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The Impact of Creativity on Organizational Knowledge Management Processes

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Abstract - In modern economics, knowledge is the main source for economical and industrial development. Knowledge consists of subjective ideas, realities, concepts, data and techniques recorded in human memory which originates from the human brain and is based on information gathered by individual experience, beliefs and values along with their decisions and actions. Knowledge management consists of a set of processes for understanding and utilizing the strategic knowledge source within an organization. The purpose of this research was to study the relationship between Knowledge Management (KM) processes and creativity among knowledge based companies' personnel. This study was conducted using the correlation method. The statistical population consisted of 2000 persons in companies as mentioned where 100 were chosen by using stratified randomized sampling. The results indicate that there are no positive and significant relationships between the KM process dimensions and creativity (in spite other related researches in this field) at every stage, because the acceptance and implementation of knowledge management among the middle persons in the creativity test were the lowest, but the best persons in creativity test had superior knowledge management process at every stage.

Keywords - *Knowledge Management, Creativity, Tacit, explicit.*

1. Introduction

Overall, human progression is categorized in terms of agricultural, industrial and information eras. The agricultural era took place to supply food; the industrial era is still governed over some countries and the information era which started after the industrial era.

The information era with characteristic of prominent knowledge presence and knowledge related tools in various fields of human life began from the 90s.In "Nonaka" integrated model for creating dynamic knowledge, knowledge is referred to as an intrinsic motivation factor. Knowledge without meaning is in fact information. Information only turns into knowledge when it is analyzed by people and is in line with their commitments and beliefs.

According to management theories, individual characteristics and personalities are important components in acceptance, implementation and execution of management schemes such as knowledge management. Creativity is an individual attribute. therefore this individual attribute is assessed in this management scheme (knowledge management).

Creativity was chosen from individual characteristics due to it being a critical factor for organizations for creating value and sustainable competitive advantage in complex and changing modern day environment.

Organizations will have more success with more innovations in relation to changing environments and developing new capabilities for enhancing performance. Also, according to well known definitions, art and knowledge management are combined. Based on Charles Pru's model on categorizing organization's operating systems, art is a unique, exceptional and creative activity. Therefore creativity and innovation are undoubtedly one of the most important factors in knowledge management.

2. Literature Review

Each person's knowledge differs from others who have received the same information. As Marakas (1990) states that defining knowledge is difficult due to its ambiguous and intangible nature. Other than the difficulties in defining knowledge, it is obvious that knowledge is a combination of ideas, rules, components and information. It is only through organizations that information is formed and turned into knowledge (Quin and coworkers 1996). Others equate knowledge to professional wisdom

and intelligence. Therefore, knowledge is partly converted to a public commodity and is constantly assessed and analyzed by members of society (Relin 1997). Ernest Adeongiki, one of the leaders in inter-organizational knowledge management has arguably the most complete definition of knowledge: "What subjects need to know to do their jobs".

Organizational knowledge management is a structured approach that establishes procedures for identifying, assessing, organizing, storing and deploying knowledge to meet organizations goals (Davenport 1998). Apart from managing information, knowledge management also facilitates the creation of new knowledge and manages new ways of knowledge sharing (Davenport 1999). In thesaurus terms, knowledge management is the systemic process of searching, selecting, organizing, refining and displaying information in a way to improve employee understanding in specific fields and for organizations to gain better insight and understanding of their experiences. According to Gupta (1999) knowledge management is a process that aids managers to find, organize, distribute and transfer information and important skills to carry out activities such as problem solving, dynamic learning, strategic planning and decision making.

2.1 Types of Organizational Knowledge

Turban (2003) refers to knowledge management as creating and storing knowledge to enable its utilization within the organization. Barun (2000) refers to knowledge management as a systematic and integrated approach for identifying, utilizing, and sharing expert experiences within the organization. According to Hendly (2000), knowledge management is a general description of culture, processes, infrastructure, and technologies used in an organization which enables efficiency and optimization of organization knowledge capital to achieve strategic goals.

As mentioned before, based on Nonaka's well-known model, knowledge is divided into explicit (clear) and latent (tacit) terms. "Explicit" knowledge can be easily expressed and transferred using words and letters. Explicit knowledge may be codified and easily be processed, transferred and stored in the organization's database. Explicit knowledge can be presented as guides, educational documents, work practices and other organizational written documents.

