

Factors affecting knowledge management adoption in public organizations



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ABSTRACT

The aim of this study was to investigate factors affecting the adoption of knowledge management initiatives in a sample of Jordanian public organizations. Four factors were identified based on the literature review, perceived usefulness and complexity of knowledge management adoption, in addition to people and technology-related factors. Managers and employees (N=125) from seven public organizations participated in the study. Data was collected using a questionnaire (18 items) developed for the purpose of the study with reference to related works. The first six items were used to measure perceived usefulness of knowledge management adoption. Similarly, six items were used to measure perceived complexity of knowledge management adoption. Technology was measured using four items. Finally, two items measured people-related factors. The findings of the study accepted the hypotheses that perceived usefulness, perceived complexity, technology and people are significant factors play an important role in the adoption of knowledge management initiatives in public organizations. This study contributes to management and research by showing that personal characteristics, organizational characteristics along with characteristics of knowledge management are three pillars for success of knowledge management adoption. Therefore, those pillars should be of interest to organizations which are willing to improve their performance.

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1. Introduction

Organizations, in general, have to have at least one of three major resources, i.e., natural resources, cheap labor, and knowledge. The most maintainable one of these resources is knowledge (Neumann and Tomé, 2011). It was acknowledged that knowledge is one of the most valued assets of organizations (Wong, 2005). Hence, organizations are required to adopt knowledge management (KM) initiatives. Prior to the adoption of KM, organizations should be aware of factors affecting the adoption of KM initiatives.

Numerous studies have been conducted to investigate factors affecting the adoption of KM. Examples of these factors include using of information technology applications, the complexity of management transactions, mechanisms used to acquire knowledge, and the degree of formal

documentation (Hsu et al., 2007), information technology support and effectiveness as well as reward systems (Lin, 2014), perceived usefulness of KM adoption (Huang and Lai, 2014), top management support and employee participation (Bolisani and Scarso, 2016), clear organizational goals and utilization of social networks and (Kim and Lee, 2010), people, processes and technology (Pasha and Pasha, 2012), employee training and education along with effective communication and integration of knowledge and information flow (Patil and Kant, 2014 and Oliva, 2014), operational factors such as information technology and market orientation degrees (Hsu et al. 2007). On the other hand, examples of barriers to KM initiatives include knowledge sharing culture and competitive pressure between organizations (Lin, 2004), inappropriate information systems and absence of incentives (Ajmal et al., 2010).

In general, factors affecting the adoption of KM have been categorized into three main groups, which are human factors, organizational factors, and technological factors. Human factors encompass employees' perceptions toward KM adoption in terms of usefulness and complexity. Other people-related factors include individuals' information

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technology awareness, skills, experience as well as training and education, and people integration into KM initiatives. Organizational factors, on the other hand, comprise senior management support, human resources management, organizational strategies and activities. Finally, technological factors cover technology awareness and infrastructure (Wong and Aspinwall, 2005; Hsu et al., 2007; Neumann and Tomé, 2011; Pasha and Pasha, 2012; Lin, 2014; Huang and Lai, 2014; Oliva, 2014; Patil and Kant, 2014).

On the basis of the extensive literature review conducted in the present research, it was concluded that there is a gap in literature concerning factors affecting KM adoption by public organizations in Jordan. Therefore, this paper is intended to investigate factors affecting KM adoption in Jordanian organizations. It contributes in KM literature by concluding factors affecting KM adoption in public organizations in Jordan and exploring factors from organizational, technological and human contexts.

The current paper is organized as follows: section two presents literature review and hypotheses development. Section three illustrates research methodology. It includes sample and data collection and measures. Section four shows data analysis (validity and reliability and model-fit for measurement model). Section five clarifies hypotheses testing. Section six contains discussion and conclusion. Section seven shed light upon research contributions, and finally section eight describes research limitations and future research.

2. Literature review and hypotheses development

2.1. Knowledge management definition and rationale

Pasha and Pasha (2012) defined knowledge as a combination of values, experiences, and experts. Form KM definitions listed in their paper, one can conclude that KM is a three-pillar structure, which are people, processes, and technology. Each pillar has its own foundations. The first one is founded on people abilities to create, use and share knowledge. For Al-Aama (2014), knowledge management is a group of processes used by organizations to manage knowledge. According to Angelis (2016), knowledge management is a set of practices used to create new knowledge and to develop new skills. Many studies have been conducted in knowledge management domain and particularly its relationship with organizational outcomes. Results have been found that knowledge management is positively related to different organizational outcomes such as organizational performance (Wiig, 2002; Shehata, 2015), competitive advantage (Neumann and Tomé, 2011; Huang and Lai, 2014), economic growth, innovation, and productivity (Pasha and Pasha, 2012). Edvardsson and Durst (2013) conducted a study in order to explore knowledge management

benefits. They have reported the following benefits: organizational success (sales growth, reduced losses, increased productivity), employee development, enhanced customer satisfaction, innovation, and improved external communications.

