The Analysis and Recognition of Effect of Employing Knowledge Management (KM) with Demitted Approach [Case Study: Members of Faculty in (IAU) Universities at Region no. 13]

Yoosef Fakhri Heravi* and Nader Bahlooli
Department of Management, Bonab branch Islamic Azad University Bonab, Iran

Abstract

Today, organizations have found that the knowledge is deemed as one of the paramount and most distinct parameters for survival in competitive world. Thus, personnel have been noticed as owners of knowledge and the foremost capital for organization more than anything else. As a tool which has become important, Knowledge Management (KM) may collect the existing knowledge and give it order and dynamism and disseminate it throughout the organization. Accordingly, the present study is intended to examine the relations between variables of KM among members of faculty in universities at Region no 13. The parameters for efficient employing of KM that have been identified in former studies are considered as variables in this investigation. The methodology of this study is of descriptive type and statistical population of current research includes 225 participants from members of faculty in universities at Region no 13. Behat standard questionnaire (2002) has been utilized for data collection. The needed data have been gathered by the questionnaire in which validity and reliability of this inventory has been examined by content-validity and retest techniques respectively. DEMATEL method has been adapted for data analysis. Similarly, the final analysis of data was conducted by means of MATLAB software. The final results signify that the variables of ‘knowledge record, knowledge creation, and knowledge application’ are effective on this system while variables of knowledge transfer (C) and knowledge acquisition (A) were characterized as the mostly affected parameters of KM between members of faculty in universities at Region no 13.

Keywords: Knowledge management; KM dimensions; Multiple-criteria decision-making

Introduction

The present time is the age of quick change and development in knowledge. The volume of knowledge is dubbed every 5.5 years while its average lifetime is less than four years. Under such circumstances, knowledge is proposed as a valuable strategic source and asset that requires management. If we add the existing serious competition in world markets to the above-said conditions as well, the importance of managing organizational knowledge is dubbed as a competitive advantage in current knowledge-centered economy.

Emphasis on knowledge and information is assumed as the most basic feature of smart organization at 21st century. Data are transferred; information is shared but knowledge is a type of characteristic in individuals and communities, which could not be easily conveyed. There are two great assets, which are possessed by organizations: One of them is the personnel who work in that organization and the other is the tacit knowledge that is embedded in mind of organizational personnel. Therefore, knowledge should be created, stored, shared, and employed and this is a task for knowledge management (KM).

As the useful knowledge is shared in organization more purposefully, the individual and organization learning and innovation is accelerated and they are manifested in development of products and giving better services and further achievement in target market and developing products and presentation of better services are more visible and thereby this facilitates further success in target market and finally achievement of organizational goals at macro level.

Interpretation of subject

Proper implementation of KM is not exclusively devoted to economic organizations and enterprises in a period that is called knowledge-oriented community and knowledge-based economy, but the universities can be also highly benefitted from it as one of centers for knowledge creation and dissemination. The research institutes tend to compete with others to attract the best researchers and investors at competitive climate of current communities and also universities seek for acquisition of their best investors namely teachers and students. Similar to other final organizations, universities and higher education institutes are involved in subject of knowledge management on the one hand and they are exposed to several challenges such as financial pressures, rapid growth of technology, changing role of personnel, competitive values, and world quick change as a whole and on the other hand they are trying to achieve their basic goals i.e., education and research and giving services to the society.

