Online Knowledge Sharing in Institutes of Higher Learning: A Malaysian Perspective

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ABSTRACT:

The process of knowledge sharing plays a significant role in determining the outcomes of knowledge management in institutions. Electronic communication tools are not specifically considered as repository within knowledge management but are regarded as collaborative tools. For the purpose of improving the results of knowledge sharing through e-communication tools, institutes must understand the mechanisms related to user's decisions to share knowledge virtually. This study discusses existing researches and develops a theoretical model of factors that influence online knowledge sharing in institutes of higher learning from lecturer's viewpoint in Malaysia. The aim is to investigate the relationship between influencing factors and online knowledge sharing and improve them for getting better results in academic environments. A questionnaire was designed and distributed through email; the survey was conducted to collect data for this study and multiple regression analysis was chose to analyze the data.

Keywords: *Knowledge management*, O*nline knowledge sharing, Institute of higher learning, Malaysia.*

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1. Introduction

Knowledge is extensively considered as a critical institutional resource (Stewart, 1997; Sveiby, 1997; Davenport & Prusak, 1998). It is difficult to maximize the value of this resource without adequate investigating and identification of influencing factors on virtual knowledge sharing, which need to understand the knowledge sharing procedure throughout the academic institutions. This study searches to improve this understanding by arguing the process of knowledge sharing through knowledge management (KM) concept.

The identified factors from reviewing of previous studies include the university structure and culture, technical aspect, sense of community, rewards motivation, attitude, security problems, intention to share knowledge, trust, lecturer's computer skill, benefit and anonymity. These influencing factors are functionally identified and are indicated as a theoretical model. Base work is to follow up research that will test and analysis this presented model.

2. Improvement In Knowledge Management

Knowledge management (KM) can be described as “an organization’s ability to gather, organize, share and analyze the knowledge of individuals and groups across the institution in ways that directly impact performance” (Ramanujan & Kesh, 2004). Efficient knowledge management is made up providing accurate information to the right people exactly when they require. Sustainable competitive advantage in a hyper competitive field depends on the effective utilization of available knowledge (Luo, 2009).

2.1. Knowledge

For many years, researchers beings have deliberated the meaning of knowledge. Even today there is no consensus on the term of “knowledge”. Knowledge means different things to different people in different research domain (Soule, 2003). The information science literature often starts defining "knowledge" by differentiating "data", "information" and "knowledge" (Alavi & Leidner, 2001). Nonaka and Takeuchi (1995) define knowledge as "a dynamic human process of justifying personal belief toward the truth". According to Nonaka and Takeuchi, knowledge is a process in which individuals create knowledge through social interaction.

According to Davenport and Prusak (1998), there are many studies on identifying characteristics of knowledge, and various ways to categorize knowledge. Among these different studies, the most popular division is putting knowledge into two categories, explicit and tacit knowledge. Polanyi (1966) was the first to introduce these concepts then further explained by Nonaka and Takeuchi (1995). According to these scholars, explicit knowledge can be articulated and codified into words, numbers, specifications, facts, rules, and policies that can be faithfully codified in paper or electronic form and shared without need for discussion while tacit knowledge is often in the head of people and thus difficult to share verbally. Knowledge is the foundation of a lecturer’s competitive advantage and, ultimately, the primary driver of its value (Luo, 2009). Much of the expertise is made explicit by capturing and coding knowledge using software, hardware and descriptive processes. However, Ramanujan and Kesh assert that tacit knowledge can only be exploited by effective communication and share (Ramanuj & Kesh, 2004). According to Lim and Klobas (2000), the interest in KM has grown with the sophistication of technology for sharing knowledge.

Since knowledge is socially constructed, contextual and situated within different environments, it is important to identify what is considered as knowledge within a specific context in order to study knowledge sharing (Ipe, 2003a; Ipe, 2003b; Marouf, 2005). This study was conducted in a Malaysian corporation; and the knowledge domain is defined in an academic context.

2.2. Knowledge Management And Knowledge Sharing

As early as 1991, intellectual capital was first mentioned in the business press (Stewart, 2001). Sveiby (2001) characterizes the early period of knowledge management in the 1980s as focused on information technology as well as communicating best practices and lessons learned within institutions. In the 1990s, research and discussion focused on information technology and the culture of

organizations as inhibiting or promoting knowledge sharing. From 2000 on, knowledge has been increasingly recognized as a commodity and asset. Much focus has been on retrieval capability and use of stored knowledge.

