Determining the relationship between intellectual capital and human resources productivity at Post Bank branches in Tehran

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Abstract
Current research tries to measure intellectual capital in post bank based on the size of perception "employee’s productivity". After library studies, six-variable model consisting of three independent variable of intellectual capital (structural capital, customer capital, human capital) and three dependent variable of employee productivity (possibility, ability, desire) was studied. Then importance of these variables was measured by experts and eventually three variables with employee productivity dimensions were used in the questionnaire. The questionnaire was designed to meet the organizational intellectual capital evaluation of each sub hypothesis. These assumptions include: the structural capital and employee productivity, customer capital and employee productivity, human capital and employee productivity. Research questionnaires were completed, in the statistical society of 130 people and a sample of 100 people in survey method. Result of the research was done using the Kolmogorov-Smirnov test, the use of this test is that the test is used for ordinal variables in the sample consistency (independent or non independent) are distributed to a sample distribution that is assumed to be used for a community. Also using correlation, the correlation coefficient, shown that among dimensions of intellectual capital, structural capital and human capital had lowest mean scores and the highest average score was customer capital and in employees productivity dimensions, the lowest and highest average rank were the willingness and ability to take a high level of satisfaction in productivity are human resources and finally meaningful, positive and strong relationship between human resources productivity and intellectual capital is obtained in this study.

Keywords: Intellectual Capital, Customer Capital, Human Capital, Structural Capital, Productivity, Willingness, Ability, Possibility.
Introduction

Intellectual capital is emerged by science and knowledge and organizations are entering into the knowledge-based economy. Economy in which knowledge and intangible assets recognized as the most important competitive advantage. Nowadays, the use of intangible assets has important effect on the success and survival of organizations, so that this leads to a new research area in management. (Ross et al., 1997, p. 16)

In a simple classification, intangible assets are divided into two groups. One of the most important components is intellectual capital which have a significant impact on the performance and implementation of organizations. Intellectual capital is the only factor that can improve itself and also make changes or modifications to provide the basis for innovation and lead to large-scale economic growth. (Chen et al., 2004, 54)

In terms of structure, reduce administration and its small size and at the same time improving quality of forces are measures that should be put on the agenda. Although, some actions have been done in human resources, knowledge management, training and interorganizational structure in banking, it seems that these actions do not have enough coordination and communication.

On the other hand, productivity and improvement always are major challenge for researchers and public administration and management and they are always seeking ways to improve the organization’s productivity and provide some recommendations and factors, have been identified whether through scientific studies or through experimental tests. As we will explain, among the factors affecting productivity, the role of the human factor, especially in service organizations such as bank are also important. (, 2006, NCPP Page 14)

Research history:

Yazdani (2006) examined the interaction between intellectual capital components and their influence on the performance of Mellat Bank. In this study, in order to calculate the amount of organizational performance, data envelopment analysis is used. The results indicated a relatively strong interaction between intellectual capital components. Also, the study showed that different components of intellectual capital has no significant effect on organizational performance at
Mellat Bank branches in Tehran. This study tries to introduce Balanced Scorecard and strategy map to influence intellectual capital on organizational performance at Mellat Bank branches.

Mehrnaz Mehdi Zadeh (2009) examined the relationship between intellectual capital and its components on the performance of the insurance industry from Point of View of Managers. Results obtained showed when the effect of intellectual, human, customer (relational) and structure capital separately and independently of each other are evaluated on performance, each of these factors are significantly related to performance, while at the same time to evaluate the effect of these factors on performance, only structural and human capital have a significant relationship with performance.

Sima Badri Koohi (2009) presents the model of intellectual capital to examine intellectual capital and its components at Saderat bank from the perspective of the heads of the branches. The results of this study indicate that the use of intellectual capital and the intellectual capital in general confirmed and its components: human capital, customer capital and structural capital are all in Bank Saderat Iran were slightly higher than average. According to the results show that Saderat Bank in terms of intellectual capital is in non-optimal conditions.

Ghelichkhani and Moshabbaki (2006) in their study examined the role social capital in developing intellectual capital in two Iranian automaker companies. The results indicate a significant positive relationship between social capital and intellectual capital. In other words, the results showed that the two Iran Khodro and Saipa firms with increasing social capital, intellectual capital, human size, structure and communication has increased.

Seraji and Anvari Rostami (2005) investigated the relationship between intellectual capital and the market value of stocks on the basis of 7-year-old stock exchange companies during the years 1997 to 2003. In this study, five assay were tested in the calculation of intellectual capital. Statistical analysis showed that 95% of fourth and fifth proposed methods measure the value of intellectual capital firms and a significant correlation (a correlation coefficient higher than 0.97) Tehran Stock Exchange with the stock market companies and industries and according to the coefficient of determination higher than the three first, second and third had a better explanatory power.
Total results of this study highlighted the importance of intellectual capital, understanding the importance of entrepreneurs and high correlation value of intellectual capital with the market value of stocks at Tehran Stock Exchange.

