The relationship between intellectual capital and marketing and financial performance of banks operating in the Tehran Stock Exchange, during 2009-2014

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Abstract

In the competitive and constantly changing business world, intellectual capital has a special position in directing business and determining the level of organizational performance as an intangible asset. The study investigates the relationship between intellectual capital and the performance of the banks listed in Tehran Stock Exchange in terms of financial and marketing performance using Pulic's Value Added Intellectual Coefficient (VAIC) model. This is an applied research In terms of purpose and in terms methodology is a solidarity research. The statistical population includes the banks listed in the stock exchange during the years 1388-1393. We used ROE and ROA variables, the capital adequacy ratio and earnings per share using financial reports and "Rah-Avard Novin" financial software to evaluate financial performance and we used brand, customer and innovation dimensions in the form of a self-administrated questionnaire that it’s validity and reliability is scientifically examined and was distributed among 384 target bank customers in order to evaluate the performance of marketing. Excel In order to data classification, SPSS for descriptive statistics and E-Views to examine the hypothesis were used. The results showed a significant relationship between intellectual capital and financial performance and marketing performance.

Keywords: intellectual capital, structural capital, physical capital, human capital, marketing performance, financial performance.
Introduction

Intellectual capital promotes as a key factor for the survival of the organization and maintaining competitiveness (Dragichi, 2013: 12). Organizations need a good capacity to maintain, develop, organize and use the capabilities of their employees to stay at the forefront of competition. It seems that intellectual capital is increasingly considered as one of the major features for the survival of the organization (Luminita Gogan, 2014: 194). According to Yigitcanlar, T., & Lonnqvist, A. (2013), in the global scenario, currently, knowledge and information are regarded as keys to economic prosperity. Knowledge-based economy through research, technology and thinking causes products with added value. Intellectual capital can be defined as knowledge-based capital of the organization that has attracted much attention in the last two decades (Petty and Guthrie, 2000). Today, many companies invest in cases like employee training, research and development, customer relations, computer and office systems that these investments are often known as intellectual capital (Zeghal and Maaloul, 2010).

Intellectual capital promotes as a key factor for the survival of the organization and maintaining competitiveness [1]. Organizations need a good capacity to maintain, develop, organize and use the capabilities of their employees to stay at the forefront of competition. It seems that intellectual capital is increasingly considered as one of the major features for the survival of the organization[2], According to Yigitcanlar, T., & Lonnqvist (2013), in the global scenario, currently, knowledge and information are regarded as keys to economic prosperity. Knowledge-based economy through research, technology and thinking causes products with added value. Intellectual capital can be defined as knowledge-based capital of the organization that has attracted much attention in the last two decades [3]. Today, many companies invest in cases like employee training, research and development, customer relations, computer and office systems that these investments are often known as intellectual capital [4]. Since the new economy development emphasize the fact that value creation in more dependent on intangible assets to physical assets. Therefore, in these economies, intellectual capital is considered as the main source of economic development and other traditional factors of production such as land, labor and financial capital are secondary in place of importance. In such circumstances, intellectual capital is the key factor in improving organizational performance. The most important issue in the intellectual capital context is how to conceptualize, percept, evaluate and measurement of these types of assets. Tools and methodologies of knowledge management and information technology help the organization to analyze and identify their capabilities and abilities to maintain and achieve sustainable competitive advantage and finally achieve the knowledge-based economy. Such evaluations can facilitate the performance adaptation and appropriate ways and also the growth of national knowledge systems for comprehensive development[1]. Due to the backwardness of Iran's banking system compared to developed countries and the lack of conditions for competition with global banking and taking advantage of the intellectual capital and modern knowledge, there is a wide area for progress in this field which considerable gains can be achieved with work and effort. Meanwhile, checking the performance of intellectual capital in banking industry is controversial to determine how much the organization's intellectual capital is focused. