

Knowledge Sharing in Academic Institutions: a Study of Multimedia University Malaysia

Ming-Yu Cheng¹, Jessica Sze-Yin Ho¹ and Pei Mey Lau²

¹Multimedia University, Selangor, Malaysia

²Disted-Stamford College, Penang, Malaysia

mycheng@mmu.edu.my

syho@mmu.edu.my

peimey@yahoo.com

Abstract: Recent developments have witnessed the emergence of a new economy where knowledge has become a valuable resource and asset. The dynamism of the new economy requires us to not only quickly create knowledge, but also to acquire and apply knowledge quickly. One possible way to do so is to share our knowledge effectively. Knowledge sharing is envisaged as a natural activity of the academic institutions as the number of seminars, conferences and publications by academics is far exceeding any other profession, signifying the eagerness of academics to share knowledge. However, instead of knowledge sharing, “knowledge hoarding” could be more prevalent in academic institutions. This paper examines knowledge sharing behavior among academics in a private university in Malaysia. Factors affecting the willingness to share knowledge, broadly classified as organizational, individual and technology factors, are examined. The overall findings revealed that incentive systems and personal expectation are the two key factors in driving academics to engage in knowledge sharing activity. “Forced” participation is not an effective policy in cultivating sharing behavior among academics.

Keywords; knowledge sharing, knowledge management, higher education institution, sharer model

1. Introduction

It has become a norm to refer today’s economy as a knowledge-based economy. Knowledge is increasingly becoming “the” resource, rather than “a” resource for wealth generation. It is widely recognized that knowledge is the critical asset to individual as well as organization to succeed in the increasingly competitive environment (Syed-Ikhsan and Rowland, 2004; Alavi and Leidner, 1999; Van den Hooff and De Ridder, 2004; Yang, 2007). Thus, how to make use of knowledge in order to create the greatest value is becoming the central concern and debate in the new economy. Many researchers have attempted the issue by identifying the salient features of the knowledge-based economy and formulating various strategies to capture and create a new source of competitive advantage in the new society. However, most studies related to the knowledge-based economy are confined to the structural challenges of the new economy, paying an excessive attention to issues such as knowledge management system, innovation and technological application. Very little investigation has ventured into the study of human behavior in the new economy, for instance, how people perceive the transition from production-based to knowledge-based economy, how ready are they in taking up new challenges, how individual views the sharing of their hard-earned knowledge asset, what motivated or discouraged them to involve in knowledge-based activities, particularly in the production, distribution and application of knowledge.

One distinguished characteristic that has made the new economy unique is that it deals with a unique resource called “knowledge”. Unlike other traditional resources, i.e. land, labor and capital, to a certain extent, once it is distributed and shared, knowledge becomes a public good. The non-exclusivity and non-rivalry nature of public goods make it essential for knowledge creators to strategize their knowledge sharing and hoarding decision. On the one hand, once created, knowledge needs to be distributed quickly and widely because active knowledge is the “gem” while idle knowledge is the “stone”. On the other hand, knowledge is the “power”, holding knowledge is similar to holding the competitive power of the new economy. The dilemma of knowledge sharing and hoarding happened in all organizations. Failure to understand the relationship between the conflicting interests has explained why many organizations failed to develop an efficient mechanism to manage organizational knowledge to achieve their pre-set goals.

The study of knowledge sharing is dominated by those focusing on knowledge sharing activity within the business organizations. Obviously, the ultimate goal of organizational knowledge sharing in these institutions is profit-motivated. However, the issue of knowledge sharing is equally important for a knowledge-based institution, such as a university, where knowledge production, distribution and application are ingrained in the institution. Though there is no direct way to measure the outcome of knowledge sharing in knowledge institutions, the impact of knowledge sharing could be larger than those created by the business organizations. This paper is designed to fill the gap in the literature and to address some of the hidden issues in literature, such as: Can we expect academics to be knowledge sharers by nature? Do they share all the knowledge they possess? What types of knowledge are shared among academics? What are the main concerns in sharing their valuable asset?

This paper explores knowledge sharing practices among academics in a private university in Malaysia, i.e. Multimedia University. Founded in 1997, Multimedia University (MMU) is the first private university established in Malaysia. In this paper, a private university, instead of a public university is chosen for the study because Multimedia University has a clear and explicitly spelt-out promotional criterion. Research productivity and teaching excellence are the two main criteria to be considered. Under this competitive environment, it is interesting to examine the behavior and intensity of knowledge sharing practices among academics and factors that have motivated them to share knowledge with their colleagues. The findings would provide useful insights for policy makers and administrators at academic institutions to plan and implement effective research and knowledge sharing practices among academics.

2. A review of knowledge sharing literature

Generally, sharing knowledge is about communicating knowledge within a group of people. The group may consist of members engaged in a formal institution, for instance, among colleagues in a workplace or informal for example, among friends and the interaction may occur between a minimum of two individuals to a multiple of individuals. The underlying purpose is to utilize available knowledge to improve the group's performance (Alavi and Leidner, 1999; Salisbury, 2003). In other words, individuals share what they have learned and transferred what they knew to those who have the collective interest and who have found the knowledge useful. The sharing process consists of collecting, organizing and conversing knowledge from one to another (Van den Hooff and De Ridder, 2004). As the sharing process involves more than just collecting data and information, generally, the value of knowledge expanded when it is shared. Therefore, if managed properly, knowledge sharing can greatly improve work-quality and decision-making skills, problem-solving efficiency as well as competency that will benefit the organization at large (Syed-Ikhsan and Rowland, 2004; Yang, 2007).

