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Evaluate the relationship between intellectual capital and the performance of employees of Ports and Maritime Organization

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Abstract
The present research has been done with the aim of determine the relationship between intellectual capital and employee performance of Ports and Maritime Organization. Statistical population of the present study includes head office employees of Tehran Ports and Maritime Organization. The statistical population is 140 people, 103 samples were selected according to Morgan table. In this research, field study and the standard questionnaire of intellectual capital of Bontis (1998) and employee performance of Hersey and Goldsmith (1980) have been used as data collection tools, In order to describe the data, descriptive statistics to analyze the data and Kolmogorov Smirnov test and Pearson's correlation coefficient have been used to evaluate the research hypotheses .Statistical analysis has been done by using SPSS software. According to the results of this research there is a significant relationship between the dimensions of intellectual capital (human capital, structural capital, relational capital) with the performance of Ports and Maritime Organization, and intellectual capital and its dimensions was not assessed at desirable level in the Ports and Maritime Organization with an average rate of 3.224 as well as the performance of employees was not assessed at desirable level in the Ports and Maritime Organization with the Average Rate of 3.468 .

Key words: *intellectual capital, human capital, relational capital, structural capital, employee performance*

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Introduction

The physical and material assets now do not count as capital of organization, but the most important asset of the organization at present era is knowledge and information and human and intellectual capital. The emergence of a new economy based on knowledge and information, has been led to increase in interest of researchers to study in the field of intellectual capital (IC). This area has attracted the attention of many researchers, IC are used as a tool to determine the Company value (Pew Tang et al., 2007). In today's knowledge-based societies, the role and importance of intellectual capital returns used in the company's sustained profitability has been employed over the financial return on capital (Rostami and seraj 2005). In the current knowledge-based economy, intellectual capital is considered as an important part of companies' value. The ability to manage and control of the intellectual capital requires that companies be able to identify, measure and report the intellectual capital (Mir Kovistra et al., 2001).

Intellectual capital is a multidisciplinary concept and understanding and comprehension of that is diverse in disciplines related to business and commerce (Huang and Luther, 2007). There is little agreement on amount of our understanding of intellectual capital. Although the intellectual capital is unknown before but now plays a role in various forms in the economic, managerial, technological and social development process. Obtained revolution in information technology increasing importance of knowledge and knowledge-based economy, changing patterns, creation of network of community as well as the emergence of innovation as the most important determinant factors of competitive advantage are among those that has provided more than before the enhance in intellectual capital in the Companies (AnvariRostami and Rostami, 2003).

Importance and necessity of research

Peter Drucker writes that knowledge will be the successor to instruments, instruments, capital, raw materials and physical labor in commercial activities in the post-capitalist society. In other words, the relative advantage of an economic organization will not be dependent on the volume of physical capital such as land, equipments or production facilities anymore and create the value is achieved through intangible assets that we say them intellectual capital in organizations.

Explore and manage the intellectual capital of a country or an economic organization requires create a system based on variable factors that helps to the detection and identification of intangible assets. Existence philosophy of social organizations and institutions, especially formal organizations is achieving the goals that have been established for this purpose. Organizations are tools to meet the needs of society, thus, according to the perceived expectations of them are in critical situation (Griffin, 1995).

It should be noted that emphasize on human capital leads to a better understanding of the underlying values of persons, tens firms, institutions and communities now and even in the future for better advantage taking of the intellectual capital. What that are a creator of economic value in the future world is not oil and gas and the cases like them but also it is wise scientist and knowledge loving children of each nation. One of the indicators of developed countries is pay attention to the role of human labors. Today, any organization is not able to survive regardless of staffing and its constructive role in the provision of services. Pay attention to labor productivity creates coordinating between organization and human resources in order to adopt common goals and to ensure the achievement of the objectives of the organization and human resources. Organizations so that they can be able to operate in today's competitive and variable environment and they can be effective it is necessary to identify and measure and valuation their level of intellectual capital. Intellectual capital is considered not only

