

The critical success factors in implementing knowledge management: agricultural organization in Islamic Republic of Iran

Mahdieh Heaidari

MA, management, University of Tehran, Qom campus, Iran

Seyed Mohammad Moghimi

Faculty of management, University of Tehran, Iran

Hossein khanifar

Faculty of management Qom campus University of Tehran, Iran

ABSTRACT

This study is to discuss the critical success factors in implementing a KMS. Also , knowledge management is as new paradigm in management and organizations have to adopting knowledge management patterns assumption . And because it is not clear for organization that what factors affecting in successful KMS, however, we investigated this factors. The objective of this study is critical success factors in implementing a KMS , in order to enhance a firm's competitiveness. Questionnaires used in the study are the Questionnaire of Hung et al (2005). 15 Questionnaire were distributed into masters professors and experts of management. Then their reforming ideas were used to codify final questionnaire. Therefore, 30 questionnaires were distributed randomly into studied society. gathering them , perpetuity coefficient (cronbach Alpha) was computed . Test value was 84%.which showed high reliability. Our statistical society included 60 people of managers of Jahad agriculture organization. This study used sampling formula including 52 managers .out of the 55 questionnaires sent .and all of questionnaires were returned. The results (t-test and Friedman) indicated that all of assumptions are significantly correlated to the successful adoption of a KMS and showed whit Friedman that components ranked.

Key words: knowledge management, critical success factors, agricultural organization

Introduction

In its conceptual form, knowledge life combined with knowledge management is much shorter than knowledge living. Knowledge management as a relatively idiosyncratic combination arises this question how management can organize knowledge? (Adlai, 2005, p. 82) As Kirmann and Aloson (2004) say, there is a tension between management and knowledge. Since its scientific life, management planned to run resources effectively and to control them fully while knowledge avoids any control (*ibid*). Knowledge management is an interdisciplinary concept and its emphasis on knowledge distinguishes it from other managerial approaches. Without such emphasis, knowledge management is just a renewed concept and repetitive managerial subject and it would be far from its target without a clear enunciation of knowledge. Thus,

knowledge forms the identity and character of knowledge management. As combined term, knowledge management consists of two elements. Knowledge is a complicated issue which is not able to be converted into a science or to be expressed through a language. Always, the community is exposed to continuous changes and gradual evolutions. Manufacturing-based industrial community is changed to a service community and recently to a knowledge-based community. According to theories by management connoisseurs, in near future all manufacturing and informational sectors will be shaped on the basis of knowledge and commercial organizations will create knowledge in different ways.

With the rapid and constant changes taking place in information technology and the internet, traditional business models must continue to meet the changing business environment in order to survive. Only firms participating in the creation and utilization of knowledge can hope to enjoy the rewards of business reform in today's knowledge-based economy. Thus, the issues surrounding knowledge management have attracted more and more concern from both industry and academia (Hung et al, 2005, p: 164). Knowledge management has been regarded as a significant contributing tool to enhance the performance of organizations. However, few studies have empirically tested and validated the theories, tools, and models of knowledge management (Yoon, 2008, p: 1).

The assumption seems to be that if knowledge is not something that is different from data or information, then there is nothing new or interesting about knowledge management. Information is processed data and knowledge is authenticated information. Yet the presumption of a hierarchy from data to information to knowledge with each varying along some dimension. What is key to effectively distinguishing between information and knowledge is not found in the content, structure, accuracy, or utility of the supposed information or knowledge. Rather

Knowledge is information possessed in the mind of individuals: it is personalized information (Alavi & Leidner, 2001, p: 109). The conversion between data and information is efficiently handled through information technology, but it is a poor substitute for converting information into knowledge. The conversion between I&K is best accomplished through social actors, but social actors are slow in converting data to information. That is one of the reasons we believe that knowledge management is best carried out through the optimization of technological and social subsystems (Bhatt, 2001, p: 68). Some researchers contend that knowledge resides in human minds and, therefore, employee training and motivation are the key factors to knowledge management (ibid). Instead of testing all knowledge management models, however, this study has selected the Hung et al framework, and will attempt to verify in their framework are used in organizations.

The importance of knowledge management in organizations is clear and it is seen as a competitive advantage. Organizational leaders are always looking for the reasons and main factors of success in devising a knowledge management system and to execute it in their organizations. This research plans to discuss and study via analyzing 10 effective and successful factors in implementing knowledge management. Therefore, we are looking for effective factors on knowledge management system in order to observe the success of the system during system execution.