In a nutshell, there are two non-exclusive ways of knowledge sharing, i.e. closed-network sharing (person-to-person sharing) and open-network sharing (sharing through a central open repository). In the closed sharing model, individual has the freedom to decide the mode of sharing and choose partners to share his or her knowledge. This type of interaction allows more personal touch and more directed sharing is expected. Many factors would explain the success of the sharing activity in this model, including personal relationship and trust. On the other hand, the open-network sharing refers to the sharing of knowledge among members of a group through a knowledge management system, typically a central database system. It involves multiple individuals sharing multiple knowledge assets in the system. Knowledge asset in this form of sharing carries the characteristics of a public good (Müller, Spiliopoulou and Lenz, 2005), thus insufficient voluntary sharing is anticipated. Open-network sharing is widely adopted in organizations to share organizational-knowledge. The following sections will focus on open-network sharing mechanism, as the method applied in this study is associated with the open-network sharing method.

The intensity and effectiveness of knowledge sharing through the open-network largely depends on the friendliness of the IT system created, the incentive system as well as the organizational culture of the institution. Hsu (2006) in an effort to classify the different approaches used in literature to promote knowledge sharing has managed to summarize them into three approaches. The first approach is called "tool-based" which focused on building sophisticated IT system in knowledge sharing. The second approach emphasizes the importance of incentives to facilitate knowledge sharing, is thus called

“incentive-based”. The third approach is the integrative approach which considers not only management values, organizational culture but also processes and structure to encourage knowledge sharing. More specifically, the passion to share knowledge in an open-network environment is affected by interacted factors socially, economically and technically. In the literature, when it comes to the decision as to whether to share or not to share, monetary incentives and rewards are the key factors cited most frequently (Hendricks, 1999; Hahn and Subrami, 2000; Ruppel and Harrington, 2001; Bartol and Srivastava, 2002; Dignum and Dignum, 2003; Syed-Ikhsan and Rowland, 2004; Riege, 2005). Sharing of knowledge is a costly activity. Thus, unless the perceived benefits exceed the costs of sharing, the sharing process is hard to realize (Chua, 2003). This can be linked to the economic exchange theory as proposed by Gee and Young-Gul (2002). In addition to incentives and rewards, organizational culture and leadership have a significant impact on the intensity of knowledge-sharing too (Ruppel and Harrington, 2001; Chua, 2003; Kim, Suh and Hwang, 2003; Malhotra and Majchrzak, 2004; Lin, 2008, Cheng, 2002; Riege, 2005). Bureaucracy and hierarchical level in an organization (Hendricks, 1999; Syed-Ikhsan and Rowland, 2004; Riege, 2005; Sondergaard, Kerr and Clegg, 2007; Lin, 2008), diversity of knowledge in a sharing team (Malhotra, and Majchrzak, 2004; Mooradian, Renzl, Matzler, 2006), team cohesiveness (Dignum and Dignum, 2003), and the fear that others will use the knowledge learnt to go against them, have also influenced the motivation to share (Ford and Chan, 2003). (Ruppel, and Harrington, 2001; Malhotra, and Majchrzak, 2004; Van den Hooff, and De Ridder, 2004; Mooradian, Renzl, Matzler, 2006; Sondergaard, Kerr and Clegg, 2007; Lin 2008).

Personal factors, like recognition as experts in the relevant fields of study, group identity and self-esteem are important considerations determining the passion to share their knowledge (Hahn and Subrami, 2000; Syed-Ikhsan and Rowland, 2004; Sondergaard, Kerr and Clegg, 2007). However, not all knowledge will be shared. The type and the amount of knowledge shared depend upon the estimation of the value of knowledge to each individual, i.e. the perceived value of knowledge (Ford and Staples, 2005). It also depends on the availability and extent of intellectual property protection for knowledge sharing activities. The fears that one might receive unfair recognition and accreditation, plus the risks of one’s intellectual property being stolen, are some of the key reasons that discourage knowledge-sharing activities (Riege, 2005).

Knowledge expands with the extension of social and community interactions (Pan and Leidner, 2003). Knowledge contributors and seekers who share common interest areas will often look for a common community to share their ideas and experiences which can be done via either informal or formal network. These knowledge contributors and seekers are habitually glued together through their personal connections (Ardichvili, Page and Wentling, 2003), and formed what is generally called “communities of practices”. Since the critical success factor of virtual communities of practice is very much depending on perpetual knowledge generation and sharing, cultivating communities of practices could be an effective mechanism to promote the sharing culture.

Technology is an important mediating factor in knowledge sharing. The intervention of information technology (IT) is inevitably important as a tool for a successful knowledge management implementation (Bhatt, 2001; Kim, Suh, and Hwang, 2003). However, ICT functions as a platform for knowledge sharing is by itself insufficient to encourage knowledge sharing as suggested by Hendricks (1999): “*The role of ICT for knowledge sharing can only be fully understood if it is related to the motivation for knowledge sharing...*” On top of the motivation for knowledge sharing, Brazelton and Gorry (2003) had also exposed the idea that technology alone may not effectively encourage knowledge sharing activities. Kim and Jarvenpaa (2008) had supported the importance of the existing relationship between communicating parties as a formula to shape technological-enabled-knowledge activities.

The above literature reveals different factors influencing the decision for people to involve in knowledge sharing activity. Basically, these factors can be grouped into three sub-groups; namely organizational factors, individual factors and technical factors. Organizational factors are factors not derived from the individual personally. It can be environmental or caused by another individual to stimulate the knowledge sharing attitude. Incentive system, organizational culture and management system are classified as external factors. Individual factors are factors derived from individually-driven considerations. That means that it comes from the person’s internal being. Examples of internal factors are beliefs, perceptions,

expectations, attitudes and feelings. Technical factor relates to the knowledge management technology, such as software and hardware used in the sharing activity.

