International Scholars Journals

International Journal of Accounting, Auditing and Taxation ISSN: 2756-3634 Vol. 9 (1), pp. 001-008, January, 2022. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

The role of knowledge management on firm performance: a case study of Iranian Pirouz Auto Development Group (PADG)

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Accepted 08 October, 2021

Knowledge Management (KM) has emerged as a robust strategy to improve firm performance. Our purpose is to identify the relationship between the main factor of knowledge elements (Knowledge Identification, Acquire, Development, Distribution, Usage and Maintain) on the Iranian Pirouz Auto Development Group (PADG). After gathering data by questionnaire and analyzing those by SPSS and LISREL 8.5, all hypothesis were accept excepted the effect of acquisition, utilize and sharing knowledge on the firm performance in this factory. Further researches have been offer and a very useful source of information for participates of KM element in the firm performance offer at the end of this paper.

Keywords; KM, firm's performances, LISREL 8.5, Pirouz Auto Development Group. IRAN.

INTRODUCTION

KM has become a very important concept in the business world. In many firms, KM has become the top investment priority. It is recognized that the performance of KM is highly associated with the intellectual capital of the firm, which in turn affects its innovation and financial achievement (Wong, 2005). However, previous studies about how to improve KM capability efficiently are still controversial (Birkinshaw et al., 2002). First, the characteristics of knowledge have been categorized from many perspectives. However, no one agreed set of definitions has been identified. For example, Polanyi (1962) classifies knowledge into two categories: explicit knowledge and tacit knowledge. Explicit knowledge can be codified and shared in the form of hard data, manuals, codified procedures or universal principles, while tacit knowledge results from an individual's experience and is only revealed through its application. Spender (1996) proposes that knowledge can be held by individuals or collectivity. Collective knowledge comes from knowledge integration: it is the combination of the coordinated efforts of several individuals who hold different but complementary skills (Grant, 1995). Second, many studies have suggested that KM is a business process consisting of sub-processes such as organizational learning, knowledge integration, and knowledge distribution, among others (Gold et al., 2001; Nevis et al., 1995; Sarvary, 1999; Wilkens et al., 2004). Most previous studies suggest that the activities of KM sub-processes will enhance KM capability (Lee and Hong, 2002; Lin and

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Tseng, 2005). For example, organizational learning and knowledge integration will influence KM capability. Knowledge distribution will affect innovation. However, the interactions among these research variables are ignored in previous studies and so require further research. Third, previous studies have argued that KM should be closely linked to KM strategy and goals (Davenport and Prusak, 1997). For example, Zack (1999a) suggests that companies oriented toward exploiting internal knowledge exhibit the most conservative knowledge strategies, while unbounded innovators (firms that closely integrate knowledge exploration and exploitation without regard to organizational boundaries) have the most aggressive knowledge strategy. While organizational learning and KM have generated a great deal of attention, relatively few related studies have investigated the interactive effects of KM strategy and organizational learning on KM. Thus, further research on the relationship among these factors is needed. Fourth, knowledge-based theory concerning knowledge characteristics and knowledge integration have been extensively applied for organizations (Bonache and Brewster, 2001; Huang and Newell, 2003; McEvily and Chakravarthy, 2002; Wang et al., 2004). Since, firms can to some extent be seen as distributed knowledge systems (Blackler et al., 2000; Grant, 1996b), in order to acquire sustainable competitiveness, a firm needs to have the capabilities to integrate different kinds of knowledge in an effective manner. Along with others, Grant (1996a) proposes that different types of knowledge require different patterns of integration. Through the knowledge integration process, firms could transform the specialized knowledge base of a number of individuals into applicable knowledge which directly or indirectly relates to an organization's knowledge capability (Huang and Newell, 2003). In other words, according to knowledge characteristics, firms with better knowledge integration processes will enhance their KM capability. However, using KM strategy as a contingent role to investigate the relationship between knowledge integration and KM capability so far has created little attention. Fifth, more and more innovation studies have emphasized the extent to which the innovation process involves the integration of external knowledge with the existing organization (Cohen and Levinthal, 1990; Leonard-Barton, 1995; Powell, 1998; Wu et al., 2002). For example, Mullen and Lyles (1993) suggest that continuous organizational learning will improve the efficiency and effectiveness of a firm's innovation. Since, innovation will strengthen a firm's competitive advantage; knowledge is the key that combines organizational learning and innovative activities. Firms must ensure continuous organizational learning and maintain a superior internal KM system (Ju et al., 2006).

