STUDY OF RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT ENABLERS AND PROCESSES WITH ORGANIZATIONAL PERFORMANCE

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Abstract

The purpose of this paper was to evaluate the impact of specific knowledge management resources (i.e. knowledge management enablers and processes) on organizational performance. This study is an applied, descriptive correlationnal research. For data collection procedure and analyzing the collected data, two kinds of questionnaires has been used. Using Cronbach's alpha coefficient , first questionnaire has 95.8% of constancy and the second has 94.9%. This shows that measuring tools have high levels of constancy. Isfahan universities faculty members formed the population of this study which were randomly selected. Research population was about 1554 among which 203 were randomly selected. The results showed that some knowledge resources (e.g. organizational structure, knowledge application) are directly related to organizational performance, while others (e.g. technology, knowledge conversion), though important preconditions for knowledge management, are not directly related to organizational performance.

Keywords : Knowledge management enablers, knowledge management processes, Organizational performance, university.

1. Introduction

For many organizations achieving improved performance is not only dependent on the successful deployment of tangible assets and natural resources but also on the effective management of knowledge (Lee and Sukoco, 2007). Much of the overall spending by organization on knowledge management initiatives is driven by strategic imperatives that depend on the effective management of the knowledge resource (Lee and Sukoco, 2007). As such, one of the main reasons universities invest in knowledge management is to build a knowledge capability that facilitates the effective management and flow of information and knowledge within the university.

Different resources make up the knowledge capability of a university. These include technology infrastructure, organizational structure and organizational culture which are linked to a university's knowledge management infrastructure capability – km enablers - , and knowledge acquisition, knowledge conversion, knowledge application and knowledge protection which are linked to the university's knowledge management process capability (Gold et al., 2001). Taken together, these resources determine the knowledge management capability of a university, which in turn has been linked to various measures of organizational performance (Gold et al., 2001; Lee and Sukoco, 2007; Zack et al., 2009).

The promise of Knowledge Management (KM), coupled with ever-growing academic and intellectual resources, has led higher education institutions (HEI) to explore strategies aimed at increasing knowledge-based activities with common organizational goals. Knowledge is recognized as an important weapon for sustaining competitive advantage and universities are beginning to manage organizational knowledge. Researchers have investigated knowledge management factors such as enablers, processes, and performance. However, most current empirical research has explored the relationships between these factors in isolation. To fill this gap, this paper develops a research model that interconnects knowledge management factors.

2. Literature review

Gold et al. (2001) proposed a model of knowledge management capabilities that has since become one of the most widely cited in the knowledge management literature. In this model, Gold et al. theorized knowledge management capabilities as multidimensional concepts that incorporate: a process perspective which focuses on a set of activities, that is, knowledge management process capabilities and an infrastructure perspective which focuses on enablers, that is, knowledge infrastructure capabilities (Lee and Choi, 2003). These in turn are composed of multiple dimensions: knowledge infrastructural capability comprises technology, organizational culture and organizational structure while knowledge process capability is made up of knowledge acquisition, knowledge conversion, knowledge application, and knowledge protection (Gold et al., 2001).

However, what is not well known is whether there are differential relationships (including null or cancelling effects) between the individual dimensions of knowledge process capability and knowledge infrastructure capability, and organizational performance and the nature of these relationships (Petter et al., 2006). To address this gap, this study examines a decomposed Gold et al. (2001) model, analyzing the structural model at the level of the individual resource in contrast organizational performance. The outcomes are expected to provide specific insights into the knowledge management – organizational performance link by identifying those knowledge resources (i.e. enablers and processes) that are directly related to organizational performance.

Based on this understanding of the relationship between resources, capabilities- enablers and process- and organizational performance, the next section examines knowledge management capabilities, the resources that make up these capabilities, and the theorized links between these resources and organizational performance. A decomposed model of knowledge management capabilities is then assessed in contrast organizational performance, and the results compared with a composite model of knowledge management capabilities.

2.1.Knowledge infrastructure capability. Prior research recognizes the importance of having a supportive and effective knowledge infrastructure to underpin a university's knowledge management initiatives (Davenport and Völpel, 2001). Different elements make up a university's knowledge infrastructure capability. This study adopts the Gold et al. (2001) typology which views technology, organizational culture and organizational structure as key components of a university's knowledge infrastructure capability.

2. 2. Knowledge process capability. Gold et al. (2001) suggested that knowledge process capabilities (required for storing, transforming and transporting of knowledge throughout the organization) are needed for leveraging the infrastructure capability. Four broad dimensions are identified – ''acquiring knowledge, converting it into useful form, applying or using it, and protecting it'' (Gold et al., 2001, p. 190).