Knowledge management initiatives were first adopted and proliferated in profit-oriented organizations, thus studies on knowledge management, including knowledge sharing, were concentrated largely on these organizations i.e., "Hewlett Packard, DaimlerChrysler (Davenport and Voelpel, 2001), British Petroleum (Cohen and Prusak, 1996), Chevron, Ford, Xerox, Raytheon, IBM (Ellis, 2001), Siemens (Davenport and Probst, 2002; Voelpel, 2003), Shell (Haimila, 2001), and Caterpillar (Ardichvili et al. 2003)", Voelpel and Han (2005) and Toyota (Dyer and Nobeoka, 2000). Recently, knowledge management practices have also extended to universities and other knowledge-based institutions, making knowledge sharing in academic institutions a popular debate.

Universities serve as the platform to enable academics to speak of their ideas and insights (Martin and Marion, 2005), besides add substantial value to the information-processing environment (Mphidi and Synman, 2004). One of the common functions of knowledge management used in university is to serve as the knowledge repositories (Bhatt, 2001; Rowley, 2000). In fact, it has always been a practice in almost all higher educational institutions to store all relevant documents contributed by in-house resources in the knowledge repository or the database. Storing information is not new in universities, but what is new is to share the available knowledge and to allow members to utilize the information generated within the community. In addition, knowledge repository is used as a diagnostic tool to allow universities to map the existing skills and experience with current needs in order to fill any gaps or deficiencies in the institution's knowledge base (Keramati and Azadeh, 2007).

Similar to the application in business organizations, knowledge management can also create a competitive advantage for academic institutions, if utilized appropriately. This is possible since the knowledge created and stored will serve as the repository to benefit scholars and researchers to advance the knowledge cycle and to distinguish the institution in the academic market place (Basu and Sengupta, 2007). Studies conducted in higher educational institutions in Asia have shown that knowledge sharing activities in the academic environment encountered similar barriers as in business environment. For instance, there seems to be a missing culture of sharing in a business school in India, as most activities are individualistic, limited to internal peer group, and interactions with external experts are limited to personal acquaintance (Basu and Sengupta, 2007). Another study conducted in a tertiary education institution in Singapore (Wah, Menkhoff, Loh and Evers, 2007) has shown that rewards and incentives, open-mindedness of the sharer, and the cost-benefit concerns of knowledge hoarding are the strongest predictors of knowledge sharing in comparison to pro-social motives or organizational care. In a study carried out by Abdullah, et.al. (2008) on seven major public universities in Malaysia, it is found that appropriate incentives and rewards should be awarded for sharing, searching and the usage of knowledge management system as a mode of motivation.

3. Research method

Nonaka and Takeuchi (1995) study the creation of knowledge through the integrated SECI process. Their findings indicated that the presence of a "platform", especially in the form of face-to-face meetings is critical for knowledge sharing to take place and to allow for interaction to happen (Nonaka and Konno, 1998). Kim and Lee (2005) construct a model consists of organizational culture, structure and information technology to examine the knowledge sharing capabilities among employees in public and private sector organizations in South Korea. They find that performance-based reward systems, IT applications focusing on end-users and social networks are key variables affecting knowledge sharing activities.

Based on the theories developed and derived from the literature and modified to suit the study for university academics, the research model designed for the study is presented in Figure 1. Variables included in the model are organizational, individual and technical factors to identify reasons contributing to knowledge sharing behavior. The willingness to share knowledge is used as the dependent variable in the model. Data are collected to address the following hypotheses:

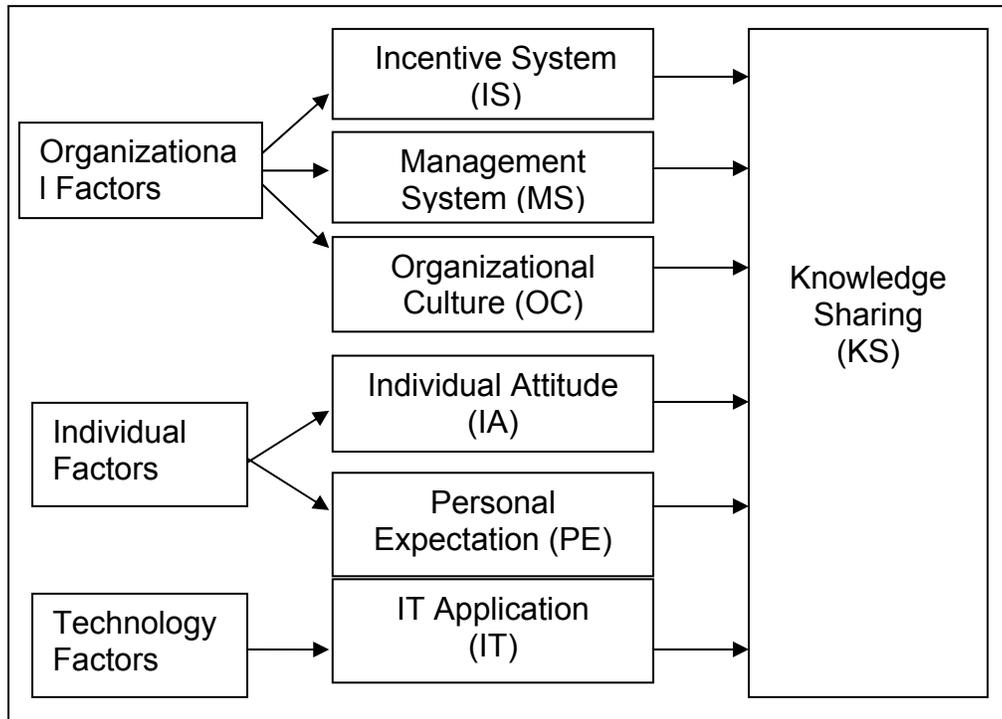


Figure 1: Knowledge sharer model

Hypothesis 1: Incentive system has a significant effect on knowledge sharing.

