

KNOWLEDGE SHARING MODEL FOR ONLINE COMMUNITIES OF PRACTICE

by

AI SYAH BINTI ISMAIL

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LIST OF ABBREVIATIONS

BCC	Blind carbon copy
C4SL	Care For Second Language
CC	Carbon copy
CSS	Cascading Style Sheets
e-Community	Electronic community
GKM	General Knowledge Model
GUI	Graphical user interface
HTML	Hypertext Markup Language
k-Community	Knowledge community
KM	Knowledge management
KSS	Knowledge sharing system
MySEIG	Malaysian Software Engineering Interest Group
PBaSE	Point-Based Semi-Automatic Expertise
PHP	Hypertext Preprocessor
SIG	Special Interest Group

MODEL PERKONGSIAN PENGETAHUAN UNTUK KOMUNITI PENGAMAL ATAS TALIAN

ABSTRAK

Objektif utama komuniti pengamal ialah untuk menggalakkan pembelajaran berterusan di antara ahli. Penggunaan sistem perkongsian seperti portal pengetahuan untuk komuniti pengamal akan membantu pertukaran ilmu dan seterusnya menggalakkan proses pembelajaran. Walaubagaimanapun, sistem seperti ini mungkin menghadapi cabaran dalam menarik minat ahli untuk berkongsi ilmu secara sukarela. Maka, tesis ini mengusulkan model perkongsian pengetahuan untuk menyokong keperluan dan aktiviti perkongsian pengetahuan bagi komuniti mengamal profesional, demografi, dan kepentingan persendirian. Satu kajian tahap permulaan melalui tinjauan untuk mempelajari keperluan pengguna di dalam portal pengetahuan untuk komuniti pengamal dijalankan atas prototaip tahap kelahiran. Maklumat yang dikumpul daripada kajian tahap permulaan menjadi asas kepada model sistem perkongsian yang diusulkan. Sebuah prototaip tahap selepas kelahiran bernama *Kliquey* dibangunkan berdasarkan model yang dicadangkan dan direplika ke atas tiga komuniti pengamal yang berbeza untuk kajian kes. Penilaian model yang diusulkan telah dijalankan menerusi prototaip tahap selepas kelahiran di mana kajian melalui tinjauan dan pemerhatian terhadap aktiviti perkongsian pengetahuan di atas tiga jenis komuniti pengamal. Hasil daripada kedua penilaian dibandingkan dengan matlamat asal komuniti untuk menyimpulkan kecapaian komuniti tersebut.

KNOWLEDGE SHARING MODEL FOR ONLINE COMMUNITIES OF PRACTICE

ABSTRACT

The main goal of communities of practice is to encourage continuous learning among the members. The use of knowledge sharing system such as a knowledge portal for communities of practice will assist the exchange of knowledge; thus it promotes the learning process. Nevertheless, such knowledge sharing system may encounter many challenges to draw interest among members in sharing their knowledge voluntarily. As a result, this thesis proposes a knowledge sharing model that can support the needs and knowledge sharing activities among professional, demographic, and personal interest communities of practice. A preliminary study was conducted on the birth period prototype using a survey to consider their needs in communities of practices' knowledge portal. Findings in the preliminary study served as the basis of the proposed knowledge sharing model. Consequently, a post-birth prototype named Kliquey was developed based on the proposed model and replicated on three different communities of practice as case studies analysis. The evaluation of the proposed model through the post-birth prototype is done via a post-birth survey and observation of knowledge sharing activities among the three different types of community. The findings from the two measurements are compared to the communities initial goal to deduce the successfulness of the communities.

CHAPTER 1

INTRODUCTION

1.1 Research Overview

In every community, it is crucial to have a way to populate collective knowledge that members can share among them. Easy access to such knowledge among community members promotes disseminating of knowledge or information to its members in timely manners. The use of an *electronic community (e-community)* portal besides physical community could benefit the community greatly. Normally an e-community of a certain domain or field converges to share their knowledge or practices. Hence, such e-community is also known as *communities of practice*.

According to Wenger et al. (2002), communities of practice are groups of individuals with a common interest who communicate and share knowledge with each other. E-community portals for communities of practice provide the platform for knowledge repository where its members can share and exchange information with each other. E-communities that promotes and encourages sharing of knowledge can be referred as *knowledge community (k-community)* as in the work of Wimmer (2006). In addition, Staab (2002) defined knowledge portal as portal that manage knowledge and distribute the knowledge to its members. Hence, this thesis refers k-community or communities of practice as individuals who join a k-community portal or a knowledge portal.

With the emergence of many communities of practice or e-communities (Huang et al., 2005; Hew and Hara, 2007; Hui et al., 2007; Pietzuch et al., 2007; Søndergaard et al., 2007; Yujong and Kim, 2007; Ming et al., 2008; Saleena et al., 2010; Xiaomo et al., 2010; Gibbs et al., 2012; Kleanthous Loizou and Dimitrova, 2012; Herne et al., 2013), there is a need to provide a generic solution to serve such communities of practice in sharing information, knowledge, and resources through *knowledge sharing system (KSS)*. According to Niwa (1990), *knowledge sharing* perceives knowledge suppliers as the same set of system users who use the knowledge base. In addition, Wang and Noe (2010) recapitulate that knowledge sharing is the process of exchanging and collaboration of knowledge or information with others through any means possible. Consequently, having a good design towards an effective knowledge sharing is important to draw the interest of an e-community in KSS (Ebner et al., 2005).