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the most important sector of capital of organization but also it provides a sustainable competitive advantage for organization in today's knowledge-based environment, so managers should not only increase their knowledge in the field of intellectual capital, but also they should develop and expand this field by strengthening its components (human capital, structural capital and relational capital) in organization. The effectiveness and efficiency of the organization had been owed more attention to knowledge and intellectual capital, and the possibility of planning, optimization, control and continuous monitoring on it can be provided in an organization by identification the nature and methods of measurement of this important. Conducting this research depends on heavily intellectual capital and organizational performance and relationships with its employees in the growth of ports organization and achieving its objectives. Therefore, it seems essential to investigate the variables that affect the performance of the ports organization and communication process, in order to be able to identify the obstacles and problems and help to growth and prosperity ports organizations and achieve its goals. Therefore, it is essential that new studies and investigations were conducted in this field in order to we can evaluate and investigate the strengths, weaknesses and shortcomings of considered topic by results and we strengthen or eliminate the percentage of possibility of them in order to make correct decisions based on its result in the future

Theoretical frameworkof theresearch

Bontis (1998), first noted to three types of human, structural and customer capital and he changed in 2000 his classification as human capital, structural capital and relational capital and asset or intellectual property. The mean of human capital is personal knowledge level that an organization's staffs have it that this knowledge is often implicit. The mean of structural capital is all inhuman assets or organizational capabilities that are used to meet the needs of the market and the mean of relational capital is all knowledge that is placed in the enterprise communications with its environment includes customers, suppliers, scientific communities and so on that in his opinion customer capital is the most important component of relational capital. For this reason, the success of an organization depends on its customer capital and the mean of intellectual ownership of that part is of intangible assets that it has been recognized and supported by law such as copyright, patents and royalties. According to Bontis the human capital is important between the intellectual capitals, because it is the source of strategic innovation and reconstruction (modernization) that it is resulted of a brainstorming session or dreaming in the office or leaving the old files by staffs or by improving personal skills, .etc. Bontis believes in the existence of relations between the components of intellectual capital, so that even if an organization has adequate human capital if it has no suitable structural capital, cannot use of knowledge granted at its people and consequently cannot give an appropriate response to their customer investment. Stewart (1997) presented his classification as human capital, structural capital, customer capital. Human capital of employees of an organization is the most important asset of an organization in this classification and the mean of structural capital of given knowledge in information technology and all royalties and commercial designs and brands and the mean of customer capital is related information to the market that it is used to attract and retain customers. This classification is somewhat similar to the initial classification of Bootees. Ross and colleagues (1997) also divide the intellectual capital into human capital includes competence, vision and agility or intellectual brilliance and structural capital includes all organizational structures and processes, and intellectual property and cultural assets and relational capital includes relations with internal and external stakeholders of a company, but then the Ross added a component of other capital with the name

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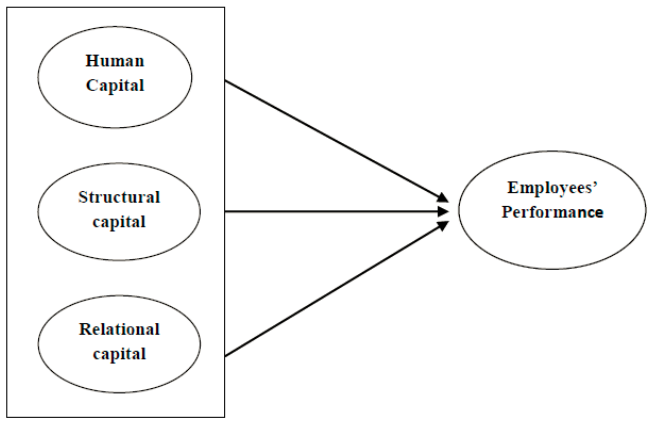

Figure 1.Research Model (Bontis et al., 2000)

of improvement and reconstruction capital to his classification that this last capital includes new patents and educational efforts. Brookings has noted to the human-centered assets and infrastructure assets and intellectual property and assets of market in his classification. The mean of human-centered assets is skills, abilities and expertise and problem solving abilities and leadership styles and mean of infrastructure assets is all technologies, and the processes and methodologies that enables an organization to be active and the mean of intellectual property is royalties and signs with trademarks and technical knowledge and the mean of market assets is brands, customers, loyal customers and distribution channels.