Hypothesis 2: Management system affects knowledge sharing significantly.

Hypothesis 3: Organization culture affects knowledge sharing.

Hypothesis 4: Individual attitude affects knowledge sharing behavior.

Hypothesis 5: Personal expectation affects knowledge sharing.

Hypothesis 6: Technology, as a means of sharing, plays a significant role in knowledge sharing.

In this study, MMU is the selected sample to study the intensity and behavior of knowledge sharing among academics in the knowledge-based institution in Malaysia. MMU is established in Malaysia to support and facilitate the development of information and multimedia technology in the country. It has two campuses located in two cities, namely Melaka and Cyberjaya. Current student population is approximately 20,000 in total¹.

Originated and modeled after the Siemens ICN ShareNet, MMU has set up its online sharing system called ShareNet to serve as a platform for the university to share knowledge within the community. Online open-network sharing through ShareNet is critical for MMU to tap its knowledge assets and communicate knowledge across the two campuses which are separated physically by a distance of about 150 kilometers. ShareNet was used to link up not only academics, but also non-academics in the university. Intra-community sharing was unlimited. At the same time, contribution to ShareNet was taken seriously by the management. The management has made it compulsory for each university's employee to contribute

¹ MMU website, accessed online on March 4, 2008 at <http://www.mmu.edu.my>

to ShareNet and the contribution was counted at the year-end performance evaluation. Though knowledge sharing means more than simply transmitting and receiving knowledge, however, in this study, we attempt to capture the spirit of sharing by examining the commitment to upload and download information to/from the ShareNet system.

Due to some technical reasons, ShareNet was replaced by Knowledge Bank in 2006. This study is conducted to study the effectiveness of knowledge sharing via ShareNet and to identify factors that influence the sharing behavior among academics. It is expected that the result of the study will provide useful information for the university to build a system that would better serve the purpose of knowledge sharing in universities. In this study, online questionnaires were distributed to all academics in the university. The survey was conducted in mid-2006, immediately after the ShareNet was closed down. Only academics were invited to participate in the survey as the purpose of the study is to examine why academics share and/or not share their knowledge. However, not all academics are qualified to answer the questionnaires, only those who have participated in ShareNet before 2006 are allowed to fill in the questionnaires. Thus, a small sample size is expected. At the end of the survey period, a total of 119 responses were collected while only 60 responses have provided the complete answers. Therefore, the analysis and findings are based on the sample of 60 responses.

The questionnaire contains questions to elicit academics behavior as the knowledge contributor. In addition, few questions were also included to grasp respondents' behavior as knowledge receiver at the same time.

4. Measures for knowledge contributors

Respondents were asked to rate from (1) "strongly disagree" to (5) "strong agree" for each question listed in Section A of the questionnaire. Questions related to incentive system, management system, organizational culture, attitude, personal expectation and IT application are put forth to reveal factors influencing contributors' behavior in the knowledge-sharing process. A 3-item measure was used to gauge the willingness to share knowledge (KS) among academics in MMU. Questions asked are "*Nobody in this organization is interested to share*", "*I have uploaded only limited information*" and "*I have uploaded information that will not be used by others*". The alpha reliability is 0.692.

To measure the impact of the incentive system on knowledge sharing, respondents were asked to rate from (1) to (5) on three questions related to incentive system, i.e. the attractiveness of the incentive system in MMU; the extent of peer inspiration on knowledge sharing and the level of recognition given by MMU for uploading information on intra-organization database. The alpha reliability for this 3-item measure is 0.680. A 3-item measure was used to examine the impacts of the management practice on knowledge sharing. Questions asked were related to management approach, i.e. on the "compulsory" participation policy; on support given by university and on management emphasis on knowledge sharing activity. The alpha reliability is 0.761. For organizational culture, a 3-item measure which includes trust and the atmosphere for communication of ideas and exchanging experience was used to capture the effect of organizational culture on sharing. The alpha reliability in this study is 0.958.

Individual attitude towards knowledge sharing is measured by two items, these include the fears that the idea shared will be criticized by others and the idea may be "stolen" by others. The alpha reliability is 0.741. A 3-item measure was designed to measure personal expectation with regard to knowledge sharing. Positive statements are prepared for this measure, thus a reversed scaling is done prior analysis to ensure the consistency of scaling used in the analysis. Expectation such as being recognized as the expert in the area; as contributor to improve the knowledge repository in MMU and as connector to link other researchers working on same research area are captured in the study. The alpha reliability for this item is 0.751.

A 3-item measure is used to measure the user-friendliness of technology as a means of knowledge sharing. Essential factors include the friendliness of web-design of ShareNet, support given by the Helpdesk to solve technical difficulties and efficiency of the system in uploading. The alpha reliability for this item is 0.820.

