Research Journal of Applied Sciences, Engineering and Technology 4(22): 4663-4673, 2012
ISSN: 2040-7467

Submitted: March 23, 2012 Accepted: April 26, 2012 Published: November 15, 2012

Knowledge Management and Technology in Shahid Rajaei Trading Port

[1]Hasan CHaharmahali, [2]Seyyed Mahdy Moafi Madany, [3]Maryam rokhshi and [4]Majid Zeinalkhani
[1]Department of Financial Management, Allameh Tabatab'i University, Tehran, Iran
[2]Management Department, Hidaj Branch, Islamic Azad University, Hidaj, Iran
[3]Department of Accounting, Kashan Branch, Islamic Azad University, Kashan, Iran
[4]Department of Industrial Engineering, payame noor tehtan, tehtan, Iran

Abstract: For most organizations, knowledge management is a process which aims at replacing conventional business processes. The dilemma is that for most of them, these processes that KM aims at computerizing do not exist. What many fail to comprehend is that knowledge management is more of a business practice than a product. The aim of this study is to examine the place of people and technology in the context of knowledge management. Based on the emerging concept of intellectual capitals where knowledge is perceived as part of the property of a firm, this study will seek to foster an understanding of knowledge management and determine the validity of the notion that knowledge management can replace human intellectuals in organizations. In conducting the study, a qualitative approach was adopted. Data was obtained from both secondary and primary sources. The primary data collection process was undertaken at Rajaei port which is based in the Islamic republic of Iran. The results were subsequently analyzed. For purposes of standardizing the results to make them suitable for comparison, the average auto sum formula was adopted. The results revealed a consistency with much of the literature on the subject to the effect that human resources are the key success factors in the implementation of knowledge management. Knowledge management is not a process for replacing human labour; on the contrary it is dependent on the knowledge residing in people minds. Recommendations were made that Rajaei port managers should begin by creating suitable environments for people to share their tacit knowledge. Further, that they should encourage a knowledge sharing culture in their organization as sustainable knowledge management is more dependent on the ability of employees to share each other's knowledge than on complex technology.

Keywords: Knowledge management, rajaei trading port, technologies, people

INTRODUCTION

In the recent past, there have been immense debates on the importance of knowledge management in the business world. Knowledge management is considered a necessary and important factor of organizational survival and maintenance of competitive power (Martensson, 2000). In order to remain at the forefront, organizations must possess a great capacity to acquire, retain, develop and utilize their employees' capabilities. Observers and scholars agree that a transformation has occurred and that indeed, now 'knowledge' is of key significance in the determination of the success of any given organization. Managers and other executives worldwide must now address the issue of knowledge management. It is considered a compulsory ingredient for increased flexibility and productivity in both the public and private sectors.

In contemporary times, there are many powerful forces which have necessitated a shift in organizational processes and human resource management strategies. These include novel technology, globalization, heightened competition, changing political and economic structures, diverse customer needs as well as increased degrees of complexities (Martensson, 2000). Martensson writes that organizations have begun realizing that competitive advantages based on technology are ephemeral and that their only sustainable advantage is their employees. Consequently, they are struggling to adapt fast, to respond faster and to shape their industries pro-actively.

This study seeks to delve into the issue of knowledge management with particular focus on Rajaei trading port. It will focus on determining the key success factors of knowledge management with particular focus Rajaei port where all the data will be sourced from. It will seek to establish the interaction of people and technology and determine which among the two is at the heart of knowledge management. It will determine which of the two is of key importance. The roles of each will be examined and a determination will be reached upon thorough evaluation.

The purpose of the study is to determine key factors for knowledge management success. It is also aimed at determining the most suitable patterns of creating

Corresponding Author: Hasan Chaharmahali, Department of Financial Management, Allameh Tabatab'i University, Tehran, Iran

technologies' and people interactions for successful performance of knowledge management, as well as to determine the most suitable systems of managing organizational knowledge in a bid to improving and developing intellectual capitals by use of modern technologies.

LITERATURE REVIEW

Questions have been asked regarding the empirical origins of knowledge management. In reference to DiMattia and Oder (1997) and Martensson (2000) identifies two empirical origins of knowledge management. She states that the development of KM is owed to two fundamental shifts namely downsizing and technological advancement. Martensson narrates that during the 1980's; downsizing was the strategy of the day for many organizations seeking to boost profits. This strategy resulted in the loss of crucial knowledge, as the many employees who left took the knowledge they had accumulated over the years with them (Piggott, 1997). Over time, organizations realized that they had lost years of valuable expertise and information and they became determined to shield themselves from recurrence. Management therefore began to undertake KM strategy in a bid to store and retain the knowledge held by their employees for the future benefit of the organization. To do so, technology and other systems are being used to capture the knowledge residing in the minds of employees, so that it can be easily shared within the organization. When such knowledge is stored it is a reusable resource that can provide immense competitive advantages, including enhanced organizational capacities, facilitating output, as well as lowering costs (Forbes, 1997).

