



## A descriptive analysis on usage of online knowledge sharing technology in Malaysian research universities

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### Abstract

This study investigates the level of usage of online knowledge sharing technology among academics in Malaysian research universities. The prerequisite to successful knowledge sharing is the acceptance and utilization of the knowledge sharing technology (i.e.KMS), however, past studies testing the significant relationship between various technologies and knowledge sharing showed that there is no significant relationship between the two variables. Hence, the current study is interested in examining the level of usage of online knowledge sharing technology for the purpose of knowledge sharing among academic staff. A questionnaire survey was utilized in this study and a descriptive analysis was done. Specifically, the academics showed a high usage of online knowledge sharing technology. Therefore, an increasing emphasis on knowledge creation and sharing and technology application leads to a continuous evaluation on the role of technology in HRD

**Keywords:** Knowledge Sharing, Knowledge Management, Online Knowledge Sharing Technology, Level of Technology Usage

### 1. Introduction

Technology innovation has a significant implication for higher learning institutions, not only in the teaching and learning process but also in knowledge sharing. Higher learning institutions have always been regarded as organizations being in the knowledge business. As such, they are very much closely tied to the management and sharing of knowledge (Alexandropoulou, Angelis & Mavri, 2008). Moreover, researchers have also acknowledged that knowledge sharing is vital to institutions of higher learning, as a strategic tool for preserving their competitiveness and achieving operational excellence, and this is done by promoting and transferring the application of scientific knowledge successfully (Asheim & Gertler, 2005; Ismail & Yusof, 2008). The contribution of technology to knowledge management can be understood by understanding the concept of both knowledge management and knowledge sharing.

Knowledge management can be generally defined as a process of making the right knowledge available at the right time for the right person. The history of knowledge management can be traced back from both the Western and the Eastern philosophers. These philosophers have documented knowledge and the focus was mainly at theoretical and abstract understanding of what knowledge is (Wiig, 2000). Devenport and Prusak (1998) were among the pioneer scholars to promote the idea of knowledge management. The concept of knowledge management can be further distinguished between the term data, information and knowledge. The term data refers to a set of raw information or data with no meanings unless transformed into information. Researchers like Davenport and Prusak (1989) defined data as “a set of discrete, objective facts about events”. Information is data that is processed for a specific purpose. Drucker, (1988), defined information as “data endowed with relevance purpose”. The application of the data that has been processed and transformed into information is known as knowledge. Therefore, knowledge is deeper, broader, richer and more meaningful than data or information (Nonaka & Takeuchi, 1995).

Knowledge sharing, on the other hand, is related to activities through which the knowledge worker mutually exchanges their knowledge in order to create a new knowledge. As such, the prerequisite for a successful knowledge management is indeed the willingness of these individuals to share their valuable knowledge with others. Knowledge management and

sharing in institutions of higher learning are regarded as an important process in which academics generate, capture, codify, store, share and apply the knowledge that resides within them (Ramachandran, Chong, & Wong, 2013). Efficient and effective knowledge management and sharing practices in institutions of higher learning allow academics to collaborate interdisciplinary around the world to create new knowledge, thus promoting the credibility of the faculty and quality of research undertaken (Lin; 2007). However, research had indicated that successful knowledge sharing in institutions of higher learning had become a rising concern over the years (Ramayah, Yeap, & Ignatius, 2013).

Consequently, Research Universities (RU) are regarded as the pinnacle of the national higher education system and they are the most visible academic universities (Hazelkorn 2011). Altbach (2009) clearly showed that RUs have a set of roles in the academic system, which includes a clear mission that focuses on the research and publication not only by their academic staffs but also getting students to engage into research. Therefore, RUs can be categorized as the hub of global knowledge, thus the success of knowledge sharing among academic staffs can contribute to the increase of quality of education in tertiary education. Moreover, with technology innovation, knowledge sharing can be easily disseminated to create collaboration among different teams of academics.