Regression analysis is conducted on the knowledge-sharing model as shown in Equation (1):

$$KS_i = \alpha + \beta_1 IS_i + \beta_2 MS_i + \beta_3 OC_i + \beta_4 IA_i + \beta_5 PE_i + \beta_6 IT_i + \mu_i \quad (\text{Equation (1)})$$

Where

- KS = Knowledge Sharing
- IS = Incentive System
- MS = Management System
- OC = Organizational Culture
- IA = Individual Attitude
- PE = Personal Expectation
- IT = IT Application

5. Findings

Being a young university in the country, MMU has attracted many young academics. The distribution of the sample reflected this feature as 63.8 percent of the respondents in the survey aged between 26 to 35 years old, 62.1 percent of them hold the position as lecturers, 13.8 percent are tutors, 12.1 percent are senior lecturers, 6.9 percent assistant lecturers or specialists, 3.4 percent are associate professors, and 1.7 percent are professors. More than half of the respondents have worked in MMU for more than 5 years. A total of 58.6 percent are male respondents while 41.4 percent are females. All faculties are represented in the survey; 18 respondents are from the management and business faculties; 11 from engineering; 19 from information technology; 8 from creative multimedia, and others from centers such as modern language and diploma centers.

As mentioned above, the participation in the ShareNet matters in the year-end performance evaluation. Contribution to this online sharing system is therefore “*involuntary*” to some extent. When asked if it is not made compulsory by the management, will they contribute to the ShareNet, 60 percent of the respondents said “*No*”. However, it is interesting to find out that even though it is an “*involuntary*” exercise, 51.8 percent of the respondents said they have contributed more than the “*required*” times, i.e. more than once a year to the ShareNet, while 40 percent of the respondents said they were just fulfilling the minimum requirement to contribute once a year. MMU is unique in the sense that it enforces a system of “*compulsory*” participation while other universities basically emphasizing on formulating an attractive rewards system to encourage knowledge sharing.

Each staff has the freedom to choose the types of information he or she would like to upload to share within the community. The flexibility is given to enable academic to participate at own capacities. In some cases, staff may only be able to complete an abstract but not full paper to be uploaded. The intention of not restricting the format and type of document is mainly on encouraging more participation. Figure 2 shows the types of information respondents have contributed to the ShareNet. The findings revealed that most of the respondents have a preference to upload the simplest or least informative form of knowledge product to share within the community, i.e. abstract (51.7 percent) and the literature review (30 percent).

From knowledge receivers’ point of view, apparently, ShareNet is not a preferred source of information for academics in MMU. About 26.7 percent of the respondents said they had never downloaded any information from ShareNet, while only 10 percent of the respondents have accessed some information from ShareNet at least once a month, 20 percent once every quarter and 23.3 percent once every six months. In terms of types of information downloaded, full research articles are the most downloaded materials (47 percent) followed by literature review (25 percent) and findings (25 percent); abstract (23 percent); methodology (23 percent) and non-academic article (17 percent).

The unpopularity of ShareNet was attributed to reasons such as lack of confidence on the quality of the information uploaded at ShareNet, technical reasons such as the web design is not user-friendly as well as stronger preference to use other published databases available outside Multimedia University. Figure 3 shows the reasons given for not searching information from ShareNet.