Technological advancement is the second fundamental shift that led to the growth of KM. Advancement in technology has amplified the interest in KM through two main sources; the fiery development of information sources e.g. the internet, and the hastened rate of technology change (Hibbard, 1997). Now it is possible to share information across not only platforms but also continents. In agreeing with all the above, Blake (1998) asserts that a company's expertise stored in a database can help it "determine what it really knows" and then marshal and exploit it systematically to its own advantage. In this regard DiMattia and Oder (1997) state that these IT developments have overwhelmed both people and organizations and they postulate that KM is an attempt to deal with the information explosion and to capitalize on the workplace's augmented knowledge.

This study seeks to meet several objectives. The first is to determine the sort of interactions that should occur between technologies and people for effective creation, distribution and utilization of knowledge. The second is to determine the role of knowledge management in fostering effective management in an organization. The third is to establish the best means through which knowledge management may be implemented so as to encourage improvement and development using current technologies.

RESEARCH METHODOLOGY

Philosophy of study: The research philosophy underlying this study is the post-positivism philosophy which emphasizes the need for in-depth exploration of a phenomenon from a qualitative perspective. This philosophy contends that research should not be a rigid process. On the contrary, it should be an interactive process which reflects the intricate relationships between individual attitudes, behavior, socio-cultural issues and external structures. It advocates for the qualitative as opposed to the quantitative approach to research. On that basis, this research deployed various qualitative methods of data collection namely observation and questionnaire.

The objectives as earlier stated seek to identify the best practices with regard to interactions between people and technology in the KM context. In order to identify best practices, challenges and opportunities, research had to be conducted on the ground. In order to identify the interactions between technologies and people at Rajaei port, the researcher had to be involved in an interactive process with the employees and administration at the port. Such an interactive process is only supported by the qualitative approach to research. Only qualitative data collection techniques could allow for interactive research. The quantitative approach upholds the positivists' school of thought and assumes that all things can be studied as hard facts and that the relationship between these hard facts can be established as scientific laws. Determining relationships cannot be a reduced to a study of hard fact because relationships are dynamic as opposed to static. Further this study is not aimed at establishing scientific laws which represent absolute truths. There can be no absolute truth in the field of knowledge management. Organizations apply KM in the means they deem best for enhancing their productivity and giving themselves a competitive edge. These recognitions are what disqualified the use of the quantitative and combined approaches to this study.

Primary data sources: Primary data was obtained through direct observation and questionnaires. Observation was a relatively simple method to use especially considering that the researcher, is a member of the employees' fraternity at Rajaei Port. This eased up the requirement to obtain permissions to access various departments. Nonetheless, permissions had to be obtained in order to access administration and records offices. This was the main challenge in the conduct of this data collection method. The researcher would spend about 8 h

a day making observations on the specific operations of the port. The field notes would be recorded instantly to avoid any human errors like forgetfulness from occurring. This posed another challenge especially in days where the researcher had to actively participate in the work processes. The results of the observations are discussed later in the next chapter of this study.

The questionnaires were based on prior research on the field of knowledge management. Secondary data obtained from the prior research led to the identification of eight independent variable of knowledge success. These are; human resource management, personnel material and spiritual welfare, knowledge association and sharing, organization policies and strategies, support of senior management, organization culture, information technology tools, and goods loading and unloading modern technologies in port. Dependent variables were also identified; organizational productivity (efficiency and effectiveness), organizational learning and balanced growth of intellectual capitals with modern technologies.

The questionnaire took the structure of a table consisting of six columns and seventy four rows. The first column contained the indexes of each variable. The other five columns were scales upon which the respondents would indicate the importance of each index. The second column was titled 'Not important', the third 'somewhat important', the fourth 'important', the fifth 'very important' and the sixth 'extremely important'. Each of the rows provided for one index of each variable. Because the aim of the questionnaire was to gauge the opinions of the respondents as to the importance of each variable, all questions therein were closed. The questionnaire was divided into two sections. The first section listed the indexes of the independent variables while the second section listed those of the dependent variables.