2.2. Knowledge management components

In her study on using technology to manage knowledge in a Saudi municipality, Al-Aama (2014) identified four processes of knowledge management: knowledge creation, knowledge capturing, knowledge distribution, and knowledge sharing. Islam et al. (2011) termed six processes of knowledge management: knowledge creation and acquisition, knowledge organization and storage, Knowledge retrieval and dissemination. In a recent study conducted in Egypt on the relationship between knowledge management and organizational performance, Shehata (2015) acknowledged six variables as components of knowledge management: Knowledge creation, acquisition, codification, sharing, transfer, and measurement. A recent Jordanian study performed by Alrubaiee et al. (2015) five processes of knowledge management were used in order to test their ability to predict operational performance variability in the presence of organizational innovation as a mediating variable. Those processes were knowledge identification, acquisition and transfer, storage, sharing, and knowledge sharing (Table 1).

Table 1: Knowledge management process in the literature

Knowledge management processes	Researcher (s)
Knowledge creation	
Knowledge identification	
Knowledge sharing	
Knowledge using	Islam et al. (2011);
Knowledge acquiring	Pasha and Pasha (2012);
Knowledge organization	Al-Aama (2014);
Knowledge distribution	Oliva (2014);
Knowledge retaining	Shehata (2015);
Knowledge transferring	Alrubaiee et al. (2015)
Knowledge storage	
Knowledge integration	
Knowledge codification	
Knowledge developing	
Knowledge retrieval and dissemination	

According to Neumann and Tomé (2011), using knowledge resources is associated with one or more of problems belonging to numerous aspects such as abilities to specify an organization's knowledge state, abilities to identify the influence of knowledge on organizational performance, and to investigate the potential role that knowledge plays in an organization. The authors indicated that knowledge has a critical role in changing the process in any organization and identified three dimensions of knowledge management in this respect, human, technological and organizational factors.

Huang and Lai (2014) used three factors to investigate the adoption of knowledge management in life insurance companies in Taiwan: perceived usefulness, complexity, and subjective norm. They conceptualized perceived usefulness as employees'

perceptions related to the benefits of adopting knowledge management processes. Perceived complexity refers to employees' perceptions towards difficulty of knowledge management adoption. On the other hand, subjective norm can be understood as external pressures by co-workers and managers.

2.3. Factors affecting knowledge management adoption

Hsu et al. (2007) investigated factors affecting the adoption of knowledge management in Taiwan. They hypothesize that industrial characteristics (environment factors and technology factors) enterprise operation factors (degree of information technology, leadership styles and degree of market orientation) in addition to degree of information technology application were affecting KM adoption. In their study on the relationship between factors affecting employees' attitudes toward KM adoption using a sample of life insurance companies, Huang and Lai (2014) found a significant and positive impact of perceived usefulness of KM and perceived complexity of KM on employees' attitudes. In their study on factors of knowledge management adoption in small and medium enterprises in the UK, Wong and Aspinwall (2005) found factors: leadership and support, knowledge-friendly culture, information technology, human resource management, training and education, resources, processes and activities, technology infrastructure, strategy of knowledge management, incentives to encourage KM practices, and measurement of knowledge management effectiveness. According to Sandhawalia and Dalcher (2011), technology infrastructure plays important role in facilitating knowledge flow and internal communication. Arif and Bin Shalhoub (2014) studied knowledge management initiatives in public and private organization in Saudi Arabia. Their results highlighted the following factors: top-management support, employee motivation, training and learning, organizational culture, information technology infrastructure, knowledge strategy and construction, internal communication, and performance measurement. Hung et al. (2005) investigated the critical success factors of KM adoption in Taiwan and found that organizational culture, benchmarking strategy, information technology, knowledge structure, employee involvement, employee training, top management support and commitment, learning environment, evaluation of training and teamwork, and resource control were major factors affecting KM adoption. Concurrently, Wong (2005) cited 11 critical factors that affect KM initiatives, which are top management support, organizational culture, information technology, organizational strategy in relation to resource and capabilities utilization, organizational infrastructure, KM processes and activities, financial support, employee training and education, employee motivation, practices of human resource management. Moreover, Akhavan et al. (2006) mentioned 16 critical factors such as organizational

structure, organizational culture, top management support and commitment, process reengineering, transparency, training, trust, pilot, experts in addition to other factors related to KM such as knowledge storage, audit, identification, capturing, sharing, and architecture. Using a sample consisted of 428 employees from Portuguese organizations; Cardoso et al. (2012) examined the critical success factors of KM and found the following factors: training related to work and management procedures, culture associated with knowledge, and commitment (personal, reward-based or continuance commitment).