Literature Review

Organizations exist to serve a purpose. They require knowledge and processes to create the outputs that accomplish that purpose. Part of the definition of knowledge must be that it enables actions and decisions

that serve an organization's purpose. There are also the processes of acquisition and creating knowledge from data, information, and other knowledge (Judge, 2008, p: 11). Knowledge is first created in the minds of individuals and is considered as tacit. This occurs when an individual attributes meaning to information or data through interpretation and cognitive construction. Tacit knowledge may be socialized with others allowing for transfer, but also for refining and adding to it (Ibid, p: 17).

Certainly, organizations always try to acquire and use knowledge. According to researches, they acquire two third of their knowledge and information through face-to-face or phone conversations and only one third of needed information is acquired via referring to written materials and documents. (Cholip, 2008, p:45)

Knowledge is an organized assemblage of data and information that individuals in business and other organizations create and maintain through rules, procedures, and operations learned and practiced over time. Maracas (1999) defined knowledge as "the application of instincts, ideas, rules, procedures, and information to guide the actions and decision of a problem solver within a particular problem context"

Bateson (1979), an anthropologist, stated that potential *Knowledge is a pattern*, a relation that can be found in collections of data and information (Schiffel, 2008, p: 3). When the pattern is recognized as being useful-how the implications of the pattern can be put to work- the pattern becomes knowledge. Patterns that represent knowledge have completeness to them that data or information alone do not contain (Ibid). Information and knowledge flows vital in ensuring organizations, work teams and other task-oriented collectives not only keep going but hopefully innovate and progress. When information is transferred among members of an organization or collective, knowledge is then possible when the shared information – in the form of statements of fact, suggestion, agreements, expression of feeling and beliefs, plans of action, etc. – is acted upon. Acting upon information occurs in many forms, from the auto-response of the brain to sensory inputs and the data of consciousness, to highly complex tasks of acting upon information, as in the designing of an aircraft (Wolfe, 2007, p: 118).

Jones (1952) and Firestone and McElroy (2003) go so far as to argue that there is no consensus on the nature of knowledge. Despite a lack of agreement, many attempts have been to define what is knowledge. Following are several definitions:

- Nonaka & Takeuchi (1995) "justified true belief"
- Argyris (1993) "knowledge is the capacity for effective action" (Yoon, 2008, p: 8).
- Davenport & Prusak (1998) "a fluid mixes of framed experience, value, contextual, information, and expert insight that provide a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowledge senders." (Douglass, 2008, p: xi).

Knowledge management

From the beginning of the 1990s, the business world has been talking about knowledge management. Recent progress and modernization in information technology have an important role for recent sudden emergence of KM. These improvements have provided new tools to better perform the activity of using and sharing knowledge. Many companies invest billions of dollars for creating, using or sharing knowledge (Civi, 2000, p:166).

KM is becoming increasingly important and prevalent for many reasons. To succeed in today's dynamic global economy; organizations must reduce their cycle times in production, shorten product development time, improve customer service and product quality, and enhance employee productivity and performance (Wu, 2008, p: 6). Knowledge management can be looked at as the systematic process of creating, acquiring, disseminating, leveraging, and using knowledge to gain a competitive advantage or to achieve an organizational objective. Knowledge itself is usually embedded in repositories, documents, routines, operational processes, practices, and norms. Since Knowledge is treated as a competitive resource, it is driving organization to implement various Knowledge management initiatives to identify, share, and exploit knowledge assets. These initiatives can be the result of business process-modeling and/or re-engineering, quality management, or the learning organization (Cholip, 2008, p: 45). KM provides organizational context to the body of knowledge in the organization. Every organization's corporate memory is unique. The structures provided to organize and retrieve knowledge from the corporate knowledge base will therefore be providing a unique context to each particular organizational knowledge base (Plessis , 2007 ,p:28).

Wig (1997) described knowledge management as “the systematic, explicit, and deliberate building, renewal, and application knowledge to maximize an enterprise’s knowledge-related effectiveness and returns from its knowledge assets” (Douglass, 2008, p:xii).

Bergeron (2003) KM is a deliberate, systematic business optimization strategy that selects, stores, organizes, packages, and communicates information essentials to the business of a company in a manner that improves employee performance and corporate competitiveness (Jafari et al, 2007, p: 127).

Alavi & Lidner(2001) defined the KM is managing the corporation’s knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value(Hung et al,2005, p:166).

Davenport & Prusak (1998) indicate that KM draws from existing resources that an organization may already have in place- good information systems management, organizational change management, and HRM practices. For instance, if an organization had a good library, a textual database system, or even effective education programs, it would be doing something that might be called *knowledge management* (Yoon, 2008, p: 42).