Conceptual model of the research

esearch hypotheses

Main hypothesis of research

1.There is a significant relationship between the intellectual capital and performance of employees in the Ports and Maritime Organization.

Sub-hypotheses of the research

1.There is a significant relationship between human capital and performance of employees in the Ports and Maritime Organization.

2.here is a significant relationship between Structural capital and performance of employees in the Ports and Maritime Organization.

3.There is a significant relationship between Relational capital and performance of employees in the Ports and Maritime Organization.

4.Intellectual capital and its dimensions are in desirable situation in the Ports and Maritime Organization.

5.Performance and its dimensions in employees are in desirable situation in the Ports and Maritime Organization.

Research methodology

In this study, a questionnaire has been used to collect the data needed for the research. The questionnaire that is used in this study, has 107 questions about evaluate the relationship between intellectual capital and employee performance in the PMO. intellectual capital standard questionnaire of Bontis (1998) and employee performance of Hersey and Goldsmith (1980), that from 107 questions, 25 questions (questions from 1 to 25) is related to the variable of structural capital, 23 questions (questions from 26 to 49) on human capital variables, 16 questions (questions from 50 to 66) related to variable of relational capital, 40 questions (questions from 67 to 107) on variable of organizational performance.

Statistical population includes the 140 head office employees of Tehran in the Ports and Maritime Organization .According to Krejcie and Morgan the number of sample size sample has been selected equal to 103. The Validity of content and face validity have been used to determine the reliability. the parts of the questionnaire was developed in content validity

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		Structural capital	Human Capital	Customer capital	Performance	Intellectual capital
Number		103	103	103	103	103
Normal parameters	Mean	3.3351	3.0769	3.2593	3.4679	3.2238
	Sd	.87227	.96007	.89239	.89441	.90619
Test statistics		.068	.079	.099	.068	.068
Significant level		.200[c,d]	.119[c]	.015[c]	.200[c,d]	.200[c,d]

Table 1.Kolmogorov-Smirnov test of the research variables

according to the literature designed to ability to showing ability to measure the existence of the attribute size and in terms of face validity, because the standard questionnaire selected has validity.Descriptive and inferential statistics were used to analyze the data collected. Kolmogorov-Smirnov test and Pearson's correlation coefficient have been used to investigate the research hypotheses. Statistical analysis has been done by using SPSS software.

Research findings

In this research Kolmogorov Smirnov valid test has been used to check normality assumption of research data.

This test to get a license necessary to the use of regression and Pearson correlation coefficient is applied on the independent and dependent variables to prove the normality of the information. In this test, the step to check normality of the data has been established according to the following hypotheses:

H0: The data have the normal distribution.

H1: The data do not have the normal distribution.

According to Kolmogorov-Smirnov test table if the significant level for all independent and dependent variables is greater than test level of (0.05) the data distribution is normal. From the central limit theorem can also be measured the normality of variables .In this case, when the sample size is larger than 30 can be considered normal the data distribution.

As it is clear from the data of table, the significant level of Kolmogorov-Smirnov test for all variables except variable of customer capital is greater than 0.05. As a result of these under study variables have normal distribution in this research and can be used Pearson correlation test to prove research hypotheses. But the significant level is less than 0.05 and is abnormal for variable of customer capital and should be used from Spearman nonparametric test.

Results based on testing research hypotheses

Main hypothesis: There is a significant relationship between the intellectual capital and performance of employees in the Ports and Maritime Organization.

In this section Pearson correlation test is used to prove the research hypotheses. According to the results of this test, if the significant level to be obtained less than 0.05 it is concluded that there is a significant relationship between the two variables.

The results of this test can be seen in the table below.

Table 2.Results of the first research hypothesis test

Intellectual capital

Employee PerformanceThe correlation coefficient0.992**

significant level0.000

Number103

According to the table above it is clear that there is 99.2 % relationship between two

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		Intellectual capital
Employee Performance	The correlation coefficient	0.992**
	significant level	0.000
	Number	103

Table 3.Test results of the first sub-hypothesis of research

		Human Capital
Employee Performance	The correlation coefficient	0.988**
	significant level	0.000
	Number	103

Table 4.Test results of the second sub-hypothesis of research

variables of Intellectual capital and employee performance in the PMO (because of lower significant level of 0.05). It should be noted that this relationship is positive. So the hypothesis is confirmed.

