

Designing of industrial organizations preparation appraisal questionnaire for applying knowledge management and it's justifiability signification : case study of marine industries.¹Mohsen Gorjinezhad, ²Ali Reza Anvari, ³Adel Soleimani Nezhad¹Department of industries, Science and Research branch, Islamic Azad University, kerman, Iran.²Department of industries, Gachsaran branch, Islamic Azad University, Gachsaran, Iran.³Shahid bahonar university of Kerman , Department of Information Science, kerman, Iran.

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ABSTRACT

Preparation appraisal of knowledge management's establishment is the first step that all organizations must apply it in this way if the appropriate substruction and necessary prerequisite are not available for using of this process, we would face with the loss of human resources, time and financial resources. Designing of a powerful and complete implement for evaluating knowledge management's preparation can help to the researchers and executive experts. by notice to the prior study, we checked the knowledge management criteria in 5: capacity of organizations culture, organizational frame, changing management, knowledge management and technological. we used content justifiability and used Alfa modulus Kronbakh for internal compatibility checking.

Key words: Knowledge management, preparation appraisal, questionnaire , content justifiability.

Introduction

Today, the knowledge existed in organizations is considered as one of the most important properties of them and it can define itself as one of the most effective and challengeable management subjects. Knowledge management is a new method for thinking about organization and sharing mental and creative sources of organization; so that it points out some attempts which are done systematically for finding, organizing and making mental assets be available and also improving continuous learning culture and sharing knowledge in the organization [8].

The key factors of knowledge management success can be defined as factors that if they are considered appropriately, they can cause the organization to be sure about reaching a competitive privilege and to be successful in performing an approach [15].

There is no any comprehensive and systematic questionnaire in order to investigate the conditions of knowledge management; especially in industrial organizations. This research, through designing a systematic and comprehensive questionnaire, has categorized the investigated criteria in the previous

Studies in five parts and; then some definitions have been given for each one of the criteria.

2- Theoretical principles and background of study:

Knowledge management is not considered as a new concept in the growth history of human; while the word of "knowledge management has become more common in recent years [14]. Knowledge management was seriously entered to the organizational debates in the beginning of 1990 decade; however, the arguments about knowledge had been began very sooner [1]. Before we enter the debate of Knowledge management, it is necessary to express data, information, knowledge and hierarchy of knowledge which shows passing from data to information and then to the knowledge.

Data is a reality from a situation and or it is one case from a special field; without having any relation with other things [17].

The second level of knowledge management is information. Information is a set of data which makes meaning in the memory which receives them [20].

From the view point of davenport and Prosuck, knowledge is defined as categorized and related

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information which have found operational and functional application in the organization.

Sunge believes that Knowledge management is a process by which organizations use their collected information. Knowledge management undertakes facilitation in creating a new knowledge and management of sharing and using methods of knowledge in addition to information management [7].

2-Principles of knowledge management substructure:

Knowledge substructure is a function by which the organization manages knowledge and the persons, in different sections, share their knowledge through this substructure; so that the members can apply that knowledge so effectively. Performing knowledge management effectively needs to pay attention to the substructures or key factors which play as a catalyzer role and cause it to be facilitated and powerful[18]. Measurement is the prerequisite of improving function so the existence of a suitable structure for measuring the situation of organization

is necessary from the viewpoint of substructures and conditions of knowledge management establishment [16].

Wen Wu, Davenport and Probest [6], Chong and Choi [3] have mentioned some factors in their researches for knowledge management success. Tabarsa and Ourmozdi [21] have investigated the substructures of knowledge management in three fields information technology system, knowledge processes and organizational culture in their essay under the title "clarification and measurement of basic factors for knowledge management establishment".

3- Developing hypotheses and conceptual principles:

The evaluation criteria of organization were defined in order to perform knowledge management in five ports such as persons capacity and culture of organization, technology capacity, alteration manage capacity, knowledge management capacity and the structural capacity of organization[11].