Research independent variables: The respondents were a group of eighteen honorable experts, Rajaei port employees and professors in the field of management working at Rajaei port. This group of professionals was chosen owing to the fact that the quality and promotion of management theories and practices is dependent upon their intellects. The respondents have varying expertise. Some are experts in IT, commercial management, social communication, education management, marine transportation technology, port and shipping management, industrial engineering, MBA, marine ecology among others. All respondents are holders of either a master degree or a PhD. The respondent with least working experience has a 3 year experience, majority having over 9 years experience. These are the people who are constantly and consistently engaged in the development of management theories and applications systems. Consequently, they are very knowledgeable in matters of management including the relatively new area of focus, knowledge management. They are updated with key developments and are thus best suited to determine which of the indexes are of key importance for the success of knowledge management and which are not. Indexes of Human resource management have been showed in Table 1.

After studying each variable for instance 'human resource management', the researcher would identify the important areas regarding human resource management. After identifying such areas, they would be written up as indexes. For example, according to Galia and Legros (2003), knowledge management and utilization can be facilitated by human resource practices. In this respect, they discuss issues like employee motivation, education level and conductive working environments as factors which have an influence on effective knowledge management as they may determine how knowledge is created and shared within an organization. From the discussions of these authors, the researcher came up with the six indexes under the human resource management head. Table 2 and 3 show how this information obtained from the foregoing authors was used in coming up with the indexes.

The researcher found it necessary to break down the variable into many indexes to broaden the respondent's perspectives as well as their responses. From the literature review, system embeddedness was identified as one of the dimensions of knowledge (Birkinshaw *et al*., 2002). The literature in essence established that the social structure of an organization has a key impact on how information is integrated, used and transferred as well as with respect to integration of technology. Embeddness to some authors was said as resulting in what some authors referred to as the sociology of technology (Martensson, 2000). Bearing this in mind, the researcher was keen to evaluate how the respondents rated some indexes that had a direct bearing on the personal lives of employees. This is because the extent to which employees relate at a personal level also determines how they share knowledge in the context of employment.

Similar questions pertaining to the individual relations were reflected under the knowledge association and sharing variable as shown in Table 4.

It was clear to the researcher that the objectives of this study could only be achieved through the candid phrasing of indexes so that respondents could opine on each index independently. Because the above are just sections of the questionnaire, the complete questionnaire is to be found in the Table 1-4 of this study. After the respondents filled in the questionnaires, they were collected and kept for subsequent analysis. Notably, the questionnaires used in this study were collated and classified.

The analysis of the data collected from the questionnaire was achieved through the Statistical Package for the Social Sciences (SPSS). In conducting the analysis, the basic steps of the tool were observed keenly.

Table 1: Indexes of human resource management

Indexes of human resource management	Not important	Somewhat important	Important	Very important	Extremely important
1. To keep and retain personnel having valuable knowledge, as one of the KM strategy factors					
2. To motivate personnel to promote their knowledge and academic level					

Table 2: Indexes of human resource management

Indexes of human resource management	Not important	Somewhat important	Important	Very important	Extremely important
1. To keep and retain personnel having valuable knowledge, as one of the KM strategy factors					
2. To motivate personnel to promote their knowledge and academic level					
3. To provide a plan to meet all of personnel educational and development needs					
4. To provide knowledge creation and sharing chance working environment					
5. To employ and train individuals searching knowledge and information					
6. To appoint experts (considering their academic field) in true position					

Table 3: Indexes of personnel material and spiritual welfare

Indexes of personnel material and spiritual welfare	Not important	Somewhat important	Important	Very important	Extremely important
1. To participate in decision making (spiritual reward)					
2. To have a chance for personal promotion (spiritual reward)					
3. To have more freedom in working (spiritual reward)					
4. To use organization facilities (material reward)					
5. To get extra pay for overtime work and unemployment (material reward)					
6. To have a share of profit (material reward)					

Table 4: Indexes of knowledge association and sharing

Individual factors	Not important	Somewhat important	Important	Very important	Extremely important
1. Knowledge acquisition					
2. Communication and social popularity					
3. Sense of responsibility					
4. Trust among personnel					

To begin with, the data was read though and the opinions which were in text form, were translated into numerical form (e.g., not important became number 1, somewhat important became 2 etc). Data transformation was then conducted by obtaining the total and average means of the indexes in order to standardize the data for comparison purposes. The variables were then defined by correctly labeling all rows and columns of the data specifically indicating the totals and average means. In order to confirm the results from the computations, Excel formula Auto sum [$\sum$ (average)] was employed. To further understand the results distinct tables summarizing the findings were created. To define the findings further, graphs were then generated using Excel Spreadsheet. The results obtained from the analysis form much of the substance of chapter four below.

RESULTS

This study established that there exists a recursive relationship between data, information and knowledge. All literature concurs with respect to the definition of knowledge management as the ability of an organization to utilize its collective knowledge via various key processes: a knowledge sharing, generation and exploitation facilitated by technology to attain its objectives (Cong and Pandya, 2003; Antezana *et al*., 2009) it is also established that knowledge management is a crucial tool for the success of any organization. All literature agrees to this and most of it recognizes that benefits of knowledge management accrue at two levels; organizational level and individual level.

