Pathology of Knowledge Management Implementation in National Iranian Drilling Company

Ali Saadi
M. A of Management Science and Research Branch Islamic Azad University, Tehran North Branch, Iran
(Employee of N.I.D.C)

Dr. Neda Nafari
Department of Management Science and Research Branch Islamic Azad University, Tehran North Branch, Iran

Abstract – **Organizations have always been seeking for learning more knowledge and using it. During the employment, they prize mostly experience rather than intelligence because they are aware of the value of the knowledge which has been gained as a result of years of experience. Managers look for more experienced employees to engage their knowledge in decision makings rather than seeking for information in data bases. Nowadays, intellectual properties and knowledge are valued as much as physical and financial properties and organizations that know about their importance try to manage the intellectual properties so they can use this key asset efficiently in their process in order to form their Knowledge Management and failure in obtaining the requirements and preconditions may result in failure of Knowledge Management implementation. In this research we chose 122 individuals from NIDC's Board of managers, deputies and analysts using simple random modeling to answer the provided questionnaire. We analyzed the results using single modeling T-Test and concluded that knowledge management implementation in NIDC confronts various obstacles and damages in four modules of creation, preservation, transmission, and usage.**

Keywords – **Knowledge Management, Knowledge Creation, Knowledge Preservation, Knowledge Transfer, Knowledge Usage, NIDC.**

I. INTRODUCTION

Nowadays land and raw material, the former essential factors of establishment and growth of the companies, are not as important as before. Companies shall survive in a world of rapid changes (Iranshahi, 1998). Today's transitive world requires that companies seek new methods and implements in order to survive. One of the main ways for this purpose is knowledge management. Knowledge management is a process which helps organizations and companies to find, select, organize and distribute knowledge and information. Knowledge management is a specialty for solving problems, creative learning and decision making (Tsang ho, 2008). Hence many organizations apply Knowledge management to seize the intellectual properties of their personnel. The main point is various amount of knowledge about customers, processes, products and services in the different levels of an organization and transition and management of the above mentioned knowledge may help companies to be more successful, effective and productive. On the other hand, every year there comes a considerable number of employees with different levels of knowledge and experience and companies shall use their potential and knowledge in the best way in order to make progress. National Iranian drilling company has taken significant steps regarding Knowledge Management although a total implementation is yet to be achieved. The Personnel do not use the data base appropriately and the previous mistakes happen repeatedly. In this research, our main challenge was to identify the lacks and problems inside NIDC's Knowledge Management process system. And we tried to state the present situation and analyze the obstacles ahead of us for Knowledge Management implementation in NIDC. In the light of the above our main question is: what are the damages inside NIDC's Knowledge Management process (creation, preservation, transmission, and usage)?

II. LITERATURE

Diagnosing organizations is the process of using concepts, science and technology methods to define and describe the situation of organizations and finding ways to increase their effectiveness (Harrison, 1998). Diagnosing based on information is essential in order to analyze and know the structure, co operations, management ways and other components of a system. In other words, pathology, diagnosis and its scientific focus is extremely fundamental in order to determine the necessary actions for improving the organization performance. Pathology requires a systematic and regular view to the process as a unique whole and aims to identify the nature of the occurred problem s (Sommi zadeh, 1996). A pathologist shall draw general circumstances; specify inner and outer boundaries to be analyzed, seek to find the damaging center and look forward to specify the damage symptoms (Mirzaee, 2002). Table 1 shows the different kinds of organizational damages

Table 1

INDICES	BASIC DAMAGES	Critical damages	Risky damages
EFFECTS & INFLUENCES	SHORT TERM	Medium term	Long term
DAMAGE TYPE	ORGANIZATIONAL GROWTH AND SURVIVAL	ORGANIZATIONAL GROWTH	ORGANIZATIONAL GROWTH AND SURVIVAL
DAMAGE RANGE	LIMITED	Certain limits	Vast, unlimited

