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IDENTIFICATION AND PRIORITIZATION OF KNOWLEDGE NEEDS FOR DEVELOPING A KNOWLEDGE-ORIENTED DATABASE IN CAPITAL FINANCING COMPANIES

Dr.A.Bazaei[1]

Department of Industrial Management, Central Tehran Branch, Islamic of Azad University, Tehran, Iran

Sh.Malekkhuyan[2]

[1] Department of Bussiness Management, Central Tehran Branch, Islamic of Azad University, Tehran, Iran

Abstract

The present study seeks to identify and prioritize knowledge needs and requirements for designing a knowledge - based database in capital financing companies. This study is a descriptive and survey study. Statistical research population includes managers, experts and employees in capital financing companies, that a number of 250 individuals were selected by using census and simple random sampling methods. Research instruments is a standard questionnaires. Data analysis were conducted by using SPSS software. Studying research results indicated that 9 factors of technical, knowledge and human infrastructures capacity, organizational structures and processes capacity, services of capital financing companies, technology, knowledge management capacity, marketing, Security and political stability, cultural capacity and change management capacity are considered as knowledge requirements and needs in capital financing companies and should be included in knowledge databases of these companies.

Key words: *knowledge needs and requirements, database, knowledge-based database*

Introduction

From the middle of 1990s, a large volume of studies were directed toward knowledge management concept and from then, everyday organizations have been more oriented to this direction. Currently, largest companies in the world, have obtained their main advantage not in accumulated assets resulting from factories and even the big market, but in the knowledge embedded in their processes. These problems become evident when we get to know that in today's world, in some categories of base knowledge, every 5.5 years, the new emerged knowledge is two times the old knowledge. Davenport & Prusak define knowledge management as a process for creating knowledge flow among an organization's individuals as a tool for achieving innovation in process, products and services, effective decision making and adapting an organization with dynamic and competitive environment. The main aim of knowledge management is combining knowledge in an organization for obtaining and maintaining competitive advantage (Petersen and Polfit, 2002: 45).

With entering the age of wisdom, knowledge has been introduced as the most important capital of an organization and the success of organizations has become dependent on their ability

to create, obtain, use and transfer knowledge. Hence, organizations in order to be able to make use of the opportunities in current dynamic environment and in order to obtain competitive advantages should manage their knowledge resources effectively. Knowledge management pays a potential moderating role in related organizational factors together with organizational effectiveness. It is imagined that knowledge management has the potential to expand competitive advantage, customer focus, relations and progress of employees, innovation and low costs. Knowledge management not only is precedent to organizational effectiveness, buy also is a moderating factor between organizational factors and effectiveness as well. Knowledge resources are one of the outputs of culture, structure and strategy, because knowledge is created and applied based on a number of cultural norms and values, structural relations and strategic priorities (Nonaka et al., 2000: 6).

Results of so many studies and existing statistics and figures indicate that those countries that surpassed others in creating knowledge have a higher rank in terms of competitive growth and development and economic power comparing to others. Also, those countries that don't have a proper economic condition, suffer from weakness in their knowledge foundations and infrastructures. Also, according to other existing statistics and figures, among 16 countries of United States of America, England, Japan, Germany, China, France, Canada, South Korea, India, Turkey, Iran, Egypt, Saudi Arabia, Pakistan, Kuwait and Iraq, Iran in 2004 has been placed in 11th rank in terms of knowledge creation and knowledge creation percentage in Iran comparing to the rest of the world is 0.19. The mentioned statistics, indicate that comparing to developed countries and other developing countries, Iran has a longer road for optimal knowledge management and in case Iran intends to compete with other countries in international arena, it has no option but to establish systematic methods of knowledge managements and to remove the distance between exiting knowledge and the required and needed knowledge (Rahman Seresht and Simar As, 2008).

One of the theoretical elements of knowledge is that knowledge is acquired through a process of selection and Refinement and this is this process which determines which part of information should be kept. This decision regarding accepting or rejecting a certain information depends on the fact that to what extent the mentioned information is related to the field under question and this relevance means that to what extent this information is related to the interest of the receiver of these information or to the problem the organization seeks to solve it (in fact the same existing knowledge gap). This relevance is something which is ignored in our organizations which means that they don't store and keep information based on their knowledge gaps and their knowledge needs (Pyo, 2005).