Akhavan et al. (2009) identified five critical factors of KM, which are KM architecture and readiness, human resource management, benchmarking, and chief knowledge officer. Huang et al. (2011) deemed organizational characteristics such as size and structure as one of these factors (Table 2).

2.4. Research hypotheses

Bearing in mind previously mentioned literature; this study suggested the following propositions between four independent factors and knowledge management adoption:

H01: perceived usefulness of KM positively affects KM adoption.

H02: perceived complexity of KM positively affects KM adoption.

H03: KM-oriented technology positively affects KM adoption.

H04: people integration into KM initiative positively affects KM adoption.

2.5. Research model

The research model, shown in Fig. 1, consists of four independent variables and one dependent variable. The model postulates that perceived usefulness as well as perceived complexity of KM, technology infrastructure and awareness, in addition to people integration in KM initiative is four factors affecting KM adoption.

3. Methodology

3.1. Sample and data collection

A randomly sample consisted of seven public organizations in Jordan. The sample comprises 215 participants either managers or employees. The required data was collected using a questionnaire developed on the basis of the literature review. The questionnaire included 18 items covering four independent variables. Responses were anchored at "strongly disagree" for responses of 1 and "strongly agree" for responses of 5. The final number of complete questionnaires returned was 173 questionnaires.

Table 2: Factors affecting knowledge management adoption in the literature

Factors affecting KM adoption	Researcher (s)
Senior management support Knowledge-friendly culture Information technology Human resource management Training and education Resources, Processes and activities Technology infrastructure Strategy of KM Incentives to encourage KM practices Measurement of KM effectiveness	Wong and Aspinwall (2005); Oliva (2014)
Organizational characteristics: environment and technology factors. Enterprise operation factors: degree of information technology, leadership styles, and degree of market orientation. Degree of information technology application	Hsu et al. (2007)
Human factors Technological factors Organizational factors.	Neumann and Tomé (2011);Huang et al. (2011)
People Processes Technology	Pasha and Pasha (2012)
Perceived usefulness of KM adoption Perceived complexity of KM adoption Perceived necessity of KM adoption	Huang and Lai (2014); Girish et al. (2015)
Top management support Employee training and education Integration of knowledge and information flow Effective communication Trustworthy teamwork to exchange knowledge	Patil and Kant (2014); Oliva (2014)

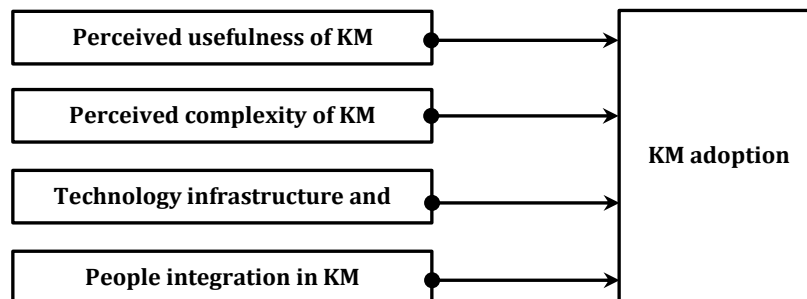


Fig. 1: Research conceptual model (Author's elaboration based on Pasha and Pasha (2012), Huang, and Lai (2014))

3.2. Measures

Perceived usefulness as well as perceived complexity of KM were measured using sub-dimensions adopted from Huang and Lai (2014), which were work and service quality, meeting work needs, and reducing duplicate work in order to assess the perceived usefulness, in addition to user-friendly use, simplicity and accessibility to evaluate the perceived complexity of KM initiative. Technology factors were measured using two related dimensions adopted from Pasha and Pasha (2012); technology infrastructure and technology awareness. Finally, people factor was evaluated based on their integration into KM initiative as in Pasha and Pasha (2012). Fig. 2 shows the measurement model of the current study in which four hypotheses were postulated on the impact of independent variables on the dependent variable.

4. Data analysis

4.1. Validity and reliability

Four academic experts assessed content validity. Convergent validity was evaluated using the average variance extracted (AVE). Reliability was assessed using Cronbach's alpha coefficients and composite reliability coefficients. The results are summarized in Table 3.