For the organization, knowledge management is crucial in enhancing productivity, innovation, efficiency, quality and providing competitive advantages. Because of its numerous advantages, it is a rapidly growing practice and is now penetrating various industrial areas like biological and life sciences fields (Antezana *et al*., 2009). For the individual, knowledge management provides employees with the opportunity to enhance personal and career development. This is because it enables them to

Table 5: Variable sources

Construct	Variables	Referencing
People management	Human resource management	Nonaka and Takeuchi (1995)
Culture and peopleemphasis on individual as opposed to groups/teams	Personnel material and spiritual welfare	Wijnhoven (2003)
Communication/knowledge distribution	Knowledge association and sharing	Degnbol (2006)
Conducive workplace environment	Organization policies and strategies	Nonaka and Takeuchi (1995)
Management responsibility	Support of senior management	Wijnhoven (2003)
Culture and people	Organization culture	Martensson (2000)
Innovation/intelligence solutions	Information technology tools	Hicks *et al*. (2006)
Efficiency/time	Goods loading and unloading modern technologies	Cong and Pandya (2003)
Efficiency and effectiveness	Organizational productivity	Cong and Pandya (2003)
Personal output/productivity	Organizational learning	Ramalingam (2006)
Core competencies, invisible assets	Balanced growth of intellectual capitals with modern technologies	Martensson (2000)

Table 6: SWOT analysis results

Weaknesses	Threats	Goals
Weak performance compared to the pre-set program goals	Unwillingness to acquire skilled manpower due to eccentricity Rajaei	Install internet at office level
Low efficiency of equipment, distribution over time and irrelative stop ships	Lack of coordination among related organizations	Hold monthly meetings with management and staff
Failure to repair and maintain services ships	Rapid growth in technology and port inconsistency to reaching this technology	To reward staff based on performance, efficiency and productivity
Information systems failure, lack of transparency and operational mechanized working process		Devise processes to reduce work-related discharge rate of 10%
Failed public management i.e. failure of management to organize cultures, organizational behavior and human resources		Improve performance feedback channels by 30%
Lack of technology to compete with regional ports lack or repair for the existing port systems		Train personnel to ten thousand next year year (6000 h office & 4000 h operating menu)
Poor research structures		Strengthen communication and information network at port level
		Create relationships with organizations related to export, import and transit of goods (customs free zone, police and transportation office)

come together and share one another's tacit knowledge. They are able to learn from each other (Cong and Pandya, 2003).

This study has also revealed that there is no one agreed procedure for implementing knowledge management. Many authors have in that regard come up with their own models to assist organizations in implementing knowledge management. However, there is agreement on the basic activities involved in knowledge management. These are knowledge innovation, socialization, internalization and exploitation. For example, Bhatt (2001) process model consists of five key activities. Despite the five activities, his model is basically embodies the foregoing mentioned fundamental activities. His process model is as follows;

There is therefore agreement on the basic activities that should underlie the process of knowledge management. For knowledge management to occur, knowledge must first be created. It must then be shared within the organization. People within that organization must internalize it and then apply it effectively. It is only then that knowledge management can be an effective business tool for an organization.

With regard to application of the concept management, this study established various things. First, knowledge management is a management tool that can be used as an operational tool in two contexts; either as an information handling tool or as a strategic management tool. All literature agrees that as an information handling tool, knowledge management is concerned with the creation and exploitation of knowledge (Martensson, 2000; Birkinshaw *et al*., 2002; Broadbent, 2002). As a strategic management tool, knowledge is recognized as an organization's most valuable asset. When recognized as such, organizations must then be able to adjust their capabilities, i.e. resources and skills to a constantly changing complex external environment (Martensson, 2000). An organization must therefore build systems for capturing and transferring best practices and internal knowledge (Allerton, 1998).

Various hurdles to knowledge management have been identified. The main hurdles to KM have been

identified as the absence of a commonly held model for knowledge creation and dissemination and the absence of processes and systems designed to support and evaluate the effectiveness of KM. Other challenges to knowledge management result from the lack of a sharing culture between the employees of an organization and their failure to understand the benefits of knowledge management.

The study has also revealed that the most important factor in knowledge management is people and not technology. Research shows that KM strategies premised purely on technology solutions always fails. Technology is however an important factor toward effective knowledge management. In order to create and implement a successful knowledge management strategy, some critical factors must be present. These are creativity, evaluation, time, cultures and people, communication, so what questions, top management support, knowledge sharing and incentives (Martensson, 2000). Out of the many success factors of knowledge management, this study found out that there are eight key independent success factors with regard to knowledge management at a port. These are human resource management, personnel material and spiritual welfare, knowledge association and sharing, organization policies and strategies, support of senior management, organization culture, information technology tools, and goods loading and unloading modern technologies in the port. The Table 5 indicates the sources of each of the variables used in this study.

