

Development of Knowledge Management Processes in Organization (Case Study: Squares Organization of Tehran)

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Abstract: The purpose of present research is to examine the relationship between criteria of knowledge management and processes of knowledge management. This study is a type of applied research that uses a survey method in order to investigate about the processes of knowledge management within Squares organization of Tehran. The population consists of all managers and staff working in Squares organization of Tehran. Through random sampling method, 360 subjects were selected and questionnaires were distributed. The Kolmogorov-Smirnov test was adapted in order to measure normal distribution. Considering the level of significance, normality of distribution was approved. In following, to compare criteria of knowledge management with processes of knowledge management, the group hierarchical analysis method was utilized. This research is not going to provide fixed processes for knowledge management within the organization, though it aims at development of strategies for proper selection of criteria of developing the processes based on nature of business in each organization as well as appropriate formulation of knowledge management processes. The final result is to choose main criteria of knowledge management and development of knowledge management processes within the organization in accordance with the selected criteria.

Keywords: Criteria of knowledge management, knowledge management, processes of knowledge management

INTRODUCTION

Knowledge Management (KM) is a new way of thinking about organization and sharing intellectual and innovative resources of organization. In other words, KM involves all methods by them the organization manages its knowledge properties including way of collecting, storage, transfer, implementation, updating and creation of knowledge. Sotriaka and Mary (2004) believed that approaches of developing criteria were used in past decades have no function today. This, therefore, in much extent is due to changes in knowledge and information criteria. The principal idea in criterion management is tendency toward superior performance and marinating it. To make this happen, managers must be able to join the environment with capabilities of organization. At present, such purpose is possible only through knowledge and its management (Gupta and Sharma, 2004).

Intellectual dealing with sources of knowledge is an effective and critical factor in organizations' achievement. It is because of such significance that a number of organizations measure existing knowledge and reflect it as either the intellectual capital or an index for rating organizations in their reports. According to Shih and Chiang (2005), these enterprises consider

establishment of knowledge as a part organizational criterion. He stated that in most companies, KM is a channel for executing business and KM strategies. Therefore, they may fail or leave it unfinished. As a result, to be certain about successful implementation of KM, the important issue is how to evaluate and choose correct KM strategies. For identification, development and prioritizing of organizational knowledge criterion, needs assessments and organizational evaluation processes are performed. Here, the goal is to study organization's conditions from KM viewpoint.

In this stage, the organization will be evaluated based on different dimensions like KM systems and information management, organizational structure, knowledge processes, employees' knowledge and organizational culture. After the information were extracted, the extent of organization's maturity in KM by use of the existing models will be identified and organization' capabilities and failures will be recognized (Schein, 1996).

With regard to the importance of research on KM criterion, Fateh and colleagues discussed that knowledge activates criterion and the criterion encourages knowledge. Thus, without having a relationship between KM and organization and business criterion, even the best KM system would be

inefficient. The criterion must pay attention to the deep impact of knowledge on development of organizational standard and achievement (Fateh *et al.*, 2008).

Additionally, organizations need to be sure their standard and knowledge program are in accordance with macro organizational demands and technologies, resources, roles and skills appropriately adjusted with them. When such a compatibility creates between KM, organization and business standards, KM systems moves in a direction that makes a long-term, competitive advantage and improves performance of criterion management in ever-changing and volatile environments. The present paper, thus, due to significance of the subject and the employer's need struggles to identify KM processes within the organization and develop the best possible standard for it.

In the first step, after identification of organizational needs, first organizational studies and comparative studies will be conducted in order to a comprehensive familiarity is created toward the studied organization and top organizations in business. Also, based on collected data in the process of study and exploration of organization, a brief report of strategic execution as practical summary should be developed in the process of devising knowledge strategy. In the second step, the outside environment of organization including international changes and standards, condition of implementation of KM in top international organization in domain of organization function, rules and regulations, technological, social, economic and cultural processes as well as rival organizations and organizations that are inside the cycle of organizational value need to be evaluated.

