

APPLICABILITY OF TECHNOLOGY ACCEPTANCE IN KNOWLEDGE MANAGEMENT IMPLEMENTATION

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Abstract

Individual acceptance for technology adoption is well documented. However, though knowledge management processes highly depend on information technology use, the importance of individual acceptance is not thoroughly studied in knowledge management context. With the intention of filling this gap, the researcher attempts to verify the relationship between individual acceptance and intention to be involved in KM by using structural equation modelling (SEM). For this purpose, data were collected from 313 executive level organizational members from the telecommunication industry of Sri Lanka. The finding shows that both performance expectancy of KM and Effort expectancy of KM are positively related with intention to be involved in KM processes.

Keywords - Knowledge Management Processes, Performance Expectancy, Effort Expectancy, SECI.

1 INTRODUCTION

Knowledge has been accepted as an essential source of competitive advantage [1]. As a result proper implementation of knowledge management (KM) processes for organizational success has become an important trend [2]. There are numbers of studies that study about the importance of KM supportive organizational culture and structure in the past for a successful KM process implementation. However, organizations need to understand the degree of acceptance or intentions of organizational members to be involved KM processes [3] as they are the people who are going to initiate the KM processes. There are many theories in the information systems (IS) literature which stress on the importance of individual acceptance of any organisational change, such as, theory of reasoned action (TRA) [4], diffusion of innovation (DOI) [5], theory of planned behaviour (TPB) [6], technology acceptance model (TAM) [7], unified theory of acceptance and use of technology (UTAUT) [8] and so on. However, very little attention has been given to these factors in the KM literature. In this paper, the researcher intent to investigate whether the individual acceptance contribute to towards the intention to be involved in KM processes.

2 RESEARCH BACKGROUND

2.1 Knowledge Management Processes

There are discrepancies in the literature while delineating KM as processes, at the minimum, KM involve four basic processes of creating, storing/retrieving, transferring, and applying knowledge [9]. Nevertheless, among the KM processes, the processes of knowledge creation and knowledge sharing get most of the attentions [10] as the prime processes of KM. In this context, the term KM process, as used in this study, means the processes of creation and sharing of knowledge.

2.2 Intention to be involved in KM process

The processes of socialisation, externalisation, combination, and internalisation (SECI process) introduced by Nonaka [11], which is collectively known as knowledge creation theory, is popularly

cited in the KM literature as the basic process for the knowledge creation and sharing [12]. Nonaka [11] proposes four different modes of knowledge conversion: tacit knowledge to tacit knowledge (socialisation), explicit knowledge to explicit knowledge (combination), tacit knowledge to explicit knowledge (externalisation), and explicit knowledge to tacit knowledge (internalisation). Becerra-Fernandez and Sabherwal [13] explain that SECI process describe the ways in which knowledge is shared through the interaction between tacit and explicit knowledge. The importance of SECI process for KM is acknowledged many times [11, 14, 15] and there are empirical studies on KM process [10, 11] based on SECI process in the past.

Since the SECI process is considered as the route process of knowledge creation and sharing, this study measures the intention to be involved in KM process by tailoring the indicators of SECI from perceived behavioural dimension [10] to perceived behavioural intention for the following reasons. Firstly, the SECI process has become widely accepted [10] and used in variety of management fields [16]. Secondly, it includes not only knowledge creation but also knowledge sharing [10, 16]. There are many studies [10, 11, 16, 17] that show the relationship between the SECI process and knowledge creation. In addition Becerra- Fernandez et al. [12] and Becerra-Fernandez and Sabherwal [13] have also shown the relationship between the SECI process and KM. Therefore, the intention to be involved in the SECI process can be considered as an indication to be involved in the KM process.

2.3 Individual Acceptance

There are many theories in the information systems (IS) literature such as, theory of reasoned action (TRA) [4], diffusion of innovation (DOI) [5], theory of planned behaviour (TPB)[6], technology acceptance model (TAM) [7], unified theory of acceptance and use of technology (UTAUT) [8] and so on which stress on the importance of behavioural intention of individuals (organisational members) for any organisational change.

These theories and models offer a number of factors as antecedence of intention, such as perceived usefulness, perceived ease of use, social influence, and facilitating conditions. However, critical review of the above mentioned individual acceptance models shows that perceived usefulness and perceived ease of use are the main basic antecedence of intention. The variable of effort expectancy has been cited as an important consideration for KM in the KM literature as well [18-21]. As such, in this study, only these two variables are considered as individual acceptance factors.