However, it seems that researchers rarely discuss the interrelationships of a comprehensive model that contains the main elements of knowledge integration on the Firm performance in Iranian Pirouz Auto Development Group (PADG). Specifically, the moderating role of KM strategy on this KM model has largely been ignored. Thus, further investigation is needed.

Based on the above, it is evident that a few research gaps exist for academics and practitioners to develop a contingency model of KM capability that brings relevant constructs as the influential variables. Thus, the purposes of this study are two-fold:

(1) To develop a conceptual framework to identify the interrelationships among knowledge characteristics and elements on the firm performance in Iranian Pirouz Auto Development Group (PADG); and

(2) To empirically test the above conceptual framework.

Lecture review and Hypothesis

KM might be a popular challenge to today's organizations, but successful firms and their managers have always realized its value. The globalization of business, shift from production-based to knowledge-based economy, growth of ICT, the strive to become learning organizations and the emergence of knowledge workers have made KM practice a must today across all types of levels of firms (Chong and Choi, 2005). Many companies are recognizing that they are on the verge of knowledge-based economic revolution (Stewart, 1997). Hence, it is not surprising at all that the issue of more efficient and effective operations of an organization's knowledge assets has become more important today as numerous organizations have moved from information to knowledge age (Choi, 2000). As Drucker (1995) rightfully predicts, knowledge has become the key economic resource and a dominant source of competitive advantage. Despite the importance of KM to organizational success, there is not yet a common consensus on the concept of KM (Earl, 1999) despite a great deal of interest on the subject. Defining KM is especially difficult, as different perspectives or schools of KM can yield different dimensions and meaning (Salleh and Goh, 2002). For example, management information systems researchers and practitioners tend to define KM as an object that can be recognized and controlled in computer-based information systems. Management researchers, on the other hand, address knowledge as processed based on individual and organisational competencies such as skills and know-how (Choi, 2000; Davenport and Prusak, 1998; Nonaka and Takeuchi, 1995; Stewart, 1997; Sveiby, 1997; Winter, 1998). Thus, different perspectives on the concepts of knowledge can lead to different definitions of KM.

However, the shared theme of current business literature is that knowledge in the minds of enterprise members is the most valuable organisational resource (Liebowitz, 1999). It caters to the critical issues of

