

The Key Factors and Tools for the Knowledge Sharing: A Review



Piyachart Tumna, Piyasak Jeatrakul
School of Information Technology
Mae Fah Luang University, Muang, Chiang Rai, Thailand
piyachart.tum13@lamduan.mfu.ac.th, piyasak.jea@mfu.ac.th

ABSTRACT: *This study focuses on the tendencies of current research related to knowledge sharing. The literature review emphasizes the key factors that influence the motivation of knowledge sharing within organizations. The review investigates factors of knowledge sharing in three different areas: individual factors, organizational factors, and technological factors. The current tools used in knowledge sharing are also surveyed. Thirty eight research papers between 2009 and 2013 are investigated. The result of this research indicates that significant factors can motivate the development of knowledge sharing within an organization effectively.*

Keywords: Knowledge Sharing, Tacit Knowledge, Explicit Knowledge

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1. Introduction

Presently, gaining advantage from knowledge is important because it can enhance the efficiency of business operations and business competitiveness in organizations. Generally, knowledge is divided into two categories, tacit knowledge, and explicit knowledge. Tacit knowledge is knowledge which is derived from experience. It can be called the intellectual capital. On the other hand, explicit knowledge is any knowledge that can be explained in words, sentences, numbers and pictures. It can be applied to practical education tools. These are, for example, multimedia tools, books, and documents. In order to employ tacit knowledge and explicit knowledge efficiently, organizations need to understand how to manage the two types of knowledge successfully. This is called knowledge management [1]. In the process of knowledge management, tacit knowledge and explicit knowledge need to be extracted and collected in a knowledge-based database. While the knowledge-based database is information collected for knowledge sharing within organizations, knowledge sharing is an activity to exchange knowledge, skills and experiences from person to person. Furthermore, knowledge sharing is a key component in the knowledge management process [2], for example, a senior employee can perform knowledge sharing by transferring their working experience to a new employee.

In the previous study, there is a lot of research related to knowledge sharing. This research tries to study the factors influencing knowledge sharing. The results show that there are several factors supporting knowledge sharing in both business and educational organizations. This leads to the first motivation of this paper – to investigate the key factors of knowledge sharing. Furthermore, the current research shows that there are several tools implemented in experiments. The implementation of effective tools can enhance the organization to be successful in the long term [3]. This leads to the second motivation of this review.

This paper tries to investigate the current tendencies of knowledge sharing tools. This is to discover which characteristics can be applied effectively using the current tools. Research papers between the years 2009 and 2013 are investigated.

2. Factors influencing knowledge sharing

Upon investigating twenty five papers, twenty knowledge sharing factors are found. Riege [4] proposed three categories of motivation factors in knowledge sharing: individual factors, organization factors, and technological factors. In order to apply these categories all factors are summarized in Table 1.

Individual Factor	Organizational Factor	Technological Factor
<ul style="list-style-type: none"> • Self-efficacy • Trust • Leadership • Individual’s motivation • Enjoyment • Relationships • Employees’ collaborative behaviors • Learning behaviors • Attitude positively 	<ul style="list-style-type: none"> • Organizational climate • Organizational structure • Organizational culture • Organizational reward • Social relationship 	<ul style="list-style-type: none"> • Communication network • Information technology • IT infrastructure • Social networks • Technological and social-cultural • Resource availability

Table 1. Factor for Knowledge Sharing [2, 5 - 28]

2.1 Individual Factors

Individual factors are internal factors in each person. Generally, people have different individual factors based on their skills, experience, and attitude. Some examples of individual factors are trust, individual’s motivation, leadership etc. Howell and Kerry [13] found that trust and leadership are major individual factors. These factors encourage people to share knowledge among them. Trust and leadership are also key factors supporting tacit knowledge sharing [10].The researchers were interested in studying individual factors concerning knowledge sharing with regards to transmitting appropriate knowledge from the right person at the right time. This shows that exchanging knowledge depends on the behavior or the reception of each person. This literature review indicates the importance of individual factors and the processes which relate to both a person and a group while working. [5-18]

