

Conference Paper

Knowledge-Sharing Enablers and Barriers in Research Centers: A Literature Review

Abdul Rohman¹, Anis Eliyana², and Dedi Purwana³

¹Department of Management, Universitas Negeri Jakarta, Indonesia

²Department of Management, Universitas Airlangga, Indonesia

Abstract

The purpose of the study is to explore the enablers and barriers of knowledge-sharing and consider how knowledge-sharing is implemented by research centers. The literature review covers journals which are indexed (Scopus, ProQuest, and Thomson Reuters) and specialized in knowledge-sharing in research centers. The papers could be easily explored using the key search terms via search engines such as Google Scholar, Emerald Insight, and ProQuest. The review process included the studies from 1994 to 2018. Key search terms include “knowledge management”, “knowledge sharing”, “knowledge sharing enablers and barriers”, and “research centers” to reduce interpretation bias. Individual enabler factors supporting knowledge-sharing consist of social relations and networks, physical proximity to colleagues, a ‘no stupid questions’ culture, monetary rewards, trust, openness in communication, interactive communication, and intrinsic motivational factors. Meanwhile organisational factors include the provision of meeting facilities and informal spaces, appreciation of research by firms and society, diffusion and routine dissemination, simplification of the patenting process, organizational rewards, organizational culture, intention to knowledge sharing methods, extrinsic motivation factors, and others (teamwork, and solid research team). The study was approached from a theoretical perspective and the model proposed can be empirically validated by identifying statements for each dimension. Future research should explore more empirical studies from different countries especially case studies in research centers.

Keywords: knowledge management, knowledge sharing enablers and barriers, research centers

Corresponding Author:

Abdul Rohman
rohmanhafid@gmail.com

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1. Introduction

Knowledge management (KM) has been applied in many organizations, companies and industries in the world, from small, medium to large scale organizations. Knowledge management is viable for most organisations today, since when it is implemented effectively it provides many benefits to an organisation. For example, management of knowledge improves performance and might advantage organisations by smoothing the progress of decision-making, plummeting ‘product’ development cycle time, and

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enhancing services [1]. There are so many benefits obtained by organizations in implementing knowledge management, among them are knowledge management systems provide organizations with processes and tools to capture, organize, and manage knowledge [2].

Several recent studies on the implementation of knowledge management in various organizations, companies and industries have also been carried out, such as recent research on the implementation of knowledge management in public accounting firms [2], implementation in logistics companies [3], research that focuses on implementation in SMEs [4, 5], implementation in educational institutions [6], implementation in service sector [7] and implementation focuses on university-industry partnership [8]. All research results with both qualitative and quantitative methodologies have concluded that the knowledge management role is very important and dominant in the success of the organization.

Meanwhile, previous studies have not revealed much about the implementation of knowledge management in research institutions. There are only a few research results that focus on research institutions. At the research center, knowledge management is basically built through the concept of knowledge creation which was developed in A Dynamic Theory of Organizational Knowledge Creation [9, 10]. Various studies suggested that knowledge sharing as the main activity of the knowledge management process [11]. Therefore, the role of knowledge sharing in organizations is very important, because knowledge management has been created for the purpose of supporting knowledge sharing. Meanwhile, the innovation capability of an organization can be improved through knowledge sharing [12].

In addition, to understand the importance of knowledge sharing in organizations, there are many questions that arise from practitioners about what and how to implement it in organizations and what factors can encourage and hinder the implementation. Several studies have found models and forms to answer this question, both through quantitative and qualitative research. One of the results of the discussion put forward by the researchers found that intrinsic motivation factors and extrinsic motivation were interesting for employees to do knowledge sharing to others [13]. Knowledge Management was originally defined as a process of applying a systematic approach to capture, structure, organize, and disseminate knowledge throughout the organization to work faster, reuse best practices, and reduce expensive rework from project to project [9, 10]. In addition, the definition of knowledge management is divided into three perspectives, namely: (1) business perspective, (2) cognitive science/knowledge science perspective, and (3)

process/technology perspective. From a business perspective, knowledge management is defined as an integrated and collaborative approach to the creation, capture, organization, access, and use of corporate intellectual assets. Meanwhile, from the point of view of the cognitive science/knowledge science, knowledge management is defined as a fundamental resource that encourages us to function these resources intelligently [14]. While the latter, according to the process/technology perspective, knowledge management is defined as a concept in which information is transformed into knowledge that can be acted upon and easily available in a form that can be used for people who can implement it.