Hsu et al. (2007) describe the obstacles in KSS from personal and environmental perspective. As there are different types of k-community (Burstein et al., 2008), there are also different challenges in promoting knowledge sharing among the members of a k-community or communities of practice. Thus, this thesis proposes a knowledge sharing model involving three main factors, which are culture, power issues, and *graphical user interface (GUI)*.

1.2 Background to the Research

There are challenges in ensuring the success of KSS. One of the major challenges is to encourage users to share knowledge among the communities of practice (Burstein

et al., 2008). KSS without knowledge sharing activities by its members is a waste of time, energy, and money. According to Hall and Goody (2007), a successful knowledge sharing can be measured by three outcomes that are by producing an improved organisational learning, new knowledge creation and innovation, and knowledge reuse. However, it is hard to measure improvement of organisation learning, new knowledge creation and innovation, or knowledge reuse in a semi-formal KSS.

There are three main challenges in promoting knowledge sharing that are culture, power issues, and GUI (Hall, 2001; Gillies, 2005; Huang et al., 2005; Hall and Goody, 2007; Hsu et al., 2007; Chow and Chan, 2008; Ming et al., 2008; Chaoxian and Mengjun, 2009; Lee et al., 2009; Keng et al., 2010; Xin and Baoguo, 2010; Jeon et al., 2011; von Krogh et al., 2011; Abbas et al., 2013; Fullwood et al., 2013; Herne et al., 2013). Culture in KSS relates to environment factor that includes group cohesion, organisational culture, and language barrier of the community (Chow and Chan, 2008; Ming et al., 2008; Keng et al., 2010; Wang and Noe, 2010; Jeon et al., 2011; Abbas et al., 2013; Fullwood et al., 2013; Herne et al., 2013). Power issues may due to fear of losing control in an organisation besides trust and intellectual property issues (Hall and Goody, 2007; Lin, 2008; Chaoxian and Mengjun, 2009; Gagné, 2009; Lee et al., 2009; Wei and Yifang, 2009; Abbas et al., 2013). Finally, GUI is the intermediary between communities of practice and KSS that could be an enabling factor to motivate knowledge sharing (Wu et al., 2001; Du and Chen, 2007).

1.3 Research Questions and Objectives

Challenges in designing a KSS are not only limited to cultural, power, and GUI issues but also the need to cater for different types of communities of practice. According to Adler and Christopher (1999), there are three types of communities of practice, namely professional, demographic, and personal interest. As such, different types of communities of practice may have different set of knowledge sharing challenges. Pursuing this further, works by Jeon et al. (2011) and Fullwood et al. (2013) noted that research on communities of practice are lacking in semi-formal organisation such as an academic group, club or association. Likewise, most of the recent KSS initiatives are done in firms or corporate organisations (Jeon et al., 2011; von Krogh et al., 2011; Nieves and Osorio, 2012; Abbas et al., 2013; Carmeli et al., 2013; Fullwood et al., 2013; Dali and Shaalan, 2016), which differs from the scope of this thesis. There is also issue with lack of enforcement in communities of practice unlike in formal organisations where knowledge sharing will be embedded as part of workflow or job scope (von Krogh et al., 2011; Abbas et al., 2013; Carmeli et al., 2013; Ziaie, 2014).

Therefore, this thesis addresses the gap in the literature by focusing on semi-formal organisation within the three types of communities of practice and the three main obstacles in knowledge sharing namely culture, power issues, and GUI. This research gap leads to the following research questions:

- (i) How knowledge sharing obstacles such as culture, power issues, and GUI found in formal organisation applicable to semi-formal organisation or communities of practice?

- (ii) What are the factors that might influence or encourage knowledge sharing activities for professional, demographic, and personal interest communities of practice?
- (iii) How to measure the successfulness of a knowledge sharing model that can support professional, demographic, and personal interest communities of practice?

Accordingly, the objectives of the research in this thesis are:

- (i) To investigate knowledge sharing obstacles and needs in communities of practice.
- (ii) To propose a knowledge sharing model to serve the need of professional, demographic, and personal interest communities of practice.
- (iii) To measure the successfulness of the proposed knowledge sharing model.

To achieve the research objectives, this thesis proposes a knowledge sharing model for semi-formal communities of practice. Then it leads to the identification of communities of practices' needs towards knowledge sharing for three types of communities of practice. Based on Castro (2006a), successfulness of knowledge sharing can be measure by observation of activities, effectiveness as perceived by members, and comparison with initial community goal. Consequently, this thesis measures the proposed knowledge sharing model through feedback of the members of different types of communities of practice via survey. In addition, case studies on knowledge sharing activities by the different types of communities of practice are observed.

1.4 Significance of the Research

To design a KSS, researchers need to understand the factors that should be considered when designing KSS. In addition, as mentioned in **Section 1.3**, there are the lack of researches that focus on semi-formal KSS (Jeon et al., 2011; Fullwood et al., 2013) as most of KSS initiative focuses on firms and corporate organisations settings (Gagné, 2009; Lee et al., 2009; Keng et al., 2010; Wang and Noe, 2010; Jeon et al., 2011; von Krogh et al., 2011; Nieves and Osorio, 2012; Abbas et al., 2013; Carmeli et al., 2013; Fullwood et al., 2013).