The organization receiving the information, should decide that which part of information should be added to Knowledge repository which is known as " knowledge base or storage". If knowledge, that is, consistent information used for decision making, is kept and stored in a knowledge base, it can reduce so many costs and expenses. It is because, having loads of irrelevant information and data makes us to spend a lot of time for searching and creates extra financial costs for their storage and ..., however, with filtering and identifying the required and needed information and knowledge, these costs and expenses can be avoided (Godbout et al., 1999). Capital financing companies are financial institutions which aid companies and governments in the process of capital financing by underwriting their securities and act as their

representative in issuing securities. Also, capital financing companies play the role of a consultant in the process of mergers and acquisitions of companies. This companies provide a variety of services regarding market making and trading. Capital financing companies in a way act as a professional and skilled consulted in financing for companies and collecting and exchanging the necessary information for their customers and on the other hand, are considered as important specialized and consultancy centers in activities such as development and attraction of participation, issuance and sale of shares, acquisition and other related activities (Cender and Cornet, 2010).

Hence, the main question raised in this study is that what are the effective factors for developing an appropriate knowledge-oriented database in capital financing companies?

Research method

This study is an applied study in terms of aim and goal. The application of this study specifically is for managers of capital financing companies in north part of Tehran for providing them with information about identification and prioritizing knowledge needs for developing a knowledge-oriented database and its general application is for managers in other investment and knowledge-based companies. In terms of data collection method, this study is a descriptive - correlation study. Research population of this study includes all managers, experts and employees of capital financing companies which are a number of 250 individuals. Research sample is a sub-group of research population that with studying them the research can generalized the obtained results to the whole research population (Cesarean, 2009: 295). Considering the fact that the research population is limited, researcher has studies all the research population and census method was used for this peruse. Therefore, a number of 250 individuals were selected by using simple random sampling method as research sample. Data collection instruments used in this study is an author made questionnaire and collected data were analyzed by using SPSS software.

Findings

Most of the individuals in research sample are in the range of 30 to 40 years old. Men have the highest number in research sample. Participants have a service tenure of 10 to 20 years. In terms of educational level , most of the participants have an undergraduate degree.

1st research question: what are the components of a content of a data based on the basis of knowledge needs for capital financing companies?

For studying and answering this question, factors analysis was used. As table 1 shows, the KMO for questionnaire's data is equal to 0.862 which indicates that data are appropriate for factor analysis.

Table 1: Results of Kaiser-Meyer and Bartlett test

KMO of Bartlett test		
KMO of index		0.863
Bartlett test	Approximate value of chi-square	2680.8
	Df	630
	Sig.	.000

On the other hand, for making sure that data are appropriate for factor analysis, based on the fact that correlations matrix which is used for the basis of factor analysis is not zero in research population, Bartlett test should be used. In order for the factor model to be useful and meaningful, it is necessary for variables to be correlated, otherwise, there is no reason for determining factor model (Naghizadeh, 2009: 114).

As it is seen in table 2, sig. Level is smaller than 0.5 . Therefore, data are correlated and are approbation for factor analysis. Extraction of factors and the expressed value of changes by them and factor loading of each of the indices in the remained factors after rotation are as below:

Factor 1: Capacity of technical, knowledge and human infrastructures and their indices

Table 2 - Expresses percentage of changes by factors

									Variance changes description	
		Eigen values			Matrix of extracted components			Matrix of rotated components		
Factor	Total	Changes %	Accumulated changes%	Total	Changes %	Accumulated changes%	Total	Changes %	Accumulated changes%
1	8.923	24.878	24.878	8.923	24.878	24.878	3.088	8.578	8.578
2	2.175	6.041	30.829	2.175	6.041	30.829	3.025	8.402	16.98
3	1.841	5.113	35.942	1.841	5.113	35.942	2.805	7.792	24.772
4	1.589	4.415	40.365	1.589	4.415	40.356	2.506	6.691	31.377
5	1.451	4.032	44.388	1.451	4.032	44.388	2.198	6.106	37.839
6	1.353	3.759	48.147	1.353	3.759	48.147	2.059	5.72	43.559
7	1.305	3.625	51.772	1.305	3.625	51.772	2.055	5.709	49.267
8	1.224	3.401	55.147	1.224	3.401	55.147	1.823	5.063	54.33
9	1.167	3.234	58.416	1.167	3.243	58.416	1.471	4.087	58.416

Table 3 presents results of Confirmatory Factor Analysis of the indicators related to "capacity of technical, knowledge and human infrastructures" together with correlation intensity of indices with the corresponding factor. As it is seen, indices in rows 1 - 5 due to having a higher factor loading in capacity of technical, knowledge and human infrastructures were transferred to this factor.