Knowledge Sharing is one of the most important aspects in the knowledge management process [15]. This opinion is in line with the success of knowledge management initiatives depending on knowledge sharing [16]. Knowledge sharing activities allow the group members to exchange ideas and work together, and in this way was the success of their organization's performance can be maximized [17]. Sharing knowledge is defined as group activities that facilitate learning and enhance the group's ability to achieve goals [18].

In various scientific studies, knowledge sharing has a very positive and significant influence on business performance. Some studies that reveal a positive relationship between knowledge sharing and business performance are research from [19]. which states that company performance is influenced by trust among employees, while the high value of trust will also affect the value of knowledge sharing. Meanwhile, introduces that knowledge sharing is a culture of social interaction that involves exchanging knowledge, experience, and skills of employees through all departments or organizations [20]. This opinion directs that knowledge sharing is actually an activity of social interaction of human subjects to transfer knowledge, experience and skills possessed by someone so that knowledge can be spread and used for the benefit of future improvements.

2. Method

The studies were explored from journals which are indexed (Scopus, ProQuest, and Thomson Reuters) and specialized to knowledge sharing in research centers. The papers could be easily explored using the key terms and using various search engines such as google scholar, Emerald insight, and ProQuest. The review process included the studies from 1994 to 2018. During the review process, papers were explored on the basis of key word search, namely, "knowledge management", "knowledge sharing",

“knowledge sharing enablers and barriers”, and “research centers” to reduce interpretation bias.

3. Result

From the table, we can see that there are about 35 enablers knowledge sharing factors and there are around 19 barriers factors for knowledge sharing. The results of the study showed that the supporting factors were more than the inhibiting factors. While this inhibiting factor is taken from the test results on the processed data using PLS which shows that these factors do not support scientifically [21]. They argued that the factors that do not support this data are obstacles to the process of knowledge sharing. Whereas in other studies, it does not explained the inhibiting factors of knowledge sharing [13] and vice versa research (Ondari-Okemwa, 2006) does not explain the supporting factors [22].

4. Discussion

As explained earlier that research institutions have unique characteristics and characteristics that are different from other organizations in terms of how they behave and want to share their knowledge, or this term can be called knowledge sharing behavior. Because of its uniqueness, it is necessary to do research that shows these differences, especially in the context of the implementation of knowledge sharing. And furthermore, this literature review focuses on enablers and barriers in knowledge sharing. Various theories have been presented about how the theoretical history of the formation of knowledge management as the root of the knowledge sharing process introduced by (Nonaka, 1994) and (Takeuchi & Umemoto, 1996) through the concept of knowledge creation [9, 10].

Previous studies to reveal the enablers and barriers to knowledge sharing have also been reviewed, until finally reviewing the literature through empirical methods that focus on ten research institutions that apply knowledge management systems and face challenges and get support from several factors. The ten research institutions according to what have been explained previously are empirical study from Pharmaceutical Research and Development in Denmark [23], Portuguese University Research Centers in Portugal [24], Research Universities in Malaysia [21], Iranian Research Centers in Iran [13], the International Livestock Research Institute (ILRI) in South Africa [22], Health And Life Sciences Research Communities in the United States [25], German R&D Projects of

TABLE 1: Empirical Studies of Knowledge Sharing Enablers and Barriers in Research Centers