2.2 Organizational Factors

Organization factors are factors occurring in the organization and within a group of people working in an organization. These factors emphasize policy and vision in order to build an atmosphere within the organization that transmits knowledge, skills, and experience from generation to generation. The act of knowledge sharing can be supported by activities that motivate knowledge sharing within an organization as well as inter-organization. Some organizational factors that relate to individual factors. Zhang et al. [20] mentioned that knowledge sharing in a group of employees who are skillful effects the organization, so that organizational design is necessary for the process of knowledge sharing. Seba et al. [7] mentioned that the factors which affect knowledge sharing in an organization should be considered as the result of the structure and preparedness in resources of organization. However, the organizational factor is obviously a significant motivation of knowledge sharing in an organization. [2, 5, 7, 12-14, 16-21]

2.3 Technological Factors

Technological factors are significant because they allow knowledge to be managed successfully and are a connection between individual factors and organizational factors. They help people to work and share their knowledge together easily. Besides, they help to collect knowledge which is received from implicit knowledge transmission that becomes explicit knowledge. This encourages people to share knowledge not only within the organization but also between organizations. Technology used for sharing knowledge based on modern information technology structure and reliable computer systems not only connects an individual with technology, but also with the organization. Innovation and other connections in the act of knowledge sharing include fast and effective transmission and collection of information .This is related to the technology systems of knowledge sharing including technology combinations and technology used in sharing knowledge. In addition, technology can be used to transfer and collect knowledge – they support each other[5]. Shih et al [28] stated that the factors of effective knowledge

transmission of IT via an outsourcing system depends on the ability of workers in that field. They develop IT knowledge in practice and manage it as well. Technology must include an effective working collaboration in order for knowledge transfer to occur. This shows that technological factors such as IT systems, technology, new innovation, and IT workers are necessary to encourage knowledge sharing within an organization. [7, 10, 12, 15, 20, 22-27]

3. Tools Using for Knowledge Sharing

Tools for knowledge sharing are an important part of the knowledge sharing process. Every organization gives precedence to them because they increase successful knowledge transfer by employees. If the tools are chosen appropriately, they will encourage knowledge sharing appropriately and can reduce the obstacles or limitations of shared knowledge. Successful knowledge sharing creates benefits which result in an effective an effective working process.

In table 2, information is presented about the results from using tools for knowledge sharing. They are divided into 2 categories – technology tools, and non-technology tools. These results are from previous research during the years 2009-2013.

3.1 Technology Tools

Information and Communication Technology (ICT) is Technology is used in computer systems and telecommunication systems to design tools for knowledge sharing. The main purpose of using these tools is knowledge transmission, and exchange of explicit knowledge. They can be divided into 3 types which are: communication technology, collaboration technology, and storage technology. Some examples of technology tools are: wiki, blog, web-based, data mining, knowledge map etc. These other functions can also be used in knowledge transmission by means of text, pictures, animation, music, and video. These functions can help the learning process easier. Moreover, ICT helps in the process of knowledge storage and maintenance in order to preserve knowledge for sharing. They contribute to reduced expenses in the knowledge sharing process as well. Hence, technology tools support knowledge access and more effective methods of knowledge sharing.

Table 2 presents an example of some technology tools which the researchers developed for knowledge sharing.