The results of these studies lead, therefore, to recognition of fortunes and threats of organization's environment. In the third step, the internal environment is considered. This evaluation contains resource of organizational information and knowledge, systems and used software besides employees and customers' demands. These types of studies end to recognition of strong and weak points of organization internal status. As the fourth step, according to identified opportunities, threats, weak and strong points arranged based on significant coefficients is given through Analytical Hierarchical Process (AHP), different alternatives of selection and production strategies are prepared. Accordingly, the organization approach in using KM systems is specified.

The present research purpose is not to provide fixed processes for KM within the organization. But it aims to develop some approaches for proper selection of standards of developing the process in terms of business in each organization as well as appropriate development of KM processes. So, the organization is selected as the research pattern for identification of the best processes of KM within the organization.

REVIEW OF LITERATURE

The most fundamental characteristic of intelligent organizations in 21st century is their emphasis on knowledge and information. Unlike the past organizations, today's organizations enjoy from advanced technologies and rely on schooling, management and exploitation of knowledge and information due to improvement of efficiency, management and following up nonstop changes. Knowledge is powers that can strongly revolutionize the world and make unreal real. According to Chase, there exists two huge properties organizations possess them. First, individuals are working in an organization and second, the knowledge rests in employees' mind. Therefore, knowledge must be created, saved and used, which is a duty of KM.

KM includes a wide range of concepts, management tasks, technologies and activities, on the other hand, rapid changes in PCs and electronic communications during last decade, have enabled us to create, gather, manipulate, store and transfer information (Chase, 1998). Like any other source, Knowledge plays a critical role in organization's survival and success in global markets. Organizations have to equip with mechanisms of creation and controlling knowledge. However, most organizations have not considered KM role formally and consciously so far.

Probably, the reason for this indifference is that most of organizations have not understood the concept of knowledge and its importance yet (Skyrme, 2001). Today's, what brings originations' wealth are inclusive management quality, reengineering and spiritual capital. In 21st century, companies are successful that are excellent in knowledge. Gupta introduced seven levels of knowledge as: customer's knowledge, stakeholder relations, perceptions of the business environment, organizational memory, knowledge processes, knowledge products and services, individuals' knowledge (Gupta and Sharma, 2004).

Knowledge management deals with either technologies or contemporary organizational procedures like production of new knowledge, attaining valuable knowledge from foreign resources, using this knowledge in decision making, entering knowledge into the processes, products and services, encoding information in documents, software and databases, facilitation of knowledge growth, transfer of knowledge to other sectors of organizations and finally measurement of knowledge properties and effectiveness of KM (Leonard, 1990). Indeed, KM is a series of activities assist the company to get knowledge both from internal and external resources of organization. It refers to the process of capturing specific expertise and adaption of intelligence in organization and as a result using it for fostering innovation through continuous organizational learning (Quinn and Finkelstien, 1996).

Table 1: Phases of life cycle of KM in different models

Model	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Despres and Chauvel	Creation	Planning	Storage	Sharing/transfer	Reuse	Evolution/derivation
Gartner group	Creation	Organizing	Capturing	Access	Use	
Davenport and Prusal	Production	-	Encoding	Transfer	-	
Nissen	Capturing	Organizing	Formalization	Distribution	Application	
Amalgamated	Creation	Organizing	Formalization	Distribution	Application	Evolution/derivation

Ref. Gupta and Sharma (2004)

Table 2: Features of general paradigms of KM

Rank	Technical/computer paradigm	Organic paradigm
1	Technological	Socialization-organizational
2	Technical oriented	Human-oriented
3	Linear (mechanical)	Non-linear (discrete)
4	Only explicit	Explicit and implicit
5	Static	Dynamic
6	Optimizing	Adaptability

Ref. Hazlett *et al.* (2005)

In terms of holistic viewpoint, knowledge rest in ideas, judgments, talents, relations, attitudes and concepts. Knowledge is inside individuals' mind or in the organizational processes, which are codified in lines of documents, products, services and systems. Knowledge is a function relies on innovation, collective expertise, special relations, inter-organizational unions and increased value activity and behavior (Pfeffer and Sutton, 2000). According to Malchup, knowledge could be divided into five categories that consist of pragmatic knowledge that appears in individuals' actions, works and decision makings.

