

Ranking Effective Factors on Knowledge Management system in Bonab Islamic Azad University

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Abstract: In industrial economics, organizations create value through saving. Therefore, creating value depended more on industrial competence and capital budgeting; while in knowledge-based economics, the only creating value method is accepting innovation of a business. In these organizations creating value depends on organizational knowledge, innovation process, and intellectual resources and human resources creativity. The sample group for the present research is staffs having BA and higher degree or faculty members of Bonab IAU. For analyzing data gained from the sample, we made use of paired samples average test in order to investigate the existing and favorable situation and also Freidman test to rank effective factors in knowledge management system. The results show that the existing situation of effective factors on implementation of knowledge management system was not at a suitable level and has a significance difference with its favorable level. On the basis of the results gained from Freidman, the priority of effective variables on implementation of knowledge management system was not the similar and the priority of the variables is as follows: human resources, knowledge management strategy, organizational culture, leadership, information technology (IT) strategy and organizational structure.

[Behnam Talebi, Roghayyeh Rezayi, Khosro Gholizadeh, Behnam Heidarian, Saeed Zanjani. **Ranking Effective Factors on Knowledge Management system in Bonab Islamic Azad University.** *Life Sci J* 2012;9(4):3652-3658]. (ISSN: 1097-8135). <http://www.lifesciencesite.com>. 541

Key words: Knowledge Management System Factors, Higher Education

1. Introduction

In current economics the basis for organizational competitiveness ranking is changed from previous tangible and intangible resources to knowledge and on the other hand, informational systems focus from information management to knowledge management. Businesses which can effectively gain the existing knowledge of the organization and make use of it for business, their production and services have proper competitive advantages in the market. Most of their knowledge management is the basis for their work. These days, the organizations which assign competitiveness ranking as their central issues, consider knowledge management as one of the central activities for their activities effectiveness (Talebi and Salimitorkamani, 1998).

Now, many companies and organizations in the world invest on management knowledge. Despite success, some organizations face failure. It seems that a set of conditions, positions and purposeful challenges lead to final success or failure of knowledge management in the organizations. So, to using knowledge as one competitive, strategic advantage and also systematizing the process of knowledge management development, knowing organization's existing situation regarding knowledge

management and determining effective factors is necessary in an organizations' decision making to make use and optimizing knowledge management (Gholipour et al, 2009). Regarding the above mentioned explanations, one of the main concerns of this area is maybe devoted to priority scheduling of effective knowledge management system in order to properly direct physical and human resources in the knowledge management and this concern is investigated in this study in IAU of Bonab.

2. Literature Review

Knowledge consists of formal knowledge, models, rules, programs and procedures and individual's experiences. It also consists of formal knowledge, communicating, position analysis, new solutions' development and doing organizational activities, cultural issues, traditions and values such as organization audience (Watson, 2003). In a general categorizing, knowledge consists of personal and organization knowledge. Personal knowledge is a knowledge existing in people's mind. Organizational knowledge is a knowledge forms by inter-technology communication, sciences, and people in organization (Bhatt, 2001). Organizational knowledge itself consists of tacit and explicit knowledge. Explicit knowledge is an organized knowledge with a fixed content that can be coded, edited and published

through using IT. This knowledge terminologically is placed at the visible upper part of sources iceberg. An example of this knowledge is data basis and manuals in the organizations. Tacit knowledge is at the opposite extreme of explicit knowledge. This knowledge is personal and depends on text and its place is in individual's mind, behavior and understanding. This knowledge forms the bottom of the resources' iceberg of organizational knowledge. People's insight and intuition are the examples of such knowledge in organizations (Duffy, 2000).

According to Holm (2001), knowledge management is using proper information for who needs it and at the time required, helps people to make and distribution knowledge and act upon it (Holm, 2001). Knowledge management is a systematic and integrated management strategy that combines IT with organizational process. Knowledge management is a managerial activity that develops, transmits, stores, and applies knowledge. And also, puts real information at organizations service to react and make proper decisions (Hung et al, 2005).

In a complete definition, knowledge management is a combination of gaining and storing explicit knowledge with intellectual capitals. Dalkir (2005) investigating more than 100 published definitions about knowledge management summarize them in 3 views:

1). Business views: knowledge management is a commercial activity which has two main aspects: considering knowledge element of business activities as an explicit part of business which is reflected in organization's strategy, procedure in all levels and also creating direct relationship between intellectual capitals and business results. Regarding this view, knowledge management is a combined, cooperative approach for creating, capture, organizing, transmission and using organization's intellectual capitals

2). science- based views: knowledge is the main source that enables us act cleverly. Over time, important knowledge converts into other forms (such as book, technology, procedures, and traditions and ...) in the organizations and generally in the society. This conversions of form, leads to improving knowledge and when using properly leads to improving effectiveness. Intellectual knowledge is one of the main factors that enable personal, organizational and social behavior.

3). Process/technology view: is a concept which transforms information into practical knowledge, and with a minimal effort becomes useful for people who can use it (Dalkir, 2005).

3. Knowledge management processes

According to Wiig (1993) three requirements for success in business are: 1).business and customers 2).Resources (human, capital, equipments) 3). Performance capability. The third requirement emphasizes on knowledge management cycle. Knowledge is the main power in the smart creation performance capability with improving knowledge ; we know what to do better. According to Wiig the main purpose of knowledge management is: facilitating creation, storing, sharing and making use of high quality knowledge in order to create organizations which have intellectual performance.

1). Knowledge creation: Knowledge creation points out at the activities ranging from market research to sample groups, surveys, competitive cleverness, data analysis application. Knowledge creation has 5 activities: knowledge capture, knowledge analysis, restructuring, knowledge combining; coding and modeling knowledge; knowledge organizing.

Knowledge capture can happen through R and D projects, individuals' innovations to optimize working styles, experimentation, reasonable discussion about existing knowledge and employing new people. Also, knowledge maybe created through knowledge import (for example: professional knowledge gained from experts and useful guidelines, involving in joint business activities to gain technology or transferring individuals among branches) and finally observing real world (for example: observing the place, observing the process after change starts).

Knowledge analysis consists of extracting knowledge gained from learnt material, summarizing learnt material, diagnosing the relationship among elements of knowledge and the emphasis that extracted materials compatible with real sources meanings. Combining or restructuring knowledge consists of generalizing analyzed material in order to achieve more developed principles, making hypothesis for describing observations, creating compatibility between new and existing knowledge and updating knowledge source with new knowledge coming.

Coding and modeling knowledge consist of how to show existing knowledge in our mind, how to combine knowledge in a coherent model, how to document knowledge in books and guidelines and how to encode it so as to transfer it into knowledge repository. Finally, knowledge is organized for specific applications according to a determined organizational framework. This organizing usually is done through using existing knowledge determination methods and categorizing it.

2). Storing knowledge: storing knowledge is remembering, compiling and putting it into knowledge repository and archiving it. Remembering knowledge means an individual (the knowledge understood by a specific person) saves knowledge or remembers it. Compiling knowledge in a repository means creating a knowledge base based on computer and also encoded knowledge and has the possibility to be saved in organizational memory. Putting knowledge means guarantying that knowledge is a part of business procedures (e.g. adding to procedure guidelines or training courses).

Finally archiving knowledge means creating a systematized scientific library and abolishing out of date or unrelated knowledge from knowledge depository. Examples of organization's knowledge are: intellectual properties, patents, documented knowledge in the form of research reports, technical papers, or hidden knowledge in people's mind but may be extracted and inter into base or knowledge repository. So, organization's valuable knowledge properties is documented in repository or people's mind and therefore is accessible to see and for future use.

3. Sharing knowledge:

Sharing knowledge is coordinating, gathering, accessing and retrieving knowledge. Knowledge coordination usually requires forming cooperation teams to create a communication network in order to understand the point that who knows what? As soon as knowledge resources are recognized, they turn into accessible records for a library or repository in order to facilitating access and further retrieving. Sample groups often form to reach to consensus regarding this issue. Then access and retrieve can be able to consult people about difficult issues, asking related experts' views, or discussing one difficult issue with a same level colleague. Moreover, knowledge can directly accessible and retrievable from a knowledge repository.

Organizations can share knowledge in different ways. The staffs who lack the required knowledge for solving a specific problem can communicate to others who have the similar experience through gaining information from organizational knowledge repository or finding related expert among specified professional network in the organization and directly contact to that person. Then, these staffs can organize all these information, and ask other more experienced staffs verify the content validity.

4. Knowledge use

Knowledge use is doing responsibilities, survey and description, choice, observation, analysis and combining, evaluation, decision making and performance. From knowledge view point, the

resource of competitive advantage is knowledge use rather than knowledge itself. Despite this, organizations often are not enough creative when using knowledge operating methods (Glitch Li, 2009).

Table1. Determining factors in knowledge management and their theorists (Valmohammadi, 2009)

Researchers and Authors	Main Factors	Rows
Skyrme and Amidon (1997), Holsapple and Joshi (2000), Davenport et al (1998), Hassanali (2002), American productivity and quality center (1999), Ribirer and Sitar (2003), Wong and Aspinwall (2005), Albusaidi and Olfam (2005), Chung (2006), Akhavan and Jafari (2006)	Leadership	1
Skyrme and Amidon (1997), Davenport et al (1998), Liebowitz (1999), American productivity and quality center (1999), Mc Dermott and O'Dell (2001), Hassanali (2002), Wang and Spinwall (2005), Albusaidi and Olfam (2005), Hung et al (2005), Chung (2006), Akhavan and Jafari (2006)	Organizational Culture	2
Skyrme and Amidon (1997), Davenport et al (1998), Alavi and Leidner (1991), American productivity and quality center (1999), Hong et al (2005), Akhavan and Jafari (2006), Wang and Spinwall (2005), Akhavan et al (2006), Duplesis (2007)	IT	3
Skyrme and Amidon (1997), Davenport et al (1998), Alavi and Leidner (1991), Zack (1999), Wong and Spinwall (2005), Akhavan et al (2006), Duplesis (2007)	Knowledge Management Strategy	4
Brelade and Herman(2000), Yahya and Goveh(2002), Wong and Spinwall (2005)	Organization's Human resources	5
Davenport et al (1998), Holsapple and Joshi (2000), Bhatt (2000), Wong and Spinwall (2005), Akhavan and Jafari (2006)	Organizational Structure	6

A great range of factors which can affect successfully performing knowledge management are observed in the topic literature. For example, humanistic resources factor, organizational structure, organizational culture, information technology and leadership are raised as main considerations regarding performing knowledge management.

Gholipour et.al (2009) in a research entitled "measuring maturity level of knowledge management in organizations through a developed model of knowledge management maturity" investigated the verified indexes and also at developed model of

knowledge management maturity level. Data analysis was done through paired sample, Freidman tests.

The results show that strategy indexes and processes are of same rankings but the other 6 factors indexes namely (leadership, culture, organizational structure, IT, human resources, and evaluation) do not have same rankings and their priority should be considered when improving.

Also, existing factors at second and forth level of the study's developed maturity model have same rankings but the 3 factors at the third level (IT with first priority, process with second priority and organizational structure with third priority) do not have the same ranking and their priority must be attend.

Cong and Pandya (2003) found out that organizational knowledge must be kept and saved in a proper way. And in this regard, technology must be chosen in a way that people's required knowledge is at their service. Davenport and Prusak (1998) stated that IT application in knowledge management leads to improving access to knowledge and improving transmission speed for organization members (Davenport and Prusak, 1998).

MusaKhani et al (2008) in a research entitled "offering a model for measuring the readiness degree of organizations regarding knowledge management" offered a hypothetical model and measured its verification through experts and finally made use of weighted average method to determine factors level and its indexes. The main purpose of the research is determining a set of necessary requirements to successfully perform knowledge management through offering a preparation model of knowledge management. Results shows that considering final marks of effective factors in knowledge management from reporters and experts view point, these factors have categorization as follows: 1. Culture; 2. Infrastructure; 3. Structure and 4. Change management.

Rabiei and Khajavi (2010) made use of 6 factors in Tehran municipality that is, leadership, human resources, organizational structure, IT, process and organizational culture, in order to design a suitable model for knowledge management system.

Results show that leadership components, human resources, organizational structure, IT and processes have higher priorities respectively.

Monavvarian's research results show that organizational culture, IT, human resources and training affects knowledge management and the most important factors in performing knowledge management are cultural factors.

Afraz (2007) believes that determining knowledge strategy and also managing it and

organization's key choices are the first fundamental steps in applying knowledge management. Here the main purpose is providing ground for correct and necessary understanding of organization's knowledge state. Knowledge management needs this view in order to strategy regulation, projects' priority scheduling, knowledge management activities and understanding needs and special knowledge management opportunities.