The first sub-hypothesis: There is a significant relationship between human capital and performance of employees in the Ports and Maritime Organization.

Pearson correlation test results can be seen in the table 3.

According to the table above it is clear that there is 98.8 % relationship between two variables of human capital and employee performance in the PMO (because of lower significant level of 0.05). It should be noted that this relationship is positive. So the hypothesis is confirmed.

The second sub-hypothesis: There is a significant relationship between Structural capital and performance of employees in the Ports and Maritime Organization.

Pearson correlation test results can be seen in the table 4.

According to the table above it is clear that there is 99.3 % relationship between two variables of Structural capital and employee performance in the PMO (because of lower significant level of 0.05). It should be noted that this relationship is positive. So the hypothesis is confirmed.

The third sub-hypothesis: There is a significant relationship between Relational capital and performance of employees in the Ports and Maritime Organization.

Pearson correlation test results can be seen in the table 5.

According to the table above it is clear that there is 99.7 % relationship between two variables of customer capital and employee performance in the PMO (because of lower significant level of 0.05). It should be noted that this relationship is positive. So the hypothesis is confirmed.

The forth sub-hypothesis: Intellectual capital and its dimensions are in desirable situation in the Ports and Maritime Organization.

Single sample t-test is used to test this hypothesis. According to this test result if the significant level less than 0.05 and mean to be obtained more than 4, then it can be said that Intellectual capital and its dimensions are in desirable situation.

The result of this test can be seen in the table 6.

Average for all variables has been obtained less than 4, therefore it can be concluded that intellectual capital and its dimensions in the Ports and Maritime Organization was not in a desirable situation and this hypothesis is rejected.

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		Structural capital
Employee Performance	The correlation coefficient	0.993**
	significant level	0.000
	Number	103

Table 5.Test results of the second sub-hypothesis of research

		customer capital
Employee Performance	The correlation coefficient	0.997**
	significant level	0.000
	Number	103

Table 6.Single sample t-test result

		CONFIDENCE INTERVAL					
Result	Mean	Low limit	High limit	significant level	Degrees of freedom	T-statistic	Variable
Hypothesis rejection	3.3351	.1647	.5056	.000	102	3.899	Structural capital
Hypothesis	3.0769	-.1108	.2645	.018	102	3.812	Human

Table 7.Result of single sample t-test

The fifth sub-hypothesis: Performance and its dimensions in employees are in desirable situation in the Ports and Maritime Organization.

Single sample t-test is used to test this hypothesis. According to this test result if the significant level less than 0.05 and mean to be obtained more than 4, then it can be said that performance is in desirable situation.

Result of this test can be seen in the table 7.

According to the table above it is clear that average for all variables has been obtained less than 4, it can be said that the performance is not in the desirable situation in the Ports and Maritime Organization and this hypothesis is rejected.

Discussion and conclusion:

Main hypothesis: There is a significant relationship between the intellectual capital and performance of employees in the Ports and Maritime Organization.

This hypothesis is confirmed according to Pearson correlation test. Ranai Poor (2014) has done the research entitled"The intellectual capital relationship with occupational and organizational performance of Department of Education in Fars Province". The research tools of Intellectual capital of Bontis (1998), occupational performance of Patterson (1992) and organizational performance of Hersey and Goldsmith (1981) were used in this study. Data analysis by using statistical test of Pearson correlation coefficient showed that there is a significant positive relationship between intellectual capital and occupational and organizational performance and organizational and occupational performance variables with dimensions of Intellectual capital have had

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significant relationship in a positive direction acquainted results are aligned with the result of this study.

The first sub-hypothesis: There is a significant relationship between human capital and performance of employees in the Ports and Maritime Organization.

According to Pearson correlation test this hypothesis was confirmed. EsmaeiliAyan (2013) has done an article entitled "evaluate the relationship between social capital and human capital and their effect on employee performance (Case Study: Social Security in Western Azerbaijan Province)" the results of the analysis of data are as follows: 1- there is a significant relationship between social capital and human capital of West Azerbaijan province in social Security organization in terms of Employees. 2- There is a significant relationship between social capital and structural capital of West Azerbaijan province in social Security organization in terms of Employees. 3- There is a significant relationship between social capital and performance of West Azerbaijan province in social Security organization in terms of Employees. The results of data analysis showed a significant relationship between proposed hypotheses in the very high level. The results obtained are aligned with the results of this study.