2-3. A composite model of knowledge management capabilities. There is a general consensus in the literature that knowledge management is linked to organizational performance (Lee and Sukoco, 2007). Lee and Sukoco (2007) found that knowledge management capabilities affect innovation and organizational effectiveness. Gosh and Scott (2007) also argued that knowledge infrastructural capabilities such as technology, organizational culture and organizational structure, need to correspond with knowledge process capabilities (e.g. actual flow and use of knowledge) in order to achieve considerable improvements in effectiveness. In assessing the relationship between knowledge management practices and performance outcomes, Zack et al. (2009) found that knowledge management practices are related to measures of organizational performance. Thus, it is expected that:

3.Research Hypotheses

The aim of the present study is to investigate the relationship between knowledge management enablers and processes with organizational performance in selected universities of Isfahan province. In this research the relationship between three different kinds of knowledge management enablers, namely technology, organizational culture, organization structure and four different kinds of knowledge management processes, namely knowledge acquisition, conversion, application and protection with organizational performance in selected universities is examined.

3-1.Major Research Hypothesis

There is relationship between knowledge management enablers and processes with organizational performance in selected universities of Isfahan province.

3-2.Secondary Research Hypotheses

*H1.*There is relationship Technology and organizational performance in selected universities of Isfahan province.

*H2.*There is relationship Organizational culture and organizational performance in selected universities of Isfahan province.

*H3.*There is relationship Organizational structure and organizational performance in selected universities of Isfahan province.

*H4.*There is relationship Knowledge acquisition and organizational performance in selected universities of Isfahan province.

*H5.*There is relationship Knowledge conversion and organizational performance in selected universities of Isfahan province.

*H6.*There is relationship Knowledge application and organizational performance in selected universities of Isfahan province.

*H7.*There is relationship Knowledge protection and organizational performance in selected universities of Isfahan province.

*H8.*There is relationship Knowledge infrastructural capability and organizational performance in selected universities of Isfahan province.

*H9.*There is relationship Knowledge process capability and organizational performance in selected universities of Isfahan province.

4. Research Methodology

This study is applied, correlationnal descriptive research and is categorized as field study. To collect related literature, related books, articles and journals were consulted as data collection procedure and analyzing the collected data, two kinds of questionnaires has been used. The first is Lee & Choi's (2003) questionnaire about knowledge management enablers types and the second of one is Park's (2006) questionnaire about knowledge management dimensions. Each questionnaire contained 27 questions. Subjects answered the relevant questions based on a 5 degree Likert scale. Using Cronbach's alpha coefficient the first questionnaire has 95.8% of constancy and the second has 94.9%. This shows that measuring tools have high levels of constancy. Isfahan universities faculty members formed the population of this study which were randomly selected. The whole population was about 1554 among which 203 were randomly selected. The relevant information about level of education, age, sex and years of service is as fallows:

SEX: 64% female and 36% were male participants.

Age: 37% was under 40 year old, 47% between 40-50 years old and 16% more than 50 years old .

Years of service: 24% of participants have less than 5 years of record of service, 26% between 5-10 years and 16% between 10-15 years, 23% between 15-20 years and 11% more than 20 years .

In this study for the purpose of analyzing the collected data, SPSS software was used. Also descriptive statistics (percentage, frequency, mean, standard deviation) was used to test research question inferential statistics were used.

5. Data analysis and results

In this study for the purpose of analyzing the collected data, SPSS version 17.0 software was used. Also descriptive statistics (mean, standard deviation) was used to test research question inferential statistics were used. Descriptive statistics (i.e. mean and standard deviation) for each construct are shown in Table 1. Table 1 also shows that composite reliabilities ranged from 0.918 to 0.963 and average variance extracted (AVE) from 0.635 to 0.789 exceeding recommended cut-offs (Chin,1998). Construct AVEs were also greater than the variance shared between the constructs (Table 2) satisfying the criteria for discriminant validity (Chin, 1998).

5-1. Decomposed model of KM capabilities

Turning to the structural model, the results showed the decomposed model accounted for 0.754 of the variance observed for organizational performance. Of the knowledge infrastructural capabilities, only organizational structure (β=0.209; p≤ 0.05) was significant in contrast organizational performance; technology infrastructure (β=-0.003) was not expected to be significant. Hypotheses H1 and H3 were supported. Contrary to expectation, organizational culture was not significant (β=0.055); H2 was therefore not supported.