DIAGNOSIS RESULT	SIMPLE SYMPTOMS PROGNOSIS	More complex symptoms	difficult SYMPTOMS PROGNOSIS
STRUCTURAL DISORDER	SLIGHT	considerable	Deep and severe
PERFORMANCE DISORDER	SLIGHT slump	Considerable slump	Massive slump
OUTLINE PREVALENCE	NO PREVALENCE	OUTLINE limited PREVALENCE	OUTLINE massive PREVALENCE
PRIORITY	THIRD	second	first
RESPONSE METHOD	CONSIDERABLE AND SUPERFICIAL	Scientifically together with analysis and pathology research	Revolutionary, fast , crucial

III. KNOWLEDGE MANAGEMENT

Knowledge management means the process of creating, preserving, transmitting and utilizing knowledge. Karl Wig (2004) believes that Knowledge management is to implement the necessary processes to: identify and absorb an organization's needed data and knowledge from inside and outside of the organization and apply them to decisions and actions. Hence, Knowledge management is "a series of activities which help an organization to achieve knowledge from inside and outside of the system." Knowledge management points to the process of capturing knowledge and intelligence in an organization and utilize them to develop innovation through continuum organizational learning (Rahe, 2009). Knowledge management aims to help individuals to be more innovative and co operative and to make effective decisions. It could also improve organizational opportunities and act as a gradational process to help an organization for its performance of main processes.

1- Capturing Knowledge: in this stage there are activities related to introducing new knowledge to a system which include capturing and developing knowledge (Newman and Conrad, 1999). Here, the essential factor is to produce and develop information and interpreting the processed information and turning it to knowledge. Producing knowledge implies the ability of an organization to implement new ideas and solutions. Organizations can renew or develop their previous knowledge structure with different methods to produce new concepts. There are a number of methods for capturing knowledge in an organization. Employing people of necessary knowledge, employing foreign consultants, and supporting universities and research centers financially to help producing new knowledge are among such methods (Gupta & Sharma, 2004).

Table 2: Obstacles in the way of producing knowledge

PRESRVING DRAWBACK	RESEARCHER	YEAR
DEPUTY RAISING LACK	KAMELI	2008
AVAILABLE KNOWLEDGE DOCUMENTATION WEAKNESS	SHAHAB BANI MUSA	2009
MANAGERS' KM FACTORS	MOHAMMAD BEIG	2011
SUCCESFUL KM	REINHARDT	2008

2- Maintaining knowledge, which means a series of activities which settle knowledge inside a system. The essential factors in this regard are organizational memory and individual memory which mean the ability of an organization to preserve and maintain knowledge. Should the above memories exist beside each other, they would support each other.

A number of tentative researches suggest that although organizations capture knowledge, yet they forget knowledge too. Hence storage, arrangement and recovering knowledge depends on organizational memory (Stein and Woss, 1995). Organizational memory includes knowledge which has been documented in forms of documentation, data stored in electronic data bases, individual knowledge stored in professional systems and organizational procedures. It appears on processes and captured knowledge of individuals or networks (Tan and Theo, 1998).

Table 3: Obstacles on the way of knowledge maintenance

DRAWBACK	RESEARCHER	YEAR
MOTIVATING AND REWARDING SYSTEM, EDUCATION	TALEBI	2011
CAPTURING KNOWLEDGE	LARIJANI	2009
LACK OF EDUCATION AND PROPER GROUP LEARNING	KAMELI	2008
IN-BETWEEN/SOCIAL FACTORS	CHAMPIKALIA ET AL	2010

3- Sharing knowledge: a series of activities relating to transferring knowledge from one section to another or from one person to another which include communication, translation, transformation, interpretation, purification of knowledge. Since organizational knowledge is naturally distributed, sharing knowledge is an essential process in

Knowledge Management within an organization. Nonetheless sharing knowledge will not be a simple process in organizations which have weak knowledge management implementation systems (Alavi & Linder, 2001). It is necessary for knowledge to be shared inside an organization before using it in organizational levels. Co operation between personnel and organizational technology can have a direct effect on knowledge distribution (Bott, 2000). Sharing knowledge happens in different levels inside an organization; among personnel, from individuals to visible resources, from individuals to groups, among groups, from one group to another and from groups to the organization. Overall, sharing knowledge with the required spots inside an organization is an important process of knowledge management.