| No. | Empirical Study | Source | Findings |
|-----|--|---|---|
| 1 | Health And Life Sciences Research Communities in the United States. | (Park & Gabbard, 2018) | Enablers: reciprocal benefit, anticipated relationship, reputation, and altruism. Barriers: Fear of being scooped. |
| 2 | Research Universities in Malaysia | (Tan & Md. Noor, 2013) | Enablers: Trust, organizational rewards, organizational culture, KM system quality, openness in communication, interactive communication. Barriers: Self efficacy knowledge, reciprocal benefit, top management support, KM system infrastructure. |
| 3 | Iranian Research Centers in Iran | (Akhavan et al., 2013) | Enablers: Intrinsic motivational factors, extrinsic motivational factors, and intention to methods of knowledge sharing. Barriers: - |
| 4 | Pharmaceutical Research and Development in Denmark. | (Lilleoere & Hansen, 2011) | Enablers: Social relations and network, Physical proximity to colleagues, no stupid question culture, meetings and informal space. Barriers: No physical proximity to colleagues, no one can use the knowledge / fear of being foolish, knowledge is power, do not know who knows. |
| 5 | German R&D Projects of University Scientists of the Chemical and Biological Sciences | (Niedergassel & Leker, 2011) | Enablers: Trust, dependency, frequency of communication and closeness of partners. Barriers: - |
| 6 | R&D organizations in Taiwan | (Taylor, Hung, & Lai, n.d. 2011) | Enablers: Reputation, reciprocity, altruism Barriers: |
| 7 | Pharmaceutical companies in Canada and the United State | (Ensign & Louis, 2010) | Enablers: Reputational factors (past behavior, duration of interaction, personal and professional relationship) Barriers: - |
| 8 | Portuguese University Research Centers in Portugal | (Rego, Pinho, Pedrosa, & Pina E. Cunha, 2009) | Enablers: Appreciation of research by firms and society, diffusion and disseminations routines, monetary reward, simplification of patenting processes, others (eg, teamwork, and solid research teams). Barriers: Culture of "working alone", lack of motivation, fear of being "robbed", inadequate qualification personnel, others (eg, lack of time, monetary reward, scientific culture, effectiveness of the diffusion tools, etc). |
| 9 | Taiwan-based Research Institute and Laboratories | (C. Wang, Yang, & Management, 2007) | Enablers: Extraversion, neuroticism, conscientiousness, agreeable, and openness. Barriers: |
| 10 | International Livestock Research Institute (ILRI) in South Africa | (Ondari-Okemwa, 2006) | Enablers: - Barriers: Documentation of ethno-veterinary knowledge, audit knowledge, coping with service demands, personnel shortage, sharing of information, budgetary constraints. |

University Scientists of the Chemical and Biological Sciences [26], R&D organizations in Taiwan [27], Taiwan-based Research Institute and Laboratories [28], and Pharmaceutical companies in Canada and the United State [29].

There are still not many studies that are directly applied to research institutions around the world, limiting conclusions from previous studies. This is also the question of whether previous studies describe the same characteristics in all research institutions in the world, both in terms of the type of research and regional demography.

Every process in knowledge creation requires strong definition support to say that knowledge sharing is a major part of the knowledge management. Where each process will produce different outputs. For this reason, it is necessary to discuss how the great concept of knowledge management in the knowledge sharing process within an organization, especially research organizations.

5. Conclusion

In drawing conclusions, writing attempts to classify supporting factors and inhibit knowledge sharing based on categories developed by researchers which provides several categories of supporting factors and inhibitors to three categories, those are organizational, individual, and technological [30–36]. After analyzing this category and revisiting the findings, the authors conclude the categorization of the results as follows:

First, individual and organizational factors dominate to be an enabler of knowledge sharing activities. Second, individual factors dominate as a barrier to the process of knowledge sharing activities in research institutions. Third, research institutions also need to pay attention to the inhibiting factors born from the organization itself. The most dominant thing in this research is the support of management. And the last, the supporting factors in terms of technology also can not be underestimated, because these factors become one of the facilities and infrastructure important for the successful implementation of knowledge sharing in the company. For this reason, research institutions should pay attention to this factor and prepare it properly.

References

- [1] Dhabi, A. (2018). Role of Organisational Culture, Leadership and Organisational Citizenship Behaviour on Knowledge Management Amna Ali Al Mansouri*, Sanjay Kumar Singh and Mehmood Khan, vol. 9, issue 2, pp. 129–143.
- [2] Hwang, Y., Lin, H. and Shin, D. (2018). Knowledge System Commitment and Knowledge Sharing Intention: The Role of Personal Information Management Motivation. *International Journal of Information Management*, vol. 39, <https://doi.org/10.1016/j.ijinfomgt.2017.12.009>.