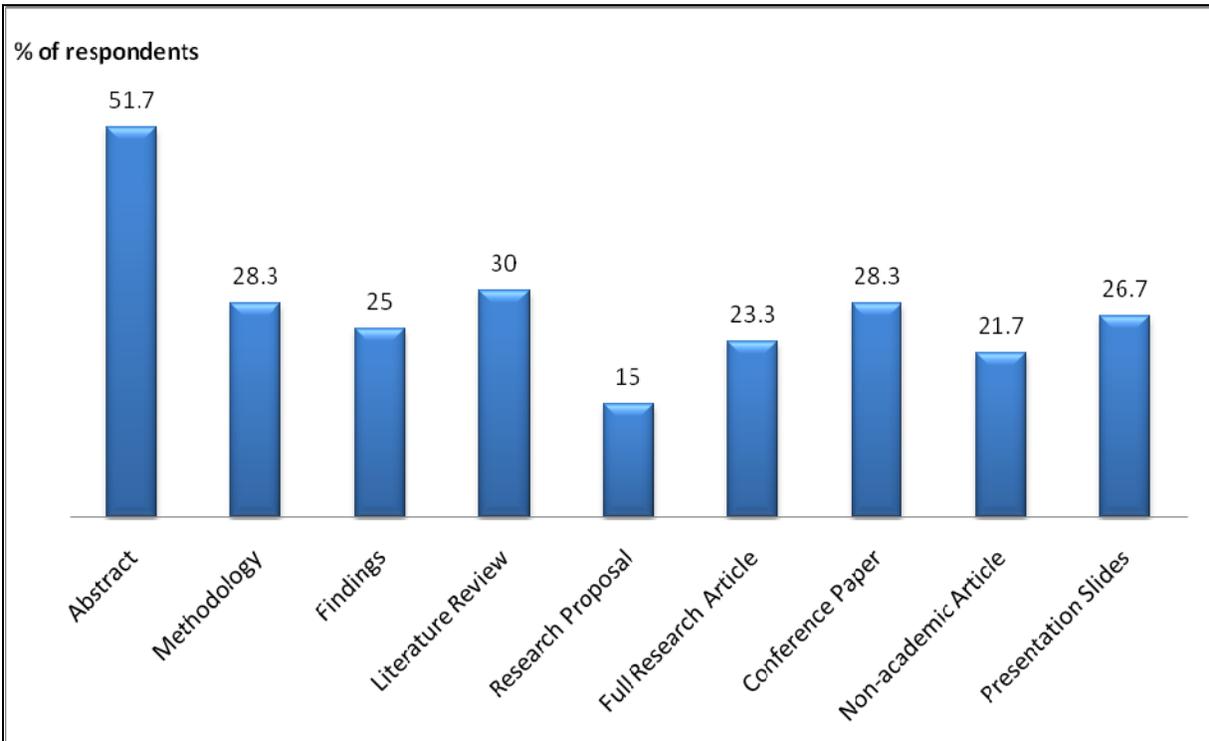


Figure 2: Type of information uploaded in the ShareNet

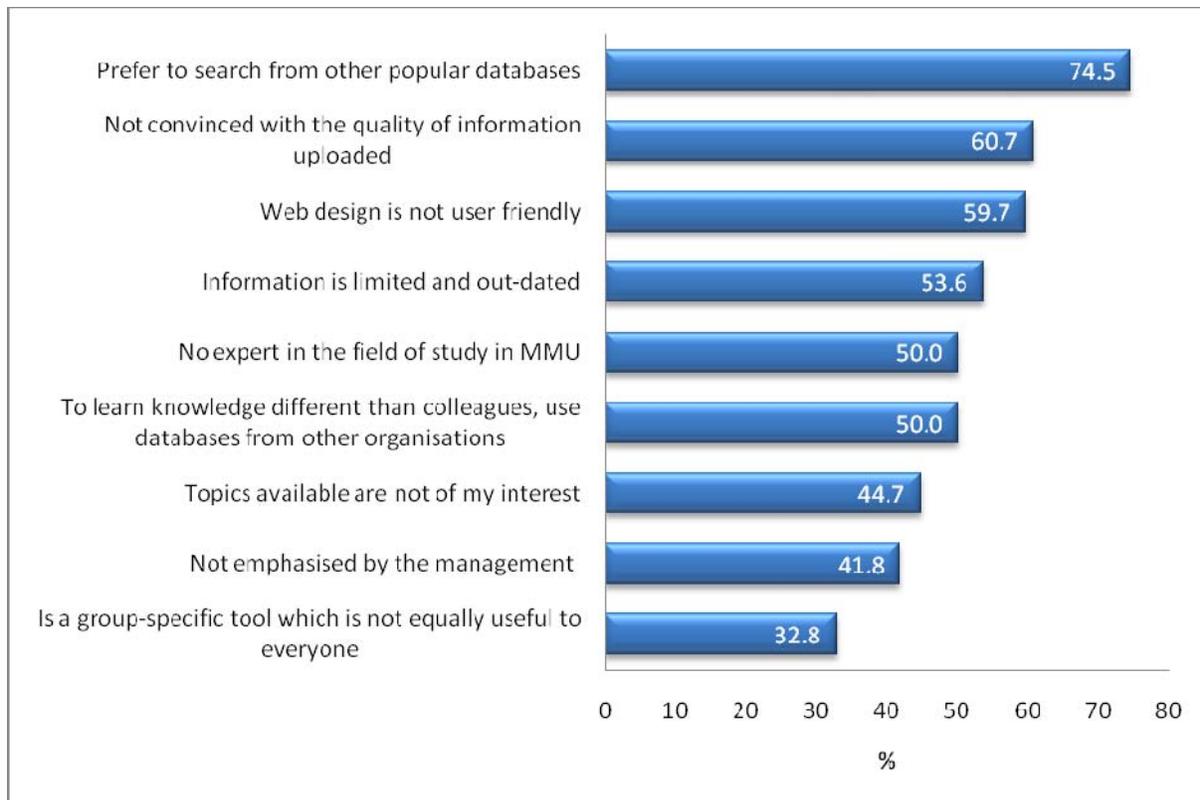


Figure 3: Reasons for not searching information from ShareNet

From knowledge receivers' point of view, apparently, ShareNet is not a preferred source of information for academics in MMU. About 26.7 percent of the respondents said they had never downloaded any information from ShareNet, while only 10 percent of the respondents have accessed some information from ShareNet at least once a month, 20 percent once every quarter and 23.3 percent once every six months. In terms of types of information downloaded, full research articles are the most downloaded materials (47 percent) followed by literature review (25 percent) and findings (25 percent); abstract (23 percent); methodology (23 percent) and non-academic article (17 percent).

The unpopularity of ShareNet was attributed to reasons such as lack of confidence on the quality of the information uploaded at ShareNet, technical reasons such as the web design is not user-friendly as well as stronger preference to use other published databases available outside Multimedia University. Figure 3 shows the reasons given for not searching information from ShareNet.

5.1 Findings from regression analysis

Result of multiple regression analysis is presented in Table 1. As indicated in Table 1, incentive system and personal expectation are the two significant factors associated with the passion to share knowledge. The findings suggest that both the external and internal factors are crucial in promoting knowledge sharing activities among academics.

Academics are motivated to share if the incentives and reward mechanisms are encouraging to create a conducive knowledge sharing environment. Both the monetary as well as non-monetary incentives are crucial to generate the passion toward knowledge sharing. Promotion and other monetary rewards are fundamental factors. Besides, although it may not bring immediate monetary payoff or promotion as a return, if the university recognizes the effort of knowledge sharing as significant to the success of the institution, academics will also be motivated to participate in the sharing activities.

In addition, personal expectation and the desire to build a reputation as an expert in the specific area in MMU provides the strong inspiration for academics to upload their valuable knowledge work on the ShareNet. Also, academics will be encouraged to contribute to the ShareNet if they could expect to receive useful knowledge in return and to build a network within the community. Another factor related to the personal expectation is the desire of academics to be portrayed as altruistic in helping others with what they know.