In this division, political knowledge, professional knowledge, knowledge of business and other empirical knowledge are in between. Intellectual knowledge, in fact, satisfies man's rational curiosities. This knowledge is considered as a part of humanistic knowledge. Spiritual knowledge, however, encounters with human's religious understanding and prevents man to get indulged with sin. Unnecessary knowledge stands out of man's interests and is kept in special purpose. knowledge of entertainment is popular due to its amusing and emotional attractions that compromises of stories, proverbs, games, gossip, news, events, happenings and so on (Malchup, 1980).

Sarmiento believed that KM follows a multistage process that identification of each of them are essential in perception of KM. these stages known as the life cycle of management, pertains to creation, capturing or production of knowledge, organizing knowledge, storage, encoding or authorization of knowledge, distribution, sharing or transfer of knowledge and finally, application or use of knowledge (Sarmiento, 2005). According to Nissen *et al.* (2000) a life cycle can be imagined for KM. in order to complete their model of KM life cycle, they used from others' researches like (Davenport *et al.*, 2001) and introduced their integral model like Table 1 (Gupta and Sharma, 2004).

As Davenport *et al.* (2001) said, KM is an entity is rapidly developing and pays precise attention to the recent challenges for increase of efficiency and effectiveness of business-based processes as well as continuous innovation, need to KM is rooted in growth of commercial community perception and this reality that for reaching appropriate organizational performance and access to the sustained competitive advantage is a critical component (Choi and Lee, 2003). For transforming a company to a knowledge-based enterprise through KM technologies and standards, it is mandatory that first, hidden dynamism in Knowledge economy, knowledge and KM are discovered. Briefly speaking, KM is recognizes as the process of creation, evaluation, presentation, distribution and application of knowledge.

Hazlet with regard to the interdisciplinary nature of studies and theories classifies into two paradigms. First, technologic paradigm and second, social-organizational paradigm, these two are also, known as technical/computer and organic paradigms. Later, some other paradigms were added to these. Characteristics of all KM paradigms are presented in Table 2 (Hazlett *et al.*, 2005).

Hung *et al.* (2011) stated that most of KM programs concentrate on seven stages as follows. Knowledge of customer (the most crucial knowledge in most of organizations), knowledge in processes (application o the best information when doing tasks), knowledge in products and services (intelligent solutions based on customers' needs), individuals' knowledge (developing and control of mental power is the most valuable ca[ital]), knowledge in communications (deep personal knowledge that supports successful cooperation), organizational memory (being in contact with past learning or anywhere in the organization), knowledge properties (measurement and management of your intellectual capital). Kankachalli *et al.* (2005) insists that the organization have to enjoy from knowledge standards in accordance with it industry.

They tried to explain the impact of industry on the relationship between KM and company performance, their main hypothesis is that standards of adjusted KM with a company must be affected by its industrial type, which are classified into three productive, financial and service industries, standards f KM of productive companies can created higher company performance, if are in greater accordance with human-orientation criteria rather than system-orientation standards.

METHODOLOGY

The present research in practice is a type of descriptive-survey study. It is descriptive because it describes in details a situation or condition, here, knowledge management. Also, it is an applied one since using its obtained results can assist managers and employees of the present study and even other organization to identify the criteria of organization 's KM and get acquainted with a meaningful or meaningless relation between KM and their organization performance. Finally, for collecting the data a questionnaire and interview were adapted.

The data collection and sampling method: The research method is field dependent. Related books, articles, inherent, library sources, Squares organizations of Tehran, observation, interview and questionnaire were used for the required data. The time period for doing the research was from 2012 to 2013 and in Square Organization of Tehran. The population consists of all managers and employees of the Squares organization with total size of 90 mangers from Fruit and Vegetables organization. The random sampling method was used and through Cochran's formula 73 subjects were determined:

$$n_{cochran} = \frac{\frac{P(1-p)z_{1-\alpha/2}^2}{d^2}}{1 + \frac{1}{N} \left(\frac{P(1-p)z_{1-\alpha/2}^2}{d^2} - 1 \right)} = \frac{\frac{0.5 \cdot 0.5 \cdot (1.96)^2}{(0.05)^2}}{1 + \frac{1}{90} \left(\frac{0.5 \cdot 0.5 \cdot (1.96)^2}{(0.05)^2} - 1 \right)}$$

$$\frac{384.16}{5.29} \cong 73$$

where,

P = 0.5, probability of occurrence of one attribute in the society due to unavailability equals to 0.5.

