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SYSTEMATIC THINKING AS THE FOUNDATION OF KNOWLEDGE MANAGEMENT

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ABSTRACT

Field & Goal: Knowledge is the value base in any organizations in current time. Knowledge reserve is a strategic capital of the organization and the most important competitive advantage as well. Therefore this research was made for finding out any effects of knowledge management on strategic thinking at department general of Industry, Mine and Trade – Isfahan province.

Materials & Method: Research method is applicable from viewpoint of the goal and is survey for required data collection. Statistical population includes all occupied personnel at department general of Industry, Mine and Trade of Isfahan Province for 150 persons. Statistical sample includes 110 persons who were selected on classified random sampling method and according to Morgan table.

Findings: Research data were collected through the Knowledge Management questionnaire with reliability of 0.83 and strategic thinking with reliability of 0.808 through Pearson correlation tests by SPSS software.

Conclusion: According to the results, there are positive and significant relation between sub-parameters of knowledge management and strategic thinking. Meanwhile the effects of two parameters of internalization and socialization are more than externalization and composition.

Keywords: Knowledge, Knowledge management, Strategic thinking, Internalization, Composition, Systematic thinking

INTRODUCTION

The signs of providence of managers in such a great organization are implementation of knowledge management and providing the primary field for registration and maintenance

of experiences to remained sub-division companies. The integrated knowledge management plan has been commenced along with further executive steps by the help of future development consultants because of

their previous experiences in similar projects. According to the expand rate of experiences in different fields, it is obvious that the organization will face with serious problems without any knowledge management and will be prevented from such a valuable knowledge/ experience reserve through the time. With complete knowledge about the concerned case and by the cooperation of future development consultants, all sincere managers and staff of Hormozgan Electricity Production Management Company, has started to have preliminary implementation of knowledge management and provide required situations and necessary field for upgrading the organization from the viewpoints of knowledge and knowledge management. Industry & Mine Organization of Isfahan province has started to provide various situations including colored brochures of processes, notebook of process in waiting saloons, guidance boards and also introducing the organization through the relevant portal for referees and promotion of electronic services and service table at the organization. Some of the mentioned programs are continuous supervision on personnel conduct with referees and encouraging the referees to minimize their personal refers. In case of suitable training with daily needs of manager and staff, there is the best output for increasing the knowledge level of managers, personnel accompanied with upgrading of training programs of today personnel for

changing them into future ones. Knowledge management in the age of communications and electronic transactions means any changing of additional knowledge into applicable one.

Therefore if we want to be in parallel with world changes, it is necessary to remove any previous structures and equipped with update technology and information of the world at most of developed and under-developing countries. There are five steps for preparing knowledge drawing in any organization as follows:

A: Determining any knowledge needs of the organization

B: Determining any key priorities of the organization

C: Data collection of work priorities in the fields of major knowledge

D: Determining of required knowledge sub-fields and transfer of daily knowledge to all parts of the organization, notifying of instructions, notices and receive circulars about important issues like hijab, holding of any sessions about Islamic / Professional conduct for personnel, suitable reaction with personnel and referees, environmental and effective advertisement for more knowledge of referees and personnel with considered rules and regulations of administrative changes committee. Knowledge management helps to improve any decision making process, more reflectiveness and reduction of work rate, increasing the output, making new

chances for business, reducing of costs and providing more motivations for personnel.

Knowledge management is a strategic need for institutes, organizations and servicing systems at the beginning of third millennium. Knowledge management may guarantee any long-term priorities for the organizations and societies and their benefits from humanistic, mental and information capitals. Knowledge management is an attitude which may be implemented by managers of organizations along with further new services and products, finding/making new markets and do not leaving of knowledge capitals. Strategic management is one of the new-coming discussions in the field of management with lots of attention by scientists and managers of the organization. It is in fact the most important base of knowledge management, implementation and further effects. Such a thinking method has different scenes than other competitors. It means any landscapes which may cause some new and effective strategies.

If the strategic application makes competitive advantage, therefore strategic thinking is an inevitable case for survival and growth of organization in such a highly competitive today situation. Competitive advantage needs better attitudes about competitors and some differences in attitudes. Continuous learning from the environment, finding out any non-satisfied needs of market and creation of new guidelines are three orders of strategic

thinking. This is not an executive step-by-step instruction. The major message of this pattern is a different attitude about business environment. With such an attitude, it is necessary to have another definition about any relationship between managers and market. Also it is a need to revise any guidelines of organizational management. What is discussed here is not naturally a form of managerial knowledge. The real meaning of change is changing the fundamental beliefs of managers. As it was mentioned before, there is a direct relationship between strategic management and knowledge success. With better knowledge management and organizational guideline, managers are able to find out better success in their organizations.