Technical factors, such as the user-unfriendliness of the information system, have often been cited as one of the critical factors that hinder people from participating in the open-network system, like ShareNet. However, in this study, it does not stand up to be a prime reason for academics not to share their knowledge. It could be due to the reason that being a university that stresses on IT and multimedia, academics at MMU do not find it a burden to use IT in their sharing activities, or it could also be a result of the well-designed feature of the ShareNet system that provides an easy way for people to engage in the activity.

The findings suggest that to promote knowledge sharing activity in knowledge-based institutions, it is essential to create an environment which is people-oriented, rather than technological-oriented. While technology plays a crucial role in minimizing the barriers and increases the propensity to share knowledge, knowledge sharing is still a people- process.

Table 1: Regression analysis of the knowledge- sharing model

Dimensions	Variable	Regression Coefficient	Standard Error	t
External	<i>Incentive system</i>	0.401*	0.159	2.524
	<i>Management system</i>	0.106	0.153	0.695
	<i>Organizational culture</i>	0.063	0.114	0.553
Internal	<i>Individual attitude</i>	0.125	0.111	1.121
Dimensions	Variable	Regression Coefficient	Standard Error	t
	<i>Personal expectation</i>	0.348**	0.299	2.908
Technology	<i>IT application</i>	0.007	0.133	0.958
Constant		-0.062	0.446	-0.140
	R ²	0.563		
	Adjusted R ²	0.503		
	F	9.439***		
	N	60		
<i>p<0.05; **p<0.01; ***p<0.001</i>				

6. Conclusion

This study was conducted to examine knowledge sharing among academics in the knowledge-based institution. Knowledge sharing is vital to the success of knowledge management practices in all organizations, inclusive of universities. Effective knowledge sharing is essential for the organization to benefit from the knowledge its employees have generated. This study reveals that both external and internal factors are equally important to explain academics' behavior in knowledge sharing. Although it is a policy in MMU that every academic must upload their research output on ShareNet at least once a year, the impact of "stick" strategy is not as significant as the "carrot" strategy. Academic responded to performance-based incentive system rather than the "force" management system. To a certain extent, the findings are consistent with previous studies, which emphasized the importance of providing the "right" incentive system and understanding individual's expectation towards knowledge-sharing in order to facilitate knowledge sharing behavior.

In managing the valuable knowledge asset, organizations always seek help from technology to build sophisticated database to capture and store knowledge. However, if employees are not willing to share and pass along the knowledge across the organization, the effort of knowledge management will fail. In a nutshell, knowledge sharing is a people-process. More consideration should be given to understand how individuals react to internal as well as external factors in making their decision as to whether to participate in the sharing activities.

References

- Abdullah R., Selamat., M. H., Jaafar, A., Abdullah, S. and Sura, S. (2008), An Empirical Study of Knowledge Management System Implementation in Public Higher Learning Institution. *International Journal of Computer Science and Network Security*, 8(1), 281-290.
- Alavi, M., and Leidner, D.E. (1999), Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of Association of Information Systems*, 1(7), 1-37.
- Ardichvili, A., Page, V. and Wentling, T. (2003), Motivation and barriers to participate in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management*, 7(1), 64-77.
- Bartol, K. M., and Srivastava, A. (2002), Encouraging Knowledge Sharing: The Role of Organizational Reward Systems. *Journal of Leadership & Organizational Studies*, 9(1), 64-76.
- Basu, B. and Sengupta, K. (2007), Accessing Success Factors of Knowledge Management Initiatives of Academic Institutions – a Case of an Indian Business School, *The Electronic Journal of Knowledge Management*, 5(3), 273-282.
- Bhatt, G. D. (2001), Knowledge Management in Organizations: Examining the Interaction between Technologies, Techniques, and People. *Journal of Knowledge Management*, 5(1), 68-75.
- Brazelton, J. and Gorry, A. (2003), Creating a Knowledge-Sharing Community: If You Build It, Will They Come? *Communications of the ACM*, 46(2), 23-25.
- Cheng, M. Y. (2002), Socializing Knowledge Management: The Influence of the Opinion Leader. *Journal of Knowledge Management Practice*, 3. Available: <http://www.tlinc.com/articl42.htm> [2008, April 15]
- Chua, A. (2003), Knowledge Sharing: A Game People Play. *Aslib Proceedings*, 55(3), 117-129.
- Cohen, D., Prusak, L. (1996), *British Petroleum's Virtual Teamwork Program*. Ernst & Young Center for Business Innovation, Paris.
- Davenport, T., Probst, G. (2002), *Knowledge Management Case Book – Best Practices*, 2nd ed., Wiley, New York, NY.
- Davenport, T., Voelpel, S. (2001), The rise of knowledge towards attention management. *Journal of Knowledge Management*, 5(3), 212-221.
- Dignum, V., and Dignum, F. (2003), Knowledge Market: Agent-mediated Knowledge Sharing. *International Central & Eastern European Conference on Multi-Agent Systems 2003 - CEEMAS 2003, Czech Republic*, 168-179.
- Dyer, J. H. and Nobeoka, K. (2000), Creating and managing a high-performance knowledge-sharing network: the Toyota case. *Strategic Management Journal*, 21(3), 345-367.
- Ellis, K. (2001), Sharing the best practices globally. *Training*, 38 (July), 32-38.
- Ford, D., and Chan, Y. (2002), Knowledge Sharing in a Cross-Cultural Setting: A Case Study. *Working Paper 02-09: Queen's School of Business, Queen's University at Kingston*, 1-31.
- Ford, D. P. and Staples, S. D. (2005), Perceived Value of Knowledge: Shall I Give you My Gem, My Coal? *Proceedings of the 38th Hawaii International conference on System Sciences – 2005*
- Gee, W.B., and Young-Gul, K. (2002), Breaking the Myths of Rewards: An Exploratory Study of Attitudes About Knowledge Sharing. *Information Resources Management Journal*, 15(2), 14-21.
- Hahn, J., and Subrami, M.R. (2000), A Framework of Knowledge Management Systems: Issues and Challenges for Theory and Practice. *Proceedings of the 21st International Conference on Information Systems, Australia*, 302-312.
- Haimila, S. (2001), Shell creates communities of practice. *KM World*, February 19,1-2.
- Hendricks, P. (1999), Why Share Knowledge? The influence of ICT on the Motivation for Knowledge Sharing. *Knowledge and Process Management*, 6(2), 91-100.
- Hsu, I. C. (2006), Enhancing Employee Tendencies to Share Knowledge – Case Studies of Nine Companies in Taiwan. *International Journal of Information Management*. 26: 326-338.
- Keramati, A., and Azadeh, M. A. (2007), Exploring the Effects of Top Management's Commitment on Knowledge Management Success in Academic: A Case Study. *Proceedings of World Academy of Science, Engineering and Technology, Vienna, Austria, May 2007*, 292-297.
- Kim, S., Suh, E., and Hwang, H. (2003). Building the Knowledge Map: An Industrial Case Study. *Journal of Knowledge Management*, 7(2), 34-45.
- Kim, Y., and Jarvenpaa, S. L. (2008), Formal Boundary Spanning and Informal Boundary Spanning in Cross-Border Knowledge Sharing: A Case Study. *Proceedings of the 41st Hawaii International Conference on System Sciences 2008*.