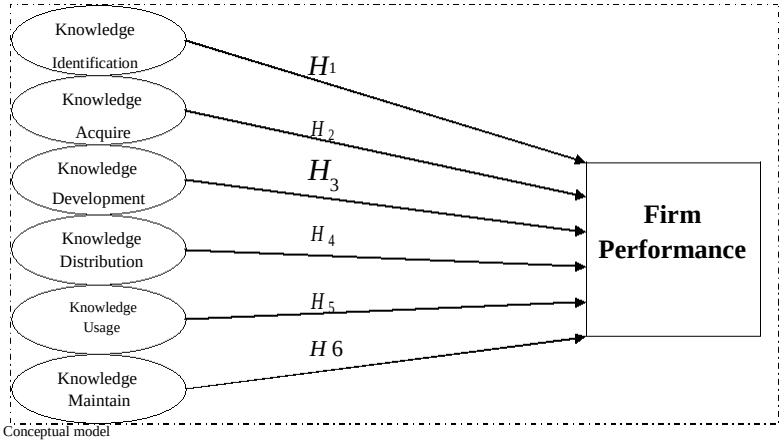

Figure 1: Conceptual model

organisational adoption, survival and competence in face of increasingly discontinuous environmental change (Davenport, 1999). Salleh and Goh (2002), in their paper on managing human resources toward achieving KM in Malaysia, define KM as a process of leveraging knowledge as means of achieving innovation in process and products/services, effective decision-making, and organisational adaptation to the market for creating business value and generating a competitive advantage to organizations. If KM is a critical determinant to an organization's success, then it is extremely important that an efficient knowledge-intensive process must be established to meet the demands of improved enterprise performance (Quinn et al., 1996). Quinn and colleagues assert that the analysis of critical success factors provide an important meaning to KM through the identification of core processes that are critical to successful KM implementation. As Choi (2000) supports, a KM programmed needs to identify critical performance indicators of success factors to gauge its performance. Although KM experts such as Davenport, Prusak, Stewart and Sveiby have developed the basic concept and ideas of KM since the late 1990s, the research stream of KM is still emerging. Perhaps to date there has been no study that clearly defines boundaries and frameworks of KM. Since KM involves almost every field of business, i.e. management theory, marketing, management information systems and so on, the proposed success factors are fragmented and diversified. While knowledge is not easily measured and audited, organizations must manage knowledge effectively in order to take advantage of the skills and experience inherent in their systems and structures as well as the tacit knowledge belonging to the employees of the firm (Hung et al., 2005). However, one of the biggest challenges identified is the ability to understand KM and its purposes. There is not yet a common consensus on the concept of KM (Earl, 1999) since different researchers and practitioners tend to define KM based on their fields and interests (Chong and Choi, 2005; Choy et al., 2006).

For the purpose of this paper, various KM models proposed by leading KM researchers and recent survey evidences have been comprehensively reviewed so that a unified framework of KM can be identified. To achieve this, among the studies conducted on identifying KM critical success factors, the most comprehensive list of success factors have been presented by Chong and Choi (2005). They posit that there are 11 key KM components to successful KM implementation. They consist of:

(1) Employee training;
(2) Employee involvement;
(3) Team working;
(4) Employee empowerment;
(5) Top management leadership and commitment;
(6) Information systems infrastructure;
(7) Performance measurement;
(8) knowledge-friendly culture;
(9) Benchmarking;
(10) Knowledge structure; and
(11) Elimination of organizational constraints.

These key KM factors identified by Chong and Choi (2005) are drawn from myriad research that supports the inclusion of one or more of the individual critical success factors (Chong, 2006). According to this lecture review, we can offer these hypotheses:

1) Knowledge Identification has a positive impact on the firm performance.
2) Knowledge Acquire has a positive impact on the firm performance.
3) Knowledge Development has a positive impact on the firm performance.
4) Knowledge Distribution has a positive impact on the firm performance.
5) Knowledge Usage has a positive impact on the firm performance.
6) Knowledge Maintain has a positive impact on the firm performance.

METHODOLOGY

The present study attempts to analyze the relationship between the independent variables and the dependent variable by applying a reliability analysis, correlation

Table 1. Descriptive Statistics and Correlations & R2

	Mean	Std dev	Min	Max
Firm Performance	4/12	0/88	4	20
Knowledge Acquire	3/87	0/10	5	20
Knowledge Development	4/19	0/260	3	15
Knowledge Distribution	3/70	0/926	2	17
Knowledge Usage	3/70	0/737	3	20
Knowledge Maintain	4/01	0/95	4	19
Knowledge Identification	4/99	0/89	2	7

R^2	Knowledge Identification →	Firm Performance	0/53
R^2	Knowledge Acquire →	Firm Performance	0/71
R^2	Knowledge Development →	Firm Performance	0/78
R^2	Knowledge Distribution →	Firm Performance	0/47
R^2	Knowledge Usage →	Firm Performance	0/19
R^2	Knowledge Maintain →	Firm Performance	0/17

Note: Significant at; p<0.05)

analysis, regression analysis, mean analysis and hypothesis testing. The paper is based on a survey questionnaire adopted from previous studies. The sample was randomly selected among Iranian Pirouz Auto Development Group (PADG). As a rule of thumb, Sekaran (2006), states that the sample size should be between 30 and 500 are used depending on how appropriate and effective the type of sampling design is being used and the research questions implemented. As the research is on KM in the Iranian Pirouz Auto Development Group (PADG), a sample size of 200 employee and supervisor is deemed adequate. The 5 point Likert scale were used as a measurement for the respondent with scoring of 1 (strongly agree) to 5 (strongly disagree).

Pilot study

A pilot study of the questionnaire was conducted to evaluate the content validity of the measurement scales. Content validity can be assessed by a group of judges or experts who decide whether the test represents all of the content of a particular construct (Judd et al., 1991). After evaluation by four academics and five local professionals in this field, some items were reworded based on their feedback.