Investigations revealed a lot of information concerning Rajaei Port which is the subject of this study, as well as about general port business in Iran. The top administrator of port business in Iran is the High council which consists of the minister of economics, transportation, president strategic assistant and the navy commander. Under them is the independent office of the minister of transportation who receives reports from the direct administer of ports, the ports and maritime organization managing director, who is in charge of the various independent ports in Iran. After a comprehensive market research, below are the findings of a SWOT analysis which indicates that Rajaei Port is a proper subject for knowledge management. Rajaei is in modern times the Port attracting key interest from the government of Iran. As established in the introduction the port is very strategically placed and is the government's hope for sustainable economic development for Iran as a whole. The port will open up the country to trade with central and East Asia as it is the only Iranian Port with direct access to the ocean (Maroos and forwarding company, 2005). At the moment, Rajaei is a declared free trade zone. Its main competitor is Gwadar Port which is based at Pakistan.

From the Sistan and Baluchistan ports & maritime general office missions, it is clear that knowledge management is a necessary factor if the port is to achieve some of its key objectives. First, the port aims to increase productivity. The first mission of the general office at Rajaei is to increase the port's capacity and discharge to 6 million tons per year (Ports and Maritime Organization, 2011). To do this, there must be effective and speedy processing of information. Another aim is to promote widespread use of information technology (General Authority of Sistan and Balochestan, 2011). All these imply effective knowledge management. The mission statement is attached in the Table 4 D for verification of this information.

The SWOT analysis revealed the Weaknesses and Threats (WT) of the port. After the analysis, the general office at the port came up with certain goals which reflect the need for KM, though the office did not use the terms 'Knowledge management'. This information is shown in Table 6.

Because the concern of this research was to examine the interactions between technologies and people at the port with a view of establishing the current structure of knowledge management, research was conducted on the structure of the human resource department.

The specific number of persons in each department was established through observation and will be discussed shortly. The human resource department at the port is affected by various factors; social, technological, political and economic. Social factors such as area deprivation, changes in population structure and migration of villagers to the city and increasing expectations of families lead to fundamental changes in supply and demand in the labor force. The port therefore has to find mechanisms to keep adapting to the changing trends of the above mentions factors. Rapid advancements in technology have posed a major threat to the port. Fundamental changes such as new equipment and especially mechanized implementation of administrative and operational systems, such as Office Automation System and use of sea satellites and computer systems are urgent.

Results from primary data-observation & questionnaire: Rajaei port has terminals for general/ multipurpose and oil cargoes. The berths in the port of Rajaei include general cargo and bulk, and general cargo of Shahid Kalantari with 2, 2 and 4 posts respectively. Berth capacities range from 2,000-25,000

Table 7: Table of berths specifications (Shahid Beheshti & Shahid Kalantari)

Type of berths	No of posts	Length (M)	Draft (M)	Berth tonnage (MT)
General (Shahid Beheshti)	2	300	8-9	25,000
Break bulk	2	300	8-9	25,000
General (Shahid Kalantari)	4	180	2-5	2,000

Table 8: Table of equipments

Barges	9	Gantry cranes	0
Hopper for cereal	4	Yard cranes	6
Tractors1	2	Boats	2
Top lifts	1	Tugboats	3
Lift-Trucks	15	Dredges	0
		Transtainers	1

Table 9: Number of human resources in every department

Department name	Total human resources	Department name	Total human resources
Design and development deputy	2	Office of safety and channel	8
Administrative and financial deputy	7	Port governance	17
Deputy of operations	11	Governance of marine	22
Technical and maintenance deputy	6	Administrative affairs	7
General director of the field	40	Financial affairs	14
Department of education	5	Department of engineering	4
Total	147	Department repairing	4

Table 10: Descriptive statistics

	N statistic	Minimum statistic	Maximum statistic	Sum statistic	Mean statistic	S.D. S.E.	S.D. statistic	Variance statistic
VAR00001	18	3.00	5.00	73.00	4.0556	0.15065	0.63914	0.408
VAR00002	18	2.00	5.00	70.00	3.8889	0.19619	0.83235	0.693
VAR00003	18	2.00	5.00	65.00	3.6111	0.18327	0.77754	0.605
VAR00004	18	2.00	5.00	69.00	3.8333	0.21768	0.92355	0.853
VAR00005	18	2.00	5.00	62.00	3.4444	0.20166	0.85559	0.732
VAR00006	18	2.00	5.00	71.00	3.9444	0.20567	0.87260	0.761

Valid N (list wise)18

tons. Table 7 shows information about Berths specifications for Shahid Beheshti & Shahid Kalantari. Furthermore Table 8 shows information about Equipments.