- Kim, S. and Lee, H. (2005), Employee Knowledge Sharing Capabilities in Public and Private Organizations: Does Organizational Context Matter? *Proceedings of the 38th Hawaii International Conference on System Sciences 2005*.
- Lin, W. (2008), The Effect of Knowledge Sharing Model. *Expert Systems with Applications*, 34, 1508-1521.
- Malhotra, A., and Majchrzak, A. (2004), Enabling Knowledge Creation in Far-flung Teams: Best Practices for IT support and Knowledge Sharing. *Journal of Knowledge Management*, 8(4), 75-88.
- Martin, J. S., and Marion, R. (2005), Higher Education Leadership Roles in Knowledge Processing. *The Learning Organization*, 12(2), 140-151.
- Mooradian, T., Renzl, B., and Matzler, K. (2006), Who Trusts? Personality, Trust and Knowledge Sharing. *Management Learning*, 37(4), 523-540.
- Mphidi, H., and Snyman, R. (2004), The Utilisation of an Intranet as a Knowledge Management Tool in Academic Libraries. *The Electronic Library*, 22(5), 393-400.
- Müller, R.M., Spiliopoulou, M. and Lenz, Hans-J. (2005), The Influence of Incentives and Culture on Knowledge Sharing. *Proceedings of the 38th Hawaii International Conference on System Sciences - 2005*.
- Nonaka, I. and Konno, N. (1998), The Concept of "Ba": Building a Foundation for Knowledge Creation. *California Management Reviews*, 40(3), 40-54.
- Pan, S. L. and Leidner, D. E. (2003), Bridging communities of practice with information technology in pursuit of global knowledge sharing. *Journal of Strategic Information Systems*, 12, 17-88.
- Reige, A. (2005), Three-dozen knowledge-sharing barriers managers must consider. *Journal of Knowledge Management*, 9(3), 18-35.
- Rowley, J. (2000), Is Higher Education Ready for Knowledge Management? *The International Journal Of Education Management*, 14(7), 325-333.
- Ruppel, C. P., and Harrington, S. J. (2001), Sharing Knowledge through Intranets: A Study of Organizational Culture and Intranet Implementation. *IEEE Transactions on Professional Communications*, 44(1), 37-52.
- Salisbury, M. W. (2003), Putting Theory Into Practice to Build Knowledge Management Systems. *Journal of Knowledge Management*, 7(2), 128-141.
- Syed-Ihksan, R F., (2004), Benchmarking Knowledge Management in a Public Organisation in Malaysia. *Benchmarking, Bradford*, 11(3), 238.
- Sondergaard, S., Kerr, M., and Clegg, C. (2007), Sharing Knowledge: Contextualising Socio-technical Thinking and Practice. *The Learning Organization*, 14(5), 423-435.
- Van den Hooff, B., and De Ridder, J. A. (2004), Knowledge Sharing in Context: The Influence of Organizational Commitment, Communication Climate and CMC Use on Knowledge Sharing. *Journal of Knowledge Management*, 8(6), 117-130.
- Voelpel, S. (2003), *The Mobile Company: An Advanced Organizational Model for Accelerating Knowledge*. Innovation and Value Creation, IFPM, St Gallen,
- Voelpel, S. C. and Han, Z. (2005), Managing knowledge sharing in China: the case of Siemens ShareNet. *Journal of Knowledge Management*, 9(3), 51-63.**
- Wah, C. Y., Menkhoff, T., Loh, B. and Evers, H. -D. (2007), Social Capital and Knowledge Sharing in Knowledge-Based Organizations: An Empirical Study. *International Journal of Knowledge Management*, 3(1), 29-48.
- Yang, J. (2007), The Impact of Knowledge Sharing on Organizational Learning and Effectiveness. *Journal of Knowledge Management*, 11(2), 83-90.