"Determining and priority scheduling of main factors in successful performance of knowledge management in small and medium enterprises of Iran" is a title conducted by Valmohammadi (2009). In the current study factors, 12 leadership factors: senior management support, organizational culture, IT, knowledge management strategy, performance measurement, organizational infrastructure management, processes and activities, rewarding and motivating, removing resources' restriction, training and re-training, human resources' management, modeling the best are considered as main factors of knowledge management performance success.

According to the results, all factors ranked by reporters and experts are important in successfully performing knowledge management and only 3 factors: IT, rewarding and motivating and modeling the best have low average scores in comparison with main factors' scores. Also, leadership and senior management support and organizational culture are determined as the main factors of success by reporters and experts.

Rahnaward and Mohammadi (2009) also in a research entitled "identification of key factors in knowledge management system success in Tehran faculties and higher education institutes" considered 7 factors as main effective factors affecting knowledge management system success: Human resources development, knowledge-based orientation, cooperative culture, informational systems infrastructure, knowledge evaluation and transmission, modeling and involvement of individuals.

Findings of this research shows that effective key factors on knowledge management system success respectively are: first factor (human resources development) with a variance of 12/26, second factor (knowledge-based orientation with a variance of 11/98, third factor (cooperative culture) with a variance of 10/86, forth factor (informational systems infrastructure) with a changing dependant variance of about 10/6, fifth factor (knowledge evaluation and transmission) with a variance of 9/76, sixth factor (modeling) with a variance of 7/72, seventh factor (involvement of individuals) with a variance of 4/33.

Also, related findings of priority scheduling of factors according to Friedman test shows that: ranking of human resources development factor is more than others and it is necessary that all universities consider this factor as a key factor. Also, modeling shows the lowest ranking, but we should consider that developing competitiveness, its importance will improve. Between these two factors, are other variables respectively: cooperative culture, involvement of people, knowledge-based orientation, informational systems infrastructure, knowledge evaluation and transmission .

3. Material and Methods

The purpose of the present study is to investigate and schedule effective factors in knowledge management system in IAU of Bonab.

Sample group for the current study is staffs having BA or higher degree and faculty members of Bonab IAU. Total numbers of this people are 455.

The variables being qualitative and numerous, to determine the proper size of the described sample, and in order to make sure of findings' correctness, we make use of Cochran formula. Regarding statistics, the proper volume for the size will be 78 people chosen through random sampling.

Knowledge management cycle of Wiig (1993) is considered as the theoretical framework for knowledge management in the present study, this cycle, in fact determines how to create and use knowledge by people or organizations and has for main steps: 1.creating knowledge, 2. Knowledge sharing, 3.storing knowledge, and 4. Knowledge application. In order to investigate the above mentioned dimensions, according to various studies 6 main factors are defined in the knowledge management system as follows: 1. Knowledge management strategy, 2. Leadership, 3.culture, 4. Organizational structure, 5. Human resources, 6. IT.

We make use of questionnaire for data collection. The following table shows variables and each ones related items.

In order to test the existing hypotheses in the present study we make use of Friedman's bi-factor variance analysis test so as to investigate the effects of variables and priority scheduling them. In this test the data were as nominal and ranking frequency .Null hypotheses and lack of relationship is investigated in group matching or frequency equation of comparing groups from different levels for each. In order to investigate the existing and favorable situation of the variables in the study, paired samples tests were used.

Table 2: Variables and research model's related components

	components	Variables
Gaining knowledge, knowledge analysis, restructuring /knowledge combining, coding and modeling, knowledge organization	Knowledge creation	Knowledge Management Dimensions
Remembering knowledge, compiling knowledge in repositories, putting knowledge into repositories, archiving knowledge	Knowledge saving	
Knowledge coordination, knowledge aggregation, restructuring knowledge, combining knowledge, accessing knowledge, retrieving knowledge	Knowledge sharing	
Doing responsibility, survey and description, choice, observation, analysis and combining, evaluation, decision making and performance	Knowledge application	
Knowledge management strategy, integration of organization's strategies, knowledge management vision, knowledge management goals	Knowledge management strategy	Effective Factors in Knowledge Management
Model role, leadership style and strategic role, senior management support and commitment, participatory leadership, setting purposes and strategies, providing allocation of resources and change management	Leadership	
Organizational eliminate, reliance, humanism, culture, learning culture, adapting with change culture, knowledge-based culture, cooperation culture, innovation and creativity culture	Organizational culture	
Decentralized structure, less major formality, informal communication channels, team structure, identified roles and responsibilities	Organizational Structure	
Training staffs, staffs' cooperation, storing and maintenance and improving staffs	Human Resources	
Infrastructure, information quality, fit with staffs' needs	IT	