Table 4: Limitations of sharing knowledge

DRAWBACK	RESEARCHER	YEAR
ORGANIZATION STRUCTURE, AVAILABE TECHNOLOGIES, ORGANIZATIONAL CULTURE	SHAHLOO	2009
CULTURE, INFRASTRUCTURE, IT INFRASTRUCTURE	TALEBI AND SALIMI	2011
MOTIVATING AND REWARDING SYSTEM, EDUCATION, ORGANIZATIONAL RESOURCES, HR MANAGEMENT GROWTH	TORKMANI	2011
IMPROPER REWARDING SYSTEM, FAILURE OF SHARING KNOWLEDGE AMONG SENIOR AND JUNIOR EMPLOYEES, COMMUNICATION SKILLS WEAKNESS	TEIMUR NEJAD, NAJAFI	2011
ORGANIZATIONAL STRUCTURE AND CULTURE	NOROUZI AND RABIEE	1390
DISTANCE BETWEEN EMPLOYEES AND MANAGERS	SHAHAB BANI MUSA	2009
OPEN COMMUNICATION, OPEN PROCESS	STEWART HOSS ET AL	2006

4- Utilizing knowledge: a series of activities relating to applying knowledge in the organizational processes (Newman & Conrad, 1999). In other words, the above characteristics shall be counted as the learning organization's features. In such organization capturing and sharing knowledge are the main columns of being innovative and modern (Alvani, 2006). A successful organization shall continuously create new knowledge to solve new and unfamiliar problems, develop knowledge systematically and in accordance with targets and guidelines in all layers and sections of the organization, look forward to turn the knowledge into new products and modern technology and use the knowledge (Cross, 1997).

Conceptual Model:

According to our main purpose in this essay, figure 2 shows the Conceptual Model of this research.

Figure 2- Conceptual Model of this research

The Main hypothesis:

- Knowledge management process inside National Iranian Drilling Company faces a number of damages and obstacles in all modules (capturing, preserving, sharing and using)

Secondary hypothesis:

1- Knowledge management process inside National Iranian Drilling

Company faces a number of damages and obstacles in capturing module (weakness in applying creation techniques, lack of training and improper group education, and weakness in abilities of personnel).

2- Knowledge management process inside National Iranian Drilling Company faces a number of damages and obstacles in preserving module (inadequate technological upgrade overall, using old data centers, improper development program for deputies and substitutes, improper documentation of available knowledge).

3- Knowledge management process inside National Iranian Drilling Company faces a number of damages and obstacles in sharing module (lack of knowledge sharing, lack of information and communication technology, weak communication skills).

4- Knowledge management process inside National Iranian Drilling Company faces a number of damages and obstacles in utilizing module (organizational focus, emphasizing on experience rather than knowledge in solving problems, weak evolutionary leadership).

IV. METHODOLOGY

In this research, we considered our target, hypothesizes, questionnaire (grading) and ease of creating and interpreting the results by using Lykert's scale compared to other scales (Threston, Gothman and Bogardos) and we decided to apply Lykkert's method and each question is valuated in 5 categories: very much (weight 5), much (weight 4), to some extent (weight 3), little (weight 2), very little (weight 1).

In order to obtain the justifiability of the questionnaire, the questions have been prepared using several reliable resources, and approved by experts of this field. In order to obtain the perpetuity of the questionnaire, we used Kronbach Alpha Method. The minimum acceptable Cronbach Alpha for utilization is 7%, for capturing knowledge 74%, for preserving knowledge 79%, for sharing knowledge 77%, and for utilizing knowledge 77%. In the light of the above results it is clear that the questionnaire is valid.

Analyzing data and results:

66% of our statistics society was men and 34% was women. 21% of our statistics society was married and the rest was single. The majority of the statistics society was graduated (80.3%). 15.6% of our statistics society has less than 5 years of experience, 34.4% between 6 and 10 years of experience, 15.6% between 11 and 15 of experience,

8.2% between 16 and 20 years of experience and 26.2% has over 20 years of work experience.

The results of Kolmogorov-Smirnov test in accordance with the following table show the normality of the distribution of variables. Also we can apply parametric tests (in this research single-sample T-Test) for analyzing the research hypothesizes.

Table 5 - Kolmogorov-Smirnov Test results

Variable	Capturing knowledge	Preserving knowledge	Sharing knowledge	Utilizing knowledge
Kolmogorov-Smirnov test magnitude	1.276	1.200	1.390	1.033
Sig.	0.77	.112	.062	.237

Research hypothesis tests:

We applied sample t-test to respond our assumptions and the results are shown below:

Table 6: Knowledge Management Process, results of drawbacks

Criteria-T3				
VARIABLE	DF	AVERAGE	T	Sig.
KM implementation drawbacks	121	3.1901	6.461	.000

Since our questionnaire for Knowledge Management Process contained 5-choice type questions, we assumed 3 as an average for Knowledge Management Process at this stage. According to the results (average=3.191, P<0/01) among NIDC personnel, it can be derived that the personnel believe that Knowledge Management Process in NIDC confronts several deficiencies and drawbacks in all modules. (p<0/01).

The 1ˢᵗ sub-hypothesis test:

Table 7: Capturing knowledge drawbacks results

Criteria-T3				
Sig.	T	Ave.	DF	VARIABLE
0/000	5/493	3/3064	121	CAPTURING KNOWLEDGE DRAWBACKS
0/013	2/513	3/2541	121	*weakness in applying creation techniques*
0/000	7/663	3/3115	121	*lack of training and improper group education*
0/000	5/889	3/4536	121	*weakness in abilities of personnel*

The above table date proves our capturing knowledge drawbacks hypothesis (weakness in applying creation techniques, lack of training and improper group education, and weakness in abilities of personnel).

The 2ⁿᵈ sub-hypothesis test:

Table 8: Preserving knowledge drawbacks results

Criteria-T3				
Sig.	T	AVE.	DF	VARIABLE
0/015	2/459	3/1674	121	*Maintaining Knowledge drawbacks*
0/000	9/521	3/7418	121	*inadequate technological upgrade overall, using old data centers*
0/002	-3/112	2/7158	121	*improper development program for deputies and substitutes*
0/002	3/206	3/2705	121	*improper documentation of available knowledge*

The above table date rejects our preserving knowledge drawbacks hypothesis regarding improper development program for deputies and substitutes, and proves our hypothesis regarding inadequate technological upgrade overall, using old data centers, improper documentation of available knowledge).

The 3ʳᵈ sub-hypothesis test:

Table 9: Sharing knowledge drawbacks results.

Criteria-T3				
Sig.	T	AVE.	DF	VARIABLE
0/043	2/048	3/1172	121	*Sharing KNOWLEDGE DRAWBACKS*
0/033	1/514	3/1186	121	*lack of knowledge sharing*
0/000	-6/197	2/4180	121	*lack of information and communication technology*
0/807	-0/245	2/9809	121	*weak communication skills*

The above table date proves our sharing knowledge drawbacks hypothesis in transferring module, and rejects our hypothesis regarding lack of information and communication technology, weak communication skills.

The 4th sub-hypothesis test:

Table 10: Utilizing knowledge drawbacks results.