Challenges and factors should be considered in designing such KSS might be different between firms or corporate organisations with semi-formal communities of practice such as an academic group, club or association. Hence, this thesis proposes a model that comprises the three factors (culture, power issues, and GUI) in promoting knowledge sharing among three different types of semi-formal communities of practice.

1.5 Scope of the Research

The main concern of this thesis is on the design level of KSS or knowledge portal for communities of practice. KSS deals with the manipulation of knowledge through creation, combination, and dissemination of knowledge (Karadsheh et al., 2009). This includes the study on the obstacles in promoting knowledge sharing in communities of practice that leads to the proposal of a suitable model. The scope of communities of practice is within three different types of communities that are

professional, demographic, and personal interest. Likewise, measurement of the proposed model on three portals are also within the three types of communities of practice.

1.6 Thesis Outline

This thesis has seven chapters. **Figure 1-1** illustrates how this thesis organises research problem and objectives into corresponding chapters.

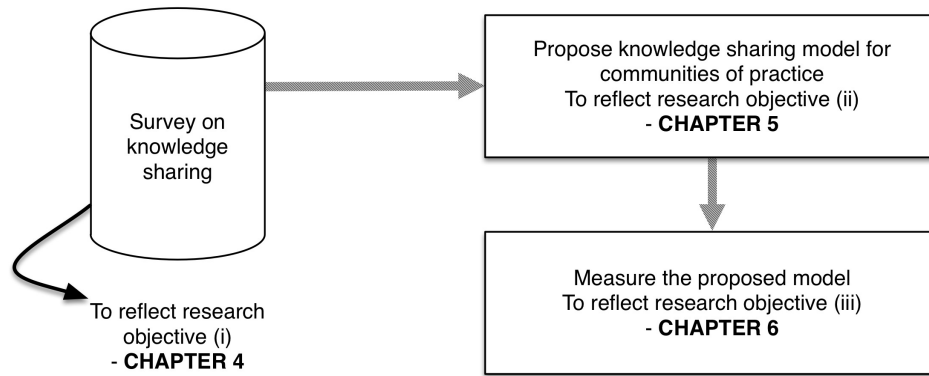


Figure 1-1: Research problem and objectives on corresponding chapters.

Each of the thesis chapters is detailed as follows:

Chapter 2 covers literature review and related work of this thesis. It presents an overview of factors to be considered in designing knowledge sharing model. Processes involved in knowledge management and knowledge sharing are explored in **Section 2.2** and **Section 2.3** respectively. **Section 2.4** lists types of communities of practice and discusses characteristics of members followed by **Section 2.5** on

community tools. Finally, challenges in KSS are discussed in **Section 2.6** and **Section 2.7** reviews existing knowledge sharing models.

Chapter 3 outlines the research methods use in this thesis. Three phases of research workflow and research design are presented in **Section 3.2**. Followed by the descriptions of validity and reliability in **Section 3.3**. Details of construct validity and reliability test are described in **Section 3.3.1** and **Section 3.3.2** respectively.

Chapter 4 reports the preliminary study conducted on birth period prototype and is described in **Section 4.2**. **Section 4.3** presents how the sample size are calculated while **Section 4.4** outlines the survey and the objective of the survey. **Section 4.5** presents the analysis followed by the findings of the study in **Section 4.6**.

Chapter 5 describes the proposed knowledge sharing model. The motivation of the proposed model is discussed in **Section 5.2** followed by the descriptions of the proposed knowledge sharing model in **Section 5.3**. Prototype named Kliquey and how it can be presented in hypothetical communities of practice is presented in **Section 5.4**. **Section 5.5** explore Kliquey known uses or the post-birth prototype and comparison between birth period and post-birth period prototype. Finally, discussion of the proposed model in **Section 5.6**.

Chapter 6 evaluates the proposed knowledge sharing model. **Section 6.2** covers effectiveness of communities of practice as perceived by its members. Case studies through observation of knowledge sharing activities are presented in **Section 6.3**. The discussion on the implication of the evaluation is discussed in **Section 6.4**.

Chapter 7 revisits objectives of this thesis and summarises contributions of this thesis in **Section 7.2**. Finally, possible future works are discussed in **Section 7.3**.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

According to Kahn and Adams (2000) there are distinction between data, information, and knowledge. Data are sets of facts while information is classified and reviewed facts. Knowledge is the byproduct of the combination between information, context, and consideration. **Figure 2-1** illustrates the relationship between data, information, and knowledge as explained by Kahn and Adams (2000) and Karadsheh et al. (2009).

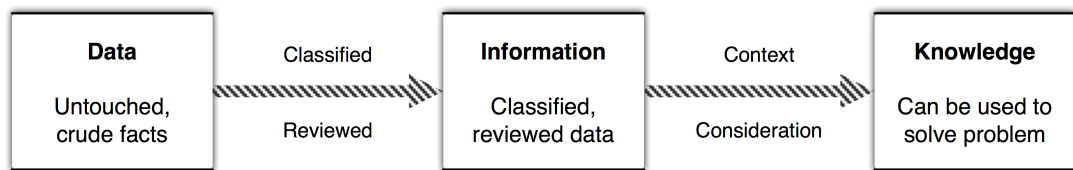


Figure 2-1. Relationship between data, information, and knowledge (Kahn and Adams, 2000; Karadsheh et al., 2009).