Next, the questionnaire was administered to 30 employee and supervisors of Iranian Pirouz Auto Development Group (PADG) who were recruited through a local newspaper advertisement. They were required to answer, review and critique the questionnaire. After completion, they were reimbursed with RMB50. All 30 questionnaires were useful; the questionnaire was then revised and finalized based on their feedback.

Method of analysis and Profile of respondents

To test the model's robustness, we analyzed the data using covariance structure analysis (LISREL) as well. As the data were truncated into two samples, both samples are highly skewed and consequently violate the main assumption for analyzing data using structural equation modeling. Realizing that non-normality may cause problems to our analysis we transformed the data set using PRELIS based on Anderson and Gerbing (1988) and Jo¨reskog and So¨rbom's (1999b) recommendations. We tested the conceptual model using the two-step approach suggested by Anderson and Gerbing (1988); first, we tested the measurement models and then the causal model. Our factors and constructs all passed these tests. Furthermore, we entered all constructs in the model at the same time and computed them as exogenous variables. We did this to reveal any potential conflicts between the constructs before we tested the structural model. Our model provided acceptable fit statistics and did not reveal any particular problems between any constructs. Based on the measurement models and the tests we conducted, we can conclude that the convergent and discriminate validity both are satisfactory.

Finally, we ran the structural model, which provided assessments o homological validity (Anderson and Gerbing, 1988). In doing so, we looked at both absolute and incremental fit statistics (Bollen, 1989; Gerbing and

Table 2. The results of hypotheses testing

Hypotheses	Relationship of construct	Result	T-value
H1	KI → FP	supported	3/92
H2	KA → FP	Rejected	-0/14
H3	KD → FP	supported	4/25
H4	KD → FP	Rejected	0/44
H5	KU → FP	Rejected	0/21
H6	KM → FP	supported	5/25
$\chi 2$		384/61	
Df		3	
CFI		0/98	
NFI		0/90	
NNFI		0/95	
RMSEA		0/07	

Note: Significant at; p<0.05)

Anderson, 1993; Marsh et al., 1988).

Of the absolute fit statistics, we examined the x 2 and GFI (Jo¨resko and So¨rbom, 1989), SRMR (Bentler, 1995), the RMSEA (Browne and Cudeck, 1992; Steiger, 1989). Of the incremental fit statistics, we reviewed AGFI (Jo¨reskog and So¨rbom, 1989; Bentler, 1983) and NNFI (Bentler and Bonett, 1980). According to the different cut-off criteria provided in the literature (Hu and Bentler, 1998, 1999, for an overview), we draw that our causal model was within the acceptable range of all fit statistics. The RMSEA was below 0.08, the SRMR was low (0.037), GFI was well above 0.90 (0.96), as were AGFI (0.94) and NNFI (0.95). As the x 2 is sensitive to the sample size above 200, this is not a very good indicator of model fit in our study. Minor misspecifications may become significant with larger samples. Last but not least, all paths in the structural model were found to be significant when running the LISREL analyses. In summary, we claim that the model fit the data reasonably well.

FINAL RESULTS AND DISCUSSION

Table 2 reports the path coefficients, the degree of explained variances and the fit index for the conceptual model for the total sample of the Iranian Pirouz Auto Development Group (PADG). As with confirmatory factor analysis (CFA), model testing was done with the LISREL 8.5 software using the maximum likelihood algorithm. The overall fit statistics, as shown in Table 2, indicate an acceptable level of fit between the hypothesized model and the data. As predicted, three of six hypothesis were accepted and there was a difference in degree, KI has a significant relationship with FP (P<0.05, T=3.92), thus confirming H1. Results also show that KA hasn't a significant relationship with FP (P<0.05, T=-0.14.13), weren't supporting H2. As shown in the results, KR has a significant relationship on FP (P<0.05, T=4/25), thereby confirming H3. However, the path from KU hasn't a significant relationship on FP (P<0.05, T= 0/44), and H4 weren't supported by the data. And by analyzing data gathering from KS to FP (P<0.05, T= -0/21), H5 wasn't also supported. Finally, the final and most important hypothesis was the path to KD has a significant relationship with FP (P>0.05, T=5/25) was strongly supported.