Having said that, the advancement and rapid growth of information and communication technology (ICT) like the internet, intranet, World Wide Web (WWW), electronic document repositories and other technologies had actually transformed the way how knowledge is being managed and shared in organizations including the institution of higher learning. A technology here, in fact, acts as a catalyst for knowledge creation, management, and sharing. Above all, individuals themselves need a tool that enhances their momentum to manage and access one another's knowledge; thus, technology is seen as an enable that facilitates these interactions among people (Alavi & Leidner, 2001) within and outside an organization for knowledge sharing. To add on, Lee and Al Hawamdeh (2002) argued, "The fundamental requirement of knowledge sharing has always been the technology". This is because, growing reliance on technology is increasing rapidly, and understanding the factors that support and promote effective knowledge sharing via the use of technology, is a vital issue for researchers and practitioners.

Both technology and knowledge sharing are the two related phenomena and the concept that has been the success of knowledge management, which is the focus of this study. This study will enable us to examine descriptively the level of usage of online knowledge sharing technology among academics in RUs, which can be the direction and focus in future research.

## **2.0 Literature Review**

Drawing from Davenport & Prusak's (1998) study, knowledge management is classified into four cycles: knowledge generation, knowledge codification, knowledge sharing and knowledge application/outcome. Knowledge generation is the initial phase where individuals create and exquisite the knowledge that resides in their minds. Given in the context of this study, this phase is referred as the process where academic staff forms ideas from various sources and experiences so that the desired knowledge can be invented or created. Knowledge codification is the process where the ideas, which reside in the mind, are now turned into an explicit form. For instance, when academic staff starts to put their ideas into a journal article, a product, a process, a specification, procedures, strategies or even as lecture notes, they are known as explicit form.

As knowledge management enhances effectiveness and efficiency in an organization, researchers have regarded knowledge management as a primary resource (Schutze & Leicher, 2002) and expensive commodity (Iftikhar, Eriksson & Dickson, 2003). However, knowledge sharing which is a sub-element of knowledge management has an essential role in knowledge management practice (Ford, 2004; Hong, Bock & Kim, 2002; Alavi & Leidner, 2001). This is because, knowledge only becomes useful if it is shared, and utilized by multiple individuals. In other words, knowledge sharing requires the involvement of several individuals who collaborate to create a new knowledge (Tuomi, 1999). In fact, Li, Montazemi, and Yuan (2006) said that knowledge sharing is to utilize each individual's knowledge collectively, while Cabrera and Cabrera (2002) had clearly said: "KM initiators try to foster the sharing of knowledge, ideas, and experiences, in whatever form, among individuals or groups".

Therefore, the above clearly explains that the important stage in knowledge management is indeed knowledge sharing. This is said so because the knowledge that has been converted will not benefit others unless it is being shared directly. Given in this context, knowledge sharing among academic staff occurs when academicians upload their creation (knowledge in any form) into the knowledge portals or knowledge management system so that it can be shared. This is a stage where the shared knowledge creates value for its recipients and the creator. In the context of this study, this stage is the benefit of knowledge sharing on individual academic staff via the use of online knowledge sharing technology..

Most of the present studies on knowledge sharing have distinguished a clear definition between "knowledge sharing" and "knowledge sharing behaviour". According to Wang, Ahmed and Rafiq (2008), Knowledge sharing is a process of dissemination of explicit or tacit knowledge, ideas, experiences, skills or technology among individual employees or within a group of employees. Gibbert and Krause (2002) defined knowledge sharing as 'willingness of individuals in an organization to share with others the knowledge they have acquired or created'. On the other hand, Staples and Webster

(2008) state that an exchange of either explicit or tacit knowledge is known as knowledge sharing. Several studies have also given an explicit definition of knowledge sharing. For instance Lee (2001) defined knowledge sharing as “activities of transferring or disseminating knowledge from one person, group or organization to another, while, “behaviour” is defined as “actions”, “reactions” and “interactions” in response to external or internal stimuli. On the other hand, Connelly and Kelloway (2003) defined knowledge sharing behaviour as “a set of behaviours that involve the exchange of information or assistance to others”. As such, knowledge sharing behaviour is being operationalized as the action of the academic staff to share knowledge by using the online knowledge sharing technology.