Table 3: Indicators of capacity of technical, knowledge and human infrastructure factor and their factor loadings

Item	Indices of capacity of technical, knowledge and human infrastructures	Factor loading
1	There are sufficient hardware such as server, optical fiber, PCs and ... for strategic needs	0.505
2	Employees have know how to work with internet, intranet, management	0.543

	software and ...	
3	Integrated information systems such as ERP, MRP and MIS and so on are implemented in the organization.	0.737
4	Employees make use of internal network, information systems and PCs for increasing their productivity and interactions	0.374
5	Security procedures have been established in organization	0.660

Factor 2: Capacity of organizational structures and factors and their corresponding indices

Table 4 presents the results of confirmatory factor analysis of the indices related to the factor of "capacity of organizational structures and processes" together with the correlation intensity of indices with the corresponding factors. As it is seen, none of the indices were eliminated and no indices from other factors were transferred to this factor.

Table 4: Indices of the factor of the capacity of organizational structures and processes and their corresponding factor loading

Item	Indices of organizational processes and structures capacity	Factor loading
1	There are official proper channels for quality informing of employees and employees are satisfactory.	0.49
2	There are training according to organization's missions and there are systems for evaluating their effectiveness.	0.799
3	In strategic planning of the organization for knowledge as a strategic source, analysis and planning are performed.	0.561
4	In organization, achievement of goals are measured by measurable indicators .	0.564
5	A part of employees' salary and bonus is calculated and paid as per their knowledge and technical performance.	0.618

Factor 3: Capacity of organizational structures and processes and its corresponding indices

Results of confirmatory factor analysis of indices related to factor of "services of capital financing companies" together with correlation intensity of indices with corresponding factors are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors were transformed to this factor.

Table 5: Indices of capital financing companies' services factor and their factor loading

Item	Indices of services in capital financing companies	Factor loading
1	How is the cost of using services in your region?	0.612
2	What is the extent of special and unique services in your region ?	0.427
3	To what extent provision of various capital services is paid attention to in your region?	0.701
4	To what extent innovation in service provision exists in your region?	0.604

Factor 4: Technology and its corresponding indices

Results of confirmatory factor analysis related to the factor of "technology" together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 6: Indices of technology factor and their corresponding factor loading

Item	Indices of technology	Factor loading
1	To what extent technological tools are used in your area for creating security in servicing?	0.577
2	To what extent advanced communicational tools such as email, fax, video conference and ...are used in work?	0.709
3	To what extent fast computational tools (for registration of information and financial calculations and ...) are used?	0.672
4	To what extent for providing information and promotion, innovative tools like creating website or promotion through website are used?	0.472

Factor 5: Capacity of knowledge management and its indices

Results of confirmatory factor analysis related to the factor of "knowledge management capacity" together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 7: Indices of knowledge management capacity factor and their corresponding factor loading

Item	Indices of knowledge management capacity	Factor loading
1	Employees are aware of the advantage of knowledge and its management as a competitive advantage in the age of information	0.620
2	There are individuals interested in voluntary practice of knowledge management in organization.	0.408
3	There are infrastructures and processes for storing, dissemination, searching, easy access to information and knowledge resulting from skill and expertise.	0.601

Factor 6: Marketing and its corresponding indices

Results of confirmatory factor analysis related to the factor of "marketing " together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 8: Indices of marketing factor and their corresponding factor loading

Item	Marketing indices	Factor loading
1	What is the level of your awareness of customers needs and preferences?	0.709

2	How much you have information about your customers?	0.637
3	To what extent you perform their promotions through national media?	0.679
4	To what extent your promotions are effective on your customers purchase?	0.672

Factor 7: Security and political stability and its indices

Results of confirmatory factor analysis related to the factor of "security and political stability " together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 9 : Indices of security and political stability factor and their factor loading

Item	Security and political stability indices	Factor loading
1	To what extent the existence of stable policies by government are effective on region's economic security?	0.500
2	To what extent using international economic partners can increase your customers' trust?	0.477
3	To what extent you make use of security systems for attracting customers' trust ?	0.603

Factor 8: Cultural capacity and indices related to it

Results of confirmatory factor analysis related to the factor of "cultural capacity " together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 10: Indices of cultural capacity factor and thier factor loading

Item	Indices of cultural capacity	Factor loading
1	Failure is not condemned and searching and discovering knowledge for solving organizational problems are valued.	0.637
2	Individuals are inclined to work together and with higher value added.	0.441
3	It is believed in the organization that through increasing knowledge, more individual and organizational opportunities are created and activities are distributed among individuals according to their merits.	0.409
4	Organization greatly values its knowledge employees and focuses on their job satisfaction	0.617

Factor 9: Capacity of change management and its corresponding indices

Results of confirmatory factor analysis related to the factor of "capacity of change management " together with correlation intensity of indices with the corresponding factor are presented in the below table. As it is seen, none of the indices were eliminated and no index from other factors also was transferred to this factor.