In KSS such as a knowledge portal, the resources being shared could be of type data, information or knowledge. By determining the types of resources to be shared in KSS, the flow of resources can be identified and fully utilised to promote sharing of knowledge among communities of practice members.

2.2 Knowledge Management

Newman and Conrad (2000) described *knowledge management (KM)* as a discipline that support and retain knowledge assets of individuals and organisation. In addition, knowledge sharing concerns with the handling and distribution of knowledge (Karadsheh et al., 2009). Consequently, *General Knowledge Model (GKM)* concerns with the flow of knowledge in KM. **Figure 2-2** illustrates knowledge flow for GKM (Newman and Conrad, 2000) which involves four main activities that are creation, transfer, utilisation, and retention.

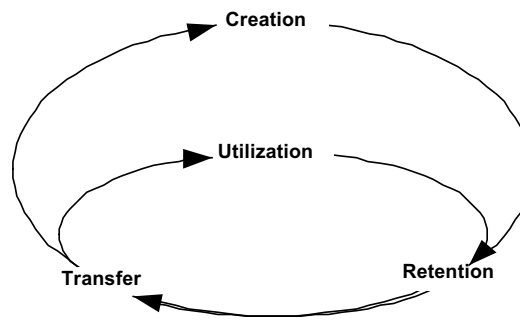


Figure 2-2: The General Knowledge Model (Newman and Conrad, 2000).

Figure 2-3 demonstrates processes associated with KM as proposed by Karadsheh et al. (2009). The processes include knowledge infrastructure, knowledge repository, and knowledge sharing. Knowledge portal can be used as a knowledge repository to store knowledge and at the same time shares knowledge among communities of practice members. Hence, KSS such as a knowledge portal helps to facilitate KM.

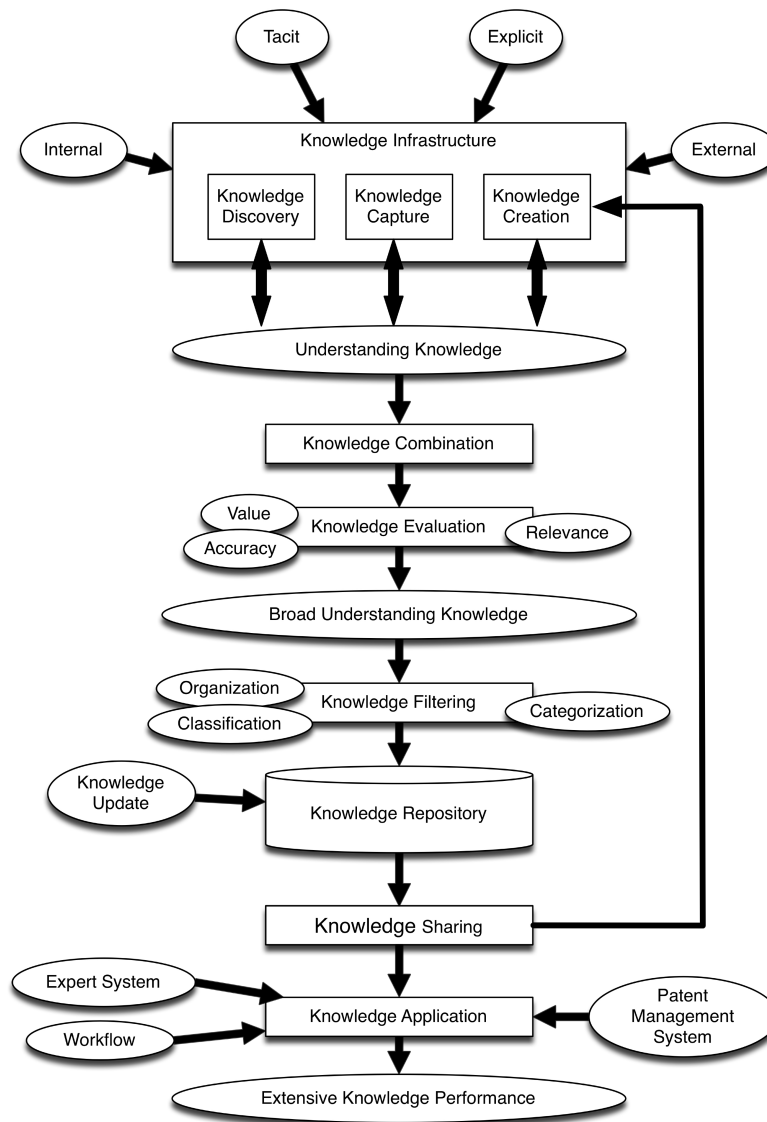


Figure 2-3: Conceptual framework for knowledge management process (Karadsheh et al., 2009)

Knowledge infrastructure concerns with knowledge discovery, capture, and creation. It depends on the process of extracting internal or external knowledge in an organisation. Internal and external knowledge can be in tacit or explicit form. **Figure 2-4** shows four modes of knowledge conversion which includes socialisation, externalisation, combination, and internalisation also known as SECI (Nonaka and

Takeuchi, 1995). The letter *i*, *g*, and *o* in **Figure 2-4** represents individual, group, and organisation respectively.