The proper behavior with challenges and achievement of goals are only possible if the university is capable to manage consciously and clearly the related processes to KM and to find easy solution for acceptance of KM relevant paradigms and processes. KM is an appropriate approach that has emerged to create integration between new requirements in current modern communities. At competitive climate that governs over universities and the efforts made by universities for knowledge creation and for acquisition of better degree in this area [1], KM posits appropriate strategy for optimal utilization from knowledge and intellectual powers of members in universities. With implementation...
of KM the storage, transfer, and retrieval of existing knowledge as well as its creation may facilitate and accelerate interaction between the researchers so in turn this may lead to enhance research level and increase in level of knowledge creation and contribute universities to achieve their objectives. Emphasis on knowledge and information is the most basic characteristic of organizations in 21st century. Unlike classic organizations, modern organizations possess high-technology and require capture, management, and utilization from knowledge and data to improve efficiency in organizations. Knowledge is a power tool that can exert changes in the world and facilitate innovations. The importance of knowledge could not be overlooked in today global and complex environment. Those organizations can act as leaders of their industries, which know how to acquire, distribute, and manage the information efficiently. Today, we move toward a period in which not only competitive advantage is obtained by access to information, but more importantly it is acquired with creation of new knowledge [2]. Leitner et al. argue that the communities move toward knowledge-based economy in which the knowledge is supposed as the foremost element for value-creation in organizations [3]. The model of growth for world economy has been essentially changed with occurrence of IT revolution and fast development in technology. Today with respect to competitive conditions, knowledge has been substituted with financial and physical capitals as the paramount capital. Therefore, KM is assumed as symbol of competition and factor to achieve power of development for many advanced countries [4]. The knowledge-based business environment requires an approach that may cover the new organizational intangible assets such as knowledge and competencies of human resources, innovation, customer’s relationship, organizational culture, and organizational systems and structure etc.

In fact, at present KM has achieved structural position in enterprises and organizations and it is ever-growingly added to its role and importance. The studies, which have been conducted in this field, suggest that in Britain 80% of large-size organization are benefitted from KM and the rest 20% of organizations will implement KM system for 5 years later. Similar to these investigations in USA and regarding 200 large-size enterprises, it is expressed that 82% of these enterprises utilize from KM and allocate 50% of their budget and personnel to KM and 27% of organizational positions include KM [5]. Nonetheless, in our country KM is deemed as one of the most controversial subjects with which it is dealt in the scientific and administrative community. The fact is that the various and complex interpretations and definitions about KM have caused creating less common perception of all aspects of KM.

In this course, with reliance on the previous conducted investigations the researchers in the present study have tended to identify and analyze the relations between KM variables by means of a model proposed by Pang Leo Liu et al. [6].

Research history

Several researches have been carried out about KM inside the country and abroad therefore some of the conducted studies are given in the following.

In a study, Amirkhani et al. examined the effect of KM on organizational entrepreneurship from viewpoint of personnel in Ministry of Industries and concluded that KM might prepare a platform to create organizational entrepreneurship and it could be efficient in creation of organizational entrepreneurship [7]. In another research, Akbari et al. explored KM dimensions with organizational learning according to perspective of high school teachers at Saveh town [8]. Findings of this study indicate that the organizational learning is correlated to all of KM dimensions positively and significantly between female and male teachers. The highest correlation coefficient in male group belongs to variable of knowledge creation and application with coefficient of (0.603). Namely, implementation of KM increases organizational learning in schools. In a survey, Ghalramani et al. studied the status of KM infrastructures in Tabriz University from viewpoint of members of faculty and the results of their study indicate that the researching community is rarely familiar with concept of KM at low level [2]. Among the studied infrastructural factors, four factors (i.e., organizational culture, organizational structure, financial processes and sources) are placed at inappropriate position while two factors (manpower and technology) are situated at suitable condition. In their investigation titled ‘the relationship among KM variables and performance of manpower’, Badri et al. have concluded that knowledge acquisition had the maximum effect in prediction of performance of manpower in physical education administration at eastern Azerbaijan Province [9]. In their study under title of ‘development of structural dimensions of organization proportional to KM approach’, Monavarian et al. came to the result that the structural elements of formality and centralization might negatively affect on KM efforts while the structural dimensions of delimitations, informal networks, teamwork, and professionalism positively affected these variables [10]. Accordingly, one can conclude that human resources development and removal formalization from this structure is necessary for successful implementation of KM related projects in the given organization. In their survey with title of ‘analysis of effect of social capital in KM development in National Taxation Affairs Organization’, Mahdianrad et al. concluded that social capital is significantly important and this diagram also shows at standard status that social capital can interpret 86% of variance in KM [11]. In their study with title of ‘Role of social capital in development of KM’, Alvani et al. came to the result that the presence of social capital in organizational groups of Iran Data Processing Company has been effective on developing software activities of KM (including related activities of knowledge transfer and creation); nonetheless, no significant relationship was shown with development of hardware activities of KM (including activities of knowledge acquisition, record, and application) [12]. In a survey, Hemati has evaluated the rate of employing KM variables in Technical Faculties (Pardis) of Tehran University. The findings of this study signify that except chemistry engineering faculty, the faculties of materials and basic sciences were at inappropriate status in terms of application of KM and other faculties are placed in relatively favorable conditions [13]. In a study with title of ‘analysis on strategic gap among KM dimensions in knowledge-based institutes’, Doayye et al. have concluded that KM has been mainly addressed by directors and planners in Public Universities while KM dimensions are not at favorable conditions in the studied Islamic Azad Universities [14]. In an investigation, Azizi et al. examined and compared KM dimensions among public and private organizations and evaluated five dimensions of KM including strategy, structure, process, personnel, and roles and IT dimension in their study and concluded that out of five identified dimensions, there is significant difference among public and private banks only in two dimensions of IT and KM processes [1]. Monavarian et al. showed that social capital might play determinant and significant role in KM cycle and any dimension of social capital might typically increase KM cycle in the given organization [10]. In their survey with exploring relationship among KM and social capital in Islamic Azad University (from viewpoint of members of faculty in Yazd University, Damoori et al. found that the given results from application of statistical tests showed the positive and significant relationship among KM and
social capital and also variables of social capital are positively and significantly related to ten dimensions of KM [4]. In an investigation, Zamani et al. has examined KM infrastructures (administrative factor, organizational culture, and technical factors) in faculty of educational sciences and psychology at Isfahan University based on perspective of faculty members [14]. The results of that study suggest that among the basic infrastructures of KM through the faculty, technical infrastructure enjoys relatively favorable status but two factors of management and organizational culture lack appropriate conditions.