Z_{1-α/2} = 1.96 (α = 0.05)

d = 0.05 maximum accepted error

N = 360 population size

Cochran : Sample size

Validity and reliability: By validity, it means preciseness of indexes and criteria for measurement of the phenomenon. Since, the research instruments in the current research include hardware (book, articles, internet, library resources and questionnaire) and knowledge ware (computer software, formulas and mathematical computations), there is no need to do validity test calculations. In field studies a survey is used. In the present paper, therefore, by use of closed

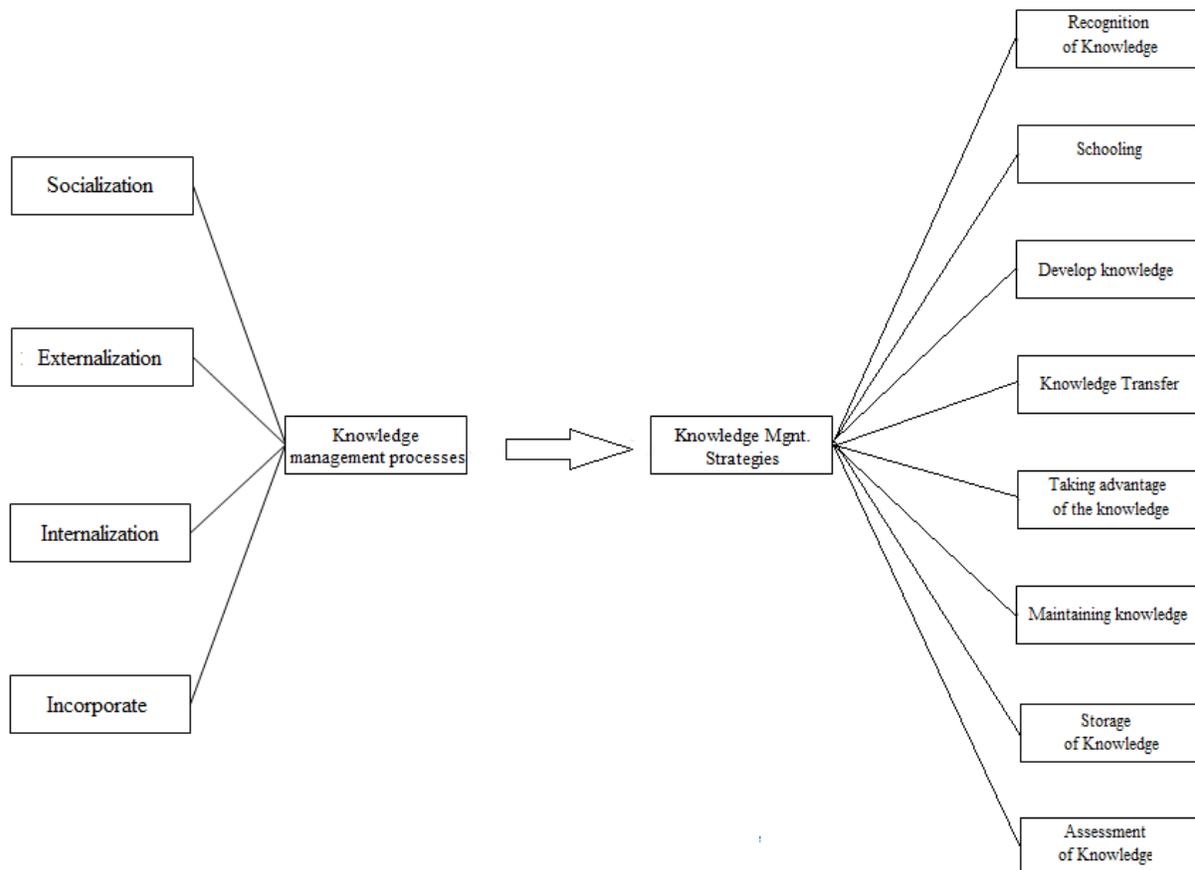


Fig. 1: The conceptual model

questions (five options), the data were gathered. A pilot study with 20 subjects was performed in order to test the questionnaire validity and after knowing about the experts' remarks on the questionnaires, some modifications were used. Next, the final standardized questionnaire after validity assessment was distributed and collected. The Chronbach's alpha tested the questionnaire reliability. It was achieved 0.87 which proved high rate of the questionnaire reliability.