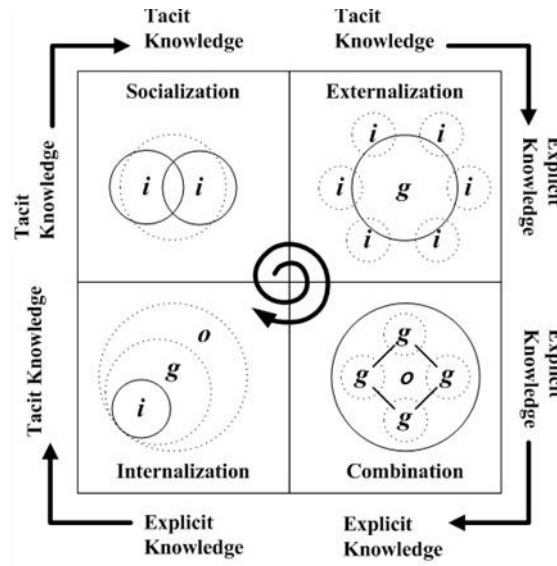


Figure 2-4: Four modes of knowledge conversion (Nonaka and Takeuchi, 1995).

Socialisation is combination of tacit knowledge and tacit knowledge. Externalisation converts tacit knowledge into explicit knowledge. Combination combines explicit knowledge with explicit knowledge that leads to internalisation that convert explicit knowledge into tacit knowledge. Hence, this whole process contributes to knowledge discovery, capture, and creation in knowledge management (Sage and Small, 2000). This also leads to the need of knowledge sharing once knowledge is created.

2.3 Knowledge Sharing

Based on **Figure 2-3**, knowledge sharing can also be referred as a knowledge repository. KSS is an enabler to capture knowledge repository as a knowledge base. According to Niwa (1990), knowledge sharing perceived knowledge supplier as the

same set of system users who use the knowledge base. On the other hand, KSS deals with the manipulation of knowledge through creation, combination, and dissemination of knowledge (Karadsheh et al., 2009). From both definition, this thesis deduces that KSS such as a knowledge portal provides a medium for interaction among its users by exchanging knowledge and information among them.

According to Bo and Zhao (2007), there are three elements in KSS, which are: knowledge sharing main body, object, and means. Knowledge sharing main body refers to communities of practice in KSS, and knowledge sharing object concerns with resources being shared in KSS. While knowledge sharing means involves the medium uses as KSS or knowledge portal as uses in this thesis. Xin and Baoguo (2010) suggested the three elements should be integrated as shown in **Figure 2-5**.

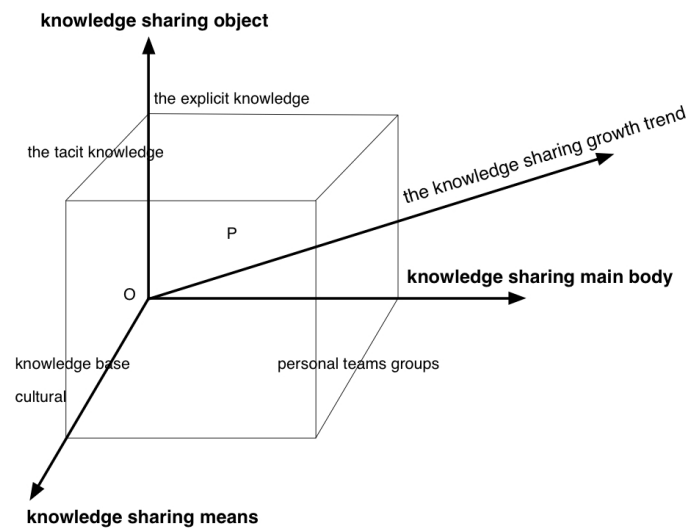


Figure 2-5: 3D map of knowledge sharing system (Xin and Baoguo, 2010).

KSS often associated with virtual communities, e-community, k-community or social network (Fengjie et al., 2004; Huang et al., 2005; Schulz and Klugmann, 2005; Hall

and Goody, 2007; Hsu et al., 2007; Yang et al., 2007; Ming et al., 2008; Wang and Noe, 2010; Fullwood et al., 2013). The similarity of all systems is the exchange of knowledge using Internet as a platform. Thus, a website or portal is use for such community.

2.4 Communities of Practice

According to Adler and Christopher (1999), there are three types of communities of practice or *virtual community*, namely demographic, professional, and personal interest. Similarly, Burstein *et al.* (2008) classify virtual communities of practice into three categories that are: avocational, professional, and organisational. On the other hand, Kondratova and Goldfarb (2004) categorized communities into four types; business, government and organisational, professional, and social. Communities in business, government, and organisational categories are usually tied to bureaucracy.

This thesis focuses on communities other than the corporate organisation, hence will be using Adler and Christopher (1999) three types of communities. The example of characteristics of each type of community and example of portal is shown in **Table 2-1**. Another example of a professional community is *Special Interest Group (SIG)*. SIG aims to promote knowledge exchanged among its members on specific technical field of interest (Durrani, 2004). SIG normally refers to research group such as those in Association for Computer Machinery (ACM, 2013).

Table 2-1: Example of characteristic and portal based on type.