In a study, Zahedi et al. have explored the obstrusive factors (barriers) against knowledge sharing [15]. These factors include shortage of self-efficacy that indicates individual factor in sharing of knowledge; shortage of ICT facilities that denote technical factor; and shortage in organizational encouragement to show that the organizational factor hinders knowledge sharing. The relationship between these factors has been measured by correlation test. The research findings show that there is negative relation between these three factors with behavior of knowledge sharing and organizational encouragement as the most efficient factor. In a survey, Vashit, have studied the perceived KM barriers and facilities by researchers of universities and researching centers at India. To this end, knowledge collection, creation, and dissemination have been examined from three individual and social, organizational, and technical aspects. These findings signify that the researchers are more involved in individual and social-organizational KM dimensions than technical aspect. Individual and their interactions have created knowledge and it contributes to this trend. Marko and Art maintain that the efficient creation and transfer of knowledge requires the presence of specific structure in the organization. The internal structure of an organization may act as drive or barrier for KM. Knowledge transfer and creation requires presence of organizational culture in which individuals and groups are inclined to cooperate with each other while they may have mutual interest in this regard and they can share their knowledge together. Scott, assumes knowledge-centered and knowledge- oriented organization as a type of organization in which knowledge creation and knowledge sharing process have been internalized and it has been acknowledged as operational guiding path. To interpret necessity for research and study in KM field at universities, Monaco, claims that despite of generalization of KM in fields of trade and economy, KM has not yet achieved due status in universities while the universities are considered as source of knowledge production with enjoying research centers so they should be pioneer in employing KM in the society. In an investigation, Abdullah, studied empirically implementation of KM in Malaysian higher education institutes. The findings of that study signified shortage of awareness of users in process of implementation and utilization from KM system and it was also because of lack of perception and recognition of some applications and technologies. Correction of framework of KM system mainly emphasizes on rising awareness of system and identifying advantages of KM. Similarly, the results have shown that encouragement and reward may play essential role in success of employing KM system. Also in a study that was conducted in order to determine knowledge growth level in by Stet, in several organizations, he has concluded that the knowledge is placed at medium level of growth. Imgarda, as academic professor in field on communications in his doctoral treatise under title of ‘Knowledge asset management: global and local knowledge’, has studied this subject and showed that the KM was at very low level in most of these organizations and many of them are ranked at level 3 (i.e., knowledge is noticed in these organizations only at level of data classification and limited use). Peraksan, in an investigation with title of ‘Analysis of database’ that had been conducted to explore KM backgrounds in Indian Nuclear Studies Center have expressed that the first step is to determine organizational focus on KM. For this purpose, 6 levels were designated for KM in organization. The results from this test showed that the organizations have not a lot of capability for KM and they are placed on a continuum ranged from level 1 to 5. In their research under title of ‘social capital, KM, and continuous premium performance’, Hoffman, indicated that in comparison to organizations at low level of social capital, the organization with higher levels of social capital possess further potentials in KM. Agbo, mentions that KM and intellectual capital in organizations are deemed as key factors for achievement of innovations and the efficient management of knowledge assets comprises of a holistic approach and educational plans should reflect the nature of innovation and KM dimensions as very complicated social processes.