The conceptual model: To determine the KM processes first, some criteria must be defined. Having the KM criteria as recognition of knowledge, schooling, develop of knowledge, knowledge transfer, taking advantage of knowledge, maintaining knowledge, knowledge storage and assessment of knowledge in the present research, the above criteria were adapted for prioritizing selected processes of KM like socialization (Mintzberg *et al.*, 2005), externalization (Gilbert *et al.*, 2000), internalization (Gold *et al.*, 2001) and incorporation (Horitika and Nonaka, 2000). Therefore, the conceptual model is made as follows. This model describes criteria of KM, independent variables and KM processes and dependent variables the conceptual model is shown in Fig. 1.

RESULTS

Comparison and assessment of coefficients of variables through Analytic Hierarchy Process (AHP).

To prioritize the processes and criteria by the questionnaire was distributed among manager, employees, experts and customers of Squares organization of Tehran the following steps were taken:

- De-scaling of paired comparison matrix (D) with $n_{ij} = a_{ij} \div \sqrt{a_{ij}^2}$ formula
- To obtain the row relative weights (W) a_i by least squares method (by use of linear programming)

- Calculation of weighted sum vector (WSV) through $WSV = D * W$
- Calculation of Compatibility Vector (CV)
- Calculation of λ_{max}
- Calculation of incompatibility index $II = (\lambda_{max} - n)/(n-1)$

In the first step of paired comparison, the KM criteria were compared in pair and created the p_{ij} matrix the number below its main diameter equal $1/a_{ij}$. Since the criteria in current research is positive, to obtain weight per each criterion and de-scaling the matrixes, the soft method with formula part a was used. Then, to get the weight of each criterion, least squares method was applied. In this method, w_i was set to give disparity of the decision matrix component with the desired matrix up to least possible value. To do so, the below linear program was adapted.

$$\begin{aligned} \min \sum_{i=1}^n \sum_{j=1}^n (a_{ij} - \frac{w_i}{w_j})^2 \\ \sum_{i=1}^n w_i = 1 \\ w \geq 0, \forall i, j \end{aligned}$$

The model limitation shows that the weights must be normalized and their sum should be equal to 1. By using the normalization mechanism, the above model can be written in linear form. As a result, an approximation of the weights is achieved:

$$\begin{aligned} \min \sum_{i=1}^n \sum_{j=1}^n (a_{ij} w_j - w_i)^2 \\ \sum_{i=1}^n w_i = 1 \\ w \geq 0, \forall i, j \end{aligned}$$

Table 3: Results of rating of KM criteria rating

Criterion	Recognition of knowledge	Schooling	Develop knowledge	Knowledge transfer	Take advantage of knowledge	Maintaining knowledge	Storage	Assessment of knowledge
Coefficient	0.156	0.168	0.088	0.128	0.076	0.012	0.012	0.008
Rank	2.000	1.000	4.000	3.000	5.000	7.000	7.000	8.000

Table 4: Results of rating of KM processes criteria

Criterion	Socialization	Externalization	Internalization	Incorporate
Coefficient	0.172	0.227	0.402	0.182
Rank	4.000	2.000	1.000	3.000

Table 5: Results of rating of KM processes criteria and its relevant indexes

		Recognition of knowledge	Schooling	Develop knowledge	Knowledge transfer	Take advantage of knowledge	Maintaining knowledge	Storage	Assessment of knowledge
Knowledge management processes	Internalization	6	2	4	1	3	5	7	8
	Incorporate	5	3	4	2	1	6	8	7
	Externalization	6	2	4	1	3	5	7	8
	Socialization	6	2	3	5	1	4	8	7