4.2. Model-fit indices for measurement model

Based on the results of confirmatory factor analysis (CFA), five fit indices were used to assess the measurement model of the study as explicated in Table 4. The results suggest that the measurement model shows a good fit with data used for the purpose of this study.

5. Hypotheses testing

Path coefficients of the structural model were extracted in order to identify relationships between four factors affecting KM adoption. The structural model clarified in Fig. 3 illustrates the standardized path coefficients for each path. As hypothesized perceived usefulness of KM affects positively KM

adoption ($\beta = 0.641, P = 0.000$). Moreover, perceived complexity of KM affects positively KM adoption ($\beta = 0.532, P = 0.000$). On the other hand, KM-oriented technology affects positively KM adoption ($\beta = 0.544, P = 0.000$). Finally, people integration into KM initiative affects positively KM adoption ($\beta = 0.691, P = 0.000$). Hence, study hypotheses were supported.

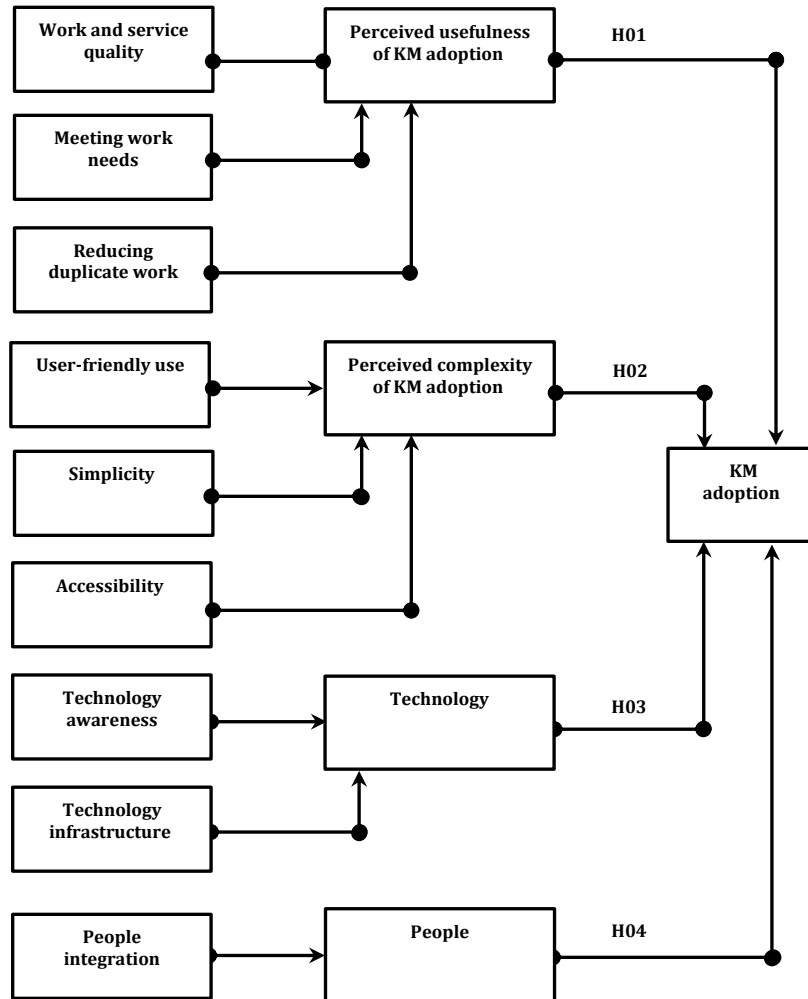


Fig. 2: Research measurement model

Table 3: Results of validity and reliability tests

Variable	Items validity		Items Reliability	
	AVE	Cronbach's alpha	Composite reliability	
Perceived usefulness	0.79	0.82	0.81	
perceived complexity	0.82	0.79	0.86	
Technology	0.87	0.75	0.79	
People	0.85	0.87	0.77	

Table 4: Fit indices of the measurement model

Index	Calculated value	Recommended value	Result
CFI	0.944	More than or equal 0.9	Good fit
GFI	0.932	More than or equal 0.9	Good fit
χ^2/df	2.630	Less than or equal 3	Good fit
RMSEA	0.052	Less than or equal 0.08	Good fit

CFI: Comparative Fit index, χ^2/df : Normalized Chi-square, GFI: Goodness of Fit Index
 RMSEA: root mean square error of approximation

6. Discussion and conclusion

The current study investigated factors affecting the adoption of knowledge management in a sample of managers as well as employees from public organizations. The required data was collected in

April 2016. Four independent factors were identified based on the literature review: perceived usefulness of knowledge management adoption, perceived complexity of knowledge management adoption, technology, and people factors. Fall in the same line with Soliman and Spooner (2000), Yahya and Goh

(2002), Moffett et al. (2003), Xu and Quaddus (2005), Hung et al. (2005), Ho (2009), Noordin et al. (2013), Arif and Bin Shalhoub (2014), Huang, and Lai (2014), this study revealed that perceived usefulness of knowledge management along with perceived

complexity of knowledge management in addition to technology and people-related factors were significantly and positively associated with knowledge management adoption.