Data- Information- Knowledge

The some authors address the question of defining knowledge by distinguishing among knowledge, information, and data. Defining data, information, and knowledge is difficult. Only through external means or from a user’s perspectives, can one distinguish between data, information, and knowledge .in general:

“Data” are streams of raw facts representing events occurring in organization or their physical environment before they have been organized and arranged into a form that people can understand and use (Terry, 2007, p: 25).researchers use different definitions of data that vary along the dimensions of observability, verifiability, objectivity, fact, context, functional capacity, ...Dalkir (2005) indicates that data are content (Yoon, 2008, p: 7).

“Information” is organized or processed data that has been transformed into content relevant to the situation (Terry, 2007, p: 25). Dalkir (2005) indicates that information is content that represents analyzed data. Wiig (1993) notes that information is organized data that can be thought of as full or partial description of the state or condition of a situation (Yoon, 2008, p: 11).

“Knowledge” is information possessed in the mind of individuals: specifically personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments (Bray, 2008, p: 22).

Knowledge is not easily measured or audited, so organizations must manage knowledge effectively in order to take full advantage of the skills and experience inherent in their systems and structures as well as tacit knowledge belonging to the employees of the firm(Hung et al,2005, p:165).

There are also the processes of acquisition and creating knowledge from data, information, and other knowledge (Judge, 2008, p: 11).

Table (1)
 (Adlai, 2005, p. 25)

Knowledge processing K W	Information processing I K	Data processing D I
Discovery	Revise	Organizing
Deduction	Measurement (statistics)	Stockpile (storage)
Values	Relation, classification	Computation
Judgment	Grouping – categorization	Recovery
Witnesses and vision	Application – link	Report, presentation
Creativity	Learning	
Abstraction	Relation – dissemination	

Knowledge Management systematical Model (Life cycle)

Knowledge management follows a multistage process, that is, knowledge creation has some stages whose identification is useful to understand knowledge management. Now, we are going to address comprehensive systems approach on knowledge management. These stages are called "life cycle" of knowledge management as follows:

1) Knowledge Acquisition

Companies import a significant part of their knowledge from external resources. They can buy a part of knowledge from connoisseurs or inventive firms which they can not develop it (Prost *et al*, 2006, p. 45).

Increasingly, people need a varied and high volume of knowledge throughout the world to perform their works. Organizations make firm the pillars of their knowledge by data collection from varied resources (Marquette, 2006, p. 186).

Knowledge acquisition, knowledge is captured and retained for use and further treatment(Kuhlen , 2003 ,p: 8).

There are two internal and external resources to acquire knowledge.

External resources: outsourcing, brain hunting, hiring specialized experts, acquiring others intellectual properties and reverse engineering.

Internal resources: employees' mindsets (subjective knowledge), company databases.

There are two important points on knowledge acquiring. First, information gathered from internal or external resources should pass conceptual filters, norms, values and trends of the company. Such filters impact on organizational decisions regarding the fruitfulness of achieved information. Second, achieved knowledge is not always informed. A part of it is random or as the result of company initiatives (Marquette, 2006, p. 190).

2) Knowledge Creation

Following important and definitions knowledge, a question state: what is creation knowledge? This section defines knowledge creation, then tacit and explicit knowledge.

Knowledge creation refers to the ability of an organization to develop novel and useful ideas and solutions. By reconfiguring and recombining foreground and background knowledge through different sets of interactions, an organization can create new realities and meanings. Knowledge creation is an emergent process in which motivation, inspiration, experimentation, and pure chance play an important role (Bhatt, 2001, p: 71). Organizational knowledge creation involves developing new content or replacing existing content within the organization's tacit and explicit knowledge. Through social and collaborative processes as well as and individual's cognitive processes (Alavi & Leidner, 2001, p: 116).

The theory of organizational knowledge creation has been further developed by adding the concepts of context/ place, leadership and by identifying enabling conditions as well as certain barriers for knowledge creation. This "overall set of organizational activities that positively affect knowledge creation" is called knowledge enabling (Ichijo & Kohlbacher, 2006, p: 2). According to Ichijo (2006) "the creation of knowledge is not simply a compilation of facts but a uniquely human process, one that cannot be reduced or easily replicated" (Ibid, p: 6).this comprises activities associated with the entry of new knowledge into the system, and includes knowledge development, discovery and capture (Newman &Conrad, 1999, P: 4).

A) Tacit knowledge

Tacit knowledge is difficult to define because there is no single, broadly accepted definition for the term "knowledge". The first philosophical attempt to define knowledge in Plato's dialogue of the Theaitetos described knowledge as "justified true belief". This introduces truth as a required feature of knowledge (in order to distinguish it from errors) (Meyer & Sugiyama, 2007, p: 18). Polanyi (1966) concluded the existence of a silent dimension of knowledge which cannot be articulated: tacit knowledge (Ibid, p: 19).