For knowledge process capability, three processes were significant in contrast organizational performance: knowledge acquisition (β=0.146; p≤ 0.05), knowledge application (β=0.412; p≤ 0.001), and knowledge protection (β=0.148; p≤ 0.05); H4, H6 and H7 were supported. Knowledge conversion capability was not significant (β=0.025); H5 was not supported.

5-2. Assessment of the composite model

Next, latent variable scores representing the dimensions of knowledge process capability and knowledge infrastructural capability were extracted and used to assess the composite model. Consistent with recommended guidelines, indicator weights for all seven dimensions were examined (Table 3); all except knowledge conversion were significant in contrast their respective constructs at p≤ 0.05 (Petter et al., 2007). However, this does not mean knowledge conversion was unimportant. Further examination of the item loadings showed the construct demonstrated ‘‘absolute’’ importance when assessed independently of other indicators (Cenfetelli and Basellier, 2009). The results also showed that, knowledge application was the most important of the dimensions in terms of relative importance.

The results of the structural model tests showed that the composite (second-order) model accounted for 0.748 of the variance observed for organizational performance (Table 4) .Consistent with expectations, knowledge infrastructural capability (β=0.251; p≤ 0.05) and knowledge process capability (β=-0.639; p≤ 0.001) were both significant in contrast organizational performance, supporting hypotheses H8 and H9. Finally, a summary of the results of the model tests for the decomposed model and the composite model are shown in Table 4.

6. Discussion and Implications

Consistent with expectations, the study results provided strong empirical support for the decomposed model, accounting for 0.754 of the variance observed for organizational performance. For the composite model (Table 4), the amount of variance explained was 0.748, and was similar to the decomposed model. The links between organizational performance and knowledge process capability and knowledge infrastructure capability returned path weights of 0.251 and 0.639 respectively. Altogether, these findings are consistent with prior research that has observed similar orders of magnitude for the path weights and variance explained in respect of knowledge management and organizational performance (Gold et al., 2001).

The results for the decomposed model (Table 4) showed that of the three infrastructural capabilities, only organizational structure had a significant impact on organizational performance; neither technology nor organizational culture had a significant impact on organizational performance. For knowledge process capability, knowledge acquisition, knowledge application and knowledge protection also impacted organizational performance, but not knowledge conversion.

Altogether, these results suggest that although the individual resources collectively determine the knowledge management capabilities construct, not all are directly linked to organizational performance. This is consistent with the resource-based view which suggests that only a subset of a university’s capabilities when leveraged appropriately reflect direct contributions to performance measures (Grant,1996). For example, Seleim and Khalil (2007) found that of five knowledge

processes studied (e.g. acquisition, creation, application) only knowledge application was directly linked to organizational performance.

The study results have several implications for knowledge management in universities. For example, research suggests appropriate investments in knowledge management initiatives can enhance organizational performance. However, this study shows that not all of the resources are direct contributors. Although resources such as technology, culture and knowledge conversion are necessary for effective knowledge management (Gold et al.,2001) they did not impact organizational performance directly. However, universities can ill afford to neglect these dimensions as they work in combination with and support other resources, such as knowledge acquisition and knowledge application that may contribute directly to organizational success (Van den Bosch et al., 1999; Seleim and Khalil, 2007).

Second, this research showed that inferences about an overall capability do not necessarily apply when it comes to individual resources. For example, the current findings are consistent with research which suggests that particular knowledge resources (e.g. technology, organizational structure, knowledge acquisition, etc) are directly related to knowledge management capabilities (Gold et al., 2001; Zack et al., 2009) and are therefore important in forming a university's overall knowledge capability. However, for studies that use composite models, it is difficult to identify which resources directly impact organizational performance. Although some studies shed light on this gap (Zack et al., 2009), there remains a gap in the literature regarding empirical evidence linking particular knowledge resources to performance. The current study addresses this gap by identifying specific enablers and processes that are directly related to organizational performance.

The combination of resources that is most effective for an organization is also likely to differ across universities. Since there are no ''silver-bullet'' combinations when it comes to enhancing organizational performance, it is incumbent on managers not only to recognize that all the resources are important, but also to identify which resources and consequently which capabilities are most salient to organizational performance. Such insights can help managers identify appropriate strategies aimed at deploying combinations of knowledge management resources that better support the university's goals. Furthermore, since the combinations may be unique across universities, this provides an opportunity for competitive advantage and sustained performance.

Finally, this study also does not provide in-depth insight into the capabilities of individual universities. Such insights would enable a better understanding of the individual capabilities that make up a university's knowledge capability, why differences may occur, and under what circumstances do some resources impact organizational performance and others do not. Future research is therefore needed to examine in greater detail the links between the individual capabilities that make up knowledge resources, and organizational performance.

