Who can use Onewiki?

➢ Do you feel some differences using OneWiki in your company compared with the Wikipeadia outside the company?

➢ So far, what changes it has made as far as knowledge management and sharing are concerned?

➢ Do you trust the knowledge or information you find from your company's OneWiki system? How about the knowledge or information found from the public Wiki?

➢ How often or regular you have used OneWiki? Are you the moderator, editor, or reader?

➢ What other systems the company has planned in the future for KM?

➢ In general, does OneWiki make your life easier or more difficult as the result of learning about a new tool?

➢ Is there something else you would like to add or mention that I did not notice to ask and you feel important in this context?

APPENDIX 2: CONSENT AND DEMOGRAPHIC INFORMATION FORM

Title "A Case Study on the Application of Wiki Technology for Knowledge Management in the Corporate Setting"

Interviewees: Knowledge Sharing Team, OneWiki Team and selected employees

Purpose of the interview: The interview is aimed to helping the researcher to understand why and how the wiki technology has been applied in an international oil company for its KM efforts.

Your cooperation would be highly appreciated. All the information would be solely used for the purpose of this research. Identity of the interviewees and confidentiality of the information provided will be maintained.

Demographic Information

Name:.... ....

Job Title: ....

Department/Functional Group: ....

Years of Service with your company ....

Role in the OneWiki team: ... .

I agree to allow Lin Bian to use my comments for her current research. I agree to the condition that these comments remain strictly confidential. I reserve the right to review the portions of the final draft which contain my statement before the final submittal or publication

Signature   Date

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