Table 1: The investigated criteria of knowledge management in the performed researches.

row	criteria	Chong and Choi (2005)	Davenport and Probest (2005)	Wen Wu (2012)	Tabarsa and Ourmozdi (1387)	criteria used in this research
1	Learning culture	*		*	*	*
2	team work	*		*	*	*
3	competent- centered culture	*		*	*	*
4	Employers, understanding about the rate of organization, support			*	*	*
5	Communicative canals within the organization			*		*
6	Training	*	*	*		*
7	Schematization system and strategic management		*	*		*
8	the measurement and evaluation system of function	*		*		*
9	reward and proportion based on function			*	*	*
10	the level of comprehensive management systems	*	*		*	*
11	the level of operational systems				*	*
12	budget			*		*
13	supporting and management commitment	*	*	*	*	*
14	employers Participation	*			*	*
15	the quality of news transmission and change transfer	*			*	*
16	employers, acquaintance and awareness about knowledge management		*	*		*
17	the existence of pioneer persons					*
18	Effective usage of technological substructures			*	*	*
19	informational literacy of employers			*		*
20	special informational systems o operational unit	*	*		*	*
21	the existence of necessary technological substructures			*	*	*

4) Methodology:

In this study, since the purpose was to design a specialized questionnaire for an organization, the content justifiability was used. In the subject of content justifiability, the purpose is to recognize that a test can define a content to what extent; which has been contrived for it's measurement [13].

The determination pattern of content justifiably:

Holsti [10] describes the content justifiability as a technique which is used with the purpose of making perceptions and it takes steps systematically through a purpose of recognizing special features of a message. Gooba and Lincoln [9] expressed the

concept of dependability as a criterion for helping or a substitution for justifiability and constancy.

Lavashi [12] invented a model for determining the content justifiability; in the way that the questionnaire is given to the experts in order to guide the members of their group; so that it can provide the possibility of accurate judgment of members on the basis of the questionnaire components' necessity and they are requested to give their view points about each term, which has been determined in a judgment scale, in the following three choices:

1-Necessary (I agree) 2- useful but not necessary (I don't have any opinion) 3- unnecessary (I disagree).

The selection method of experts group's members:

This study has used a combination of active experts who worked both in the university and related industry in order to reach ideal results. The features of experts' group have been brought in the following table.

Table 2: The features of experts' group.

academic field	management	industrial engineering	mechanical engineering
Number	4	4	3

Afterwards, the mathematical and statistical calculations obtained from fulfilled questionnaires were done by the persons of experts' group via using excel Microsoft software.

Quantifying the members' votes of experts' group:

The members' opinions of experts' group are quantified about each one of the terms which has been belonged to ((I agree) via the content justifiability ratio which is shown whit "CVR" abbreviation from now on (Lavoshi 1975), which its formula is as the following:

$$CVR = \frac{n_e - \frac{n}{2}}{\frac{n}{2}}$$

n_e : number of panel's members who have recognized that term necessary ((I agree)).

n : the whole number of experts' group's members.

While interpreting CVR, the following rules are dominant [12]:

1) If all the members of the experts' group don't agree with the necessity of one term, that term should be deleted from the questionnaire, and if all the members of experts' group agree with the necessity, f one term, the existence of that term is necessary in the questionnaire.

3- about doubtful cases, when a half of experts' group's members agree. About bringing each one of the terms, that term has the content justifiability. In this research, the higher number of persons who have recognized the term necessary, the content justifiability rate will be more.

Table 3: The minimum amount of CVR regarding the number of members in experts' group.

the number of members in the experts' group	5	6	7	8	9	10	11	12	13	14	15
the minimum amount of acceptable CVR	0.99	0.99	0.99	0.78	0.75	0.62	0.59	0.56	0.54	0.51	0.49

Determining the average of judgments' amount of experts' group's members: the numerical average of judgment shows that the average of experts' opinions and judgments is closer to which on of the choices "I agree", "I don't have any opinion" and "I disagree". According to the Lavoshie's suggestion, we should do the following changes and calculation on the justifiability measurement questionnaire in order to calculate the average of judgments belonged to each term: we place 2 = instead of choice "I agree", 1= instead of choice "I don't have any opinion", = zero instead of "I disagree". Now, we do the above changes and we calculate the sum total of opinions related to each one of the terms and we divide it on the members' number of experts' group in order to determine the judgments' amounts' average.

The acceptance or refutation method of terms: Regarding this matter that the members' number of experts' group is 11 persons in this study, the minimum of CVR which is acceptable for as is 0.59

(on the basis of table 3). Now, regarding the following principles, the terms which don't obtain the minimum of mentioned amounts will be deleted from out questionnaire:

- Unconditional acceptance of the term; when its CVR amount is equal or more than 0.59.

- Acceptance of the term when CVR is between zero and 0.59 and the numerical average of judgments in the experts' group becomes equal or more than 1.5.

-refutation of the term; when CVR is between zero and 0.59 and the numerical judgments of the experts' group is lower than 1.5.

- Refutation of the term; when CVR is lower than zero.