Nevertheless, over the last two decades, higher learning institutions invested their resources on online information systems and technologies that are necessary to disseminate knowledge. However, these institutions need to realize that the return on investment occurs only when their intended users use the information systems effectively and efficiently. In other words, the return can be seen only when individuals exhibit knowledge sharing behaviour. Gray, Thomas, and Lewis (2010) highlighted that a few studies focusing on knowledge sharing and management in educational institutions were on the implementation, users acceptance and usage of a technology, i.e knowledge management system, virtual communities of practice, knowledge repositories, and others that aid the success of knowledge sharing activities. Although there have been various studies on technology and knowledge sharing, yet, there is no total agreement concerning both the above variables (Ford, 2004). Researchers like, Alavi and Leidner (2001), and Subramanian and Soh (2009), in fact, have given a fair amount of attention in investigating the role of technology (knowledge management system) in knowledge sharing, and have acknowledged that information system technology is significantly important for knowledge exchange as they can support knowledge transfer within and across organizations.

Besides that, Nistor, Baltas, and Schustek (2012) investigated knowledge sharing and educational technology acceptance (ETA) among the academic virtual communities of practice. The purpose of their study was to investigate the factors that influence technology acceptance. Using a regression analysis on acceptance factors (performance expectancy, effort expectancy, and social influence and facility conditions), user intention, and behaviour intention, was reported that, the educational technology acceptance (ETA) was at a moderate level. Furthermore, the findings reveal that newly initiated and not well-established technologies show a low correlation between intention and behaviour, but user intention and behaviour is strongly influenced by participants’ experience with the technology.

Although, the prerequisite to successful knowledge sharing is the acceptance and utilization of the knowledge sharing technology (i.e.KMS), however, some past studies testing the significant relationship between various technology and knowledge sharing showed that there is no significant relationship between them (Connelly & Kelloway, 2003). One reason for such a situation is due to the difficulty of the technology itself that de-motivates the user to use it for the purpose of knowledge sharing (Huber, 2001). Others reveal that, the decision to share their knowledge is largely being influenced by monetary incentives and rewards (Hahn & Subramami, 2000; Bartol & Srivastava, 2002; Syed-Ikhsan & Rowland, 2004; Chua 2002; Riege, 2005).

The above literature analysis reveals that the connection between knowledge sharing and technology. Hence, the current study is interested in examining the level of usage of online knowledge sharing technology for the purpose of knowledge sharing among academic staff.

## **2. Problem Statement**

Technology innovation has a high impact on successful knowledge sharing. However, past researchers recognise that the introduction of a technology has created a difficult challenge for organizations in promoting individual towards organisational learning, knowledge sharing and performance improvement (Benson, Johnson, Kuchinhe, 2002). As such, the investigation of technology intervention has received considerable attention specifically in projecting the usage of technology in enhancing organisational performance (Wang, 2012). The effective adoption and usage of online knowledge sharing technologies have also been recognized as powerful platforms that allow users to connect, share, and interact with others (Arapaci, & Baloglu, 2016; Ramakrisnan, Jaafar, & Yahaya, 2016). In fact, the three elements, technology and knowledge sharing and management are concepts that are highly related phenomena.

Although knowledge sharing is an important enabler for an organization to achieve competitive advantage (Tapscott & Williams, 2006), the importance given on knowledge sharing in the academic environment is less compared to business sectors (Kim & Ju, 2008, Hou, Sung & Cheng 2009). This is probably because earlier research on knowledge sharing had focused on business entities relating to gaining competitive advantage (Leibowitz, 2007), and not much attention was given to education institutions (Kim & Ju, 2008). Therefore, research on knowledge sharing in the education field was not studied at the same rate like in other fields (Kim & Ju, 2008).

This is indeed important to the management team in RUs to understand that valuable knowledge that resides in academics mind need to be shared openly with others. This can only be done if academics are cooperative enough to share their knowledge (Gupta et al. 2012; Lin & Hwang, 2014). Nevertheless, many academics are nearing their retirement age or end of their contract, thus it is important for top management to initiate appropriate measures to ensure that the knowledge that resides in their mind can be stored and used.