Type	Example of Characteristic	Example of Portal
Demographic	<ul style="list-style-type: none"> • Women • Autism 	<ul style="list-style-type: none"> • iVillage (2013) • Wrong Planet (2013)
Professional	<ul style="list-style-type: none"> • Researcher • Professional 	<ul style="list-style-type: none"> • ResearchGate (2013) • LinkedIn (2013)
Personal Interest	<ul style="list-style-type: none"> • Body building • Fashion 	<ul style="list-style-type: none"> • BodyBuilding.com (2013) • Chictopia (2013)

Hu et al. (2009) defined three layers of clique in KSS, they are core, primary circle, and secondary circle. Core members are active members who frequently communicate with each other whereas primary circle are members who occasionally contribute or communicate in communities of practice. On the other hand, secondary circle are members who rarely participate in any conversation. Likewise, there are three known characteristics of members in KSS; they are active members, mentors, and lurkers. Different characteristics contribute differently to the growth of knowledge sharing. Active members are members who contribute and participate to activities in KSS (Castro, 2006a). Similar to active members, mentors also contribute actively to activities in KSS. However, mentors are usually KSS administrators or are paid to contribute to activities in KSS. Mentors are essential during the beginning of knowledge sharing initiative as they will nurture knowledge sharing culture among the members (Hall, 2001).

Research on knowledge sharing in corporate organisational environment shows there is a correlation between leadership and knowledge sharing culture (von Krogh et al., 2011; Carmeli et al., 2013). Leaders refer to an employee who holds a managerial position in an organisation. Carmeli et al. (2013) proves that leaders' active involvement in knowledge sharing inspire and influence knowledge sharing culture.

Mentors or administrator acts similarly in communities of practice environment as organisations' leaders in the growth of knowledge creation in knowledge sharing.

Despite the effort to nurture knowledge sharing culture, inactive members are inevitable. Inactive members are members who stop participating in KSS activities for a certain period (Castro, 2006a). Yang et al. (2008) defines a social phenomenon called lurkers or halo as used by Gibbs et al. (2012), lurkers or halo are members who rarely participate in activities in e-community. Preece et al. (2004) list five reasons why lurkers exist in KSS or knowledge portals, which are: shy about posting, want to remain anonymous, wrong group, fear of being treated poorly or poor quality of interaction.

It is reported that the amount of lurkers varies from fifty to ninety percent (Rafaeli et al., 2004) . The work shows that familiarity and persistent involvement in KSS might be the cause of lurking, but it will eventually contribute to active participation. The disadvantage to this is that, with the increasing number of participation, it may lead to information overloading in which the phenomena will increase the number of passive participant or lurkers. Lurkers should not be seen as a threat as different types of communities of practice (demographic, professional, and personal interest) have different focus and need, thus have a different way of interactions.

2.5 Community Tools

According to Wenger et al. (2005), there are five types of community tools, which are: asynchronous interactions, synchronous interactions, publishing, individual participation, and community cultivation as shown in **Figure 2-6**.

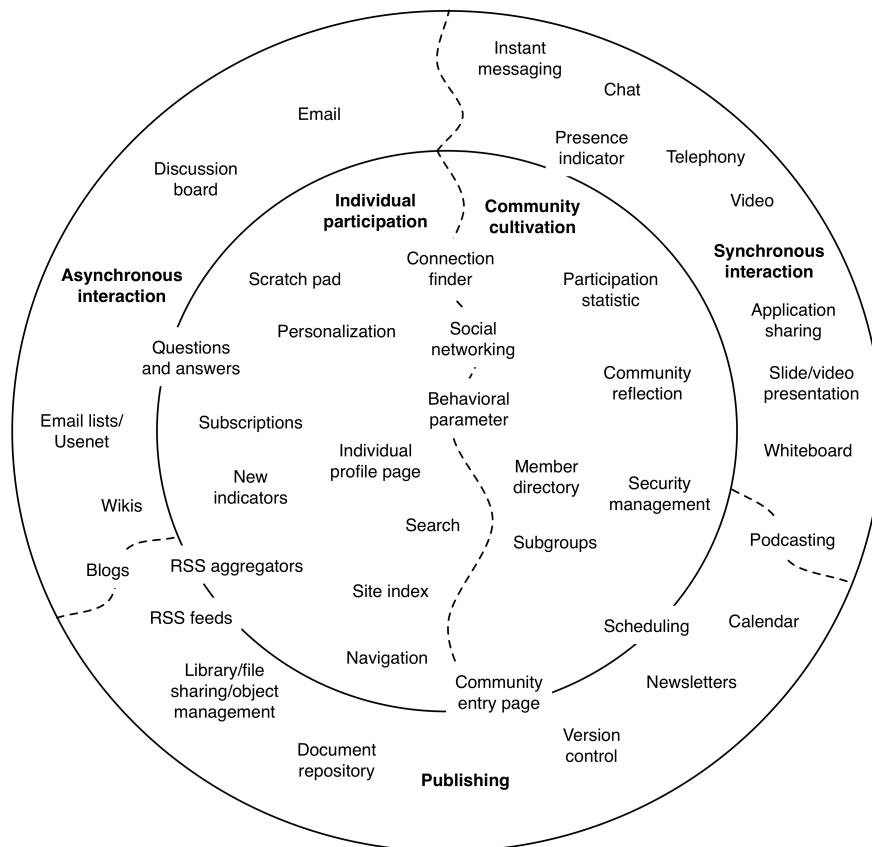


Figure 2-6: Community tools (Wenger et al., 2005).

