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Dimensions of Knowledge Management Maturity in the University Libraries

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Abstract. Knowledge is recognised as a critical resource, and managing knowledge is crucial in organisations. The benefits of knowledge management have been reviewed in much literature. This paper presents an overview of knowledge management, the maturity model, and the knowledge management maturity model. To the best of our knowledge, the amount of literature relating to knowledge management maturity is almost nonexistent in the field of libraries. Identifying this gap, the main goal of this paper is to discover knowledge management maturity dimensions, namely human capital, support from top management, organisational culture, leadership, and employee skills, towards innovation performance in university libraries.
Keywords: knowledge management maturity dimensions, human capital, support of top management, organisational culture, leadership, employee skills, university library, innovation performance.

1 Introduction

In today's economy and competitive atmosphere, organisations recognise the importance of the knowledge assets available within their organisation. Knowledge and information have become key resources. The acknowledgement of knowledge as a critical organisational resource increased the value of organisations (Alavi & Leidner, 2001), such as organisational effectiveness (Zheng, Yang, & McLean, 2010). Knowledge is created by employees of organisations, which involves departments and processes (Van Deventer, Kruger, & Johnson, 2015). Thus, managing knowledge is very important in every organisation. The concept of knowledge management was introduced in the 1950s when Drucker coined the term "knowledge worker". Since then, knowledge management has been widespread and growing rapidly. Research on

the topic of knowledge management has arose, and many scholars and practitioners are interested in it (Davenport, De Long, & Beers, 1998). Documented practices revealed that knowledge management helps organisations be more productive and effective.

Knowledge management is introduced to assist organisations in creating, sharing, and utilising knowledge systematically. Assessment of knowledge management is very crucial due to its importance in improving the performance of library professionals and university libraries (Rafi, Zheng, & Ahmad, 2022). Previous studies have provided empirical evidence on the study of knowledge management maturity (Ehms & Langen, 2002; Pee & Kankanhalli, 2009; Khatibian, Pour, & Jafari, 2010; Lin, 2011; Velasquez & Lara, 2021). To the best of our knowledge, in the field of libraries, the number of books relating to knowledge management maturity, specifically in Malaysia, is almost nonexistent. In other professions, knowledge management maturity is not a new research area among researchers. Therefore, there is a need to evaluate knowledge management maturity in university libraries so that the performance of employees, innovation, and organisation can be improved. Identifying this gap, the objective of this paper is to discuss the conceptual framework of a study on the dimensions of knowledge management maturity, namely human capital, support from top management, organisational culture, leadership, and employee skills, towards innovation performance in university libraries. The paper is structured as follows: Section 1 presents a brief overview of the importance of knowledge management in organisations. Section 2 describes knowledge management in libraries and the theories underpinning this study: maturity models and knowledge management maturity models. Section 3 highlights five dimensions of knowledge management maturity. Section 4 defines innovation performance in university libraries. Section 5 presents the proposed conceptual framework of the study. The final section concludes with a discussion, conclusion, and future research.

2 Literature Review

2.1 Knowledge Management in University Libraries

More than two decades ago, knowledge management emerged in the business environment to assist organisations in creating, sharing, and utilising knowledge more effectively. Knowledge management is also being applied in non-profit and public-sector organisations such as libraries. Libraries have been involved in knowledge-related activities (Li & Li, 2010) and applying some knowledge management concepts such as knowledge acquisition and knowledge sharing (Shanhong, 2000; Che Rusuli, Tasmin, & Takala, 2012). Library professionals no longer perform cataloguing and provide references to their library clients but do more than that. The roles of library professionals have changed since the concept of knowledge management was used in the library environment (Jantz, 2001).

Perceptions of knowledge management are diverse in the library community (Roknuzzaman & Umemoto, 2009). They found a number of literatures reveal that there are no universally accepted knowledge management definitions. Scholars (Koenig, 1997; Davenport, De Long, & Beers, 1998; Nazim & Mukherjee, 2016) perceived

knowledge management as a rebranding of librarianship and information management. Table 1 outlines the definition of knowledge management by library practitioners and international bodies. Regardless of the definitions, the ultimate aim of knowledge management in university libraries is to improve library operational effectiveness (Koloniari & Fassoulis, 2017).