Table 11: indices of change management capacity factor with their factor loading

Item	Indices of change management capacity	Factor loading
1	Top managers encourage all employees and believe in knowledge management fully.	0.701
2	Employees are participated in change process and controlling a part of these processes are delegated to them.	0.591
3	Organization has the required capacity for on time information of employees who are engaged in knowledge management programs and make use of gradual change strategy. .	0.604
4	There is an organizational architecture which is more social, clear, free, flexible and respectful toward employees.	0.814

2nd research question: what is the ranking of the needed knowledge in capital financing companies in Tehran?

For comparing and raining regions based on the factors, Kruskal-Wallis test was used. Table 12 presents average ratings for each group (companies under study).

Table 12: Average ratings for each of the factors in each region

Factor	Region	Average rating
1	Amin	129.66
	Novin	99.29
	Bank Mellat	113.67
	Omid	98.06
	Sepehr	107.62
	Parsian Lotus	108.83
	Arman	125.75
	Kardan	114.52
2	Amin	106.53
	Novin	85.83
	Bank Mellat	128.3
	Omid	98.96
	Sepehr	130.21
	Parsian Lotus	134.64
	Arman	117.62
	Kardan	117.42
3	Amin	120.47
	Novin	99.95
	Bank Mellat	116.39
	Omid	103.94
	Sepehr	106.81
	Parsian Lotus	119.02
	Arman	112.27
	Kardan	123.5

4	Amin	112.75
	Novin	117.46
	Bank Mellat	102.89
	Omid	100.5
	Sepehr	123.17
	Parsian Lotus	120.36
	Arman	107.98
	Kardan	107.44
5	Amin	115.6
	Novin	104.71
	Bank Mellat	95.65
	Omid	121.98
	Sepehr	116.42
	Parsian Lotus	114.48
	Arman	105.08
	Kardan	124.42
6	Amin	114.96
	Novin	112.5
	Bank Mellat	108.54
	Omid	108.6
	Sepehr	128.67
	Parsian Lotus	121.67
	Arman	103.29
	Kardan	97.88
7	Amin	134.34
	Novin	108.63
	Bank Mellat	102.59
	Omid	105.94
	Sepehr	123.02
	Parsian Lotus	96.31
	Arman	113.15
	Kardan	102.88
8	Amin	115.59
	Novin	117.19
	Bank Mellat	84.59
	Omid	105.08
	Sepehr	128.98
	Parsian Lotus	127.38
	Arman	109.1
	Kardan	103.33

9			
	Amin		12.41
	Novin		105.52
	Bank Mellat		91.87
	Omid		105.96
	Sepehr		113.21
	Parsian Lotus		102.45
	Arman		131.17
	Kardan		117.58

3rd research question: how does the knowledge needs ranking differs in capital financing companies?

For ranking the factors in each region, Friedman's test is used. In this study, Friedman's test value is equal to 54.707, 72.185, 53.39, 35.019, 50.458, 40.56, 53.768 and 42.118 for Amin Co., Novin Co., Bank Mellat, Omid Co., Sepehr Co., Parsian Lotus Co., Arman Co., and Kardan Co. Respectively. Also, sig. Level for all the companies is equal to zero and therefore, the assumption of equal level of importance for all 9 factors is rejected and the assumption of difference of at least two priority is accepted.

Table 13: Friedman's test for studying the 2nd question

	Amin	Novin	Bank Mellat	Omid	Sepehr	Parsian Lotus	Arman	Kardan
Capacity of technical, knowledge and human infrastructures	6.65	6.14	6.85	6.1	5.37	5.79	7.12	6.83
Capacity of organizational structures and processes	5.38	5.05	6.85	5.88	6.42	6.76	6.19	6.08
Services of capital financing companies	3.94	3.55	4.63	3.22	3.19	3.83	3.63	4.28
Technology	6.31	7.37	6.35	6.72	6.83	7.05	6.6	6.71
Capacity of knowledge mgt	3.5	3.75	3.22	4.64	3.87	3.83	3.71	4.4
Marketing	4.88	5.17	5.11	4.86	5.48	5.05	4.13	3.92
Security and political stability	6.34	5.63	5.15	5.34	5.92	4.69	5.52	4.73
Cultural capacity	3.99	4.52	3.5	4.36	4.37	4.83	3.69	3.63
Change management capacity	4.01	3.82	3.35	3.88	3.56	3.17	4.4	4.31