Theoretical basics

There are various researches about any relationship between knowledge management processes and strategic thinking. For instance in a research titled as "The role of knowledge in general strategic thinking (Afrazeh, 2008, 45), it has been discussed that although knowledge is a necessary resource for survival of today organizations and also the world trade, but the real condition for success of organizations is to find a deep knowledge in all levels.

In another research titled as "A model for strategic thinking based upon Knowledge management process" (Yadollahi, Shivaie, 2007: 42) it has been discussed that the

greatest problem of manager is how to use all current knowledge of the organization.

Chini Forooshan (2009) has a research titled as "Development of humanistic resources in parallel with strategic thinking" has concluded that today world is the world of continuous and permanent changes. Meanwhile manner of thinking and strategic thinking are the relevant basics of it.

In a research by Yaghoubi (2007) titled as "The role of knowledge management in specifying any organizational strategies", both concepts of knowledge management and strategic thinking have been defined accordingly. It has been also stated that human resources unit is mostly controlling a great volume of data. Updating the same by the use of effective systems of knowledge management may cause better strategic attitudes for the managers.

In his research titled as "Any relationship between parameters of organizational knowledge management and innovation rate of scientific board members of Isfahan University, Rahimi has evaluated the questions of research by considering various dimensions of knowledge management (Socialization, externalization, composition and internalization) with regard to various demographic characteristics (Age, Sex, Field of study, scientific grade and employment status).

In his research, Sheikhi (2007) found out that there is a relationship between organizational

space and output of personnel at Tax Affairs Department- Tehran Province. Also from among various factors, we have organizational space, operating rewards, support, knowledge and principles and identity as the estimating factors of proficiency.

In another research by Haghghat Joo, it was concluded that there is a relationship between organizational health and efficiency. It means higher rate of organizational health rte may cause an increase in efficiency. There is a converse relationship between organizational health and innovation of managers. But that was not a significant one. (Haghghat Joo, 2006)

Goodarzi et al. (2009) confirmed that all today organizations are obliged to be in parallel with knowledge resources in order to find better competitive advantages in world economy. Meanwhile, optimization of knowledge management of organizational data is just for finding better operations by the use of various methods. In addition, Afarideh Sani et al. (2007), has a study about a research petrochemical company. They used Nonaka & Takeuchi model for presenting an algorithm for measuring of knowledge management level in organizations. According to the results, one of the most important cases for further success in implementation of knowledge management is finding a good knowledge about knowledge situation of the organization. In case of a

suitable step of knowledge, it is possible to implement all knowledge management steps by applying suitable strategy and a written program.

In his research titled as “Knowledge management at learning organizations”, Chauhan (1999) found out that learning is possible by knowledge share among personnel and customers. On the other hand, Nadi (2008) specified that there is a significant relationship between knowledge management and learning organization at Islamic Azad universities (District Four).

Martin (2004) has focused on knowledge management in a new meaning in his research titled as “The importance of learning and creation of processes”. He believes that manager is the supporter of organizational learning and creation of organizational knowledge.

In his research titled as “The role of changing leadership and transfer in knowledge management”, Briant (1999) found out that there is a clear and significant relationship between changing leadership and knowledge management at various organizations. In addition, he believed that obliged leadership is more effective in knowledge distribution at personal and group levels.

In his doctrine thesis titled as “Knowledge management at changing times”, Hall (2005) has studied any transactions between explicit and implicit knowledge, has studied the importance of knowledge management and

relevant challenges at various times. The real goal of his research was to evaluate knowledge management at changing times by any analysis of the effects of knowledge management combination at servicing and health agencies.

In a research by Kan Gass (2006), he has evaluated any relationship between organizational culture and innovations of knowledge management. According to the findings, knowledge management in organizational culture is like a strategic innovation which may cause long-term success, development of values and increasing the competitive interest.

In a research by Ward (2006), he evaluated any application of knowledge management in confirming executive decision making in a military environment. According to the results, knowledge management innovations could not have direct control on innovations. In contrast, it may control knowledge management, internal/ external environment innovations for encouraging any distribution of information and making new knowledge with effective submission of knowledge to decision makers.

In his paper titled as “Strategic Process for taking care of organizational knowledge at knowledge –based organizations”, Yarigar Ravesh (2008) has stated that knowledge management is a job strategy for concurrent effects on multiple fields. Also it is

considered as a tool for general progress of a program in an organization.