As Polanyi points out, tacit knowledge consists of that which one can know but never tell (Fireston &McElroy, 2003, p: 13). Tacit or personal knowledge means the knowledge that resides in experts' brain. This form of knowledge is hard to communicate or share with other members in the organization (Yoon, 2008, p: 27).

Tacit knowledge transfer through direct human interaction (Judge, 2008, p: 32). Undocumented knowledge that is internal to the individual including cognitive learning, mental models, and technical skills, and is acquired through by internal processes including experience, reflection, or internalization .generally known as the most transparent and subjective form of knowledge (Douglass, 2008, p: xii). Tacit knowledge is highly personal. It is hard to formalize and therefore difficult to communicate to others. In the words of the philosopher Michael Polanyi, “*we can know more than we can tell.*” Tacit K is diffused, unstructured, without tangible form and difficult to put into words (Terry, 2007, P: 29).

B) Explicit knowledge

Explicit knowledge comes in the form of books and documents, white papers, databases, and policy manuals. It plays an increasingly larger role in organization, and many consider it the most important factor of production in the knowledge economy (Terry, 2007, p: 30). This knowledge transferred from one person to another. This normally means that they have been codified so it is possible to touch, see, hear, feel and manipulate them (e.g. books, reports, data files, newsreels, audio cassettes and other physical forms)(Newman & Conrad, 1999, p: 4) . Explicit knowledge will be those that are captured in media and available for transfer to a human agent without direct contact with another human agent (Judge, 2008, p: 32). Explicit knowledge has also been called *leaky knowledge* because of the ease with which it can leave an individual, document, or the organization, since it can be readily and accurately documented (Terry, 2007, p: 30).

C) SECI Model

Among the many important implications of the new KM is that the still popular SECI knowledge-conversion model put forth by Nonaka and Takeuchi in the *Knowledge Creating Company* (Firestone & McElroy, 2003, p: 13). According to Nonaka and Takeuchi concept of knowledge creation is summarized as a spiral of socialization, externalization, combination, and internalization (SECI). Throughout this spiral, existing knowledge resources must be available to build on or to refine the knowledge (Judge, 2008, p: 17). Nonaka and Konno (1998) suggest that the essential question of knowledge creation is establishing an organization's "ba" (defined as a common place or space for creating knowledge). Four types of ba corresponding to the four modes of knowledge creation discussed above are identified: 1-originating ba (S) 2- Interacting ba(E) 3-cyber ba(C) and 4- exercising ba(I) (Alavi & Leidner, 2001, p: 116).

Table 2: (Kuhlen,2003,p:7)

	Tacit	Explicit
Tacit	S Socialization	E externalization
Explicit	I internalization	C combination

1) Tacit to Tacit Knowledge (socialization)

Interpersonal exchange of tacit knowledge through observation, cooperation, and common experience (Kuhlen, 2003, p: 7). originating ba entails the socialization mode of knowledge creation and is the ba from which the organizational knowledge creation process begins. Originating ba is a common place in which individual share experiences primarily through face-to-face interactions and being at the same place at the same time (Alavi & Leidner, 2001, p: 116).for example, when Ikuko Tanako apprentices herself to the head baker at the Osaka International Hotel , she learns his tacit skills through observation, imitation, and practice. They become part of her own tacit knowledge base. Put another way, she is “socialized” into the craft (Nonaka, 2008, p: 16). But on its own, socialization is a rather limited form of knowledge creation. True, the apprentice learns the master’s skills. But neither the apprentice nor the master gain any systematic insight into their craft knowledge. Because their knowledge never becomes explicit, it cannot easily be leveraged by the organization as a whole (Ibid).

2) Tacit to Explicit Knowledge (externalization)

Interacting ba is associated with the externalization mode of knowledge creation and refers to a space where tacit knowledge is converted to explicit knowledge and shared among individuals through the process of dialogue and collaboration (Alavi & Leidner, 2001, p: 116). Transformation of tacit knowledge into explicit knowledge, mainly through representation, codification, standardization (Kuhlen, 2003, p: 7).

3) Explicit to Explicit knowledge (combination)

Cyber ba refers to a virtual space of interaction and corresponds to the combination mode of knowledge creation. Data warehousing and data mining, documents repositories, and software agents, for example, may be of great value in cyber ba (Alavi & Leidner, 2001, p: 117). Generation of new explicit knowledge through categorization, synthesis, combination, integration into existing knowledge structures (Kuhlen, 2003, p: 7). An individual can also combine discrete pieces of explicit knowledge into a new whole. For example, when a comptroller of a company collects information from throughout the organization and puts it together in a financial report, that report is new knowledge in the sense that it synthesizes information from many different sources (Nonaka, 2008, p: 17).