CRITERIA-T3				
Sig.	T	AVE	DF	VARIABLE
0/000	7/260	3/3115	121	Utilizing KNOWLEDGE DRAWBACKS
0/000	9/237	3/7186	121	organizational focus
0/000	5/587	3/3989	121	emphasizing on experience rather than knowledge in solving problems
0/044	2/033	2/8279	121	weak evolutionary leadership

The above table date proves our utilizing knowledge drawbacks hypothesis regarding utilizing knowledge for organizational focus and emphasizing on experience rather than knowledge in solving problems, and rejects our hypothesis regarding weak evolutionary leadership.

Drawbacks priority

In order to study the importance and priority of the above-mentioned drawbacks we applied Friedman Test:

Table 11: Knowledge management implementation drawbacks, order of precedence

RESULT (knaR)	RANK AVERAGE	VARIABLE
2	2/59	CAPTURING KNOWLEDGE
3	2/43	PRESERVING KNOWLEDGE
4	2/20	SHARING KNOWLEDGE
1	2/79	UTILIZING KNOWLEDGE
24/007		Chi-Square
4		Df
0/003		Sig.

The results of Friedman Test indicate a meaningful difference among knowledge management implementation obstacles in NIDC regarding the order of precedence (p<0/01).their order of priority is as follows:
1- Knowledge utilization (average rank=2.79)
2- Knowledge capture (average rank=2.59)
3- Knowledge preserve (average rank=2.43)
4- Knowledge share (average rank=2.20)

V. CONCLUSION

Regarding our main hypothesis, the above results show that Knowledge Management Process in NIDC confronts several deficiencies and drawbacks in all 4 modules (average= 3.1901, P<0/01), and match with the research tentative basics. Also, the results of the 1st sub-hypothesis test; capturing knowledge module (weakness in applying creation techniques, lack of training and improper group education, and weakness in abilities of personnel) shows the necessity of information technology education in NIDC and understanding of its fundamental effects of the KM process. Capturing knowledge plays an important role in this regard. It can be subject to modifications or modify the system. The results of the 2nd sub-hypothesis, preserving knowledge module, was approved (inadequate technological upgrade overall, using old data centers, improper documentation of available knowledge), however regarding improper development program for deputies and substitutes, which is a human resource management sub-system for organizational learning, increasing personnel job satisfaction, force circulating rate and organization financial performance, the results were rejected. The 3rd sub-hypothesis, sharing knowledge module (lack of knowledge sharing, lack of information and communication technology, weak communication skills) shows that a mighty organization bears an environment in which personnel of different work groups co operate with each other in all their activities, which helps sharing knowledge among them and enhance KM inside the system. In a knowledge organization, knowledge shall be shared easily and accessible for all employees. The results of the 4th sub-hypothesis, utilizing knowledge module (organizational focus, emphasizing on experience rather than knowledge in solving problems, weak evolutionary leadership), indicates organizational focus on major decision makings of NIDC. The staff would benefit from their personal experiences fir solving certain problems. The results also show that the managers are patterns of knowledge management activities. Based on the results, we are providing a number of recommendations as follows. Regarding the approval of the main hypothesis of this research, it is recommended that a knowledge plan system shall be implemented, using various data banks, to indicate who in the system has knowledge, in what topic and where the employee is working in the organization. NIDC managers and

personnel shall be updated about KM benefits. In this regard it is recommended to hold educational courses, include KM topics in the programs of employer/employee public sessions and reserve a section inside NIDC's electronic portal for KM topics. Regarding the approval of the sub-hypothesis of this research, in below we are providing a number of recommendations to eliminate the obstacles in all 4 modules of KM at NIDC. With regards to 1th sub-hypothesis, capturing knowledge, it is recommended that NIDC must arrange personnel in teams to do their obligations and personnel shall upgrade their knowledge propose new procedures. Also it is recommended that NIDC must hold educational courses for the employees to challenge them in their ways of doing their routines.

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