"Knowledge management" is used to describe a large variety of actions ranging from database management to organizational learning in the business world (Ruggles, 1998). Davenport and Prusak (1998), theorize four processes in knowledge management based on the lifecycle of knowledge within firms, including knowledge generation, knowledge codification, knowledge sharing, and knowledge application. Many researchers have highlighted the essential role played by knowledge sharing because it closely relates to the other processes in the entire knowledge management practice (Ford, 2004). Institutions need to have significant considerations for knowledge sharing in order to achieve effectiveness in knowledge management (King et al, 2002; Shin, 2004). For instance, in the Nonaka and Tacheuchi model (1995), which includes four modes of knowledge conversion ("socialization", "internalization", "combination" and "externalization"), knowledge sharing among individuals plays a critical role (Nonaka, 1994). Currently knowledge sharing is commonly agreed to be the most critical process within knowledge management (Chen, 2004; Davenport & Prusak, 1998).

All economic development procedures like any other significant human activity leads to the achievement of know-how that indicates how those activities are done successfully. It shows know-how that is learnt during the procedure of pursuing the significant human activities, then online knowledge-sharing systems are created for communicating and sharing the know-how that can be captured during those activities (Ahmad & Ewe, 2005). Therefore Knowledge sharing can be a process of exchanging know-how among members of specific communities facilitated by online systems. Contacts with these knowledge-sharing systems are normally done via online connections (Ahmad & Ewe, 2005).

Knowledge sharing and communication among institution members, along with structural and cultural factors, have been emphasized for KM success in communication systems and KM literature (Bock et al*,* 2005; Ko et al, 2005; Wasko & Faraj, 2005). Today's KM environments consist of members located in different part of the world that communicate via collaboration technologies to share knowledge for completion a project. Much of the studies in this domain have been concentrated on the technological aspects of such environments (Hwang & Kim, 2007).

According to Davenport and Prusak, one of the problems of local knowledge is the non-availability of mechanisms to access distant knowledge. Knowledge transfer across space and time raises serious problems due to the "localness of knowledge" (Davenport & Prusak, 1998). The main weakness of traditional association is that it is predominately dependent on infrequent face-to-face communication and thus is not encouraging to stimulating incorporation, especially when parties are located in different part of the world (Cheng et al, 2006). Other than making use of traditional collaboration, an association should place emphasis on electronic collaboration (e-collaboration), which is referred to as collaboration through internet and online systems among a group of associated parties, particularly the use of communication

and collaboration technologies to initiate and assist the sharing of resources especially across the world in order to improve associates' success (Gharavi et al, 2004; Lee-Kelley et al, 2004; Routkowski et al, 2002).

3. Online Systems For Knowledge Sharing

What's really interesting about online technologies is that they haven't changed very much over the past years. These tools have gotten less expensive, more widely available, easier to use, faster and better integrated with one another, and the scope of how these technologies are used has greatly expanded. These tools allow people to interact asynchronous or synchronous, asynchronous tools can be used without people having to be available at the same time, and synchronous tools are used b two or more people at the same time in the purpose of sharing knowledge (Boone, 2001).

Electronic communication tools are applications where information technologies are used to help people coordinate their work with others by sharing information or knowledge (Doll & Deng, 2001). These technologies are critical in KM applications and programs (Alavi & Leidner, 2001; Marwick, 2001; Skyrme, 1998). Different systems are used in e-collaboration and communication (Dasgupta et al, 2002). The concept of e-communication systems is support the exchange of information, knowledge, documents and opinions. Also, the aim of using these tools is holding relationship for sharing information, opinion and knowledge (Cerdan et al, 2008). Electronic collaboration is the purposeful use of networking and collaboration technologies to support lecturers in the creation and sharing knowledge toward joint effect. Higher institutes require mechanisms to harness the diverse and personalized intellectual resources that are distributed across the world. While electronic collaboration and communication technologies have made it possible to harness intellectual resources across space and time (Qureshi & Keen, 2005).

Ideally an E-collaboration tool should support the phases of lecturer's activity, the exchange and processing of appropriate lecturer's information, and their collaboration. Numerous electronic scientific collaboration sites based on a variety of E-collaboration technologies can be found on the Internet. These sites mostly attempt to duplicate scientists' traditional information sharing and co-authoring activities. However, a growing number of other university academic collaboration sites or collaboratories are appearing on the net. These sites go beyond the attempt to duplicate scientists' traditional information sharing and co-authoring activities. Moreover, these provide a space for scientists to conduct collaborative research (Ahmed, 2009).