In a research titled as "Knowledge management & Strategy", (Nikolaides, 2007), it has been stated that the survival and growth and efficiency of organizations are based upon a competitive advantage and also benefiting from data base and IT system for considerable assist of organizations in competitive environment.

Simen et al. (2004) has defined strategic thinking as a continuous process in a paper titled as mutual dependency between strategic management and knowledge management. In order to have a useful relation between benefiting from knowledge capitals, it is necessary to make a good relationship between ideals and assignments of organization and knowledge management strategy.

Research hypotheses

The present research includes a major hypothesis and four indirect ones. All of the hypotheses are regulated in two fields (non-directional) as follows:

Major hypotheses

Knowledge management has significant effects on strategic thinking throughout the general department.

Indirect hypotheses

- Externalization dimension has significant effect on strategic thinking throughout the general department.

- Composition dimension has significant effect on strategic thinking throughout the general department.
- Internalization dimension has significant effect on strategic thinking throughout the general department.
- Socialization dimension has significant effect on strategic thinking throughout the general department.

Research method

The present research is applicable from viewpoint of the goal and has a descriptive method on correlation basis. The concerned population include all personnel of Dept. General of Industry, Mine and Trade of Isfahan Province for 150 persons. They have been selected in compliance with Morgan table with a sample volume of 110 persons and by simple random sampling method.

Research tools

Questionnaire method and library study are used in this research for necessary data collection. Knowledge management questionnaire is based upon Nonaka & Takeuchi (1995) model in a way that the survey has 26 question with answers pack with Likert-five options criterion (Completely agree, agree, no idea, disagree, completely disagree) with respective grades of 1-2-3-4-5. The mentioned questionnaire may evaluate four parameters of knowledge socialization, knowledge externalization, knowledge composition and knowledge internalization.

The only researcher questionnaire of strategic thinking in Iran is the only model of strategic thinking made by Rahman Seresht and Kafche (2008) which is the base of the present research. All factors of strategic thinking are studied in this model including content factors and process factors.

Content factors are: Creation, landscape, systematic thinking.

Process factors are strategic communications and strategic analysis. Therefore we used a researcher made questionnaire for measuring of strategic thinking according to the model of Rahman Seresht and Kafcheh (2008).

Data analysis method

Descriptive and conceptual statistical methods are used in this research. It means

that descriptive statistics such as mean and standard violation are used. SPSS software is also applied for summarizing and classification of data and correlation coefficient for determining any correlation among research variants and statistical calculations. Linear regression is the major statistical method in this research.

Validity and reliability of research

The alpha coefficients of competitive intelligence and innovation by Chronbach’s alpha are respectively as 0.973, 0.936 and 0.881 all more than 0.7. Therefore the research questionnaire had acceptable reliability accordingly.

Table 1: Chronbach’s alpha coefficient for knowledge management & strategic thinking questionnaires

Questionnaire	No. of questions	Chronbach’s alpha
Knowledge management	26	0.83
Strategic thinking	17	0.808

Findings

According to data distribution through K-S test, it was specified that probability of error is more than 0.05 for independent variants like organizational intelligence and dependent variants and modifiers of organizational change and organizational agility. Therefore all parameters of research have normal distribution form. (Table 2)

Prior to specifying the type of test, especially in comparative tests, it is necessary to be ensured about normal variants. In case of normal variants, it is recommended to use parameter tests, otherwise it is better to use non-parameter equal tests. Therefore followings are the hypotheses of the research: Null hypothesis (H₀): The considered variant has normal distribution.

Alternative hypothesis (H₁): The considered variant has not normal distribution.

Table 1: Normal distribution of variants of knowledge management & strategic thinking with K-S test

Variants	Normal parameters b	Statistic Z of K-S test	Significant level
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	Mean	Standard violation		
Knowledge management	97.25	27.12	1.66	0.081
Externalization	88.7	13.45	1.147	0.144
Composition	39.0079	4.2265	0.972	0.302
Socialization	36.9365	4.87893	1.032	0.237
Internalization	37.8810	5.21015	0.792	0.557
Strategic thinking	89.6270	4.86084	0.849	0.466

Since the considered variants of this research are distant-grade one and also because the significant level for independent parameters (Knowledge management) and dependent ones (Strategic thinking) are more than 0.05, it is decided to reject hypothesis H_1 (The considered variant has not normal distribution) because of greater amounts than p-value and accept the null one H_0 (The considered variant has normal distribution). Therefore we have normal distribution of used data. As a result, we applied linear

regression for finding any effects of knowledge management parameters on strategic thinking.