A. *Performance Expectancy of KM*

Performance expectancy of KM (PE of KM) refers to the subjective evaluation of the extent to which a person believes that contributing to KM using available capabilities existing within the organisation improves his/her job performance [22]. The influence of performance expectancy on behavioural intention was shown and proved by many theories and models, such as TAM [7], TAM II [23], UTAUT [8] etc. In addition, the work of Li [24] has found that the performance expectancy is the strongest driver to share knowledge while [25-27] have found the positive influence of performance expectancy on individual intention. Therefore, there is no any logical reason to expect a different relationship, thus the following hypothesis is proposed.

H1: There is a significant positive relationship between performance expectancy of KM and the intention to be involved in KM process.

B. *Effort Expectancy of KM*

Effort expectancy of KM (EE of KM) can be defined as the subjective evaluation of the extent to which a person believe that involving in KM process is easy and comfortable within the existing organisational context. Similar to the performance expectancy, the influence of effort expectancy on behavioural intention was shown and proved by the theories and models of TAM [7], TAM II [23] and UTAUT [8] etc. In addition, [25-27] have found the influence of effort expectancy on individual intention. Thus based on these theories and models, the following hypothesis is advanced.

H2: There is a significant positive relationship between effort expectancy of KM and the intention to be involved in KM process.

These potential relationships are shown in figure 1.

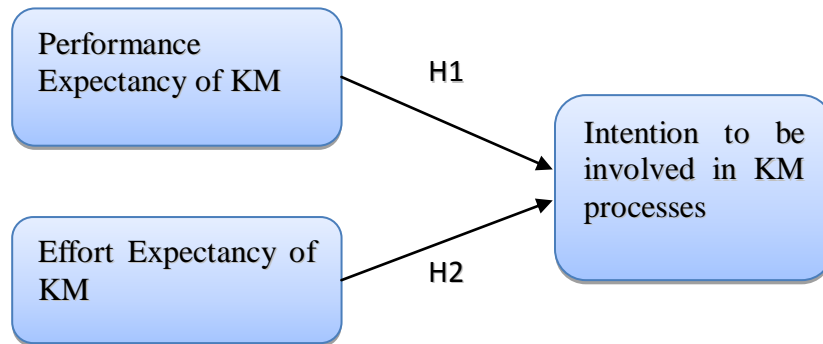


Figure 1: Research Model

3 DATA COLLECTION AND MEASUREMENT

To measure the intention to be involved in KM process a questionnaire was developed based on items adopted from [10, 16]. Similarly to measure performance expectancy of KM and effort expectancy of KM items were adopted from Venkatesh et al. [8]. The questionnaire was comprised of 27 items. Respondents were asked to indicate (on a 7-point Likert scale ranging from “Strongly disagree” to “Strongly agree” their level of agreements on statements.

Data were collected from 313 executives in the Sri Lankan telecommunication industry. This sector was chosen because it was considered as knowledge intensive industry [28]. In addition, the current market hi-tech companies such as telecommunication firms must implement innovative business strategies, and invest vast resources in research and development in order to remain competitive in the market [29]. This makes KM as important concept for these firms to succeed.

4 ANALYSIS AND FINDINGS

Confirmatory factor analysis (CFA) was performed using AMOS 16. These analyses techniques were used as a process of refining the measurement items to achieve reliability and validity. CFA model was estimated using AMOS through which the three constructs (PE of KM, EE of KM, and Intention to be involved in KM process) were represented as correlated first-order factors. Several CFAs were conducted and observed variables with factor loading less than 0.60 and R-square less than 0.40 were eliminated from the analysis to get goodness of fit indices.

The structural model shown that the Chi-square is 63.954 ($p < 0.05$), but the other model fit indices were above the threshold of 0.9 (GFI=0.962, AGFI=0.935, NFI=0.954, RFI=0.935, IFI=0.976, TLI=0.966, CFI=0.976). RMSEA is below 0.08 (RMSEA=0.057), PCLOSE is greater than 0.05 (0.276), and RMR is less than 0.08 (0.053). Based on these results the structural model is considered acceptable.