5) *The analysis of data:*

The results of acceptance or refutation of each term have been brought for the questionnaire in tables 4 and 5.

Table 4: General questionnaire.

Row	District	District	Term	CV R	Numerical average of judgments	Acceptance or refutation
1	cultural capacity of the organization	learning culture	the persons are encouraged because of the successes which they obtain in order to be promoted to be more active.	0.81	1.909	Acceptance
2			the persons are not punished because of their failures; so their failures are recognized as a chance for learning.	0.81	1.909	Acceptance
3			the persons don't consider "not knowing" as a fault; but it's continuity is considered as a fault.	0.63	1.818	Acceptance
4			The managers of the organization consider the time allocated to study, discovering, searching and solving problems as a useful action not to waste time.	0.99	2.000	Acceptance
5		team work	The persons tend to do their work in cooperating with others and with a more additional value.	0.99	2.000	Acceptance
6			Important decision- makings are done through consulting and on the basis of the collaborative wisdom.	0.99	2.000	Acceptance
7		the competent-culture	The activities are distributed on the basis of competences and abilities.	0.81	1.909	Acceptance
8			the persons respect each others' positions; because each one of them considers the other one as a competent person in the position which he has been located.	0.81	1.909	Acceptance
9			in the organization, there is this belief that much more opportunities (individual and organizational) are provided through increasing knowledge and abilities.	0.99	2.000	Acceptance
10		Employers; understanding about the rate of organizations' support from them.	the organization considers high significance for its employers.	0.99	2.000	Acceptance
11			The organization attempts to have the best usage of the employers' abilities in their occupational position.	0.81	1.909	Acceptance
12			the organization boasts to the achievements and outputs of its employers' activities.	0.81	1.909	Acceptance
13			The occupational satisfaction of employers is important for the organization.	0.99	2.000	Acceptance
14	the organizational structure's capacity	the communicative channels within the organization	the suitable communicative channels have been available for information transmission to the employers.	0.99	2.000	Acceptance
15			the organization's employers are satisfied with the news transmission rate from the organizations' side.	0.81	1.909	Acceptance
16			the informed persons from policies and new approaches of the organization inform the employers well in order to cooperate them.	0.63	1.727	Acceptance
17	education	the educations are defined on the basis of organizations missions.	0.63	1.818	Acceptance	
18		there is an effective system for necessity – measurement of education in the organization.	0.99	2.000	Acceptance	
19		the persons benefit from seminars, conferences and educational meetings for sharing knowledge.	0.99	2.000	Acceptance	
20		the educational various tools and methods are used depending on different variables.	0.45	1.545	Acceptance	
21		the effectiveness of educations are measured.	0.81	1.909	Acceptance	
22	the measurement and evaluation system of function	Reaching organizational purposes is analyzed with measurable features.	0.99	2.000	Acceptance	
23		if a defect is observed in the considers purposes, it's reasons can be found.	0.45	1.82	Acceptance	
24	promotion and reward on the basis of function	A part of employers' rights and privileges is calculated on the basis of their function.	0.81	1.909	Acceptance	

25			There is the possibility of vertical promotion on the basis of employers function. The meaning of vertical promotion is the increase of persons' organizational level and group.	0.81	1.909	Acceptance
26			There is the possibility of horizontal promotion on the basis of employers function. The meaning of horizontal promotion is the promotion of persons' authorities' rate in the considered job.	0.81	1.909	Acceptance
27	the alteration management capacity	managements' support and commitment	the superior managers encourage all the employers for making organizational changes and they support knowledge management.	0.99	2.000	Acceptance
28			the superior decision – makers support necessary changes.	0.99	2.000	Acceptance
29			The superior managers have believed to the special knowledge management of the organization completely with a comprehensible literature in its level and they show their commitment to this subject in a completely obvious way.	0.81	1.909	Acceptance
30		The participation of employers	The employers can receive suitable questions and responses about organizational changes.	0.99	2.000	Acceptance
31			The employers are participated in the processes of organizational changes and ; even ; controlling a part of it is given to them.	0.99	2.000	Acceptance
32			The organization has the necessary capacity for its employers' decision. Making about the operational status of some changing processes.	0.81	1.909	Acceptance
33		the quality of news transmission and change transfer	the organization has the necessary capacity for news transmission with a good quality to the employees who are the target of knowledge management programs.	0.81	1.909	Acceptance
34		the capacity of knowledge management	the acquaintance and awareness of employers about knowledge management	the employers are acquainted at least with the privileges of knowledge management and knowledge management is not a strange concept for them.	0.99	2.000
35	the existence of pioneer persons		the existence of pioneer persons who are interested in proceeding changes such as knowledge management in the organization.	0.63	1.818	Acceptance
36	technological capacity	the existence of necessary technological substructures	the organization has suitable substructures regarding its' strategic needs from the viewpoint of the number of personal computer systems or persons' availability to news transmission systems (cafenet and documents' center).	0.81	1.909	Acceptance
37			the organization has suitable hardware substructure of the network to the extent of its strategic needs; such as (server, optical fiber, suitable distribution of nodes for networks' availability).	0.63	1.818	Acceptance
38		informational literacy of employers	the employers , if it is necessary , know primary principles of informational literacy such as working with computer systems, working with internet, working with internal network of the organization and it's facilities.	0.27	1.360	refutation
39	Effective application from technological substructures		the employers use internet adequately for increasing the efficiency and improving their function.	0.45	1.545	Acceptance
40			the employers use special information systems of their job and working unit effectively in the organization.	0.27	1.545	Acceptance
41			the employers use the internal network of the organization for using some of services and cooperation.	0.99	2.000	Acceptance