In a study that was carried out about ranking of KM strategies with multiple-criteria decision making (MCDM) approach in Sepah bank (2013) by Fatemeh Varayee the results show that one of the foremost subjects in implementation of KM in organizations is way of evaluation and taking KM strategy appropriate to that organization. There are many effective parameters to determine KM strategy. Human- centered and system- oriented approaches are fundamentally different from each other in KM strategy in terms of infrastructure and manpower and for this reason KM strategies are ranked in this study based on multiple-criteria decision making (MCDM) approach in order to reduce the cost and time. The present research is of analytical-descriptive survey and it is considered as one of applied researches. Theoretical bases of the existing studies are implemented in relation with KM strategy and the effective parameters on organizational KM strategies were selected and the most effective parameter of them was ranked by the questionnaire tool according order- preference and they were weighted by combination of experts (Sepah bank) and Shannon’s entropy and they were ranked by means of VIKOR technique. Given that today the organizations have perceived KM as one of basic needs it is important to plan and identify path of moving toward that direction and whereas a lot of cost and time is consumed for implementation of a successful KM system thus possession of KM appropriate system and properly administration of this system have been converted into one of goals for the organizations so identifying and selection of suitable KM strategy seems to be necessary.

The present research posits a new methodology for ranking of KM strategies with a hybrid structure based on multiple- criteria decision-making (MCDM) approach. By taking MCDM approach in this article we deal with ranking of KM strategies while the results signify that system-centered strategy in Sepah bank has achieved the highest interest and benefit so Sepah bank may provide an operational climate for developing and sharing of data by means of KM software systems and commercial documentation of administrative experts. The process of ranking parameters was conducted using Friedman non-parametric test and weights of criteria have been extracted through combination of Shannon’s entropy method with comments of experts. In a study that has been proposed as an article, Mats Lindgren and Hans Bandhold deal with key principle in the given strategic thinking regarding this issue that nowadays the subject of strategic planning is going to develop in many organizations and enterprises. But their directors and strategic planning advisors have less noticed this subject that creation of strategic thinking in organization and especially among key directors is the prerequisite for success in this field. A respected advisor equips you with strategic thinking before s/he gives strategic plan to your organization. This type of thinking is deemed as the core
and essence of strategic planning. Strategic thinking - that is proposed versus narrow-minded and mere executive thinking- includes several principles. But the authors of this article have tried to express its seven key principles. If you are enthusiastic in strategic thinking and if your job position requires strategic thinking and or if you study and conduct research in this regard you will find this article helpful and beneficial. You may need to read it several times in order to remember its key principles in your mind and to become localized with respect to your specific conditions.

In another survey that has been carried out regarding strategic thinking, Mehdi, described it necessary to notice strategic thinking and its advantages and nature and application and finally a conceptual model for this type of thinking [10]. The present article is not only aimed at interpretation of this important managerial approach but what is inferred is formation of a group of attitudinal variables regarding business environment. It is an attitude that can develop efficiency of directors. It emphasizes on competitive advantage in organization based on competition in this study.