4) Explicit to Tacit knowledge (internalization)

Finally, exercising ba involves the conversion of explicit to tacit knowledge through the internalization

process. Thus, exercising ba entails a space for active and continuous individual learning (Alavi & Leidner, 2001, p: 117). Transformation of explicit knowledge into tacit knowledge, mainly through learning, simulation, reorganization (Kuhlen, 2003, p: 7).

Understanding the characteristics of various ba and the relationship with the modes of knowledge creation is important to enhancing organizational knowledge creation. For example, the use of IT capabilities in cyber ba is advocated to enhance the efficiency of the combination mode of knowledge creation (Alavi & Leidner, 2001, p: 117).

❖ Knowledge Conversion loop

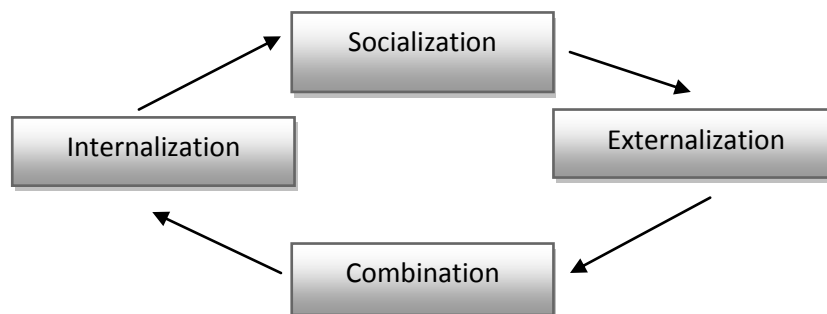


Figure (1)

(Rading , 2004,p:53)

3) Knowledge Storage

The concept of knowledge storage was emerged for the first time in 1980s. It was thought that after analyzing and sorting the data, managers can categorize them but the amount of data was too paramount that the cost of their maintenance was high. Therefore, they thought to establish a maintenance system (Marquette, 2006, p. 201).

Knowledge identification, knowledge capturing and knowledge audit are also important in a KMS and storage the knowledge of organization should be applied for both tacit and explicit knowledge(Akhavan , 2006 ,p:110).

Empirical studies have shown that while organizations create knowledge and learn, they also forget (i.e, do not remember or lose track of the acquired knowledge). Thus, the storage, organization, and retrieval of organizational knowledge, also referred to as organizational memory, constitute an important aspect of effective organizational knowledge management. Organizational memory includes knowledge residing in various component forms, including written documentation, structured information stored in electronic databases, codified human knowledge stored in expert systems, documented organizational procedures and processes and tacit knowledge acquired by individuals and networks of individuals (Alavi & leidner, 2001, p: 118). This includes all activities that preserve knowledge and allow it to remain in the system once

introduced. It also includes those activities that maintain the viability of knowledge within the system (Newman & Conrad, 1999, p: 3).

4) Knowledge Transfer

Whether we control the process of knowledge transfer to organization or we play no role in this regard, knowledge will be transferred into organization and when a colleague asks a counterpart about budget demand, he/has has practically requested knowledge transfer. (Davenport & prusak , 2000 , p:137)

This refers to activities associated with the flow of knowledge from one party to another. This includes communication, translation, and conversion, filtering and rendering (Ibid). Transfer occurs at various levels: transfer of knowledge between individuals, from individuals to explicit sources, from individuals to groups, between groups, across groups, and from the group to the organization (Alavi & leidner, 2001, p: 119). Knowledge needs to be distributed and shared throughout the organization, before it can be exploited at the organizational level. The application of e-mail, internet and newsgroup can support the distribution of knowledge throughout the organization and allows organizational members to debate discuss and interpret information through multiple perspectives (Bhatt, 2008, p: 72).

One of the most difficult tasks of knowledge management is to transfer the knowledge to right people or to locate organizational knowledge where it is required. This problem is almost neglected (Prost *et al*, 2006, p. 205).

Knowledge Transfer can be accomplished in two ways:

Willingly transfer: knowledge may be transferred knowingly by different ways like written methods such as notes, reports, boards, internal publications, video/audio facilities, printing, teacher-student training, etc.

Unwillingly transfer: knowledge may be transferred unknowingly such as rotating in steady jobs, stories and myths, temporal workforce and informal networks. (Marquette, 2006, p: 216).