Meysam Erteghaei (2009) in a study determined the relationship between intellectual capital (and its components) and performance of the branches of Bank Sepah in Tehran province. In this study tries to examine relationship with each other and the relationship of each of the components of intellectual capital and organizational performance. For this purpose, a sample of selected branches of Bank Sepah in Tehran province and the deputies and heads of departments were asked to rate the performance indicators and components of intellectual capital with their. Results of the test show a positive moderate to high correlation between intellectual capital components with each other and the components of intellectual capital and organizational performance.

Among these, the highest correlation in the relationship between intellectual capital components with each other to respect human capital, structural capital and structural capital and customer capital and the highest correlation on the components of intellectual capital and organizational performance in customer capital.

On the other hand, regression analysis shows that among the components of intellectual capital, customer capital has greatest impact on organizational performance at Tehran's Sepah Bank branches throughout the province.

Azimi (2010) examined the effect of intellectual capital on employee's performance at SAIPA Golpayegan city and the result of research shows that despite the lower returns of traditional resources, knowledge really is a resource to improve business performance. From a strategic perspective today intellectual capital is used to create organizational value. In this research elements and components of intellectual capital as human capital, structural capital and relational capital intended and finally the relationship between the factors of intellectual capital, structural capital and relational been approved for direct and indirect human capital through structural capital have an impact on performance.

Jafari and others in 2006 reviewed intellectual capital measurement models, in this study, a review of previous research on multiple sources by introducing 32 different methods of measurement of intellectual capital and their classification, altogether for measuring
organizational intellectual capital is provided. In this paper we describe the intangible intellectual capital and show resource modeling system and the benefits in sustainable competitive advantage.

Oliaei (2009) defined intellectual capital as difference between market value and book value of assets of a company, in another definition intellectual capital is all processes and assets, which are usually not reflected in the balance sheet. This study aims to determine the relationship between intellectual capital (and its components) and performance of branches of Melli Bank at Tehran. In fact, this research is trying to examine the relationship of intellectual capital components with each other and the relationship of organizational performance.

Bontis (2000) examined components of intellectual capital including human, structural, and customer capital in service and non-service sector in this country. This study revealed that intellectual capital affect structural capital and work performance. Although human capital was important in both sectors, but the capital has more impact on the structure of non-service companies and service companies.

Polik conducted several studies in Austrian banks and Croatia (1995-1993) similarly, in the banking industry to measure intellectual capital. Polik used value-added intellectual coefficient, measuring the performance of intellectual capital in these banks. The results of the two studies showed statistically significant difference in the ranking of banks based on traditional accounting measures of performance. Polik study showed that in many service firms is still aligned intellectual capital with the physical and financial assets not considered. Due to the high-conflict models of new measurement and accounting system ever seen.

Williams examined the relationship between performance and intellectual capital and disclosure methods of the research, but no systematic relationship between the two was not significant. Although it seemed that the levels of high-performance intellectual capital Disappearance of the screen is reduced.

Chen et al (2005) examined the relationship between intellectual capital and financial performance and the market value of firms. They provided a broad understanding of the role of intellectual capital in creation of value and sustainable advantages.

Liang (2008) in his article titled why intellectual capital has become more important? Examined Information related to the value of intellectual capital. The experimental findings of this study
indicate an increase in information content, information about intellectual capital in organizations transition toward a knowledge-based economy.

Nmsivayam (2006) examined human capital in the service of organizations and describe the role of intellectual capital in organization. This article attempts to establish a clear picture of human capital, human capital also offers evaluation matrix.

Pablas (2002) provided a research titled indicators of measurement of intellectual capital from Asia, Europe and the Middle East. He provided definitions of intellectual capital and divided intellectual capital into three categories: human capital, structural capital and relational capital. In this paper, valid models of measurement of intellectual capital are models of Scandia, model supervisor of intangible assets, technology and models through strategic management model based on merit.

Blkvyy (2003) provided a research titled intellectual capital and performance of multinational corporations in America. He examined the relationship between the rate of return on assets based on net value added intellectual capital and multinational corporations. The results of this study showed a strong relationship between variables.

Radvv (2002) examined financial methods in assessing intangible assets providing financial methods to measure the intangible and intellectual capital. This article is one of the most important articles in the field of intellectual capital and later used as a guideline many articles.