Table 1: Selected definition of knowledge management from library perspectives

Definition	Source
A method of organizing and giving access to intangible resource to assist in performing their more efficiently and effectively	Jantz (2001)
A process of gathering and preserving knowledge, make knowledge is accessible, promote knowledge culture, and manage knowledge as valuable resource	Townley (2001)
A process or practice of generating, acquiring, capturing, disseminating, and utilizing knowledge	Jain (2007)
A process of creating, preserving, sharing, and re-using knowledge to enable an organisation to accomplish its goals and objectives	IFLA (2019)

There is a strong interest in knowledge management among libraries' professionals. Therefore, it led to the approval of the Knowledge Management Section as a unit of the International Federation of Library Associations and Institutions (IFLA) in December 2003 (IFLA, 2019). The role of knowledge management in libraries has become more vital and challenging (Kumar, 2010). Nowadays, libraries and corporate organisations have alike values in implementing knowledge management. The most important intention for libraries to apply knowledge management is to expand the access of knowledge to their users and facilitate the creation of new knowledge (Lee, 2005). A body of literature acknowledges the benefits of knowledge management in libraries (as depicted in Table 2).

Table 2: Benefits of knowledge management in libraries

Benefits	Source
Improved library and customer services	Ajiferuke (2003)
Improved library performance	Ajiferuke (2003); Porumbeanu (2010)
Creating new knowledge	Wen (2005)
Increased staff efficiency	Porumbeanu (2010)
Improved services innovation	Islam et al. (2015)

2.2 Maturity and Maturity Models

Maturity is a stage of completeness (Proenca, Vieira, & Borbinha, 2017). Proenca and Borbinha (2016) described maturity as not an end but perceived as development and growth to reach definite purposes. A maturity model acts as a tool that assists any process, person, or group in assessing their present status (Fowler, 2014). Klimko (2001) defined the maturity model as a path to improvement and a basis for

improvement. Another definition of the maturity model by Becker, Knacksted, and Poppelbub (2009) is a stage in identifying the elements required to enhance performance. Most of the maturity models proposed by scholars and professionals were derived from the Capability Maturity Model developed by the Software Engineering Institute at Carnegie Mellon University (Paulk et al., 1993). A model was developed for assessing software capability and maturity (Paulk et al., 1993). Dozens of maturity models were structured in various fields such as corporate sustainability (Sari et al., 2021), healthcare (Carvalho et al., 2019), knowledge management (Pee & Kankanhalli, 2009), and information technology (Becker, Knackstedt, & Poppelbub, 2009).

2.3 Knowledge Management Maturity Models

Khatibian, Pour, and Jafari (2010) described knowledge management maturity as "the level of capabilities that exist in an organisation with their different dimensions that influence the knowledge management process". The literature review reveals numerous knowledge management maturity models. The majority of the well-known models were developed based on the Quality Management Maturity Grid (QMMG) by Crosby in 1979 and the Capability Maturity Model (Paulk et al., 1993). The knowledge management maturity model outlines the steps that an organisation might expect to take in order to achieve its knowledge management goals. Knowledge management maturity models have been described in different ways because of the different schools of thought. The researchers observed that the objectives of measuring knowledge management maturity in organisations are: (i) to evaluate and measure knowledge management implementation (Gallagher & Hazlett, 1999; Ehms & Langen, 2002); (ii) to understand the current position of knowledge management systematically and assess knowledge management activities in organisations (Pour, Manian, & Yazdani, 2016).

Lee and Kim (2001) presented a model based on four components: organisational knowledge, knowledge workers, knowledge management processes, and information technology. This model recommends four stages, from initiation to networking. Ehms and Langen (2002) proposed a knowledge management maturity model (KMMM®) according to eight key areas. These areas are (i) strategy, knowledge goals; (ii) environment, partnerships; (iii) people, competencies; (iv) collaboration, culture; (v) leadership; (vi) knowledge structures; (vii) technology, infrastructure; and (viii) processes, roles, and organisation. These eight key areas are constructed on the enablers of the European Foundation for Quality Management (EFQM) model.

A General Knowledge Management Maturity Model (G-KMMM) is proposed by Pee and Kankanhalli (2009). The model is described based on three key process areas: people, process, and technology. The authors applied this model to a large public university focusing on information systems. This model suggests five levels of maturity: initial, aware, defined, managed, and optimising.

Khatibian, Pour, and Jafari (2010) applied the knowledge management maturity model to software companies in Iran. The model is based on critical success factors: leadership, process, human resources, information technology, strategy, culture, evaluation, and organisation structure. The assessment of knowledge management

maturity in the companies is measured at five levels: initial, managed, defined, quantitatively managed, and optimising.