From the example of e-community based on types as listed in **Table 2-1**, **Table 2-2** matches the features of each community of practice with the community tools as compiled by Wenger et al. (2005) in **Figure 2-6**. As shown in **Table 2-2**, there are five overlapping features between three types of communities of practice. Bold text are used in **Table 2-2** to show similar community tools amongst example of portals.

It can be said that the main community tools across all types of community are email, community entry page, discussion board, individual profile page, and search.

Table 2-2: Communities of features based on type.

Type	Example of Portal	Features
Demographic	iVillage (2013)	<ul style="list-style-type: none"> • Community entry page • Discussion board • Email • Individual profile page
	Wrong Planet (2013)	<ul style="list-style-type: none"> • Navigation • Personalization • Search • Site index • Subscription • Wikis • Email • Individual profile page • Search • Wikis
Professional	ResearchGate (2013)	<ul style="list-style-type: none"> • Blogs • Community entry page • Discussion board • Document repository
	LinkedIn (2013)	<ul style="list-style-type: none"> • Email • Individual profile page • Search • Subgroups • Application sharing • Blogs • Community entry page • Discussion board
Personal Interest	BodyBuilding.com (2013)	<ul style="list-style-type: none"> • Email • Individual profile page • Search • Site index • Subscription • Wikis • Application sharing • Calendar • Community entry page • Discussion board
	Chictopia (2013)	<ul style="list-style-type: none"> • Community entry page • Discussion board • Email • Individual profile page • Member directory • Presence indicator • Search • Site index

2.6 Knowledge Sharing Challenges

As mentioned in **Chapter 1**, Staab (2002) defines knowledge portal as a portal or website that handles and allows distribution of knowledge to its users. Therefore, knowledge portal is an example of KSS or knowledge sharing means. With the growing number of KSS or knowledge portals, challenges in KSS are inevitable. Based on previous researches on knowledge sharing challenges, this thesis classified challenges in knowledge sharing into three factors, which are: culture, power issues, and GUI.

Some knowledge sharing practitioners claim culture as the main obstacle in promoting knowledge sharing (Gillies, 2005; Yujong and Kim, 2007; Chow and Chan, 2008; Ming et al., 2008; Chaoxian and Mengjun, 2009; Jeon et al., 2011). Gillies (2005) describes KM initiative as a pet that needs to be nurtured so that it can develop and grow, and there are two phases of KSS, namely birth and after birth period. For each period, there are different obstacles. Thus, there are two sets of barriers to the KM initiative for each phase. The birth period is the period to nurture the culture of sharing knowledge whilst the after birth is the period to maintain and expand the growth of the KM initiative. Chow and Chan (2008) concluded that shared goal among the members will promote knowledge sharing culture among e-community tremendously, but social trust does not promote knowledge sharing culture. In other word, group cohesion among e-community will promote knowledge sharing culture in KSS (Ming et al., 2008). Furthermore, self-efficacy and reward mechanism played an important role in encouraging knowledge sharing culture (Hsu

et al., 2007; Jeon et al., 2011). On the other hand, Huang et al. (2008) investigate the possibility of localise cultural barrier in knowledge sharing. While Keng et al. (2010) deduced that the native language used by users has influence in knowledge sharing, and language barrier should be taken in consideration when forming policies. Having said that, policies related to power issues in knowledge sharing.

In addition, some knowledge practitioners agreed that knowledge sharing culture can be nurtured through power issues (Ruppel and Harrington, 2001; Schulz and Klugmann, 2005; Hall and Goody, 2007; Søndergaard et al., 2007; Huang et al., 2008; Keng et al., 2010; Wang and Noe, 2010; Abbas et al., 2013; Carmeli et al., 2013; Herne et al., 2013). Leadership together with mentor-participants' relationship helps shape knowledge sharing culture among members in addition to incentive (Schulz and Klugmann, 2005; Wang and Noe, 2010; Herne et al., 2013). According to Søndergaard et al. (2007), higher trust among members correlates to higher chances of sharing of knowledge.

According to Ong et al. (2005), the real obstacle to a successful knowledge sharing is not due to culture but power issues and organisational politics. Power issues rooted from the major concerns of the users about loss of power and influences (Ong et al., 2005; Liu, 2008; Gagné, 2009). Other than that, trust plays an important role in the success of knowledge sharing initiative (Lin, 2007; Lin, 2008; Lee et al., 2009). There is also the issue of intellectual properties and privacy rights that make users holding back from sharing their knowledge (Baskerville and Dulipovici, 2006; Wei and Yifang, 2009; Carmeli et al., 2013). Hall (2001) proposes an enabling factor to motivate knowledge sharing through an informative user interface. By integrating

both input-friendliness and output-friendliness, users are more willing to share their knowledge. This can be done by creating a two-way communication between the users and the system through recommendation and personalization (Du and Chen, 2007). Personalization works by mining user interest and behaviors in the portal to create a recommendation based on users' interest (Wu et al., 2001; Althoff et al., 2005).

Figure 2-7 sum up the main factors in knowledge sharing initiatives. There are three main factors that are: culture, power issues, and GUI. Culture have five sub-factors comprises of self-efficacy, shared goal, group cohesion, reward or incentive mechanism, and language or cultural barrier. For power issues, there are six sub-factors with organisational politics, intellectual property, privacy rights, trust issues, policy, and leadership. Finally, there are two sub-factors for GUI, an informative interface and two-way communication through recommendation and personalisation. Correlations between sub-factors in power issues and culture can be identified by the direction of the dotted arrows as shown in **Figure 2-7**. According to Keng et al. (2010), cultural factors such as language barrier should be considered when forming policies as native language used by the members may influence knowledge sharing activities. Furthermore, some knowledge sharing practitioner believed that knowledge sharing culture could be nurtured through power issues. As such, leadership through mentor-participant helps nurture knowledge sharing culture among communities of practices' members (Schulz and Klugmann, 2005; Wang and Noe, 2010; Herne et al., 2013).