A common impression in science fiction is that of the mad scientist working alone, but this idea is far from the everyday reality of most scientists and may be the most fictionalized view of some science fiction stories. In actuality, one of the most striking facts about successful science is that it collaborates by virtue of communities of practice (Lynch & Woolgar, 1990). These communities are maintained by communication through expert societies, research institutes, graduate student development, the linking of research with academic courses, journals, electronic networks and databases, team research, inter-disciplinary research and other institutional and technological systems (Bruce & Easley, 2000).

4. Factors Affecting Online Knowledge Sharing And Hypotheses

In order to fully comprehend and enhance the process of knowledge sharing among university lecturers, the influencing factors need to be identified and investigated. There are some technical, behavioral and cultural factors that other researchers found them as critical factors for sharing knowledge through electronic systems. According to Sharratt and Usoro, the influencing factors in this process are institutional structure, technical infrastructure of these e-collaboration tools, trust, career advancement and sense of community. In order to be successful in knowledge sharing, institutions must be organized to be highly flexible and responsive (Chung, 2001). Researchers found that the technical infrastructure is greatly dependent on the value of the content it holds (Hall, 2001). In the context of online communication a critical mass of activity is required to attract others (Preece, 2000). Also, knowledge quality has been shown to indirectly affect participation in online communication (Yoo et al, 2002). In online communication, an additional factor that is likely to influence the perceived usefulness of the system is the perception of the knowledge of a participated member.

By integrating the recent research results, this part implies the theoretical groundwork for the development of some hypotheses to explore the relationship between online knowledge sharing and a number of influencing factors in academic domain.

4.1. Institution Structure And Culture

The culture and structure of institutions can directly affect the process of knowledge sharing among members. In order to be successful in sharing knowledge, institutions must be structured to be highly flexible and responsive (Chung, 2001). Organizational culture is very frequently mentioned as a supporting factor for knowledge sharing (McDermott & O'Dell, 2001; Goh, 2002). De Long and Fahey (2000) suggested multiple ways in which culture affects the behavioral fundamental to knowledge management (KM) activities such as knowledge creation and knowledge sharing. Supportive and collaborative institutional culture plays an important requirement to improve a tendency for knowledge sharing (Goh, 2002; Yang & Chen, 2007). Hence, the effectiveness of institutional culture is identified to be as a critical potential affecting an organization's success in knowledge sharing (Yang & Wan, 2004; Yang & Chen, 2007).

Also, the organizational structure is repeatedly mentioned as the solution for issues from intra-institutional knowledge sharing process (Goh, 2002; Gopalakrishnan & Santoro, 2004). Usually two structural aspects are released in organizational activities. Firstly, a proper motivator and rewards system could enhance the incentive needed for knowledge sharing (Davenport & Prusak, 1998; Hall, 2001). Secondly, political directives and effective rules in organization apply the forces needed for the purpose of inspiring member's motivations to share knowledge (Syed-Ikhsan & Rowland, 2004; Yang & Chen, 2007).

Synthesizing the findings of several studies lead to development of following statement:

H1: The structure and culture of institution will strongly affect the process of online knowledge sharing of members.

4.2. Technical Aspects

Technical aspects such as "ease of use" are among other influencing factors that are examined in this study. The parameter of "ease of use" can be defined as the members believe in the system and how much they trust that using the noted systems is free from effort (Davis, 1989). E-communication tools are identified as enablers when an institution applies a knowledge management (KM) program, these systems have both direct and indirect influences on knowledge sharing procedures (Hendriks, 1999; Lee & Suliman, 2002; Yang & Chen, 2007), such as saving costs by eliminating distance and time barriers and providing quicker solutions for sharing knowledge and ideas (Albino et al, 2004).

Collaborative workings can be facilitated by information technologies that enable the knowledge sharing procedure (Sharratt & Usoro, 2003; Chung, 2001). One of important aspects of collaborative systems use has been related to the motivation to act, which means the action or working with these systems must not be difficult to undertake (Hall, 2001). In the virtual community context, a critical collection of activities is required for better understanding the perception of the usefulness of the knowledge sharing systems (Sharratt & Usoro, 2003; Preece, 2000). Hence the following hypothesis can be derived:

H2: The greater the technical aspects such as "ease of use" of online systems, the more favorable online knowledge sharing will be.