5) Knowledge Application

An important aspect of the knowledge-based theory of the firm is that the source of competitive advantage resides in the application of the knowledge rather than in the knowledge itself (Alavi & leidner, 2001, p: 122). In general, organizational knowledge needs to be employed into a company's products, processes, and services. There are a number of ways through which an organization can employ its knowledge resources. For example, it could repackage available knowledge in a different context, raise the internal measurement standard, train and motivate its people to think creatively and use their understanding in the company's products, processes, and services (Bhatt, 2008, p: 72). Stewart (1997) reminds that structured usage of intellectual capital increases shareholders' energy. It is achieve by continuous recovery as well as using creative knowledge and organizational rich experience (Marquette, 2006 p. 223). Knowledge management tries to be assured whether organizational current knowledge is used in terms of its profitability or not. Unfortunately, knowledge successful identification and dissemination do not guarantees that knowledge would be used in daily activities. There are barriers which show that the most important step in accepting this reality is to create an informed knowledge culture (Prost *et al*, 2006, p. 47).

Methodology:

Research goals: any research seeks to achieve certain goals; in present study, the main goal is to study and examine successful and effective vital factors of knowledge management system among the managers of Qom Agricultural Jihad Organization.

Conceptual model and hypotheses: to devise research hypotheses, any researcher needs a conceptual model to identify the variables, relations between variables and their conceptual definitions. On this basis and considering vital success factor provided by Hong *et al*, 10 factors shape conceptual model. On this basis, 10 following hypotheses are provided:

Major hypothesis:

There is a relationship between vital success factors and success in executing knowledge management system.

Minor hypotheses:

1. Organizational culture leads into successful implementation of knowledge management in Qom Agricultural Jihad.
2. The commitment by senior managers leads into successful implementation of knowledge management in Qom Agricultural Jihad.
3. Employee involvement leads into successful implementation of knowledge management in Qom Agricultural Jihad.
4. Employee training leads into successful implementation of knowledge management in Qom Agricultural Jihad.
5. Teamwork leads into successful implementation of knowledge management in Qom Agricultural Jihad.
6. Empowerment leads into successful implementation of knowledge management in Qom Agricultural Jihad.
7. Information system infrastructure leads into successful implementation of knowledge management in Qom Agricultural Jihad.
8. Performance measurement leads into successful implementation of knowledge management in Qom Agricultural Jihad.
9. Benchmarking leads into successful implementation of knowledge management in Qom Agricultural Jihad.
10. Knowledge structure leads into successful implementation of knowledge management in Qom Agricultural Jihad.

Methodology and type of the research:

This is a descriptive research since we study and describe the facts. In the meantime, it is a survey since in descriptive researches; authors can use a survey to clarify research variables and data analysis.

Statistical population, sampling method:

Statistical population of the present research is the managers of Qom Agricultural Jihad Organization (60 managers). The statistical sample was 52 managers of the Organization who were selected by limited community sampling formula. In this line, 55 questionnaires were distributed.

Sampling method was ordered random so that all samples were studied randomly.

Research scope:

This research is conducted in Qom Agricultural Jihad Organization (spatial scope) to study knowledge management and vita effective factors on it (thematic scope). All data were gathered and analyzed from February 2008 to March 2009 (temporal scope).

Research measurement tool:

The main tool in this research was questionnaire. Elites' opinions were used to confirm the validity of the questionnaire. After designing, the questionnaire was submitted to 15 professors and experts and its validity was confirmed after making necessary reforms. To evaluate its reliability, some questionnaires were distributed among population and its alpha chronbach was measured by SPSS software. Since alpha chronbach was calculated as 0.84, the reliability was also confirmed.

Data analysis methods:

In this section, it is attempted to study and explain the status of population in the format of statistical tables by using descriptive statistics. In descriptive statistics, author describes the traits of studied sample by gathering and summarizing samples' quantitative data. To describe vital success variables of knowledge management, various methods are used such as percentage, average, mean and mode. Then each hypothesis is analyzed based on research data and statistical tests. In present research, hypotheses are analyzed by using various deductive methods including average test of a population and Freedman test. In this line, H0 and H1 were defined for each hypothesis and then all data were analyzed by SPSS after inserting them into computer.