Over time and as life goes on, a type of knowledge is institutionalized within people; Polani first mentioned this matter in 1969 and stated "we know more than we say". This statement refers to human capabilities such as learning to ride a bike, swimming and face recognition in which the explanation of these capabilities are difficult. He names the knowledge of such acts as "tacit knowledge". In other words, tacit or implicit knowledge may be referred to as a set of experiences, skills, work attitudes, value and mental systems within people that cannot be explained and stored in any database but are placed in the human mind. Tacit knowledge is defined in many ways by writers and scientists in this field for example in 1982 Rosenburg defines tacit knowledge as techniques, methods and schemes in which people use to achieve their goals without being able to define clear reasoning for them. According to Nonaka, tacit knowledge is completely personal, cannot be easily made official and cannot be easily transferred to others. Howell defines tacit knowledge as a non-codified and non-visual branch of knowledge which is learnt unofficially from behaviors and procedures. Grant defines tacit knowledge based on its usability as: tacit knowledge may only be visible when used and cannot be transferred.

To convert the two types of knowledge (tacit and explicit) to each other, four steps are required to be taken:

- ✓ Tacit to tacit (socialization): through meetings and group discussions conducted between people.
- ✓ Tacit to explicit (outsourcing): through individual's efforts to present their knowledge in the form of official speeches, literature, and similar documents.
- ✓ Explicit to explicit (combination): in terms of using technology to organize, distribute, and transfer written knowledge.
- ✓ Explicit to tacit (internalizing): individuals obtain new ideas by acquiring explicit knowledge or carry out useful activities based on explicit knowledge.

2.2 Bokotiz and Williams (1999) Seven Step Organizational KM

Bokotiz and Williams (1999) define a 7 step process for knowledge management:

1. Obtaining knowledge: utilizing various tools to access knowledge, libraries, and documentation sections.
2. Utilizing knowledge: using knowledge if appropriate and useful
3. Learning (from knowledge procedure): learning from experiences, information and knowledge acquired.
4. Knowledge sharing and transfer: transferring and exchanging knowledge between organization members

so that the "knowledge sharing is power" culture replaces "knowledge is power".
5. Knowledge evaluation: evaluation of knowledge state and the organization's knowledge assets.
6. Create and consolidate knowledge: the organization's ability to create knowledge and to stabilize and protect knowledge within the organization.
7. Efficient use of knowledge: complete and efficient use of knowledge by the organization to create new opportunities before using external resources.

2.3 Organizational Creativity

Creativity is defined in many ways. Some of the more prominent definitions are mentioned below:

Herbert Fox believes the process of creativity consists of any thinking process that solves problems in a useful manner. Eric Frum believes creativity is the ability to become aware and respond accordingly. It seems Kaizer has a more general approach in stating that creativity consists of utilizing mental abilities to create a new understanding.

By referring to the mentioned definitions, one can state that creativity is the production of innovative ideas and ways of thinking while practical innovation is implementing these innovative ideas. Innovation means using new ideas formed from creativity that an organization can use as new products or solutions for carrying out work tasks. Creativity refers to the ability to form new ideas and innovation refers to applying these new ideas.

Organizational creativity consists of producing modern organizational ideas and finding new solutions to solve organizational issues.

Organizations are able to use various group creativity development techniques (clear thinking methods) consistently. These techniques are: brainstorming, morphological analysis, Gordon technique, controversial questions, nominal group technique, parallel thinking, forced relationship, nature based models.

3. Previous Research

A lot of research has taken place in the "knowledge management role in organizational creativity and innovation" assessment field but little research has been carried out in assessing "creativity impact on knowledge management" which includes knowledge management implementation.

In the 2011 article titled "the relationship between knowledge management and Esfahan University faculty member's level of creativity" Hamid Rahimi and his colleagues concluded that knowledge management processes are carried out more successfully by individuals who have more creativity. They used Nonaka's four stage model (SECI) for the knowledge management process along with two different questionnaires related to the creativity and knowledge management fields. The questions are chosen based on knowledge management dimensions (socialization, internalization, combination and externalization) and according to demographic characteristics (age, gender, field of study, academic and employment status). The research method used was descriptive-correlative. The population used was 466 members of Esfahan University faculty members in which 85 were selected by simple random sampling. Data gathering tools included a knowledge management questionnaire consisting of 26 items and a Randsip creativity questionnaire consisting of 50 items. The relative Cronbach coefficient obtained were 0.95 and 0.92 respectively. Results showed positive and significant correlation between knowledge management and creativity level. There weren't any significant differences between mean knowledge management of faculty members in terms of age, gender, academic field and their level of creativity. In 2002, in an article titled "The most important issues in knowledge management", William King and colleagues refer to the role of creativity as one of the most important issues in knowledge management implementation and execution in organizations. In 1996, in an article titled "Creativity and innovation in organizations", Professor Terza Amabil examines the role of creativity and innovation in organization management.