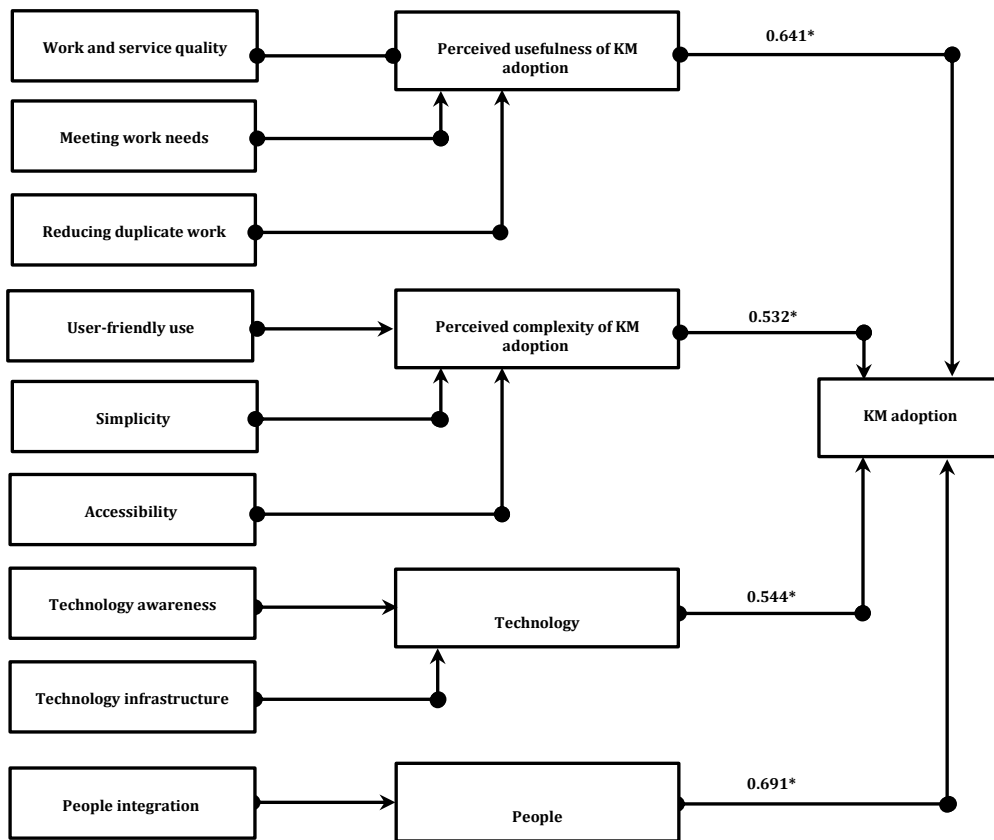


Fig. 3: Standardized path coefficients for each path

In conclusion, knowledge management adoption depends not only on technological capabilities and information technology team, but also on individuals' perceptions towards usefulness and complexity of adopting knowledge management, in addition to individuals' integration into knowledge management. The results of this study revealed that people-related factors are the most important factors in knowledge management adoption, followed by perceived usefulness of knowledge management adoption, then technology, and finally, perceived complexity of knowledge management adoption.

7. Research contributions

The main contributions of this study to the body of knowledge are twofold. First, it was conducted on a sample selected from public organizations. Second, the study concluded that people-related factors no less important than other factors such as technology infrastructure and awareness. Furthermore, individuals' perceptions have significant role in the enhancement of knowledge management adoption. To the best of the author's knowledge, this study fills a research gap since few studies have been conducted on knowledge management initiatives adoption in public organizations in Jordan.

8. Limitations and future research

Concerning constructs, this study used only internal factors that might affect the adoption of knowledge management in public organizations. Those factors were limited to perceived usefulness and complexity of knowledge management adoption, technology, and people. Additionally, the sample size utilized in this study is small. Consequently, future research might consider also additional factors, particularly external ones. Further studies are required to investigate the relationship between knowledge management and organizational performance of public institutions.

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