All standardized factor loadings for the observed variables are above 0.62 which is considered very good [30]. The AVE (Average Variance Extracted) is above 0.5 for all construct except for EE of KM. The AVE above the benchmark of 0.5 indicates the adequate convergent validity of the items and the AVE less than 0.5 indicates on average more error remains in the items than variance explained by the latent factor structure imposed on the measure [31]. The construct reliability, another indicator of convergent validity of each construct is above the benchmark of 0.7 (see Table 1). The high construct validity indicates that all the measures consistently represent the same latent construct [31].

Table 1: Average Variance Extracted and construct validity, CFA Standardized Factor loading, AVE, and CR.

Items	PE of KM	EE of KM	Intention
PE_1	0.84		
PE_2	0.83		
EE_1		0.62	
EE_2		0.70	
EE_3		0.71	
EE_4		0.69	
INT			0.76
COM			0.73
EXT			0.86
SOC			0.76
Average Variance Extracted (AVE)	0.70	0.46	0.61
Construct Reliability (CR)	0.82	0.92	0.96

The discriminant validity has been confirmed with the AVE for the constructs are greater than the squared correlation between constructs (See Table 2).

Table 2: AVE and Squared Correlation

	Mean	Std. Dev.	PE of KM	EE of KM	Intention
PE of KM	5.54	0.79	0.70	0.36	0.08
EE of KM	5.82	1.06		0.46	0.22
Intention	5.39	0.68			0.61

- Diagonal elements (shaded) represent the AVE for the construct
- Off-Diagonal elements (in bold) represent squared correlation between constructs

As all the fit indices of the structural model meet the recommended criteria, the study proceeds by examining the path coefficients of the structural model which is shown in Table 3. Both hypotheses of the study are supported.

Table 3: Results of Path Analysis

Hypothesis	Path	Estimate	S.E.	C.R.	P Value	Hypothesis Testing
H1	Intention ← PE of KM	0.276	0.059	4.643	P < 0.05	Supported
H2	Intention ← EE of KM	0.465	0.088	5.296	P < 0.05	Supported

5 DISCUSSION AND CONCLUSION

The result of this study verifies the PE of KM as predicting variable of intention to be involved in KM processes. Therefore, the benefits of involving in KM process must be intangible to the organizational

members. If involving in KM process helps to finish their respective jobs effectively and efficiently, then it will result in higher perceived PE of KM. Performance expectancy and compatibility with job needs are critical factors influencing participants' intention to be involved in KM [24]. Indeed, literature in information system research has unanimously agreed that performance expectancy is what motivates people to use the systems [8]. Hence, the managers should provide enough support and training to the organizational members and make them informed on how the KM process can fit to their job, how it would help them build the connection between their job and KM process. In addition, by making the KM process correspond to organizational members' actual needs, which would increase the organizational members' perceived PE of KM, the managers could enhance the intention to be involved in KM.

In this study, EE of KM also has shown positive effect on the intention to be involved KM process. If organizational members feel that the KM process can be easily learned and implemented, their willingness to involve in it will be enhanced. Therefore, the process of KM should be made easy and clear to the organizational members, to make higher level of intention to be involved in KM processes. Incorporating KM process design principles such as simplicity, clear role, and training would be helpful in reducing the perceived effort level, which in turn, would result in higher level of intention to be involved in KM processes.

6 REFERENCES

- [1] H. Gharehbiglo, *et al.*, "The Survey of Affecting Factors on Knowledge Management (Case Study: Municipality of the City of Rasht in Iran)," *Procedia-Social and Behavioral Sciences*, vol. 62, pp. 1155-1163, 2012.
- [2] M. Kazemi and M. Z. Allahyari, "Defining a knowledge management conceptual model by using MADM," *Journal of Knowledge Management*, vol. 14, pp. 872-890, 2010.
- [3] N. S. A. Karim, *et al.*, "Measuring employee readiness for knowledge management using intention to be involved with KM SECI processes," *Business Process Management Journal*, vol. 18, pp. 777-791, 2012.
- [4] M. Fishbein and I. Ajzen, *Belief, attitude, intention and behaviour: An introduction to theory and research*: Addison-Wesley, 1975.
- [5] E. M. Rogers, *Diffusion of innovations*: Free Pr, 1995.
- [6] I. Ajzen, "The theory of planned behavior," *Organizational behavior and human decision processes*, vol. 50, pp. 179-211, 1991.
- [7] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS quarterly*, pp. 319-340, 1989.
- [8] V. Venkatesh, *et al.*, "User acceptance of information technology: Toward a unified view," *MIS quarterly*, pp. 425-478, 2003.
- [9] M. Alavi and D. E. Leidner, "Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues," *MIS quarterly*, pp. 107-136, 2001.
- [10] H. Lee and B. Choi, "Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination," *Journal of management information systems*, vol. 20, pp. 179-228, 2003.
- [11] I. Nonaka, *et al.*, "Organizational knowledge creation theory: a first comprehensive test," *International Business Review*, vol. 3, pp. 337-351, 1994.