3.1 Main Hypotheses

-The mean performance of creative individuals during the seven step knowledge management process was higher compared to less creative individuals.

-The mean performance of individuals in knowledge management may be ranked in terms of creativity.

3.2 Research Methodology

As mentioned in the literature review section, previous research was carried out on relations or correlations between creativity and knowledge management. Therefore,

for further research and re-evaluation of these relations, 2000 personnel from Saipa Automotive Group grade C and D companies were sampled. These companies were Saipa Malibel, Rayan Saipa, Sayad Card etc. Random sampling was used to choose 100 personnel. Data was gathered using a standard knowledge management questionnaire consisting of 100 questions and a standard creativity questionnaire with 40 multiple answer questions. Cronbach's alpha reliability coefficient of 0.83 and 0.53 were obtained respectively.

The knowledge management questionnaire was designed based on knowledge management seven step processes by Bokotiz and Williams in 1999. The knowledge management questionnaire enables the assessment of knowledge management related activities within an organization even if such activities aren't under the 'knowledge management' category but are somewhat related. This questionnaire, in accordance with the United States of America working conditions is used all over the world including developing countries.

4. Results Analysis

The information gathered from the completion of "creativity" and "knowledge management" questionnaires by 100 individuals was analyzed by the SPSS software and the following results were obtained: Based on individual scores from creativity questionnaire, they were divided into four groups; non-creative individuals, less creative individuals, average creativity individuals, highly creative individuals. Each of these groups was then compared in terms of knowledge management capabilities. Since there weren't any individuals in the non-creative group, only three groups were compared.

Table 1: mean and standard deviation knowledge management marks in creativity groups

Standard deviation	***Mean***	KM creativity
28.23	478.82	Less creative
	388.75	Average creativity
	503.95	Excellent creativity

Table 2: knowledge management steps average marks in creativity groups

Step 7	***Step 6***	***Step 5***	***Step 4***	***Step 3***	***Step 2***	***Step 1***	KM creativity
65	75	67	75	72	66	57	Less creative
54	57	48	55	56	57	58	Average creativity
65	75	70	75	75	70	73	Excellent creativity

As the table shows, individuals with higher creativity have a higher average compared to individuals with average creativity during all knowledge management steps but do not have a higher average compared to less creative individuals during all steps.

Table 3: knowledge management marks comparison in three creativity groups

Significance level	***Mark F***	***Degree of freedom***	***Mean square***	***The sum of squares***	KM creativity
0.01	12.61	2	10053.33	20106.6	KM in three creativity groups

According to the table above, there is significant difference in average knowledge management capability marks for less creative individuals, individuals with average creativity and higher creative individuals. This difference is significant at 0.01.

Table 4: mean of knowledge management steps comparison in three creativity groups

Significance level	***Mark F***	***Degree of freedom***	***Mean square***	***The sum of squares***	variables in three creativity groups
0.06	2.94	2	116.45	232.91	Knowledge acquiring step
0.03	3.93	2	108.17	216.35	Knowledge utilizing step
0.002	7.54	2	288.40	576.8	Learning from knowledge step
0.006	6.18	2	355.78	711.57	Knowledge exchange and system step
0.001	9.60	2	380.93	761.86	Knowledge evaluation step
0.003	7.06	2	300.12	600.24	Knowledge establishment and consolidation step
0.015	4.83	2	98.35	196.70	Efficient use of knowledge step

As shown in table 4, the mean of seven step knowledge management with the exception of the knowledge acquiring step was significantly different for less creative, average creative and higher creative individuals and was highly significant in the utilizing knowledge and efficient use of knowledge steps at level 0.05 and the same for other steps at level 0.01.

5. Results

According to the results obtained, knowledge management capabilities for less creative individuals, individuals with average creativity and higher creative individuals were different. This difference was highly distinctive and significant for all stages apart from the acquiring knowledge stage. It can be concluded that during all knowledge management stages, highly creative individuals were more capable compared to individuals of the other two groups (first hypothesis approved) though by referring to the average marks in tables 1 and 2 it seems that apart from the utilizing knowledge stage where marks increases with higher creativity, during the other stages, individuals with average creativity had the lowest marks. Although higher creative individuals had higher marks in all stages, less creative individuals had higher marks compared to individuals with average creativity in all stages with the exception of the utilizing knowledge stage. The reason individuals with average creativity had the lowest marks is probably due to the fact that they have not replaced the "knowledge is power" culture with "knowledge sharing is power" and consider not sharing knowledge as power but higher creative individuals use creative methods to maintain the combined power of knowledge and knowledge management implementation.

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