In this article, Vafa has dealt with strategic thinking in this essay. The infrastructure of this article includes title of modern strategic approaches here a major part of this subject i.e., strategic planning is examined more perfectly and widely. In this investigation, the necessity for strategic thinking and its advantages and nature and use and eventually a conceptual model are described for this type of thinking. This article is not mainly intended to interpret only this important managerial approach, but as we hope to acquire at the end of this essay, it comprises of forming a group of attitudinal elements about business environment [16]. This is an attitude, which could develop the efficiency of directors. Nothing is more important than perceiving business environment. This is an attitude, which could develop efficiency of directors. It emphasizes on competitive advantage in organization based on competition in this study.

Strategic thinking is an approach that prepares the ground for formation and developing this insight. Strategic thinking calls on directors toward fast learning from business environment and employing creativity to generate new values. Such type of thinking is followed by distinctive perspectives from the rivals. These are perspectives, which may lead to innovative strategies and sectorial advantage. If application of strategy is considered as creation of competitive advantage, strategic thinking for organizational survival and growth in today highly competitive environment will be an inevitable issue [17]. The competitive advantage requires distinction in orientation toward the rival and distinction in orientation requires different and new attitudes. Several models have been suggested to achieve such an attitude. One model that has been introduced in this article is the continuous learning from environment and it implies discovery of unmet market requirements and creation of novel and value-creating strategies as three commands in strategic thinking. This model is not a step-by-step executive instruction. What is embedded as main message in this model is a different method from attitude toward business environment. The relation of directors with market environment should be redefined by this approach and the managerial mechanisms of organization should be revised. What it proposed here, is not essentially a type of managerial knowledge. This redefinition means change in fundamental beliefs among directors [18,19]. These are some beliefs, which set forth the basic questions about business environment as a drive for making effort (thinking and executive) to develop the organizations. The answer of directors to achieve success is not too far but the answer belongs to someone, who has a question.

Methodology

All of possible existing pair-wise relations among variables and intensity of these relations from expert group have been explored and questioned by means of questionnaire and Delphi technique and after data collection and in order to acquire this quantity, majority of votes \( \left( \frac{n}{2} + 1 \right) = \frac{60}{2} + 1 = 31 \) has been derived as criterion for judgment of group to this type of relation between two variables primarily extracted from corresponding diagraph of relations among variables (Figure 1). Then, to determine rate of intensity of the relations was finalized (through group agreement). The members of statistical population were asked to identify the intensity of the possible relations between the studied variables within the framework of the same questionnaire by scoring within range (0, 4) where number zero denotes lack of relationship and number 4 indicates the maximum relation between two elements. Also, the numbers between these two numbers show the rate of proximity to zero and 4 as rate of intensity of relationship. After collection of scores, the median of scores were extracted later where it was calculated one median for every two variables separately and the final scores for each of the existing relations are given as final output of judgment by experts in Table 1.

Following to trend of DEMATEL technique, sum of rows in matrix of intensity of mutual relations between elements was calculated and the highest value of them was considered as \( \alpha (\alpha=0.083) \) and with multiplication of \( \alpha \) to Table 1, the governing relative intensity over direct relations will be acquired in Table 2.

According to DEMATEL technique, with extension of S-geometric series in which \( M \) denotes relative intensity matrix for relations and \( I \) is identity matrix, we have:

\[
S = M + M^2 + M^3 + \ldots M^n = \frac{M(I-M^n)}{(I-M)}; \lim_{n\to\infty} M^n = 0
\]

\[
S = \frac{M(I-M^n)}{(I-M)}
\]

According to DEMATEL method, the existing relative intensity is derived from direct and indirect relations by means of the final relation acquired from Eq. (1) (Table 3).

Now with respect to output of extension \( M(I-M)^\dagger \) in Table 4, the
penetrative (influential) and if it is negative, it will be certainly under influence (passive). Therefore, according to the output extracted from DEMATEL technique in this study, elements of B, E, and D have been definitely penetrative (influential) while components of A and C will be under influence (Figure 2).

Identifying type and relative intensity of direct relations between variables are some of other results of this study that has been derived from this expression $M_2 (I – M)^{-1}$. Recognition of type and value of direct relations among components of system identifies another dimension of cause and effect relationships between elements where in this study they have been proposed within framework of indirect effects between the studied parameters. The quality of indirect relations between elements is characterized in Figure 3 and intensity of relations among them is identified in Table 5.