7. Conclusion

The literature is replete with studies that suggest knowledge management impacts organizational performance at university. However, there has been little elaboration of the relationships at the dimensional level in contrast organizational performance. Yet when it comes to making decisions about a university's knowledge capability, these are often made at the level of the individual resource. This study addresses this gap by assessing a decomposed model of knowledge management capabilities. The aim was to provide insights into the relationships between particular knowledge resources and organizational performance that can help universities identify appropriate strategies for investing in and effectively deploying the knowledge resource.

The results showed that for the current study, organizational structure, knowledge acquisition, knowledge application and knowledge protection were significantly related to organizational performance. However, technology, organizational culture and knowledge conversion did not have a significant impact. Taken altogether, the findings suggest that although the individual resources collectively determine a university's overall knowledge management capability which, as a composite is related to organizational performance, each resource is not directly linked to performance. The decomposed model therefore offers insights into relationships at the dimensional level that are not readily inferred from composite models.

In the final analysis, this study offers useful insights into the knowledge management –performance link. First, there has been little research that decomposes the effects of knowledge management in

relation to organizational performance. The results suggest the decomposed approach is useful for understanding the complex relationships embodied in the knowledge management – performance link, which cannot be surmised from a composite model. Such an approach is useful for research aimed at acquiring an in-depth understanding of knowledge management, as opposed to achieving parsimony or focusing on main effects.

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Appendix

Tables:

Constructs	Mean	SD	CR	AVE
Knowledge infrastructure capabilities				
Organizational structure (ST)	4.414	1.446	0.924	0.635
Organizational culture (CU)	5.215	1.378	0.918	0.651
Technology (TC)	4.569	1.646	0.921	0.747
Knowledge process capabilities				
Knowledge acquisition (AQ)	5.309	1.268	0.923	0.707
Knowledge conversion (CN)	4.929	1.384	0.950	0.759
Knowledge application (AP)	5.140	1.447	0.963	0.789
Knowledge protection (PT)	4.930	1.473	0.948	0.725
Organizational performance (OP)	4.810	1.478	0.951	0.763

Table 1 -Descriptive statistics, composite reliabilities(CR)and average variance extracted(AVE)

Constructs	ST	CU	TC	AQ	CN	AP	PT	OP
Knowledge infrastructure capabilities								
Organizational structure (ST)	0.797							
Organizational culture (CU)	0.745	0.807						
Technology (TC)	0.557	0.481	0.864					
Knowledge process capabilities								
Knowledge acquisition (AQ)	0.639	0.666	0.565	0.841				
Knowledge conversion (CN)	0.720	0.748	0.636	0.737	0.871			
Knowledge application (AP)	0.715	0.754	0.604	0.724	0.813	0.888		
Knowledge protection (PT)	0.595	0.591	0.600	0.588	0.641	0.642	0.851	
Organizational performance (OP)	0.742	0.723	0.576	0.718	0.752	0.822	0.669	0.873
Note: Italicized items represent the square-root of the variance shared between the constructs and their measures; the off-diagonal elements are the correlations among the constructs								

Table 2- variance shared between the constructs

Construct	Weight	t-statistic	Significance
Organizational structure	0.457	3.991	$p \leq 0.001$
Organizational culture	0.440	3.966	$p \leq 0.001$
Technology	0.252	3.455	$p \leq 0.001$
Knowledge acquisition	0.210	2.222	$p \leq 0.05$
Knowledge conversion	0.122	1.105	ns
Knowledge application	0.572	6.464	$p \leq 0.001$
Knowledge protection	0.213	2.792	$p \leq 0.05$

Table 3- Indicator weights and significance level

Hypotheses	Path	Significance
Decomposed model		
Knowledge infrastructural capability		
H1. Technology is not (directly) related to organizational performance	0.003	ns
H2. Organizational culture is positively related to organizational performance	0.055	ns
H3. Organizational structure is positively related to organizational performance	0.209	$p \leq 0.05$
Knowledge process capability		
H4. Knowledge acquisition is positively related to organizational performance	0.146	$p \leq 0.05$
H5. Knowledge conversion is positively related to organizational performance	0.025	ns
H6. Knowledge application is positively related to organizational performance	0.412	$p \leq 0.001$
H7. Knowledge protection is positively related to organizational performance	0.148	$p \leq 0.05$
R-Squared (R^2)	0.754	–
Composite model		
H8. Knowledge infrastructural capability is positively related to organizational performance	0.251	$p \leq 0.05$
H9. Knowledge process capability is positively related to organizational performance	0.639	$p \leq 0.001$
R-Squared (R^2)	0.748	–

Table 4- Summary of results for the model tests