Findings:

The results of descriptive statistics show that studied individuals were male (98%) and female (2%). Educational level was 2% as high school graduate (1 individual), 9% as associate of arts (5), and 55% as undergraduate (30) and 34% as graduate (19). It shows the proper status of the organization. In terms of job records, we observe no interviewee with less than 5 years of experience in this organization. 36% of interviewees have 5-15 years, 40% has 15-25 years and 24% has more than 25 years working background. It shows that most interviewees have 15-25 years of experience which shows that job records of employees is in median level. Look at below table

Table (3)

Descriptive statistics critical success factors on KM

Row	subject	mean	median	mode	sum
	A :organization culture	4.30	4.50	4.50	236.5
	British Journal of Science				
	September 2011, Vol.1 (2)				
	Company vision, strategy and policy	4.25	4	4	234
2	Support reform and cooperation	3.98	4	4	219
3	Encourage teamwork and knowledge sharing	4.49	5	5	247
4	Trusting and open culture	4.47	4	4	246
	B:senior management	4.07	4.25	4.25	224.25
5	They express their goal in adoption of KMS	3.69	4	4	203
6	Do guidance by senior management	4.07	4	4	224
7	Employee participation in the function of organization	4.22	4	4	232
8	Support on KM project and policy by senior management	4.33	4	4	238
	C: Employee involvement	3.86	3.80	3.60	212.6
9	Actively encourage employee participation in decision	4.29	4	4	236
10	Encourage employees to participation in work planning	3.87	4	4	213
11	Participation employees for evaluation KMS	3.80	4	4	209
12	All employee should participate in knowledge sharing environment	3.60	3	3	198
13	Employee should responsible for creating a knowledge environment	3.76	4	4	207
	D: Employee training	3.87	4	4	213
14	Appropriate training procedures and tools	4.16	4	4	229
15	Provide self-training & self-learning environment	3.69	4	4	203
16	Encourage employees to participate in internal and external training	4.20	4	4	231
17	Professional trainers	3.69	4	4	203
18	Dedicated departments for implementation KM	3.62	4	3	199
	© 2011 British Journals ISSN 2047-3745				
	D: Teamwork	4.03	4	4	222
19	Encourage creation teams	4.36	4	5	240
20	Concern about teamwork experience and knowledge	4	4	4	220

According to the results, it seems that all vital success factors of knowledge management and their subordinated elements are in desired status at studied organization.

Data deductive analysis:

Examining the desirability of vital success factors of knowledge management (hypotheses test)

The sample average includes point estimation to an uncertain estimation of the society. By using t distribution, one can use a confidence level on sample average to achieve a scope where actual population averages are achieved. Confidence level is called 100 percent confidence level $(1 - \alpha)$ for population average. By using this formula for each variable, 95% confidence level is provided ($\alpha = 5\%$). The amount of t is 1.96 which is utilized to compute the confidence level of all research variables.

As seen in table 4, the average of each knowledge management variable and their subsets are calculated in the sample. To extend the results to population, it is necessary to use the average statistical hypothesis test of the population.

In other words, we plan to determine "whether research variables are in desired status or not." To answer such question, it is assumed that if the estimated average in the population ≤ 3 , it is undesired and if > 3 , it is desired. Therefore, statistical hypothesis is as follows:

$$\left\{ \begin{array}{l} H_0 : \mu \leq 3 \text{ undesired} \\ H_1 : \mu > 3 \text{ desired} \end{array} \right.$$

If Sig is greater than 0.05, H_0 is accepted and if it is lower than 0.05, H_0 is refused. It means that the claim of the equal averages is refused. In this case, we should pay attention to $<$ and $>$ sign for deciding on figures lower or greater than 3. One can consider three cases:

1. When low and high levels are positive, the average is greater.
2. When low and high levels are negative, the average is smaller.
3. When low level is negative and high level is positive, the average has no significant difference.

The items of the questionnaire were answered by Likert's range as "completely agree", "agree", "neutral", "disagree" and "fully disagree". Then SPSS software was used to analyze data in studied community.

Table (4)

Survey variable average for hypotheses test critical success factors

hypothes	Variable	t	df	sig	Different average	high level	Low level	Result test	Position variable
1	culture	25.573	54	.000	1.30000	1.1981	1.4019	H ₀ refused	desired
2	senior managers	19.587	54	.000	1.07727	.9670	1.1875	H ₀ refused	desired
3	involvement	14.852	54	.000	.86545	.7486	.9823	H ₀ refused	desired
4	training	16.305	54	.000	.87273	.7654	.9800	H ₀ refused	desired
5	Teamwork	13.773	54	.000	1.03636	.8855	1.1872	H ₀ refused	desired
6	Information system	17.670	54	.000	.84848	.7522	.9448	H ₀ refused	desired
7	Performance measurement	21.171	54	.000	.95909	.8683	1.0499	H ₀ refused	desired
8	Benchmarking	14.791	54	.000	.80606	.6968	.9153	H ₀ refused	desired
9	Knowledge structure	11.031	54	.000	.48485	.3967	.5730	H ₀ refused	desired
10	Empowerment	12.552	54	.000	.92727	.7792	1.0754	H ₀ refused	desired

As seen in above table, all computed figures are greater than test. Therefore, all hypotheses are confirmed. In other words, all 10 effective factors on knowledge management system success have ideal situation since their average is greater than 3.