4.3. Sense of Community

Sense of community can be considered as another important factor affecting the virtual knowledge sharing process and can be defined as the sense of belongingness in a community that a member feels and a shared confidence in how much they matter to each other and that their needs are met through commitment to each other (Yoo et al, 2002; McMillan & Chavis, 1986). Sense of community causes a common perception of knowledge that is possessed and preserved by the community (Wasko & Faraj, 2000). Moral responsibility motivates a knowledge sharing process that results in a deeper sense of satisfaction comparing to when the extrinsic factors are as a motivator. Also, a strong sense of community leads to more recognition on knowledge sharing that causes feelings of intrinsic satisfaction (Sharratt & Usoro, 2003). Hence,

H3: Stronger SoC, will lead to greater participation in online knowledge sharing.

4.4. Rewards Motivation

In order to share knowledge effectively, individuals need to be motivated toward it, because knowledge resides among individuals (Sharratt & Usoro, 2003). It has been discussed that the appropriate incentives and motivators will likely affect the behavior and intention of members in knowledge sharing (Chung, 2001). Also, there is much argument for finding the ingredients of the most effective and appropriate incentive to

motivate members to share knowledge activity (Brown & Duguid 2000; Chung 2001). Extrinsic and intrinsic rewards can also motivate members to participate in active knowledge sharing. Extrinsic motivations such as financial rewards are as a method of motivating knowledge sharing, but findings show that extrinsic rewards can provide temporary fulfillment. According to Wasko and Faraj (2000), incentives based on extrinsic rewards, will quickly turn ethical obligation into acts of self-interest, and could destroy the knowledge sharing process in a community. Certainty, if the knowledge sharing procedure is not rewarding and celebrating, and supported by the organization culture, therefore artificial motivators will not much affect (Sharratt & Usoro, 2003; O'Dell & Grayson, 1998). According to Herzberg (2003), external motivators such as monetary rewards may avoid de-motivation but have small influence on sustaining the incentive of members. On the other hand, those factors that motivate intrinsically such as recognition and reputation have greater influence on a member's motivation (Ardichvili et al, 2003; Osterloh & Frey, 2000). Therefore:

H4: Rewards motivation such as financial rewards and recognition will have a great influence on knowledge sharing process.

4.5. Attitude

Attitude toward knowledge sharing is considered to be as the preliminary concept of behavioral intention to share knowledge. An individual's positive or negative viewpoint regarding a particular belief about performing a certain behavior is defined as attitude (Ajzen & Fishbein, 1980).

People are more likely to share their knowledge, as the result of a personal attitude because sharing of what they own makes them feel needed and appreciated by others. Sharing knowledge is part of a human's identity and as an attitude helps their self-confidence because sharing knowledge gives them a sense of competence, power or control of their environment (Staples & Jarvenpaa, 2000; Constant et al, 1994). One's tendency to share knowledge as a pro-social attitude influences knowledge sharing behavior, this pro-social attitude captures the common tendency of member's desire for right results not only for themselves but also for other members of community (Staples & Jarvenpaa, 2000).

H5: The personal attitude will positively affect the online knowledge sharing process.

4.6. Security Problems

According to Ardivichi, Page and Wentling (2003), security and confidentiality issue is one of the important sets of issues for virtual knowledge sharing that may negatively influence the knowledge sharing process through online systems and lead to self-imposed censorship. Some members solve the security issue by employing old techniques of sharing knowledge such as giving information over the telephone rather than sharing through online technologies.

H6: Security problems could strongly agitate the process of knowledge sharing through online systems.

4.7. Intention to Share Knowledge

The intention to engage in knowledge sharing behaviors is identified by member's attitude toward that particular behavior of sharing knowledge (Ajzen & Fishbein, 1980). Intention to share knowledge is assumed to capture the motivational factors that affect the behavior of sharing knowledge (Ajzen, 1991); It shows that how hard members are willing to share knowledge through online systems, of how much of an attempt they are planning to apply in order to share knowledge virtually.

H7: Online knowledge sharing will be controlled significantly by the people's intentions.