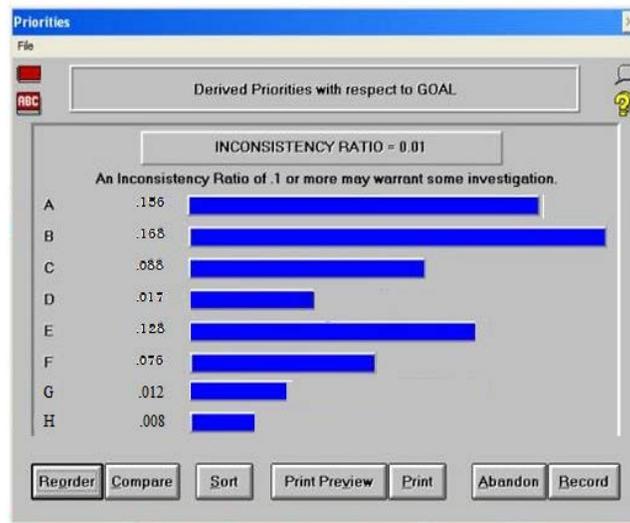


Fig. 2: Rating of KM benchmark criteria by expert choice software

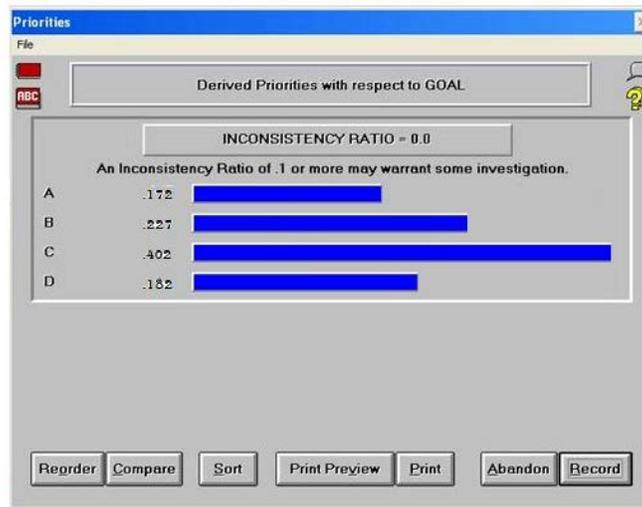


Fig. 3: Rating of criteria of KM processes by expert choice software

After creation of the weight matrix and multiplication of vector w by the coefficient matrix, a proper approximation of λ_{max} was obtained. Table 3 shows the rating results. In the next step, the processes of KM were rated the same as previous method. Table 4 represents these results. Also, Fig. 2 and 3 illustrate the results of KM criteria and processes rating by Expert Choice software.

Finally, by help of group hierarchical analysis technique, considering all samples and results of Expert Choice software, ranking and weight of four criteria of KM are provided in Table 5.

CONCLUSION

The present study purpose was to develop processes of KM within organization. In this regard,

thanks to need for developing KM processes, the KM criteria were specified as recognition of knowledge, schooling, develop knowledge, transfer of knowledge and taking advantage of knowledge, maintaining knowledge, storage and assessment of knowledge respectively. Then, the KM processes within organization were determined as socialization, internalization, externalization and incorporate respectively and a survey was performed.

Table 5 shows the comparison of rating of KM criteria and processes separately. As Table 5 shows, for establishment of each criterion based on rating in Table 4, priority of each criterion is described. However, in Table 5 for implementation and using each process, priorities of KM criteria represent how each process is produced. The major purpose of this research was to select the principal KM criteria besides

developing KM processes in the organization in accordance with the selected criteria.

RECOMMENDATIONS

It is suggested that the Squares organization of Tehran by use of presented regression functions get involved in improvement of the organization conditions with regard to minor variables results of KM criteria.

Priorities provided in Table 4 can be a guide for defining the budget of KM processes establishment and the budget allocation can be based on priorities of Table 5.

If the Squares organization of Tehran considers other criteria for its KM processes, using the method in the current research, should add the above priorities to the model and perform other steps using this research.

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