- [3] Kianto, A., *et al.* (2018). The State of Knowledge Management in Logistics SME: Evidence from Two Finnish Regions the State of Knowledge Management in Logistics Smes: Evidence From Two. *Knowledge Management Research & Practice*, vol. 00, issue 00, pp. 1–11, <https://doi.org/10.1080/14778238.2018.1488523>.
- [4] Kmiecik, R., *et al.* (2018). Knowledge Management Orientation, Innovativeness, and Competitive Intensity: Evidence from Polish SMEs Intensity: Evidence from Polish SMEs. *Knowledge Management Research & Practice*, vol. 00, issue 00, pp. 1–14, <https://doi.org/10.1080/14778238.2018.1514997>.
- [5] Law, K. K. and Chan, A. (2017). Managing Knowledge Work in Asia Pacific Contexts: Case Studies of Hong Kong SMEs. *Asia Pacific Business Review*, vol. 2381(August), pp. 1–18, <https://doi.org/10.1080/13602381.2017.1346207>.
- [6] Reddy, P. R. and Savinkina, L. A. (2018). Influence of Organisational Culture Dimensions on Knowledge Management Processes in Higher Educational Institutions. Gantasala Venugopal Prabhakar* Swapna Bhargavi Gantasala Sailaja Ankireddy, vol. 9, issue 1, pp. 51–71.
- [7] It-management, G. (2018). Knowledge Management Evaluation in a Service Sector: the Case of Central Bank of Iran. Seyed Hossein Siadat, vol. 9, issue 1, pp. 72–84.
- [8] Thomas, A. and Paul, J. (2019). Knowledge Transfer and Innovation Through University-Industry Partnership: An Integrated Theoretical View. *Knowledge Management Research & Practice*, vol. 00, issue 00, pp. 1–13, <https://doi.org/10.1080/14778238.2018.1552485>.
- [9] Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation Dynamic Theory Knowledge of Organizational Creation. *Organization Science*, vol. 5, issue 1, pp. 14–37, <https://doi.org/10.1287/orsc.5.1.14>.
- [10] Takeuchi, H. and Umemoto, K. (1996). A Theory of Organizational Knowledge Creation. *International Journal of Technology Management, Special Issue on Unlearning and Learning for Technological Innovation*, vol. 11, pp. 833–845, <https://doi.org/http://dx.doi.org/10.1504/IJTM.1996.025472>.
- [11] Riege, A. (2005). Three-Dozen Knowledge-Sharing Barriers Managers Must Consider. *Journal of Knowledge Management*, vol. 9, issue 3, pp. 18–35, <https://doi.org/10.1108/13673270510602746>.
- [12] Bock, A. G., *et al.* (2016). V _ N ^ Rcci Iv Se a | Sue Behavioral Intention Formation in, vol. 29, issue 1, pp. 87–111.
- [13] Akhavan, P., Rahimi, A. and Mehralian, G. (2013). Developing a Model for Knowledge Sharing in Research Centers. *Vine*, vol. 43, issue 3, pp. 357–393, <https://doi.org/10.1108/VINE-06-2012-0020>.

- [14] Dalkir, K. (2005). *Knowledge Management in Theory and Practices Butterworth Heinemann*, vol. 4, <https://doi.org/10.1002/asi.21613>.
- [15] . Obermayer-Kovács, N., *et al.* (2015). Exploring Emotional Intelligence Trait Enablers for Knowledge Sharing: An Empirical Study. *International Journal of Synergy and Research*, vol. 4, issue 1, pp. 7, <https://doi.org/10.17951/ijsr.2015.4.1.7>.
- [16] Wang, S. and Noe, R. A. (2010). Knowledge Sharing: A Review and Directions for Future Research. *Human Resource Management Review*, vol. 20, issue 2, pp. 115–131, <https://doi.org/10.1016/j.hrmr.2009.10.001>.
- [17] Dokhtesmati, M., & Bousari, R. G. (2013). Knowledge Sharing in Iranian Academic Institutions: Meta Analysis Approach. *Procedia - Social and Behavioral Sciences*, vol. 73, pp. 383–387, <https://doi.org/10.1016/j.sbspro.2013.02.065>.
- [18] Rosendaal, B., & Bijlsma-Frankema, K. (2015). Knowledge Sharing Within Teams: Enabling and Constraining Factors. *Knowledge Management Research and Practice*, vol. 13, issue 3, pp. 235–247, <https://doi.org/10.1057/kmrp.2013.45>.
- [19] Rutten, W., Blaas - Franken, J. and Martin, H. (2016). The Impact of (Low) Trust on Knowledge Sharing. *Journal of Knowledge Management*, vol. 20, issue 2, pp. 199–214, <https://doi.org/10.1108/JKM-10-2015-0391>.
- [20] Lin, H. F., Lee, H. S. and Wang, D. W. (2009). Evaluation of Factors Influencing Knowledge Sharing Based on A Fuzzy AHP Approach. *Journal of Information Science*, vol. 35, issue 1, pp. 25–44, <https://doi.org/10.1109/TCSI.2011.2161363>.
- [21] Tan, C. N.-L. and Md. Noor, S. (2013). Knowledge Management Enablers, Knowledge Sharing and Research Collaboration: A Study of Knowledge Management at Research Universities in Malaysia. *Asian Journal of Technology Innovation*, vol. 21, issue 2, pp. 251–276, <https://doi.org/10.1080/19761597.2013.866314>.
- [22] Ondari-Okemwa, E. (2006). Knowledge management in a research organisation: International Livestock Research Institute (ILRI). *Libri*, vol. 56, issue 1, pp. 63–72, <https://doi.org/10.1515/LIBR.2006.63>.
- [23] Lilleoere, A. M., & Hansen, E. H. (2011). Knowledge-Sharing Enablers and Barriers in Pharmaceutical Research and Development. *Journal of Knowledge Management*, vol. 15, issue 1, pp. 53–70, <https://doi.org/10.1108/13673271111108693>.
- [24] Rego, A., *et al.* (2009). Barriers and Facilitators to Knowledge Management in University Research Centers: An Exploratory Study. *Management Research: Journal of the Iberoamerican Academy of Management*, vol. 7, issue 1, pp. 33–47, <https://doi.org/10.2753/JMR1536-5433070103>.
- [25] Park, J. and Gabbard, J. L. (2018). Factors that Affect Scientists' Knowledge Sharing Behavior in Health and Life Sciences Research Communities: Differences Between