Cindering the performance ranking with Friedman's test, it is seen that results indicate that in Amin Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 6.65, in Novin Co., factors of capacity of technical, knowledge and human infrastructures and organizational processes with average rating of 6.85, in Omid Co., technology factor with an average rating of 6.72, in Sepehr Co., Technology factor with an average rating of 6.83, in Sepehr Lotus Co., technology factor with an average rating of 7.05, in Arman Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 7.12 and in Kardan Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 6.83 have the highest priority.

Discussion and conclusion

Results obtained from Exploratory factor analysis identifies 9 factors of capacity of technical, knowledge and human infrastructures, capacity of organizational process and structure, services of capital financing companies, technology, capacity of knowledge managing, security and political stability, cultural capacity and change management capacity as knowledge needs of capital financing companies are introduced as factors that should be placed in knowledge bases of companies. It means that for a company to be successful, having knowledge in the introduced factors is necessary and since, determination and identification of knowledge needs lead to correct investments in future and hence, contributes to obtaining higher share of capital market, creating a new image and attracting more skilled employees. Therefore, in fact, with identification of knowledge needs of capital financing, investment options are also determined and investment in these options is necessary for success and obtaining competitive advantage. Findings are consistent with the findings of Kaiser & Helber, Fermika & Ching (2009) indicating to the effectiveness of infrastructure factor, Piyo (2005) indicating to the effectiveness of information and management factors, Jafari and Piyo (2005) indicating to effectiveness of services factors, Khadrou and Sytana (2008) and Piyo (2005) indicating to the effectiveness of technology factor, Bohalis and La (2008) and Sigla and Saclaridis (2004) indicating to the effectiveness of technology factor, Ching (2009), Jensen - Verbecke (1986) regarding the effectiveness of cultural factor, Ching (2009) indicating to effectiveness of marketing, security and political stability factors, Ching (2009) and De Falen & Key Kerioken (2003) indicating to the effectiveness of Joint cooperation on economic development and considering them as important group of capital financing companies' needs.

Ranking knowledge needs of capital financing companies

For answering the 2nd research question, with performing Friedman's test, priorities of knowledge needs of companies were specified. In this way that, each factor that has a lower average rating comparing to other factors, was considered to have a higher priority. Results obtained from Friedman's test, indicated a different priority for knowledge needs of companies. This result, confirms the results obtained from Piyo (2005) , indicating to Different priority of knowledge needs and following that knowledge maps for capital financing companies. Results indicated that in Amin Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 6.65, in Novin Co., factors of capacity of technical, knowledge and human infrastructures and organizational processes with average rating of 6.85, in Omid Co., technology factor with an average rating of 6.72, in Sepehr Co., Technology factor with an

average rating of 6.83, in Sepehr Lotus Co., technology factor with an average rating of 7.05, in Arman Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 7.12 and in Kardan Co., factor of capacity of technical, knowledge and human infrastructures with an average rating of 6.83 have the highest priority.

Prioritizing companies based on their knowledge needs

By studying and comparing the obtained average ratings from Kruskal-Wallis test, it is concluded that from the point of view of participants, with regards to the factor of capacity of technical, knowledge and human infrastructures the highest weakness is seen is Omid Co. And the highest status is seen is Amin Co. In factor of the capacity of organizational processes and structures, highest weakness is seen in Novin Co. And the best status is seen in Parsian Lotus Co. In the factor of services of capital financing companies, highest weakness is seen in Novin Co. And the best status is seen in Kardan Co. In the factor of Technology, the highest weakness is seen in Omid Co. And the best status is of Sepehr Co. In factor of knowledge management capacity, highest weakness is seen in Bank Mellat and Kardan Co. Has the highest status. In the factor of marketing, the weakest status is for Kardan Co. And the best status is for Sepehr Co. In security and political stability, weakest status is seen in Parsian Lotus Co. And highest status is seen in Amin Co. In the factor of cultural capacity, weakest status is seen in Bank Mellat and best status is seen in Sepehr Co. In the factor of knowledge management capacity, weakest status is seen in Bank Mellat and highest status is seen in Arman Co.

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