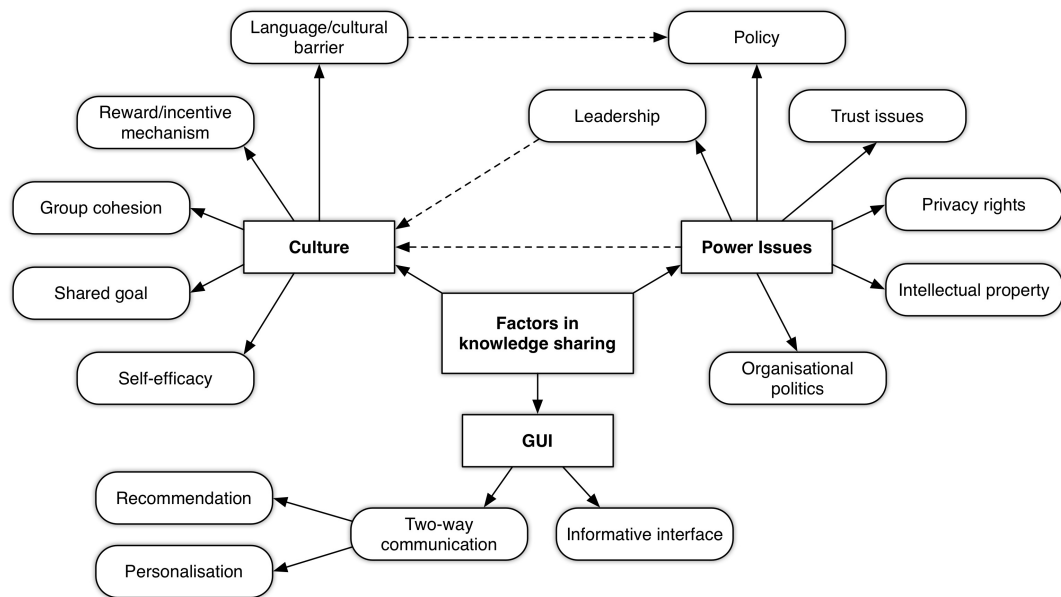


Figure 2-7: Factors in knowledge sharing.

Table 2-3 categorised knowledge sharing challenges from previous researchers as discussed by environment and factors. As seen in **Table 2-3**, much of the research related to knowledge sharing challenges or obstacles has focused on formal organisation. Out of thirty-three previous researches, only nine research discussed knowledge sharing obstacles in semi-formal organisational settings. Furthermore, none of the previous researches address the three main factors simultaneously. Therefore, this thesis addresses a gap in the research involving knowledge sharing challenges and obstacles in semi-formal organisational settings. For the most part, the existing research examined knowledge sharing challenges and obstacles in formal organisational settings with the exception of a few (Huang et al., 2005; Hsu et al., 2007; Yujong and Kim, 2007; Ming et al., 2008), and did not explicitly address the three main obstacles that are cultural, power issues, and GUI.

Table 2-3: Factors in knowledge sharing challenges.

Author (Year)	Environment		Culture					Power issues					GUI		
	Formal organisation	Semi-formal organisation	Self-efficacy	Shared goal	Group cohesion	Reward	Language / cultural	Leadership	Policy	Trust issues	Privacy rights	Intellectual property	Organisation politic	Informative interface	Two-way communication
Abbas et al. (2013)	x			x		x				x					
Carmeli et al. (2013)	x							x				x			
Fullwood et al. (2013)	x					x		x							
Herne et al. (2013)		x						x							
Jeon et al. (2011)	x		x			x									
von Krogh et al. (2011)	x							x							
Keng et al. (2010)		x					x		x						
Wang and Noe (2010)	x		x	x		x	x	x		x					
Chaoxian and Mengjun (2009)	x					x									
Gagné (2009)	x		x	x		x		x							
Lee et al. (2009)	x									x					
Wei and Yifang (2009)	x	x										x			
Chow and Chan (2008)	x			x											
Huang et al. (2008)	x					x	x			x					
Lin (2008)	x									x			x		
Liu (2008)	x									x			x		
Ming et al. (2008)		x			x										
Du and Chen (2007)	x	x												x	x
Hall and Goody (2007)	x								x				x		
Hsu et al. (2007)		x	x		x	x				x					
Lin (2007)	x								x	x			x		
Søndergaard et al. (2007)	x			x		x		x		x					
Yujong and Kim (2007)		x			x	x									
Baskerville and Dulipovici (2006)	x										x	x			
Althoff et al. (2005)	x														x
Gillies (2005)	x		x	x	x										
Huang et al. (2005)		x	x							x					
Ong et al. (2005)	x							x					x		
Schulz and Klugmann (2005)	x					x		x							
Hall (2001)	x			x	x	x		x							
Ruppel and Harrington (2001)	x					x		x	x	x					
Wu et al. (2001)	x	x												x	