Donalson and kpreston (1995) examined the capital structure. Structural capital belongs to the entire organization and includes innovation capital, relational capital and organizational foundation and so on. Calculate the value of intellectual capital is corresponded to shareholder attitudes that believe the relationship between beneficiaries includes all forms of company shareholders, employees, customers, suppliers and union representatives.

Some evidence suggests that the fall of Enron and WorldCom and some other companies in the European and American has been done by manipulating accounting procedures for intangible assets.
Research hypotheses:

The main hypothesis:
There is a significant relationship between intellectual capital and human resources productivity, Post Bank branch in Tehran.

Sub-hypotheses:
- There is a significant relationship between human capital and productivity of human resources of Post Bank branches in Tehran.
- There is a significant relationship between customer capital and productivity of human resources of Post Bank branches in Tehran.
- There is a significant relationship between structural capital and human resources productivity at Post Bank branches in Tehran.

Research Methodology:
Type of study in this thesis is applied, it results in a real environment and not fundamental. On the other hand, nothing is added to knowledge that leads to a theory or a scientific theory, the research method is descriptive - survey. So describes what is the (status quo at the present time), and seeks to describe, explain and explore solutions to and finally acts to provide solutions to improve the organization's future, on the other hand, given that seeks to identify relationships between variables (Intellectual Capital and Productivity Human Resources) correlation study also considered.

Statistical society of this study are all the branches of Post Bank in Tehran and are common trait population of this research is employees who are working at the branch Post Bank in Tehran. Due to this it was necessary to give answers to the questions are quite specialized and familiar, staff, branches, samples were selected.

Research questionnaires were completed in the statistical society of 130 people with sample of 100 people. Result of the research using the Kolmogorov-Smirnov test is used, the use of this test is that the test for ordinal variables in the sample consistency (independent or non independent) or the distribution of samples distributed consistency for a society that is supposed to be used.
Also using correlation, by correlation coefficient, shown in this study used a questionnaire related to the independent variable was prepared based on a standard questionnaire based on the proposed model, then to validity of this variable to the questionnaire were distributed to seven expert instructors to be confirmed validity.

Mentioned questionnaire consists of two parts, which describes the three questions that in this section of the demographic characteristics of the subjects were questioned and the second part contains 56 questions about the theories of managers, assistants and... Of Post Bank about the dimensions variables such as intellectual capital and productivity of human resources.

**Descriptive findings:**

In this section, the distribution of variables such as education level, age and level of work experience in Post bank are discussed.

**Age of participants:**

5% of the sample population are 20-30 years, 48% of the sample are 30-40 years and 27% are 40-50 years and 20% of the subjects were 50-60 years.

**Education level OF sample:**

26% of participants have a university degree or high school diploma, 31% had associate degree and 40% have a bachelor's degree and 3% had MA degree and higher.

**Work experience of studied sample:**

6% of the sample have work experience (1-5 years), 39% of the sample have work experience (5-10 years) and 55% of the sample have work experience. (10-20 years)

**Gender of participants:**

45% of the sample group consisted of male gender, 55% of studied sample were female gender.
The validity analysis of the questionnaire data:
The reliability indicates that the questionnaire reference to what extent detailed introduction broader questions that have been extracted. In fact, the validity is accuracy and stability and its reliability. The reliability of the variance rate is correct the observed variance in other words, represents the release of a size measurement error is random. Cronbach's alpha for use in this area is one of the tests that to validity of the questionnaire was designed as Likert scale and the multiple-choice answers are used.

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
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</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>0.938</td>
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</tbody>
</table>

The results of this showed that the Cronbach's alpha coefficient was calculated validity is 0.938. Since reliability is calculated from the 80% it can be concluded that most of the items are correlated with each other internally and questionnaire used is of sufficient reliability. (Jahanbakhsh, 2003, p. 62)

Hypothesis test:
The main hypothesis of the study:
(Null hypothesis: H0) there is a significant relationship between intellectual capital and human resources productivity Post Bank branches in Tehran.
(Null hypothesis: H1) there is no significant relationship between intellectual capital and human resources productivity, Iran Post Bank branches in Tehran.
The correlation matrix of intellectual capital and productivity of human resources

<table>
<thead>
<tr>
<th>Human resource productivity</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant relationship</td>
<td>Significant level</td>
</tr>
<tr>
<td>Yes</td>
<td>0.01</td>
</tr>
</tbody>
</table>

According to the output of SPSS, Pearson correlation coefficient for these two variables is 0.5. Value number is significantly smaller than 0.01 and is less than standard significance level ($\alpha = 5\%$). Therefore H0 hypothesis is confirmed at confidence level of 95% and H1 is rejected. This means there is a significant relationship between intellectual capital and human resources productivity.