As it characterized in Figure 3, each of KM variables indirectly affects on itself as well. Similarly, the rate of indirect effect of each of elements on other variables is clear. For instance, with respect to Table 5, variables of knowledge acquisition (A) with relationship intensity of 0.4854 and competency (B) with relation intensity 0.68121 also affect on their own.

The order of affection (effect) and affecting (causal) of parameters is given in Table 4.

The output of DEMATEL from relative intensity relations derived from direct and indirect relations. According to the acquired data (Table 5), element- B has the highest numerical value among total rows and columns and as a result it is most influential variable between the studied variables. Based on the above table, the quantitative order preference of elements is as follows: $B > D > A > C > E$.

Finally, the real location of any component is characterized in final hierarchy by $(R-J)$ and $(R+J)$ so that $(R-J)$ denotes situation of an element (along $y$-axis) and if this point is positive, $(R-J)$ will be definitely penetrative (influential) and if it is negative, it will be certainly under influence (passive). Therefore, according to the output extracted from DEMATEL techniue in this study, elements of $B$, $E$, and $D$ have been definitely penetrative (influential) while components of $A$ and $C$ will be under influence (Figure 2).

Identifying type and relative intensity of direct relations between variables are some of other results of this study that has been derived from this expression $M^T (I – M)^{-1}$. Recognition of type and value of direct relations among components of system identifies another dimension of cause and effect relationships between elements where in this study they have been proposed within framework of indirect effects between the studied parameters. The quality of indirect relations between elements is characterized in Figure 3 and intensity of relations among them is identified in Table 5.

As it characterized in Figure 3, each of KM variables indirectly affects on itself as well. Similarly, the rate of indirect effect of each of elements on other variables is clear. For instance, with respect to Table 5, variables of knowledge acquisition (A) with relationship intensity of 0.4854 and competency (B) with relation intensity 0.68121 also affect on their own.
Discussion and Conclusion

In fact, during recent decades most of KM analyses have been carried out in private sector but currently a serious interest has been created in study among public organizations including universities and research centers in this regard. Km has become highly important with focus on public universities and research centers and therefore the officials should strengthen their role in national innovation since the foremost inputs and outputs of universities are intangible and only a small part of them has been identified [20]. For this reason, universities and research centers have been compelled to propose further transparency of information to their beneficiaries Thus, paying attention to subject of Knowledge Management (KM) is crucially important. Therefore, this study has examined the KM relations by means of DEMATEL technique. The results of this study signify that the variables of knowledge record, knowledge creation, and knowledge application possess favorable status while the variables of knowledge transfer and knowledge acquisition lack suitable status in KM system and the other universities of this country may be involved in this problems as well and with respect to importance of KM in higher education system, it necessitates paying more attention to role of management and leadership, improvement of organizational culture, suitable organizational structure, and role of IT and planning for KM strategies for realization of KM system in universities. It is hoped that the directors to reduce the gap between status quo and favorable condition more quickly with design and execution of applied and efficient in order to prepare the ground for growth and development and emerging creativity in the universities [21,22].

With respect to its role and importance, study on KM phenomenon is deemed as an absolute requisite in higher education systems for successful execution of KM. At the end, given that KM plays essential role in realization of organizational goals and with respect to this fact that the officials in all of units of Islamic Azad University have paid attention to improve the quality during recent years, it is suggested to address further KM parameters in various branches of Islamic Azad University with employing effective managerial mechanisms, particularly in those universities, which possess lower rank in application of KM compared to other academic units. Based on the outcome that may be acquired in exertion of productive change and development in application of KM in university, the priority should be considered for improvement and renovation of effective elements of system namely ‘knowledge record, knowledge creation, and knowledge application’ since strengthening these parameters causes improvement in KM in the studied statistical population. Likewise, variables of knowledge transfer (C) and knowledge acquisition (A) were characterized as most affective parameters of KM among members of faculty.

References


20. No Authors Listed (2013) Varayee Fatemeh, inspection and audition administration of sepah bank.