4.8. Trust

Trust can be defined as the degree to which members believe that there is honesty and reliability in a community (Mayer et al, 1995). Trust facilitates communication and collaboration among members of a community (Fukuyama, 1995). Trust improves the level of participation or sharing knowledge in virtual communities (Andrews et al, 2002; Ridings et al, 2002). With high level of trust among members of community, people are more willing to engage in collaborative transactions (Nahapiet & Ghoshal, 1998). Trust is considered as a key factor of organizational value creation through online collaborations (Gefen & Straub, 2004; Gefen et al, 2003; Chang et al, 2005). The relationship among trust and collaborative systems are quite important, because these online systems can change the context of human relationships (Jarvenpaa et al, 2004). According to Powell et al (2004), virtual communities with high level of trust have better social collaboration, willingness toward knowledge sharing and significant and timely feedback about other member's performance. Then,

H8: High level of trust within virtual communities will encourage participators to have greater knowledge sharing through online systems.

4.9. Member's Technology Skill

In order for the efficiency of operating the online knowledge systems to be at a high level, the first aspect is that the users should be able to use these tools easily. If the users lack the sufficient skills to operate the systems, even if that technology is perfectly designed to be proficient, effective and highly productive, that system would indeed be worthless, despite all the efforts and budget wasted to set it up. In order to avoid such misfortunes, institutions try to organize training sessions for the members. In fact findings show that reliable training sessions among all team members can improve team performance (Kaiser et al, 2000; Van-Ryssen & Godar, 2000). Actually, virtual team members are categorized by their divers technology skills. Members may encounter conflicts when they are unable to resolve differences and might trade off for the using of a particular skill during working with specific technology for task completion (Powell et al, 2004). Therefore:

H9: Member's technology skills will impact knowledge sharing through online communities.

4.10. Benefit

The value of collaboration and communication technologies for knowledge sharing depends on the capability of members to contribute to institutions in finding solutions to their problems. The benefit of these mentioned systems for knowledge sharing can be explored in: cost reduction, time saving, improved decision making, improved organization efficiency and other technological benefits such as saving money etc (Gichoya, 2005). Therefore:

H10: The perception of getting benefit from using online systems will influence on online knowledge sharing process.

5. Conceptual Model

A theoretical model is designed and presented in Figure 1. This states and sketches together the research schemes.

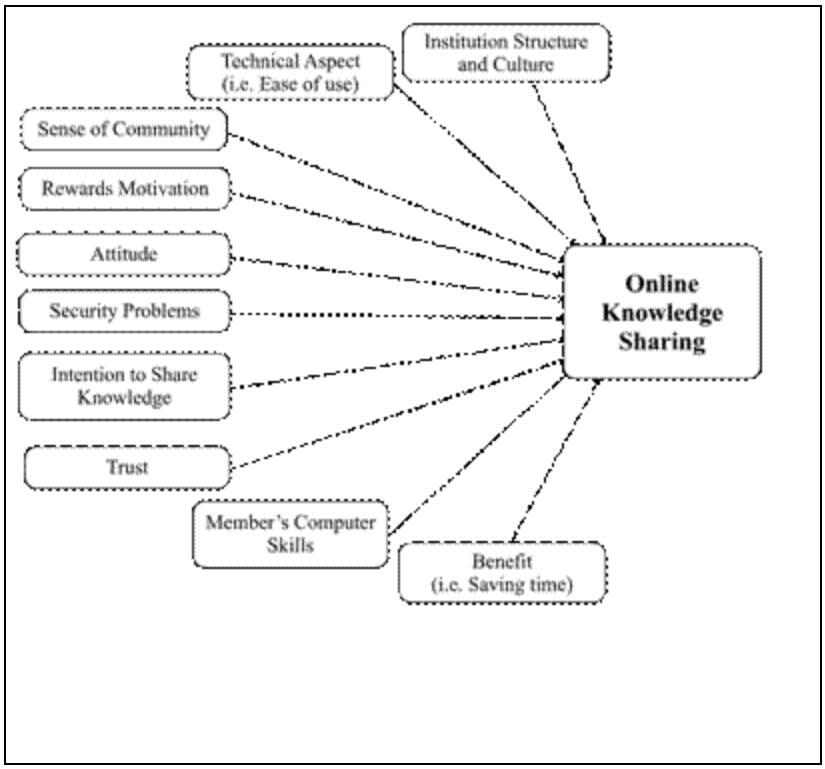


Figure 1: Conceptual Model For Influencing Factors On Online Knowledge Sharing

6. Methodology

6.1. Measurement Development

Most of measurement items were adopted from previous studies and a few items were adjusted based on the concepts provided by literature. A pretest of questionnaire was

performed using 3 experts in the KM area to review its logical reliability and validity, contextual relevance, arrangement of items and ease of comprehension of statements. The feedbacks from these experts led to quite a few minor revisions. Also, an online pilot study was conducted involving one professor, twelve lecturers and twelve assistant lecturers who have been using various professional online systems for their everyday academic tasks to examine the semantic content of the questionnaire. Then, reliability of questions were assessed according to their comments on the questionnaire content and structure.