Investigate first sub- hypothesis:

(Null hypothesis: H0) there is a significant relationship between human capital and productivity of human resources of Post Bank branches in Tehran.

(Null hypothesis: H1) there is no significant relationship between human capital and productivity of human resources of Post Bank branches in Tehran.

The correlation matrix of human capital and productivity of human resources

<table>
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<tr>
<td>Yes</td>
<td>0.01</td>
</tr>
</tbody>
</table>

According to the output of SPSS, Pearson correlation coefficient for these two variables is 0.76. Value significant number (sig) observed is smaller than 0.01 and is less than standard significance level ($\alpha = 5\%$). Therefore H0 hypothesis is confirmed at confidence level of 95%
and H1 is not confirmed. This means there is a significant relationship between human capital and productivity of human resources.

Investigate second sub-hypothesis:
(Null hypothesis: H0) there is a significant relationship between of customer capital and human resources productivity at Post Bank branches in Tehran.
(Null hypothesis: H1) there is no significant relationship between of customer capital and human resources productivity at Post Bank branches in Tehran.

The correlation matrix of customer capital and productivity of human resources

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Significant relationship</td>
<td>Significant level</td>
</tr>
<tr>
<td>Yes</td>
<td>0.01</td>
</tr>
</tbody>
</table>

According to the output of SPSS, Pearson correlation coefficient for these two variables is 0.91. Value significant number (sig) observed is smaller than 0.01 and less than the standard significance level ($\alpha = 5\%$). Therefore H0 hypothesis is confirmed at 95% confidence level and this means there is a significant relationship between customer capital and productivity of human resources.

Investigate third sub-hypothesis:
(Null hypothesis: H0) there is a significant relationship between structural capital and human resources productivity at Post Bank branches in Tehran
(Null hypothesis: H1) there is no significant relationship between structural capital and human resources productivity at Post Bank branches in Tehran.
The correlation matrix of structural capital and productivity of human resources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Human resource productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant relationship</td>
<td>Significant level</td>
</tr>
<tr>
<td>No</td>
<td>0.01</td>
</tr>
<tr>
<td>Correlation coefficient</td>
<td>-0.080</td>
</tr>
</tbody>
</table>

According to the output of SPSS, Pearson correlation coefficient for these two variables is -0.080. Value number is significantly larger than 0.01 and is greater the standard significance level (α = 5%). Therefore hypothesis H1 is confirmed at confidence level of 95%, which means there is no significant relationship between structural capital and productivity of human resources and a poor relationship is created by accident or chance.

Survey research findings
First hypothesis:
There is a significant positive relationship between intellectual capital and human resources productivity. According to the results of the test (significant correlation coefficient equal to 0.5), it can be said, between intellectual capital and productivity in the branch Post Bank in Tehran there is a strong positive and significant correlation and this issue shows that any increase in intellectual capital increases the productivity of human resources and vice versa.

Second hypothesis:
There is a significant positive relationship between human capital and productivity of human resources. According to the results of the test (significant correlation coefficient equal to 0.76), the hypothesis is confirmed that between human capital and human resource productivity in branches of the bank posts, there is a significant and strong positive relationship in Tehran and this issue shows that any increase in human capital to increase productivity in human resources and vice versa.
Third hypothesis:
There is a significant positive relationship between customer capital and human resources productivity. According to the results of statistical analysis (correlation coefficient 0.91 and meaningful), it is observed that the above hypothesis has been confirmed in this study and between customer capital and human resources productivity in branches of the bank posts a there is a strong significant and positive relationship in Tehran and this issue shows that any increase in capital increased customer productivity in human resources and vice versa.

Fourth hypothesis:
There is a significant positive relationship between structural capital and productivity of human resources. According to the results of statistical analysis (correlation coefficient equal to -0.080 and insignificant) can be seen that the above hypothesis is not confirmed in this study and capital structure does not lead to the productivity of human resources at the branch Post Bank in Tehran.

Test rankings:
According to Friedman ranking factors related to intellectual capital dimensions were ranked in the following order:
- Customer capital
- Human capital
- Structural capital

According to the ranking table dimensions of intellectual capital, the lowest mean rating was 2.41, to structural capital and the highest mean scores were customer capital of 2.89 and human capital of 2.46.

According to Friedman ranking, factors related to human resources productivity were ranked in the following order:
- Possibility
- Willingness
- Ability
This ranking indicates that the results of the ranking table of human resources productivity, the lowest mean scores were 3.26 of willingness and ability of 3.76 and the highest mean score was possibility of 3.78.
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