There are computers and computer networks on the high level offices i.e., administrative offices and the head offices of each department. Majority of employees do not have computers and interactions occur at a face to face basis. If an employee requires some data or records, they have to go to the relevant office and seek permission to have the records. Protocol and bureaucracy have a key role in how the port is managed.

The researcher having made visits to all offices recorded the number of employees in each department and compiled Table 9.

The questionnaire required the respondents to rate the importance of the indexes of the selected success factors. The results were tabulated and numeral numbers were used to represent the scale as follows:

Table 11: One-sample statistics

	N	Mean	S.D.	SEM
VAR00001	8	3.7749	0.21942	0.07758

1 = Not Important
2 = Somewhat important
3 = Important
4 = Very important
5 = Extremely important

In order for the results to be properly analyzed and comprehended, the results of each variable have been tabulated one by one below. Because the breakdown of the responses by the respondents is already presented, only the totals will be listed to enable overall evaluation The calculations were obtained by use of SPSS software then summarized in the Table 10. In particular, the researcher made use of the mean functions of the software; one-sample test and descriptive function. Below

Table 12: One-sample test

	Test value = 0					
					95% confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean difference	Lower	Upper
VAR0000	148.659	7	0.000	3.77486	3.5914	3.9583

Table 13: Human resource management

Indexes of human resource management	Total	Average score per index
1. To keep and retain personnel having valuable knowledge, as one of the KM strategy factors	73	4.055
2. To motivate personnel to promote their knowledge and academic level	70	3.888
3. To provide a plan to meet all of personnel educational and development needs	65	3.611
4. To provide knowledge creation and sharing chance working environment	69	3.833
5. To employ and train individuals searching knowledge and information	62	3.444
6. To appoint experts (considering their academic field) in true position	71	3.944
Total	410	
Average variable score		3.774

Table 14: Personnel material and spiritual welfare

Indexes of personnel material and spiritual welfare	Total	Average score per index
7. To participate in decision making (spiritual reward)	70	3.888
8. To have chance for personal promotion (spiritual reward)	64	3.555
9. To have more freedom in working (spiritual reward)	63	3.5
10. To get extra pay for overtime work and unemployment (material reward)	61	3.388
11. To have a share in profit (material reward)	65	3.611
Total	323	
Average variable score		3.588

Table 15: Knowledge association and sharing

Indexes of knowledge association and sharing		Average score per index
A. Individual factors	Total	
12. Knowledge acquisition	64	3.555
13. Communication and social popularity	62	3.444
14. Sense of responsibility	68	3.778
15.Trust among personnel	70	3.888
Total index score	264	3.666
B. Organizational factors	Total	
16. Managers viewpoints and performance	74	4.111
17. Organizational trust	70	3.888
18. Rewarding system	67	3.722
Total index score	211	3.907
Average variable score		3.787

Table 16: Organization policies and strategies

Indexes for organization policies and strategies	Total	Average score per index	
19. To put emphasis for KM system in order to adjust organization goals and strategies		66	3.667
20. To adopt strategies to facilitate move toward knowledge-based organization	68	3.778	
21. Personnel awareness and support of organization mission, statement and message	68	3.778	
Total	202		
Average variable score		3.741	

Table 17: Senior manager support

Indexes for senior manager support	Total	Average score per index
22. Senior managers financial support for implementation and performance of KM systems	69	3.833
23. Managers role as supervisors and facilitators of management system	64	3.555
24. To specify strategic priorities of KM	59	3.277
Total	192	
Average variable score		3.555

Table 18: Organizational culture

Indexes of organizational culture		Average score per index
Involvement in work	Total	
25. Team building	68	3.778
Total index score	68	
CompatibilityTotal		
26. Knowledge distribution culture	65	3.611
Total index score	65	
Adaptability	Total	
27. Customer-based	59	3.277
Total index score	59	
Mission	Total	
28. Goals and purposes	69	3.833
Total index score	69	
Average variable score		3.625

is a sample analysis done in SPSS. The data in the Table10 made use of the index scores under the human resource variable.

The total variable score for the index was then obtained by obtaining the mean of the above index means. Table 11 and 12 represent the one-sample test used in obtaining the total variable score. Table (13-23) represent the summaries of the results obtained from SPSS with respect to each variable. Table 24 and 25 indicate the average variable score of each success variable.

RESEARCH INDEPENDENT VARIABLES CONCLUSION

Though the concept of knowledge management is not novel, the discipline itself is in its formative stages. Consequently, there are many things about it that remain unknown. Literature is the pilot of the practice in knowledge management. Nonetheless, governments and organizations are realizing its importance and are rushing to implement it in their businesses. The process models presented by scholars are relatively easy to implement.