- **Happel** [26] realized the importance of “*need-driven knowledge sharing*” within the environment of Wikipedia, which lead to the development of Woogle as a prototype system. It has the characteristics of social searching and the system was developed to adjust the search engine and knowledge used within Wikis. It does this by building a ring for information requirements and knowledge sharing. This encourages users to share knowledge and can ease the problem of knowledge sharing within an organization.
- **Tang et al.** [29] use a codification mechanism to interpret the meaning of the wiki system which is called an ontology-based wiki system. This is used because it is convenient to exchange or transfer knowledge faster and more correctly.
- **Engel et al.** [24] presented knowledge sharing application based on P.i.t.c.h Project which is a design for User Interface(UI). It uses the pattern of semi-automatic coding as a tool for behavioral improvement of knowledge transfer. It stimulates employees to share knowledge. This has the effect of employees being more effective.
- **Rajalakshmi and Banu** [27] developed knowledge Portal Info-Ca-Sh to be a tool for exchanging knowledge between boundaries through a network system. This tool facilitates collaboration across and within the different locations.
- **Brown and Kolling** [25] tested knowledge sharing in different situations based on three communities. This test is known as Colour Room software. It was based on platform software on websites in order to support education in communities accurately. These three communities are Green Room, Blue Room and CAS online. Each community shares knowledge via websites such as E-mail, web boards, site access, discussion participation, resource editing, and real time discussion conversation board. The evaluation of these results indicated that using the Colour Room software is more successful in designing a prototype of knowledge sharing websites.

3.2 Non-Technology Tools (Traditional Tools)

Non-technology tools or traditional tools are used to search for knowledge, knowledge creation and acquisition, knowledge organization, knowledge codification and refinement, and knowledge sharing and learning. These tools are used in order to use knowledge to maximize the benefits for the organization. These tools are appropriate for knowledge transfer that is suitable for Tacit knowledge. This requires the transfer of interactions between individuals such as the Community of Practice (CoP),

meetings, workshops, and more.

Type	Ks Tool	Researcher	Result
Technology Tool	Woogle4MediaWiki [26]	Happel (2009)	Woogle can help to encourage users to share knowledge and can ease the problem of bootstrapping enterprise wikis.
	Ontology-based wiki system[29]	Tang et al.(2011)	A codification mechanism that makes use of a semantic wiki to facilitate knowledge sharing.
	Knowledge sharing applications[24]	Engel et al. (2011)	The design of user interfaces is greatly needed to applications for knowledge sharing.
	Info-Ca-Sh (web- based knowledge system) [27]	Rajalakshmi and Banu(2012)	This tool facilitates collaboration across and within different locations.
	Colour Software [25]	Brown and Kolling (2013)	The results show that, the Colour Room software has been successfully used by three different communities.
Non-technology tool(Traditional)	Experimental Scenario[30]	Zhang and Jiang(2012)	Learning willingness and personal relationships with the sharer have a significant effects on encouraging knowledge sharing behaviour.
	Group Work[31]	Analoui et al. (2013)	It can assist educators in making informed decisions about group work to increase student engagement, and support cognition-based trust to enhance knowledge sharing

Table 2. Tools for knowledge Sharing

Table 2 presents an example of some non-technology tools which the researchers developed for knowledge sharing.

- **Zhang and Jiang** [30] focused on an experimental scenario to create situations of knowledge sharing in meetings and training. The intention of personalized learning and the relationship between sharers are key factors of the experimental scenario to encourage knowledge sharing behavior.
- **Analoui et al.** [31] focused on the assistance of educators in making informed decisions about group work to increase student engagement, and support based on an individual's trust. However, group work sharing helps students be more confident and available to enhance knowledge sharing.

4. Discussion

In this literature review focused on the study aspect of knowledge sharing in the organization, the factors which influenced the motivation of knowledge sharing were emphasized. Besides, the key factors will be developed the knowledge sharing tools in organization.

The literature review classified the factors of knowledge sharing from 25 research papers between 2009-2013. The key factors

that have been studied repeatedly are: individual factors, organization factors, and technology factors.

Figure 1 shows the most three elements of each group of key factors that have been studied and discussed repeatedly. The evidence of the literature review was collected from 25 researches as per the results below.

- **The First Group Of Individual Factors** from 14 related literature reviews [5-18] found that the key factor which was repeated in the research was trust, and individual’s positive motivation and attitude respectively. Three factors were key factors to motivate knowledge sharing behaviors.