Table 5: The specialized questionnaire.

row	district	criterion	Term	CVR	Numerical average of judgments	Acceptance or refutation
1	the capacity of organizational structure	the level of comprehensive management systems	the comprehensive management systems; such as ISO , DOA and ETC , ... have been established in order to create additional value for the organization and also they have created positive view among the beneficiaries	0.81	1.909	Acceptance
2		the level of operational systems	some of the operational systems ; lie PMBOK in the project management , documentation pattern , the comprehensive benefiting net and etc , ... have been established in order to create additional value and positive view among gainers in the organization	0.81	1.909	Acceptance
3		budget	the topical budget in the financial resources of the economy for the knowledge management or the possibility of providing financial resources is existed under other titles	0.81	1.909	Acceptance
4			the rate of the real budget which is allocated to the knowledge management can give the adequacy of the minimum predictions	0.63	1.818	Acceptance
5		the strategic management and planning system	in the strategic planning of the organization , the analysis and planning have been a strategic source	0.99	2.000	Acceptance
6			In organizations' planning pointed to strategic component of it (competencies and bottlenecks) clearly.	0.27	1.545	Acceptance
7			the position of knowledge management has been compiled in the set of codified strategies in the organization.	0.81	1.909	Acceptance
8	Technological capacity	special informational systems	the necessary island-like or allied informational systems such as data searching com), management information systems (MIS), Human Resources planning systems (ERP) and etc ... have been established in the organization; so that they create additional value and also they cause a positive view to be made among the beneficiaries	0.63	1.727	Acceptance

Determining the content justifiability index and identifying the final questionnaire : CVI shows the comprehensiveness of judgments related to justifiability or practicability of the questionnaire and it is calculated through the following:

$$CVI = \frac{\sum \frac{1}{n} CVR}{\text{Retained number}}$$

CVI- content justifiability index

After placing CVR of retained terms in the questionnaires of above formula , the content justifiability of the general and specialized final questionnaire was respectively calculated 0.82 and 0.72.

The internal adaptability of the questionnaire (constancy):

Internal adaptability or constancy points to this matter that whether a special measurement unit, which is used repeatedly for a concept, can cause

similar results to be created in each time or not? Chadwick and his colleagues (1985) have defined constancy as the correlation rate between a set of scores and another set of scores in on equivalent test independently on a group of testers. For measuring the questionnaire's internal adaptability rate, the kronbakh alpha index has been used. The range of constancy coefficient is from zero to +1. Kronbakh has predicted the constancy coefficient 0.45 as a low amount, 0.75 as a middle amount and acceptable one, and the coefficient 0.95 as a high amount.

In this step, questionnaires were given to 60 persons of the personnels in order to response them. After fulfilling the questionnaires, the data obtained from them were entered to the software spss 16 and the rate of constancy was calculated 0.94 for general questionnaire and 0.78 for specialized questionnaire which are acceptable rates.

6) Results:

In this study, it has been tried to design a powerful and comprehensive tool in order to evaluate these substructures and also it can help the

researchers and experts in performing this work; especially in industry. This questionnaire investigate the existed substructures under five zone order to perform knowledge management. The content justifiability of the final specialized and general questionnaire was calculated respectively 0.82 and 0.72 and internal adaptability obtained for them were also respectively 0.94 and 0.78 which shows an acceptable range for this questionnaire.

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