There have been many misconceptions about the concept itself thereby misleading some organizations in to

Table 19: Information technology tools

Indexes of using information technology tools		Average score per index
Communication technologies	Total	
29. Access to intranet, extranet and internet	70	3.888
30. Creating organization knowledge portals	64	3.555
Total index score	134	3.722
Cooperative technologies		
31. To use web-based collaboration systems	63	3.5
Total index score		3.5
Saving and recycling technologies	Total	
32. To create knowledge data base and servers	62	3.444
33. To use electronic documents management systems	65	3.611
34. To use computer-based information systems	64	3.555
Total	191	3.537
Average variable score		3.568

Table 20: Modern technologies for loading and unloading goods at port

Indexes of modern technologies for loading and unloading goods at port	Total	Average score per index
35. Constant supervision in making or buying strategic equipments	61	3.388
36. To promote port personnel technical knowledge	63	3.5
Total	124	
Average variable score		3.444

Research dependent variables

Table 21: Organizational productivity (efficiency and effectiveness)

Indexes of organizational productivity	Total	Average score per index
37. To emphasis on human capital: personnel skills, knowledge and talent	72	4.0
38. Personnel congruity, team working and KM	66	3.667
39. Measuring , analyzing, programming and productivity improvement	67	3.722
40. To use personnel information, skills, and abilities in work performance	61	3.388
41. Information flow among organizational departments	60	3.333
42. To promote use of advanced technology by work force	65	3.611
43. To emphasis on applying information, communications, education and software and hardware fields	67	3.722
44. To decrease formality and deregulation in organization	60	3.333
45. More effects of development and research capital in comparison to educational kind of human resource capital	68	3.778
Total index score	586	
Average variable score		3.617

Table 22: Balanced growth of intellectual capitals with modern technologies

Indexes of balanced growth of intellectual capitals with modern technologies	Total	Average score per index
65. To remove contrasts between knowledge base , cultural reception, social structure and applied sciences	61	3.388
66. To apply creative and specified knowledge and methodology observation	67	3.722
67. To look in knowledge management by both technology and social systems	63	3.5
68. To optimize both factors of social subsystem and technology in knowledge management performance	66	3.667
69. To contemplate the meaning knowledge management by observance of interaction between technology and people	62	3.444
70. To improve and to update personnel by a new set of technologies, tools, methods and processes	59	3.277
71. To reform and redefine present interaction between technologies and people	64	3.555
72. To increase cooperation among organizational groups by decreasing limitations caused by individual or physical factors	62	3.444
73. To emphasis on changing traditional methods and improvement of structures and technologies	59	3.277
74. Gradual synchronizing of knowledge management principals	64	3.555
Total index score	627	
Average variable score		3.483

taking drastic steps like firing their employees. Fortunately, many studies into this concept have unveiled most of underlying misconceptions about knowledge management. The process has its challenges and even raises certain ethical issues. In order to reap the benefits of knowledge management considerations to lack of awareness and the need for a generic knowledge management framework to be developed must be taken into account.

This research has delivered a deep analysis into the overall concept of knowledge management. It has analyzed the importance, benefits, challenges and

Table 23: Organizational learning

Indexes of organizational learning		Average score per index
Acquisition, transfer and applying information and knowledge indexes	Total	
46. To present performance strategy and regular evaluation in form of learning processes	59	3.277
47. To encourage personnel to share their learning and remove organization problems altogether	64	3.555
48. Self-education opportunity for everyone	61	3.388
49. Acquisition practical skills (to create implicit knowledge)	64	3.555
Total index score	248	3.444
Team work and learning	Total	
50. Amount of attention and stress on team learning in organization	61	3.388
51. Open and constant discourse between individuals and groups in organization	61	3.388
52. To encourage individuals and teams to evaluate actions that have led to success or failure	60	3.333
Total index score	182	3.370
To create learning culture	Total	
53. To find out the importance of learning from all organization personnel	59	3.277
54. To encourage new personnel to ask questions about working procedure	59	3.277
55. Personnel participation in important decision makings by organization leaders	62	3.444
56. To encourage personnel to do activities that supply their mental development and learning needs	63	3.5
Total index score	243	3.375
Learning facilitator environment	Total	
57. Full support of performed personnel learning in working environment	61	3.388
58. Organizational permission to personnel to learn from their mistakes	64	3.555
59. Personnel access to information about learning opportunities and options	66	3.667
60. To hold training courses to supply personnel learning needs	63	3.5
Total index score	254	3.528
Applying technology	Total	
61. Availability of computerized systems to collect and save organization information and knowledge	66	3.667
62. Use of computer-based data systems for learning	63	3.5
63. Personnel access to local nets, internet and intranet(to access to data highway)	65	3.611
64. Creating extensive data bank to entry related information to knowledge and experience abilities	59	3.277
Total index score	253	
Average variable score		3.514