DISCUSSION

Regarding the major goal of research which is finding out any effects of knowledge management on strategic thinking throughout the general department of Industry & Mine of Isfahan province, we used step by step regression tests and linear regression for evaluation of hypotheses. The results are shown in tables 3 & 4 accordingly.

Table 2: The results of step-by-step regression analysis for strategic thinking & knowledge management

Model	Estimating variants	Non-standard coefficients		Standardized coefficients	t	p
		B	Standard error	β		
1	Fixed	42.352	4.743		8.930	0.000
	Strategic communications	4.269	0.490	0.643	8.714	0.000
2	Fixed	32.396	5.508		5.882	0.000
	Strategic communications	3.560	0.519	0.536	6.857	0.000
	Systemic thinking	3.366	1.049	0.251	3.209	0.000

According to the above-mentioned table and step-by-step regression test in two steps for relevant parameters of strategic thinking and strategic communications we have a beta coefficient of 0.643 in first step and also beta coefficients of 0.536 and 0.251 for %53 and %25 of variance estimation. Therefore the

effect of both parameters of strategic communications and systematic thinking are more than other parameters on knowledge management. Following table illustrates any effects of parameters of knowledge management on strategic thinking.

Table 3: The results of step-by-step regression for parameters of strategic thinking on externalization

Model	Estimating variants	Non-standard coefficients		Standardized coefficients	t	p
		B	Standard error	β		
1	Fixed	8.973	1.323		6.781	0.000
	Strategic communications	0.771	0.137	0.477	5.638	0.000
2	Fixed	5.390	2.131		2.527	0.013
	Strategic communications	0.582	0.161	0.360	3.609	0.000
	Innovation	0.658	0.310	0.212	2.122	0.036
	Common landscape	0.668	0.243	0.242	2.755	0.007

Regarding the above-mentioned table, from among all parameters of strategic thinking and strategic communications with beta coefficient of 0.360, we have innovation (0.212) and common landscape with beta coefficient of 0.242 with more effects on external parameter of knowledge management. For better evaluation of any effects of strategic thinking on externalization of knowledge management at organizational levels at Industry, Mine and Trade Organization in accordance with linear regression, it was specified that

externalization of knowledge management is able to estimate strategic thinking of personnel for a rate of 0.534. Therefore it is decided to approve the first hypothesis which is significant effects of externalization dimension on strategic thinking at organizational level. On the other hand, it has positive and significant effect on organizational levels at commercial departments (0.611), unions (0.498) and foreign commercial departments (0.841). There was no significant effect on other departments.

Table 4: The results of step-by-step regression analysis for strategic thinking parameters on composition one

Model	Estimating variants	Non-standard coefficients		Standardized coefficients	t	p
		B	Standard error	β		
1	Fixed	18.018	2.474		7.284	0.000
	Strategic communications	1.859	0.256	0.573	7.274	0.000
2	Fixed	27.894	3.887		7.176	0.000
	Strategic communications	2.378	0.294	0.734	8.093	0.000
	Innovation	-1.813	0.656	-0.291	-3.208	0.002

Regarding the above-mentioned table, from among all parameters of strategic thinking, both parameters of strategic communications with beta coefficients of 0.734 and innovation with 0.291 have considerable estimation of composition of knowledge management.

Hereinafter we may find out any effects of knowledge management effects on strategic thinking on organizational levels through linear regression test. Following table has illustrated the obtained results accordingly.

Table 5: The results of step-by-step regression analysis for strategic thinking parameters on internalization one

Model	Estimating variants	Non-standard coefficients		Standardized coefficients	T	p
		B	Standard error	β		
1	Fixed	1.427	1.166		4.053	0.000
	Strategic communications	1.595	0.229	0.556	6.960	0.000
2	Fixed	-0.890	1.606		-0.544	0.581
	Strategic communications	1.208	0.226	0.421	5.356	0.000
	Innovation	0.892	0.191	0.368	4.680	0.002
3	Fixed	-2.544	1.541		-1.651	0.102
	Systematic thinking	0.862	0.225	0.301	3.836	0.000
	Common landscape	0.748	0.179	0.324	4.385	0.000
	Strategic communications	0.458	0.108	0.323	4.255	0.000
4	Fixed	3.441	1.785		1.928	0.057
	Systematic thinking	1.024	0.203	0.357	5.042	0.000
	Common landscape	0.585	0.164	0.242	3.567	0.001
	Strategic communications	0.586	0.099	0.413	5.910	0.000
	Analysis	-0.818	0.155	0.343	-5.271	0.000
	Fixed	6.814	2.157		3.159	0.002
	Systematic thinking	1.076	0.199	0.375	5.418	0.000

5	Common landscape	0.460	0.167	0.190	2.759	0.007
	Strategic communications	0.743	0.113	0.524	6.555	0.000
	Analysis	-0.771	0.205	-0.198	-2.637	0.000
	Innovation	-0.541	0.205	-0.1980	-2.637	0.010

According to the above-mentioned table and also step-by-step regression test, internalization of knowledge management could, in 5 steps and with other parameters of systematic thinking (beta coefficient of 0.375), common landscape (beta coefficient

0.190), strategic communications (beta coefficient 0.524), analysis (beta coefficient 0.198) and innovation (beta coefficient - 0.198) estimate internalization of knowledge management.