Tan (2016) outlined the setback of not utilising technology for the purpose of knowledge sharing in universities. There are many reasons why academics behave in such away. For instance, lack of trust with the system is one of the many reasons why online technologies failed to create an effective platform for knowledge sharing behaviour. In fact Riege (2005) mentioned that with the huge investment on online knowledge sharing technologies, RUs however, failed to achieve high knowledge sharing collaboration among academics. With that, this study is aimed at investigating the level of usage of online knowledge sharing technology as a preliminary study on technology usage behaviour.

### **3. Research Questions**

By taking cues that technology and knowledge sharing are important phenomena and concepts in understand the knowledge sharing behaviour, thus this study is focused on examining descriptively the level of usage of online knowledge sharing technology among academic staffs in RUs.

### **4. Purpose of the Study**

The rapid change in the business environment that is increasingly driven by technology change has required the research universities to be equipped with a competent academics who can stay abreast of the latest innovations. Generally, a change in technology will radically transform how employees communicate, collaborate and create knowledge in an organization. As such, this has called the need for top management not only in business organisations but also specifically in research universities to improve the performance of its members by supporting organization's business strategies with sophisticated Information and Communication Technologies (ICT) capabilities. The organizations main goal has always been to enhance and improve organizational effectiveness by developing individual knowledge, skills, and expertise (Wang, 2012). Of these, technology has the most reflective impact on organisations. With that, organizations are believed to be able to seek production, service, and innovation advantages to enhance organizations' performance. The same scenario is applied in RUs. RUs play an important

This study has carried out the investigation in the context of higher learning because knowledge sharing research carried out in higher educational institutions in Asia have shown that the academic environment encounters similar knowledge sharing barriers as in business environment (Wah, Menkhoff, Loh & Evers, 2007). No doubt, universities are platforms for knowledge creation, and just storing this knowledge in knowledge repositories without the intention to disseminate or even share, does not create a substantial value. The above said action is no use or it does not make the knowledge productive unless the members of the organization utilize it within their community or globally.

Finally, the findings of this study can be extended to a larger group of audiences, for instance to the global academic communities from various universities and colleges. Knowing that knowledge sharing is the critical mass for excellence and quality in research and development (R&D), the results are aimed at providing the academic community at large with an understanding of the factors that initiates the utilization of online knowledge sharing technology

### **5. Research Methods**

The present study utilized the online survey with questionnaire as a tool of data collection. A stratified sampling was used to the distributed population. A stratified sampling was considered as a form of proportionate sampling, in which a predetermined proportion of respondents were sampled from different background and research universities. The data was collected over a two-month period from December 2016 to February 2017. Statistically, the sample size computed for the current study should be 300. However, the sample size distributed is increased to 950 to compensate for non-response. The final response rate collected and useable were 321.

### **6. Findings**

The background variables such as gender, age distribution, qualification, Research University, access to knowledge repository, and knowledge type were analysed. Table 6.1 below shows the descriptive analysis of the above-mentioned variables. Among the total respondents of 321, the descriptive analysis in Table 6.1 showed the gender distribution of males and females, in which males constitute 55.8% (179) and females 44.2% (149). This indicates that male academics are the majority in the field of study. The ages of the respondents ranged between 28 to 67 years. In this regard, the descriptive analysis in Table 4.1 showed that the age group of 28 – 40 years old were 22.7% (73), 41 – 54 years old were 59.8% (192), and 61 – 83 years old were 17.4% (56). Considering the Mean score of age ( $M = 46.90 \pm 8.50$ ) which falls between 41 – 54 age group, this indicated that the respondents in that age category were more than the other age levels.

With regard to the respondents' qualifications, those who have Master's Degree were 9.0% (29) respondents, and those who have Ph.D. were 91.0% (292). The minimum entry level for academic in research universities are Masters and above.

The respondents also came from five deferent research universities. Those who are academic staffs of UM were 11.2% (36), academic staff of USM were 20.6% (66), academic staff of Universiti Putra Malaysia (UPM) were 28.7% (92), academic staff of UKM were 24.9% (80) and academic staff of UTM were 14.6% (47). The analysis revealed that UPM

staffs were the majority, followed by UKM, then USM, UTM, then lastly, UM. For access to knowledge repository, all the respondents (100%) reported to have had access to knowledge repository, which means, none of the respondents selected 'No option'.