Table 24: Order of importance of independent variables

Variable	Average variable score	Rounded mean
Human resource management	3.796	3.8 (1)
Personnel material and spiritual welfare	3.588	3.6 (5)
Knowledge association and sharing	3.787	3.8 (2)
Organization policies and strategies	3.741	3.7 (3)
Senior manager support	3.555	3.6 (7)
Organizational culture	3.625	3.6 (4)
Information technology tools	3.568	3.6 (6)
Modern technologies for loading and unloading goods at port	3.444	3.4 (8)

Table 25: Order of importance of dependent variables

Variable	Average variable score	Rounded mean
Organizational productivity (efficiency and effectiveness)	3.617	3.6 (1)
Organizational learning	3.514	3.5 (2)
Balanced growth of intellectual capitals with modern technologies	3.483	3.5 (3)

misconceptions about knowledge management. A study conducted for purposes of identifying the most important factors toward the success of knowledge management has yielded amazing results. In the overall, this study confirms some of the prevailing literature, it refutes some and also extends. It has unveiled areas for need further study. It has achieved in conducting an in depth study of the concept of knowledge management. It is considered that this research will be of interests to students, researchers, academics and practitioners especially those in port business which has been found to have barely internalized the concept.

REFERENCES

Allerton, H.E., 1998. News you can use. Train. Dev., 52(2): 9-10.

Antezana, E., M. Kuiper and V. Mironov, 2009. Biological knowledge management: The emerging role of the semantic web technologies. Briefings Bioinformat., 10(0): 392-407.

Bhatt, G., 2001. Knowledge management in organizations: Examining the interactions between technologies, techniques and people. J. Knowl. Manage., 26(1): 68-75.

Birkinshaw, J., R. Nobel and J. Ridderstråle, 2002. Knowledge as a Contingency Variable: Do the characteristics of knowledge predict organization structure. Organ. Sci., 13(3): 274-289.

Blake, P., 1998. The knowledge management expansion. Inform. Today, 15(1): 12-13.

Broadbent, M., 2002. Information management and educational pluralism. Educ. Inform., 2(3): 209-227.

Cong, X. and K.V. Pandya, 2003. Issues of knowledge management in the public sector. J. Knowl. Manage., 1(2): 25-33.

Degnbol, P., 2006. Indicators as a means of communicating knowledge. ICES, J. Marine Sci., 62(1): 606-611.

DiMattia, S. and N. Oder, 1997. Knowledge management: Hope, hype, or harbinger? Lib. J., 122(15): 33-35.

Forbes, 1997. Knowledge management: The era of shared ideas. Forbes, 160(6): 28.

Galia, F. and D. Legros, 2003. Knowledge Management and Human Resource Practices in an Innovation Perspective: Evidence from France. ERMES, University Press, Paris.

General Authority of Sistan and Balochestan, 2011. Port and Maritime. Retrieved from: http:// Rajaeiport. pmo.ir/home-en.html, (Accessed on: June 04, 2011).

Hibbard, J., 1997. Knowing what we know. Inform. Week, 653(20): 46-64.

Hicks, R.C., R. Dattero and S.D. Galup, 2006. The five-tier knowledge management hierarchy. J. Knowl. Manage., 10(1): 19-31.

Maroos, S. and Forwarding Company, 2005. Iranian Ports: Bandar Rajaei. Retrieved from: http://www.maroos.net/Rajaei.htm, (Accessed on: June 08, 2011).

Martensson, M., 2000. A critical review of knowledge management as a management tool. J. Knowledge Manage., 4(3): 204-216.

Nonaka, I. and H. Takeuchi, 1995. The Knowledge-Creating Company. Oxford University Press, Oxford.

Piggott, S.E.A., 1997. Internet commerce and knowledge management: The next megatrends. Bus. Inform. Rev., 14(4): 169-172.

Ports and Maritime Organization, 2011. About PMO: History. Retrieved from: http://www.pmo.ir/home-en.html, (Accessed on: June 07, 2011).

Ramalingam, B., 2006. Tools for Knowledge and Learning: A Guide for Development and Humanitarian Organizations. Research and Policy in Development Programme, 111 Westminster Bridge Road, London, pp: 15-26.

Wijnhoven, F., 2003. Operational knowledge management: Identification of knowledge objects, Operation methods and goals and means for the support function: Knowledge management and intellectual capital. J. Oper. Res. Soc., 54(2): 194-203.