Table 6: The results of step-by-step regression analysis for strategic thinking parameters on socialization one

Model	Estimating variants	Non-standard coefficients		Standardized coefficients	t	p
		B	Standard error	β		
1	Fixed					0.000
	Strategic communications					0.000
2	Fixed					0.000
	Strategic communications					0.000
	Innovation					0.005
3	Fixed					0.092
	Strategic communications					0.004
	Systematic thinking					0.005
	Innovation					0.042

According to the above-mentioned table, all parameters of strategic thinking are able to estimate higher percentage of socialization in three steps by the help of step-by-step regression test for various parameters of strategic communications (beta coefficient 0.299), systematic thinking (0.251) and innovation (0.194). But in order to evaluate any effects of socialization and strategic thinking at organizational levels like internalization one for the whole organization, there is a significant and positive effect of knowledge management with regard to beta coefficient of 0.850 and %85 of estimation of strategic thinking belongs to socialization parameter. There are significant and positive effects for all administrative levels as well.

CONCLUSION & PROPOSALS

According to the results of above-mentioned test, more suitable conditions out of applying knowledge and effective factors on it including upgrading the quality of products and services after applying of knowledge, reduction of costs and damages, increasing of efficiency, reduction of inter-organizational disputes, increasing of coordination level with customers' expectations, increasing the level of skills may cause an increase in suitable level of strategic thinking and vice versa.

Since there is a direct and significant relation between externalization of knowledge and strategic thinking, in fact, staff believe that most benefits from externalization parameters may cause a growth in strategic thinking parameters. This means that there is an increase in managers' facilities for more effects on others and encouraging them to pay

more attention to organizational issues. On the other hand, in case of any increase in knowledge externalization, there will be a reduction in open and friendly conduct of managers and it will be replaced with more respects, mutual reliance, cooperation and lower supports from managers' side. In addition, there are little materials and basic tools for personnel and the organization may lose its scientific and cultural priority. This result is in compliance with the results of previous researches by Havilson (2009), Mierson & Cline (2008), Goodazi et al. (2009), Soltan Husseini et al. (2010), Goodarzi et al. (2007) and Goodarzi et al. (2009).

Knowledge composition may cause better organizing of information and optimized benefit of them. It may cause more calmness at the organization and increase the organizational health. This idea has been confirmed not only in present research but also in most previous researches including the studies by Havilson (2009), Chang & Lio (2008), Mierson & Cline (2008), Birdbell (2008), Bordin & Bartram (2007), Ribery (2005), Hemotry (2003), Kermani Alghoreishi (2005), Rezaei (2004) and Gholizdeh et al. (2004).

In parallel with the results, Zamani et al. (2007) concluded in their studies about any foundations of knowledge management at Isfahan University from viewpoint of scientific board members that there is not any

problem for knowledge management from technical infrastructures but there is not a suitable space for it from managerial viewpoint and culture making.

Knowledge socialization will be increased with the same rate of strategic thinking at organization. The result of above-mentioned hypothesis is in compliance with the results of the previous researches by Jang Hartoga (2007), Looke (2006), Darling et al. (2007), Natyana et al. (2007), Marry Wood (2003) and Asadian Isfahani (2007) and the results of second hypothesis.

For this purpose, Hall (2004) has pointed out that knowledge-based management means any increase in ability and knowledge which is a good way for promotion of occupational affairs and mobility of personnel. Staff need a knowledge-based management for their future success and maintenance of strategic thinking.

In addition, Helotzi (2002) has considered knowledge management is an important factor of success at great organizations. He believes that any implementation of knowledge management may cause a powerful and active organizational culture. Such an organizational culture will enrich the organization and later on it may increase the efficiency and effectiveness of the organization. It has been reported not only in the present research but also in previous researches by Havilson (2009), Jang & Lio (2008), Mierson and Cline (2008), Birdbell

(2008), Bordin and Bartram (2007), Ritory (2005), Helotzy (2003), Kermani Alghoreishi (2005), Rezaei (2004) and Gholizadeh et al. (2004).

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