The second sub-hypothesis: There is a significant relationship between Structural capital and performance of employees in the Ports and Maritime Organization.

According to results of Pearson correlation test this hypothesis was confirmed. Nazem et al (2012) has done in an article entitled "examine the relationship between intellectual capital management with the performance of employees of Islamic Azad University in Tehran East" results of paper by using linear regression test showed there is a relationship management of intellectual capital and employee performance. Also there is a significant relationship between human capital management, structural capital management and relational capital management with the employee'sperformance. The Research findings indicated there is a significant relationship between human capital management with dimensions of employees' performance. The results obtained are aligned with the results of this study.

The third sub-hypothesis: There is a significant relationship between Relational capital and performance of employees in the Ports and Maritime Organization.

This hypothesis was confirmed according to Pearson correlation test. Tabatabai (2011) has done a research entitled "Evaluation of the relationship between intellectual capital with the performance of employees in education institutions of south and southeast of Tehran". The results show that these dimensions of Intellectual capital and Performance of correlation coefficient is high and statistically is significant and the relationship between human capital with performance dimensions was examined due to importance and role of human capital in education (resolution ability and occupational knowledge, credit decisions, assess and giving feedback, motivation of environment, organizational support).The results showed that there is a high correlation coefficient in all cases and statistically is significant and the results obtained are aligned with the results of this study.

The forth sub-hypothesis: Intellectual capital and its dimensions are in desirable situation in the Ports and Maritime Organization.

Based on single sample t-test results the mean of intellectual capital and its dimensions (human capital, structural capital, relational capital) in the Ports and Maritime Organization is not in a desirable situation and this hypothesis is rejected.

The fifth sub-hypothesis: Performance and its dimensions in employees are in desirable situation in the Ports and Maritime Organization.

Based on single sample t-test results the mean of performance of employees and its dimensions in the Ports and Maritime Organization is not

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in a desirable situation and this hypothesis is rejected.

Suggestions based on the results of hypothesis:

1Suggestions based on the results of main hypothesis of research:

Since the based on the results of the Pearson correlation test it was found there is a significant relationship between the two variables of Intellectual capital and employees' performance. It is suggested that: managers of Ports and Maritime Organization to improve the Performance level of their employees pay more attention to increasing the level of Intellectual capital in the organization.

2. Suggestions based on the results of the first research sub-hypothesis:

Since the based on the results of the Pearson correlation test it was found there is a significant relationship between the two variables of human capital and employees' performance. It is suggested that: managers of Ports and Maritime Organization to improve the Performance level of their employees pay more attention to increasing the level of Intellectual capital in the organization.

3. Suggestions based on the results of the second research sub-hypothesis:

Since the based on the results of the Pearson correlation test it was found there is a significant relationship between the two variables of Structural capital and employees' performance. It is suggested that: managers of Ports and Maritime Organization to improve the Performance level of their employees pay more attention to increasing the level of Intellectual capital in the organization.

4. Suggestions based on the results of the third research sub-hypothesis:

Since the based on the results of the Pearson correlation test it was found there is a significant relationship between the two variables of relational capital and employees' performance. It is suggested that: managers of Ports and Maritime Organization to improve the Performance level of their employees pay more attention to increasing the level of Intellectual capital in the organization.

5. Suggestions based on the results of the fourth research sub-hypothesis:

Since the based on single sample t-test results the intellectual capital and its dimensions of (human capital, structural capital, relational capital) in the Ports and Maritime Organization is not in a desirable situation. Managers of Ports and Maritime Organization must pay special attention to the intellectual capital (human capital, structural capital, relational capital).

6. Suggestions based on the results of the fifth research sub-hypothesis:

Since the based on single sample t-test results showed that the average performance of employees and its dimensions in the Ports and Maritime Organization is not in a desirable situation. Managers of Ports and Maritime Organization must pay special attention to their employees' performance.

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