- Explicit and Implicit Knowledge. *Computers in Human Behavior*, vol. 78, <https://doi.org/10.1016/j.chb.2017.09.017>.
- [26] Niedergassel, B. and Leker, J. (2011). Technovation Different Dimensions of Knowledge in Cooperative R & D Projects of University Scientists. *Technovation*, vol. 31, issue 4, pp. 142–150, <https://doi.org/10.1016/j.technovation.2010.10.005>.
- [27] Hung, S., & Lai, H. (2014). Behaviour & Information Technology Knowledge-sharing Motivations affecting R & D Employees Acceptance of Electronic Knowledge Repository, pp. 37–41, <https://doi.org/10.1080/0144929X.2010.545146>.
- [28] Wang, C., Yang, Y. and Management, I. (2007). Personality and Intention to Share Knowledge: An Empirical Study of Scientists in aN R & D, vol. 35, issue 10, pp. 1427–1436.
- [29] Ensign, P. C. and Louis, H. (2010). Knowledge Sharing how Reputation affects Knowledge Sharing among Colleagues, no. 51213.
- [30] Kosonen, M. and Kianto, A. (2007). Applying Wikis to Managing Knowledge - A Socio-technical Approach. Presented at *Proceedings of the European Conference on Knowledge Management, ECKM*, vol. 19, issue 1, pp. 541–546, <https://doi.org/10.1002/kpm>.
- [31] Hartner, A. and Grünfelder, M. (2013). What influences Sharing? The case of Alstom France. *Umeå School of Business and Economics*, pp. 1–69.
- [32] Khalil, T., *et al.* (2014). Examining the Social and Technical Factors Influencing School Teachers Knowledge Sharing Intentions in a Teachers Online Professional Community. *The Electronic Journal of Knowledge Management*, vol. 12, issue 3, pp. 157–165.
- [33] Gharamah, A. A. and Noordin, M. F. (2017). Impacts of organizational culture, support and IT infrastructure on knowledge management success: An empirical study in Islamic Country, Saudi Arabia. Presented at *Proceedings - 6th International Conference on Information and Communication Technology for the Muslim World, ICT4M 2016*, pp. 19–23, <https://doi.org/10.1109/ICT4M.2016.16>.
- [34] Obermayer-Kovács, N., *et al.* (2015). Exploring Emotional Intelligence Trait Enablers for Knowledge Sharing: An Empirical Study. *International Journal of Synergy and Research*, vol. 4, issue 1, p. 7, <https://doi.org/10.17951/ijsr.2015.4.1.7>.
- [35] Aris, A. Z. (2013). Requirement for Knowledge Sharing Behavior: A Review of Empirical Findings. *Challenges in Encouraging Knowledge Sharing Behavior*, vol. 3, issue 6, pp. 517–526.

- [36] Pedersen, T. H. (2017). *Analysis of the Antecedents of Knowledge Sharing and its Implication for SMEs Internationalization*. Retrieved from <https://brage.bibsys.no/xmlui/bitstream/handle/11250/2460262/PedersenTH.pdf?sequence=1>.