Lin (2011) proposed a model called knowledge management (KM) evolution. This model consists of eight components: knowledge self-efficacy, openness in communication, reciprocal benefits, top management support, organisational rewards, sharing culture, knowledge management infrastructure, and knowledge management system quality. This model recommends three stages of maturity: initiation, implementation, and institutionalization. Lastly, Oliveira and Pedron (2014) developed a knowledge management maturity model based on nine factors. These factors are top management support, information technology, customers, partners, suppliers, tacit knowledge, explicit knowledge, storage, and knowledge sharing.

The literature addressing maturity models for knowledge management reveals a few factors, namely top management support, leadership, people, process, technology, and organisational culture. Table 3 presents factors of knowledge management maturity based on people, process and technology as the highest factors. A very few authors proposed top management support, leadership, and organisational culture as factors as well. Table 3 also reveals that employee skills have not been proposed as a factor in knowledge management maturity. Therefore, the researchers proposed employee skills as one dimension of knowledge management maturity because this factor has been discussed several times in past studies on knowledge management.

Table 3: Factors of selected knowledge management maturity models

Author(s)	Country / Study setting	Factors						
		TMS	Leadership	People	Process	Technology	OC	ES
Lee and Kim (2001)	Korea			√	√	√		Proposed for this study
Ehms and Langen (2002)	German / Automation company		√	√	√	√		
Pee and Kankanhalli (2009)	Information system in public university			√	√	√		
Khatibian, Pour and Jafari (2010)	Iran / Software companies		√	√			√	
Lin (2011)	Taiwan / Manufacturing, retail, financial services	√						
Oliveira and Pedron (2014)		√			√	√		

Note: TMS=Top management support, OC=Organisational culture, ES=Employee skills. People and human capital are used interchangeably.

3 Dimensions of Knowledge Management Maturity

There is no standardisation for knowledge management maturity dimensions. The present study identified the dimensions on the basis of the critical success factors proposed by Khatibian, Pour, and Jafari (2010) and previous literature on knowledge management maturity models. The literature also shows a growing interest in this topic. The search terms and combinations "critical success factors AND knowledge management AND library", "knowledge management AND library", "maturity model", "knowledge management maturity", "knowledge management maturity models", "innovation performance", "knowledge management AND innovation performance" and "university libraries AND innovation performance" were searched in Google Scholars, IEEE Xplore, and Emerald Insight. The dimensions, namely human capital, support from top management, organisational culture, leadership, and employee skills, were presented.

3.1 Human Capital

Human capital, or people, acts as capital in an organisation. The concept of human capital was developed in the late 1950s and early 1960s when Schultz and Becker presented their studies on the importance of human capital (as cited in Alexandru & Maria, 2012; Teixeira, 2014). Human capital is crucial in influencing organisational performance (Khan & Quaddus, 2018). The dimension of people has been proposed by Hoss and Schlussel (2009) and Oliveira and Pedron (2014) in assessing knowledge management maturity in organisations. Library staff constitute the organisation's key asset (Rowley, 1996), where they embrace a tonne of knowledge and diverse expertise (Maponya, 2004), such as research support (Si et al., 2019) and specialised subject knowledge (Saunders, 2020). The success and effective management of human capital in organisations ensures the library staff can deliver valuable services; therefore, the library staff can support high-quality services to library stakeholders such as students, faculty members, and staff.

Human capital department roles include harnessing knowledge that is available in organisations and preventing staff from leaving (Khalili et al., 2012). Alnoor (2020) suggested that elements of education and training should be measured in human capital. A previous study by Qian and Huang (2017) showed that the education of staff increases the performance of organisations. The human capital department plays a role in encouraging their library staff to continue learning. Training is crucial for staff, where library staff learn new knowledge and update their existing knowledge, such as by attending conferences or workshops, receiving one-on-one coaching, and participating in task committees (American Library Association, 2023). Mondy, Noe, and Premeaux (2002) emphasised that the human capital department must perceive learning as an investment since sending the staff for continuous learning is crucial and requires a budget (as cited in Nwaeke & Onyebuchi, 2017).