- **The Second Group Of Organizational Factors** from 12 related literature reviews [2, 5, 7, 12-14, 16-21] found that the key factor which was repeated in the research was organizational structure. Next was organizational rewards and the last one was organizational culture. Three factors were the main factors for organizations in order of importance because they can help to motivate the process of knowledge sharing effectively.

- **The Third Group of Technological Factors** from 13 related literature reviews [5, 7, 10, 12, 15, 20, 22-28] found that the key factor which was repeated continuously was IT infrastructure. The next factors were information technology and social networks. Three factors were key factors of IT which can help to make collaboration and knowledge sharing faster and easier.

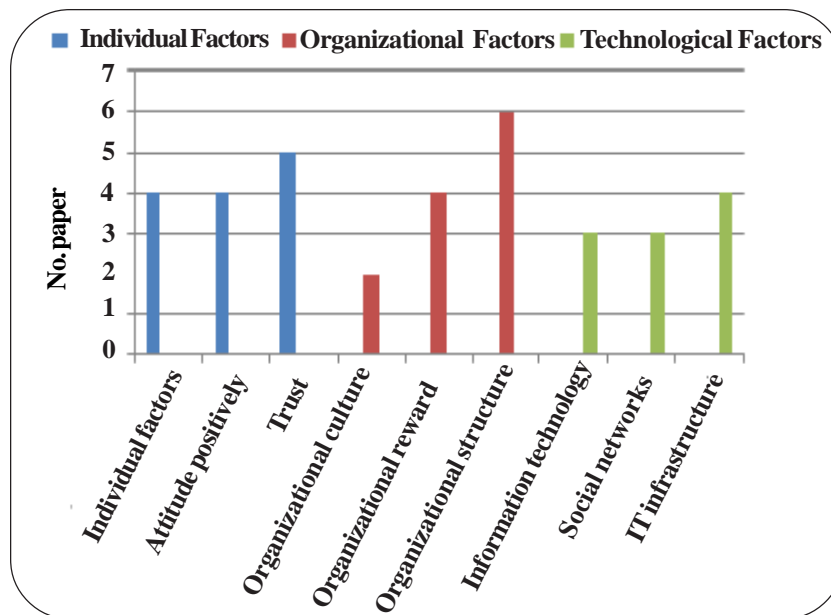


Figure 1. Key Factors Influencing Knowledge Sharing

The process of knowledge sharing needs three factors in order to motivate knowledge sharing. The first factor is individually. Trust and relationships between people are mentioned in this group because they are important in motivating belief and knowledge sharing readily. Hence, trust is a key factor for the individual factor that is most often mentioned. Next, the organizational structure is a key factor because of the differences among organizations. Many organizations give precedence to the process of knowledge sharing because this knowledge can be used in the organization to its advantage. It aims to develop organizational structure within an educational organization in order to support learning of personnel within that organization. This helps people to be ready to transmit knowledge, skills, and experience to another generation. Besides, it will have the effect of creating an effective process within the organization as well. The last factor is the technological factor of IT infrastructure. This factor indicates that development of IT systems or networks is important because this is currently the age of technology and new innovation. Therefore, using or finding the advantages from technology including transferring and storing is necessary. Correct, fast and accurate use of IT searching gives an advantage for efficient knowledge sharing.

5. Conclusion

This research has the purpose of studying the key factors which influence motivation concerning knowledge sharing within

organizations. The current tendencies in the use of knowledge sharing tools in view of especially knowledge sharing is also studied. This literature review found that the key factors which motivate the knowledge sharing activities are: trust, organizational structure, and IT infrastructure. However, the tendency of using a tool for knowledge sharing emphasizes studying and developing technology tools more than non-technology tools. This occurs because three factors, individual factor, organizational factor and technological factor, are supported in using technology tools in order to truly accomplish and motivate knowledge sharing in an organization

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