Examining the importance of variable by using Freedman test:

Freedman test is used to examine the identical categorization of some studied variables. In this test, H_0 shows that categories are identical and H_1 shows that at least one pair of variables are not identical (Momeni, 2009, p. 107). In such test, the findings of variables are categorized in each case and the assumption of equal variable means is tested by using the average raking of variables in the sample.

In statistics, there is no way to determine the categorization. Freedman test can only address to identical ranks. If H_0 is refused, one can conclude that the average of ranks is not identical. However, any other conclusion is descriptive.

$\left\{ \begin{array}{l} H_0: \text{the categories of 10 effective factors on knowledge management is not identical} \\ H_1: \text{there is at least on pair of 10 factors which is not identical.} \end{array} \right.$

Table 5: Rank average CSF

Row	variable	rank average
1	culture	8.08
2	Senior managers	6.60
5	Teamwork	6.07
6	Empowerment	5.68
8	Performance measurement	5.49
4	training	5.21
3	involvement	5.19
7	Information system	5.05
9	Benchmarking	4.82
10	Knowledge structure	2.81

As seen in above table, there is a huge difference between the average of upper and bottom variables. We guess that H_0 is refused. In next step, Freedman test is shown in following table. H_0 is refused and there is a significant difference between at least two pairs.

Table (6) Result Freedman test

X^2	df	N
102.68	9	55

Supplementary tests:

To determine variables mean difference and categorization, it needs to conduct some tests on studied variables which we call them *supplementary tests*. The order of supplementary tests is their average ranking in the test. After conducting such tests, one can state on their importance.

rank	variable
1	Culture organizational
2	Performance measurement - Empowerment – Teamwork– senior managers
3	Benchmarking - IS - employee involvement – Training employee
4	Knowledge structure

According to conducted Freedman tests on the importance of variables one can conclude that:

1. The importance of "senior managers' commitment" variable is almost equal to "working team", "empowering" and "performance assessment" variables and no significant difference is seen between them.
2. The importance of "organizational culture" is greater than other variables.
3. In terms of importance between variables, no significant difference is seen among "training", "contribution", "information system" and "modeling" variables.
4. By comparing "knowledge structure" and other variables, it was recognized that the importance of this variable is less than other variables.

One can conclude that the importance and rank of variables in 5% error level is as follows :

Table (7)Result Freedman test about categorization variable

	first variable		Second V		Third V		Fourth V		Fifth V		d f	X ²	sig	Result test
	V	Rank mean	V	Rank mean	V	Rank mean	V	Rank mean	V	Rank mean				
1	culture	1.74	senior managers	1.26							1	15.36	0.000	median unequal
2	senior managers	1.60	Team work	1.40							1	2.37	0.123	median equal
3	senior managers	2.19	Team work	1.95	Emp owerment	1.85					2	3.522	0.172	median equal
4	senior managers	2.81	Team work	2.54	Emp owerment	2.37	measur ement	2.28			3	5.786	0.123	median equal
5	senior managers	3.47	Team work	3.16	Emp owerment	2.91	measur ement	2.85	train ing	2.61	4	10.186	0.037	median unequal
6	training	1.51	involv ement	1.49							1	0.023	0.879	median equal
7	training	2.10	involv ement	1.98	IS	1.92					2	1.04	0.59	median equal
8	training	2068	involv ement	2.55	IS	2.48	Bench markin g	2.29			3	2.851	0.415	median equal
9	training	3.48	involv ement	3.25	IS	3.23	Bench markin g	2.98	KS	2.05	3	29.486	0.000	median unequal

Conclusion and recommendations:

Organizations always look for factors which lead into knowledge management implementation in order to acquire competitive advantages. The present research provides 10 effective factors on knowledge management implementation by which organizations can achieve success. Various scientists and authors have provided different factors with some commonalities. It shows that although they may have some disagreements, they all look for one thing namely implementation knowledge management successfully.

This research has gathered a comprehensive set of effective factors and has pointed their effects on knowledge management. Some recommendations should be noted:

1. Considering the model (perceptual framework), this research can be measured and studied via academic theses in behavioral sciences and related elements in varied organizations;
2. Undoubtedly, conducting this research in public and private organizations and comparing their results are appropriate for future researches.
3. Future researchers are proposed to consider all variables in a separated assumption.
4. It is suggested to examine similar issues to evaluate effective factors on crisis management, effective factors on training improvement, etc.

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