3.2 Support of Top Management

Support from top management impacts the success of knowledge management in the organisation. Term-top management refers to the highest-ranking position and those

who are reporting to him or her (Keramati & Azadeh, 2007). Lin (2011) described top management from a knowledge management perspective as the extent of continuous support in involvement and understanding the importance of knowledge management practices by the top management. In organisations such as university libraries, top management refers to the chief librarian and deputy chief librarians. The role of library top management is to facilitate the mission and vision of the library and thus support the achievement of the university's mission.

Davenport and Prusak (1998) argued that top management plays a role in supporting and encouraging staff involvement in knowledge management activities such as knowledge exchange. In addition, top management greatly influences the staff towards the overall strategic direction of the organisation (Flynn, Schroeder, & Sakakibara, 1995; Powell, 1995). Without the support of top management, knowledge management has no value to the organisation. Top management support has been proposed as a dimension of knowledge management maturity (Lee & Kim, 2001; Oliveira & Pedron, 2014; Lin, 2011). Strong support from top management will lead to mature knowledge management in organisations (Lin, 2011).

3.3 Organisational Culture

Organisational culture is one of the significant dimensions to knowledge management success (Davenport, De Long & Beers, 1998; Lee & Choi, 2003). Shoid and Kassim (2014) defined organisational culture as "a set of shared that is responsible in making the organisational community to understand the functionality of the organisation itself." An organisation should develop a culture where staff is encouraged to share and exchange knowledge (Porumbeanu, 2010). In the context of libraries, the transformation of organisational culture is very crucial. Libraries must build a performance-oriented culture that values and encourages communication and collaboration, also staff who are bring creativity and new ideas are rewarded.

To promote knowledge management culture in organisation, trust (Blair, 2007) and "no-blame" culture (Provera, Montefusco & Canato, 2010) should be elements of organisational culture. A study by Blair (2007) revealed that it is difficult to gain trust among colleagues thus staff unwilling to share and exchange their knowledge. In addition to that, he exposed that some of staff reserve or keep knowledge within themselves because of the job security. Human error is unavoidable. Provera, Montefusco & Canato (2010) defined "no-blame" is "an organisational approach characterized by a constructive attitude towards errors and near misses". Blaming culture should be evaded. It is important to take that mistakes should not be seen as bad incidents but as opportunities to learn (Provera, Montefusco & Canato, 2010).

3.4 Leadership

Leadership is a vital dimension for the success of knowledge management practices in organisation. Leadership is an ability and action taken by individual to transform and identifying resolution to a business crisis (Johnson, 2002). Blair (2007) suggested that top leaders must communicate and demonstrate knowledge management practices to their staff. Leadership is a component for effective knowledge management in organisation because leaders have a direct impact on the organisational culture and

deals with knowledge management (DeTienne et al., 2004). Leadership commitment is prerequisite the success of knowledge man-agement implementation (Ehms & Langen, 2002). A study conducted by Maponya (2004) indicated that leadership role is important in ensuring library staff participate in knowledge management activities. Strong leadership is important in libraries in order to improve and produce learning culture among library staff (Kassim, 2010).

3.5 Employee Skills

Employee skills is very vital to the success of the organisation. Practice new skills will generate the new capabilities (Shoid, Kassim & Salleh, 2012). Skills is needed for all staff regardless of their position levels (Fathian et al., 2008). Obtaining skills such as problem solving (Shoid, Kassim & Salleh, 2012), project management, networking and communication are prerequisite to achieve organisation's mission and vision. In line with time changes and advancement of technology, libraries are no longer a place that perform a traditional way of cataloging, purchasing the book, however, it is more than that (Jain, 2015). The library professionals must attend training to develop new skills or otherwise, the library professional will leave behind (Sarrafzadeh, 2008).

4 Innovation Performance

Nowadays, studies on innovation in libraries are gaining much attention from researchers due to the constant changes in technology (Rowley, 2011). A study by Clayton in the 1990s insisted innovation is not an option but an inevitability in university libraries (as cited in Jantz, 2012). In order to deliver quality services to library users, librarians use their creativity to generate new products or services that improve their usefulness. The outcomes of knowledge management in university libraries, such as generating new knowledge and ideas (Ahmed & Noor, 2021), thus excite innovation (Jantz, 2012), Boyles (2022) from Harvard Business School defines innovation as "a product, service, business model, or strategy that's both novel and useful". Galbraith stated in his study that innovation may result in the improvement of products, services, or processes (as cited in Hanifah et al., 2017). Innovation performance is "the use of ideas or creativity" (Hanifah et al., 2017) to create, introduce, and improve processes, products, and services, thus boosting performance and work productivity (Sa'ari, 2014).