The independent variables in this study are influencing factors of knowledge sharing, which are measured to examine the dependent variable of the study (online knowledge sharing).

Online knowledge sharing was assessed with items that were adopted from Wangpipatwong (2009), these items were used to measure the attributes of the content of shared knowledge through online tools. Items for measuring attitude and intention to share knowledge factors were taken from Bock et al (2005). Similar technical aspect questions were applied by Hsu and Lin (2008); Sharrat and Usoro (2003); Gichoya (2005). Organizational structure and culture was assessed with items based on Yang and Chen (2007); Tan et al (2010). Rewards motivation and trust were measured with items based on Sharratt and Usoro (2003); Tan *et al,* (2010). Sense of community was assessed with items based on research of Sharrat and Usoro (2003). Items used for assessing the benefit factor was measured based on research of Gichoya (2005). For all the measured items a five-point Likert scale was used with the definitions of 1 = completely disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree and 5 = completely agree.

6.2. Sample

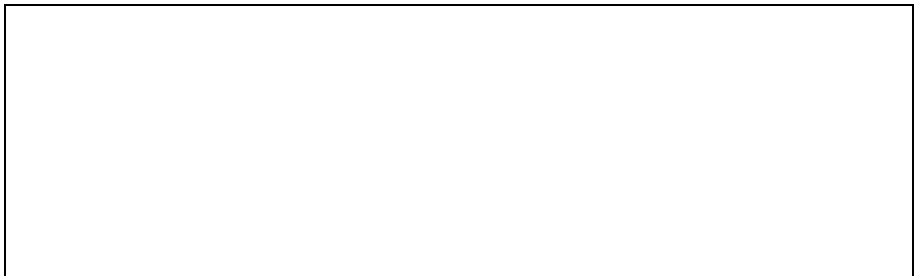
The sample was designed to include all lecturers of Multimedia University Malaysia, Cyberjaya campus from different position and departments. The survey was conducted over a period of two months and the results ended up with 100 respondents from 400 questionnaires sent, giving a response rate of 25%. The results were coded by using the SPSS for mac.

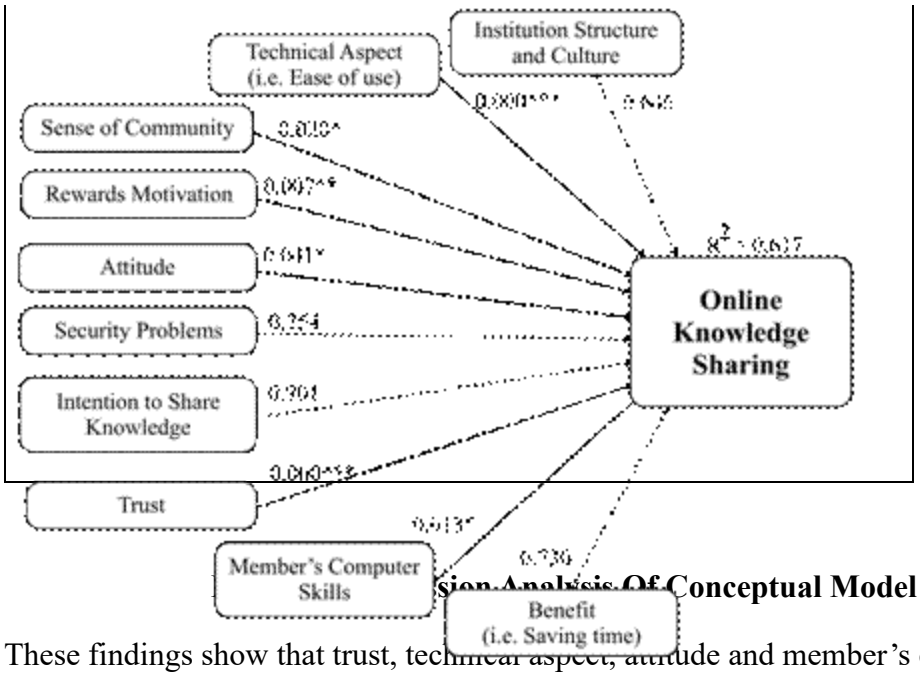
Independent Variables	**β**	**t**	**p**	**Cronbach's Alpha if Item Deleted**	**Supported**
Institution Structure and Culture	0.048	0.461	0.646	0.796	No
Technical Aspect	0.422	4.008	0.000***	0.804	Yes
Sense of Community	-0.229	-2.370	0.020*	0.796	Yes