The respondents were also deferent in terms of their knowledge type. Out of 321, majority 64.8% (208) had acquired explicit knowledge and only 5.6% (18) had tacit knowledge. However, among the respondents, 29.6% (95) reported having acquired both explicit knowledge and tacit knowledge. Based on this result, the researcher deduced that majority of the respondents have acquired only explicit knowledge.

**Table 6.1: Background of the respondents (N = 321)**

Variables	Frequency	Percent	M	SD
<b>Gender</b>				
Male	179	55.8		
Female	142	44.2		
<b>Age Group</b>			<b>46.90 years</b>	<b>8.50 years</b>
28-40 years	73	22.7		
41-54 years	192	59.8		
55-67 years	56	17.4		
<b>Qualification</b>				
Bachelor	–	–		
Masters	29	9.0		
PhD	292	91.0		
DBA	–	–		
Professional	–	–		
Others	–	–		
<b>Research University</b>				
UM	36	11.2		
USM	66	20.6		
UPM	92	28.7		
UKM	80	24.9		
UTM	47	14.6		
<b>Access to Knowledge Repository</b>				
Yes	321	100.0		
No	000	0.0		
<b>Knowledge Type</b>				
Explicit Knowledge	208	64.8		
Tacit Knowledge	18	5.6		
Both	95	29.6		

**Level of Usage of Online Knowledge Sharing Technology**

Table 6.2 illustrates the descriptive analysis of usage of online knowledge sharing technology level in which 12.8% (41) of the respondents were reported to have low level of usage of online knowledge sharing technology, 13.4% (43) of the respondents were reported to have moderate level of usage of online knowledge sharing technology and 73.8% (237) of the respondents have high level of usage of online knowledge sharing technology. This means, there is a high level of usage of online knowledge sharing technology among the respondents based on the Mean score (M = 5.30, SD = .94).

**Table 6.0 : Level Usage of Online Knowledge Sharing Technology (n = 321)**

Levels	Frequency	Percentage	Mean	SD
Low (1 – 3)	41	12.8	5.30	.94
Moderate (3.1 – 5)	43	13.4		
High (5.1 – 7)	237	73.8		

## 7. Conclusion

Knowledge sharing activities within research universities are an important task in contributing to the body of knowledge. Research universities are actively encouraging academics to adopt, manage and share knowledge for the substantial improvement in the performance of the university. The online knowledge sharing technologies are important tools for academics as it plays a crucial role in enhancing knowledge sharing. As such, a variety of online knowledge sharing technologies such as KM portal, knowledge management systems have been developed. Moreover, the results on usage level of online knowledge sharing technologies by academics in research universities have indicated a high-level usage. This gives an indication that academics are actively involved with online technologies. This indicates knowledge management is a growing influence in Malaysia.

Knowing that there is a high usage level of online technology, to support and encourage further the knowledge sharing activities among academic staff, universities should not just look into creating good infrastructure platform with various online technologies capabilities but also to understand the behaviour of individuals to promote knowledge sharing.

However, the success of implementing these technologies and high level of usage of online technologies does not guarantee that knowledge will be shared successfully. Moreover, past research on knowledge sharing success showed that both top management and HRD practitioners have called for the identification of factors, which successfully promote knowledge sharing behaviour among individuals with the use of online technologies in the context of higher education. This is said so because a successful application of a technology as a tool increasingly depends not only upon the use of a technology, but also the willingness to use it for collaborative knowledge sharing. Therefore, an increasing emphasis on knowledge creation and sharing, and technology application leads to a continuous evaluation on the role of technology in HRD. There must also be an encouraging support by related authorities for example Government (Ministry of Higher Education) and collaborating institutions.

Furthermore, past research had significantly identified that knowledge is a critical strategic resource in any organization (Paghaleh, Shafieezadeh, & Mohammadi, 2011). However, it is a challenge to convince academic staff to share their knowledge with other members online. This can be an apprehension among the academics which governing bodies should try to solve. With this in mind, the determinants that influence the usage of online knowledge sharing technology should be examined. This is said so because the current study provides evidence that the behaviour of usage of online knowledge sharing is relatively high.

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