4. Results

Considering of reliability coefficient, Alfa coefficient for the present study's questionnaire is 0/93 with acceptable reliability degree for a questionnaire.

In the proposed conceptual model for the present study variables: knowledge management strategy; leadership; culture; organizational structure; human resources; and IT are considered as effective variables in knowledge management and four processes : knowledge creation, knowledge storing, knowledge sharing and knowledge application as the main processes in knowledge management. Considering the mean , investigated components have a low mean. This can be inferred from the low mean below 3. Also, considering skew Absolute value for four components is below 0/5, we can approximately stated that collected data are normal.

Table 3: Descriptive statistic of knowledge management

variables	Skew	Standard deviation	Mean
Knowledge creation	-0.136	0.41	2.56
Knowledge saving	0.211	0.77	2.79
Knowledge sharing	0.149	0.73	2.42
Knowledge application	-0.145	0.53	2.58

Table 4: Descriptive Statistics of Knowledge Management System Factors

variables	Skew	Standard deviation	Mean
Knowledge management strategy	0.125	0.63	2.59
leadership	0.099	0.73	2.74
Organizational culture	0.335	0.88	2.55
Organizational structure	-0.166	0.65	2.82
Human resources	0.116	0.83	2.37
IT	-0.195	0.87	2.7

As we said before, one of the research purposes is investigating existing and favorable variables' situation in this model and their difference. In order to investigate this, we make use of samples means test.

In order to priority schedule the variables in the model, we make use of Freidman's test (table 6).

Table 6: Results of Freidman Test

N	96
Chi square	43.36
df	5
Sig	0.000

Table 7: Mean and priority of ranks

variables	Mean	Priority
Knowledge Management Strategy	3.27	2
Leadership	3.71	4
Organizational culture	3.35	3
Organizational structure	4.17	6
Human resources	2.6	1
IT	3.9	5

As in the table, the estimated Chi square is 68/59 and considering its significance level lowers than 0/05; we can claim that variables in this model have no equal priority. In order to priority scheduling

variables, the mean of their rankings is used. On the basis of this test, each variable with a low mean, gain higher priority. As in table 7, the priority for variables is as follows: human resources, knowledge management strategy, organizational culture, leadership, IT strategy, organizational structure.

4. Discussion

The findings concerning effective factors in knowledge management system implementation are in alignment with national and international findings. For example, we following studies are in alignment with the present study's results.

Regarding knowledge management strategy, studies alignment with the present study are : Skyrme and Amidon (1997), Davenport et al (1998), Alavi and Leidner (1991), Zack (1999), Wong and Spinwall (2005), Akhavan et al (2006), Duplesis (2007).

Khalifeh and Vanisa (2003) see knowledge management strategy, knowledge leadership and organizational culture as being effective in knowledge management strategy success.

Regarding leadership, studies in alignment with the present study are Skyrme and Amidon (1997), Holsapple and Joshi (2000), Davenport et al (1998), Hassanali(2003),American productivity and quality center (1999), Leibiere and Sitar (2003), Wong and Spinwall (2005), Albusaidi and Olfam (2005), Chung (2006), Akhavan and Jafari (2006).

Regarding human resources, studies in alignment with the present study such as Breladeand Herman (2000), Yahya and Goveh (2002), Wong and Spinwall (2005).

Davenport and Prosk (1998) stated that using IT in knowledge management leads to improvement in accessibility to knowledge, improvement in transmission speed to organization's individuals.

Regarding IT, studies in alignment with the present study are Skyrme and Amidon (1997), Davenport et al (1998), Alavi and Leidner (1991), American productivity and quality center (1999),Hong et al (2005), Akhavan and Jafari (2006), Wang and Spinwall (2005), Akhavan et al (2006), Duplesis (2007).

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9/6/2012