Rewards Motivation	-0.288	-2.785	0.007**	0.809	Yes
Attitude	0.160	2.070	0.041*	0.809	Yes
Security Problems	0.087	1.148	0.254	0.822	No
Intention to Share Knowledge	0.010	0.124	0.901	0.813	No
Trust	0.539	5.015	0.000***	0.800	Yes
Member's Computer Skill	0.250	2.411	0.018*	0.814	Yes
Benefit	0.030	0.346	0.730	0.809	No
R2	0.617				
ΔR2	0.569				
Dependent Variable: Online Knowledge Sharing					
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; β: standardized regression coefficient; N=100.					

6.3. Analysis

A multiple regression analysis was used to examine the hypotheses and identify the relationship between independent variables and the dependent variable. Online knowledge sharing is considered to be the dependent variable and the independent variables include institution structure and culture, technical aspect, sense of community, attitude, intention to share knowledge, security problems, member's computer skill, benefit, rewards motivation and trust. The results indicate that hypotheses *H2, H3, H4, H5, H8* and *H9* are therefore supported and technical aspect such as ease of use with statistical significance at $p < 0.001$ are positively associated with online knowledge sharing activities, sense of community with the p-value < 0.05 can affect online knowledge sharing process, rewards motivation with significance at $p < 0.01$ are associated with online knowledge sharing activities, attitude also has significant value at $p < 0.05$ and is positively associated with online knowledge sharing process, trust as the other independent variable with statistical significance of $p < 0.001$ positively affects online knowledge sharing activities and member's computer skill with the p-value of <0.05 influences online knowledge sharing. However, institution structure and culture, security problems, intention to share knowledge and benefit factors have no significant association with online knowledge sharing; therefore hypotheses *H1, H6, H7* and *H10* are not confirmed. The results are shown in Table 1 and Figure 2.





sion Analysis Of Conceptual Model

These findings show that trust, technical aspect, attitude and member's computer skills are most influencing factors on virtual knowledge sharing in an academic firm, which should be highly concentrated upon in order to boost up the efficiency of online knowledge sharing and achieve better outcomes. Hence, these results could be of extreme value for both academic and practical references.

7. Limitations of Study

The results of this research are based on a survey data that bears naturally inherent limitations. The most important limitation in this study can be an existed bias because of the self-selected data-gathering sample. Also, the subjects were lecturers of the Multimedia University in Malaysia and their culture and lifestyle may be different among other countries. Also, due to the limited source of time and budget, it was not possible to perform the data gathering from multiple universities in Malaysia to be able to relate the outcome to all the Malaysian academia.

8. Conclusions and Future Research

Nowadays, knowledge plays a crucial role in the progression of institutions. Because of the natural propensity to hoard useful knowledge, knowledge sharing is not being completely utilized in institutes. Therefore, to rectify such issue, knowledge sharing should be encouraged. Nevertheless, it requires investigating the associated factors to achieve successful knowledge sharing process. The aim of this study was to assess the influencing factors on online knowledge sharing. For the great progression of e-collaboration technologies, institutions have adopted different ways to decrease cost and increase performance efficiency, such as paying more attention to the virtual team models instead of traditional face-to-face collaboration forms. Therefore, it is necessary to investigate and improve the affecting factors on member's online knowledge sharing procedure. As universities are the core producers of new science, the issue of sharing knowledge needs to be the center of focus. Accordingly, by

identifying the influencing factors and by improving them, it will be possible to revive the process of knowledge sharing in academic environments.

Categorizing such factors by means of socio-behavioral theories and to justify each one by using these theories can be worthwhile for future research considerations.

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