Research by Roughen and Swain (2020) confirmed that a combination of knowledge management and branding strategies can creatively increase the services offered by the library. Ugwu and Ekere (2018) revealed in their study that the knowledge management process, namely knowledge acquisition, knowledge sharing, and knowledge utilisation, positively promotes library service innovation. In today's technological advancements, knowledge management and innovation have been recognised as factors aiding library transformation (Limwichitr, 2019). A study by Sa'ari (2014) suggested that innovation performance can be measured based on: (i) the ideas shared by librarians in solving problems of any issue in libraries, including these criteria, namely novelty, practicality, and economy; (ii) the participation of librarians in innovative competition.

5 Proposed Conceptual Framework

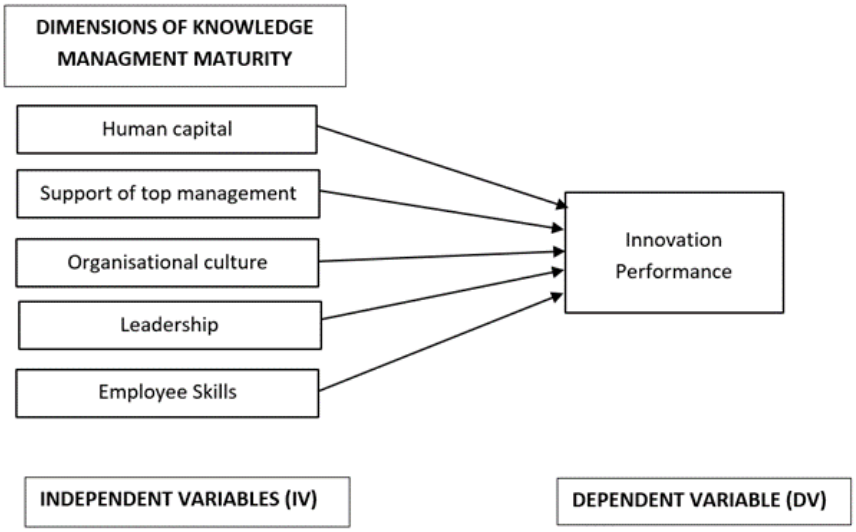

Figure 1: Proposed Conceptual Framework

The conceptual framework for this study was adopted and modified from Pee and Kankanhalli (2009) on the General Knowledge Management Maturity Model (G-KMMM) and Knowledge Management Maturity Model (KMMM) by Khatibian, Pour, and Jafari (2010). In this study, based on the literature review of the relevant literature, the proposed conceptual framework is shown in Figure 1. The variables involved are dimensions of knowledge management maturity that consist of human capital, support from top management, organisational culture, leadership, and employee skills as independent variables, while innovation performance is treated as a dependent variable.

6 Discussion and Conclusion

The key motivation of this paper is to propose selected dimensions of knowledge management maturity, namely human capital, support from top management, organisational culture, leadership, and employee skills, that can be assessed in university libraries. The library's biggest asset is its human capital, or employees, who have a plethora of experience, talents, and skills because knowledge resides in the minds of individuals (Davenport & Prusak, 2018). The experience and skills of human capital can be used to add value to organisations, such as increasing productivity and creating innovation. Top management support plays an important role in the success of knowledge management. Knowledge management efforts are difficult to flourish without the support of top management. Top management support is vital for the expansion of knowledge management practices since it motivates employees to share

and exchange knowledge on a voluntary basis. As a result, strong support from top management will lead to a mature knowledge management process (Lin, 2011), thus enhancing organisation and employee performance. The success of an organisation is heavily influenced by its culture. Building trust among team members is important to facilitate good collaboration between employees. Rewards and suitable communication tools can encourage a culture of knowledge sharing among team members. The achievement of knowledge management is subject to the leaders' ability to build a new culture on how to share and manage knowledge in the organisation. Leadership and the support of top management must go hand in hand. Without management involvement to provide knowledge leadership, knowledge management initiatives will be tough to adopt in organisations. Evaluating knowledge management maturity is a necessity in university libraries because it is able to determine the current position of knowledge management and thus enhance employee and innovation performance. This study showed that studies on knowledge management maturity in university libraries still remain unexplored. The researchers recommend discovering other dimensions, such as teamwork, for future studies. For further research, the researchers intend to develop a knowledge management maturity model and maturity scale with dimensions that suit the university library environment.

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