- [12] I. Becerra-Fernandez, *et al.*, *Knowledge Management: Challenges*, 2004.
- [13] I. Becerra-Fernandez and R. Sabherwal, "Organizational knowledge management: A contingency perspective," *Journal of management information systems*, vol. 18, pp. 23-55, 2001.
- [14] I. Nonaka and R. Toyama, "The knowledge-creating theory revisited: knowledge creation as a synthesizing process," *Knowledge Management Research & Practice*, vol. 1, pp. 2-10, 2003.
- [15] I. Nonaka, *et al.*, "SECI, Ba and leadership: a unified model of dynamic knowledge creation," *Long range planning*, vol. 33, pp. 5-34, 2000.
- [16] B. Choi and H. Lee, "Knowledge management strategy and its link to knowledge creation process," *Expert Systems with Applications*, vol. 23, pp. 173-187, 2002.
- [17] W. Teerajetgul and C. Charoenngam, "Factors inducing knowledge creation: empirical evidence from Thai construction projects," *Engineering, Construction and Architectural Management*, vol. 13, pp. 584-599, 2006.
- [18] K. Y. Wong, "Critical success factors for implementing knowledge management in small and medium enterprises," *Industrial Management & Data Systems*, vol. 105, pp. 261-279, 2005.
- [19] E. Loyarte and O. Rivera, "Communities of practice: a model for their cultivation," *Journal of Knowledge Management*, vol. 11, pp. 67-77, 2007.
- [20] A. Al-Alawi, *et al.*, "Organizational culture and knowledge sharing: critical success factors," *Journal of Knowledge Management*, vol. 11, pp. 22-42, 2007.
- [21] F. T. Bozbura, "Knowledge management practices in Turkish SMEs," *Journal of Enterprise Information Management*, vol. 20, pp. 209-221, 2007.
- [22] U. R. Kulkarni, *et al.*, "A knowledge management success model: Theoretical development and empirical validation," *Journal of management information systems*, vol. 23, pp. 309-347, 2007.
- [23] V. Venkatesh and F. D. Davis, "A theoretical extension of the technology acceptance model: Four longitudinal field studies," *Management Science*, pp. 186-204, 2000.
- [24] W. Li, "Virtual knowledge sharing in a cross-cultural context," *Journal of Knowledge Management*, vol. 14, pp. 38-50, 2010.
- [25] E. AbuShanab and J. Pearson, "Internet banking in Jordan: The unified theory of acceptance and use of technology (UTAUT) perspective," *Journal of Systems and Information Technology*, vol. 9, pp. 78-97, 2007.
- [26] Y. T. H. Chiu, *et al.*, "Early versus potential adopters: Exploring the antecedents of use intention in the context of retail service innovations," *International Journal of Retail & Distribution Management*, vol. 38, pp. 443-459, 2010.
- [27] S. Al-Gahtani, *et al.*, "Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT," *Information & Management*, vol. 44, pp. 681-691, 2007.
- [28] C. Wei, *et al.*, "Is the Malaysian telecommunication industry ready for knowledge management implementation?," *Journal of Knowledge Management*, vol. 13, pp. 69-87, 2009.
- [29] I. Reyshav and J. Weisberg, "Bridging intention and behavior of knowledge sharing," *Journal of Knowledge Management*, vol. 14, pp. 285-300, 2010.
- [30] B. Tabachnick and L. Fidell, "Logistic regression," *Using Multivariate Statistics. 4th ed. Boston, Mass: Allyn & Bacon*, pp. 517-581, 2001.

[31]J. Hair, *et al.*, *Multivariate Data Analysis Sixth Edition Pearson Education*, 2006.