Limitations

This study has several limitations that the reader should take into account in interpreting the results. First, the study uses data provided by only one key informant per firm (Iranian Pirouz Auto Development Group (PADG)). Although we obtained various indicators of the high competency of each key informant, it would have been preferable to use two informants per firm, that is, an Iranian Pirouz Auto Development Group (PADG) to respond to statements related to Iranian Pirouz Auto Development Group (PADG) resources and a business manager to respond to statements related to firm market performance. Second, the study is cross-sectional in nature and its results are only generalizable to Iranian Pirouz Auto Development Group (PADG). Third, firm performance is assessed in exclusively commercial terms. This prevents us from determining whether the results obtained could be generalized to other measurements of firm-level performance. Finally, since the methodology used is cross sectional and static and the study predictive and exploratory in nature, it is only possible to show association, not causality.

Managerial implications

The above conclusions elicit several managerial

implications. First, as many scholars have noted, the characteristics of knowledge will heavily affect on the firm performance in Iranian Pirouz Auto Development Group (PADG). It is extremely important for firms to translate knowledge elements into codified and explicit knowledge in such a case where managers from different levels and different departments could arrange the flow of important knowledge from one department to another.

Although it is really difficult to translate knowledge elements into Iranian Pirouz Auto Development Group (PADG), one KM manager of our sample firms reported that their company requires employees to spend two hours every week to meet and discuss technical and management knowledge.

Twenty five percent of the employee's performance appraisal is based on the performance of their integration and codification of technical and knowledge into explicit forms. Another KM manager of our sample firms reported that every individual should visit their department website and contribute their knowledge to the comments of the standard job procedure. Individuals are also encouraged to discuss technical and management issues with the same department of the overseas subsidiaries. Another manager of our sample group reported that they issue a KM newsletter every two weeks to share tacit knowledge to all employees in the firm. Thus, different firms tend to offer mechanisms to translate knowledge from tacit to explicit. Although organizational learning and knowledge integration have been regarded as two of the most important constructs that affect KM capability and innovation, it is rare to find studies that investigate the moderating role of these two constructs on KM capability and innovation. The results of this study certify that a firm's KM capability will be affected not only directly through the levels of organizational learning and knowledge integration, but also indirectly influenced through the adaptation of human oriented KM strategies or system oriented KM strategies. These conclusions are useful for practitioners and academics, and suggest that executives need to exercise different KM strategies to coordinate the characteristics of knowledge, the learning culture of the firm, and the integration of knowledge. In other words, the primary task of management is establishing the appropriate coordination necessary for knowledge integration and creating the environment to facilitate learning.

Managers have a responsibility to develop employees who see their organization as a learning system and who can learn how to experiment and collaborate to reframe problems (McGill and Slocum, 1992). If employees are used to transform and integrate knowledge via organizational learning, knowledge can be created, acquired, stored and deployed in the organization automatically to strengthen the firm's knowledge capability. If these contingency effects are ignored by executives, KM and business performance will be substantially discounted.

Third, it is important for firms to incorporate different KM strategies in different KM environments. The findings persuasively suggest that firms exercising a human oriented KM strategy will provide a favorable agent for organizational learning, while firms emphasizing a system oriented KM strategy will promote knowledge integration.

Hansen et al. (1999) argue that to use knowledge effectively, a company should focus on the dominant strategy and use the other in support of dominant one. They also propose an 80-20 percent split between the dominant and the supporting KM strategy.

Companies that try to pursue both strategies at the same time run the risk of failing at both. Executives may need to rethink their KM strategy and find a balance between human-oriented strategy and system-oriented strategy. Thus, executives of Iranian Pirouz Auto Development Group (PADG) should evaluate carefully the characteristics of knowledge and organizational context in their firm before adopting specific KM strategies

CONCLUSIONS

As we know, Iran is positioning itself as a capital spiritual country in the world of Islamic countries, and more efforts are required for developing and promoting the KM as a one of the infrastructural bases of Iranian Pirouz Auto Development Group (PADG). Iranian Pirouz Auto Development Group (PADG) have the most impact on KM and FP. In addition, the private sector must be investigated and have a strong role in the KM. While the industry is private sector-driven, the government must continue to assume an active role to facilitate its growths of the Iranian Pirouz Auto Development Group (PADG) in Iran.

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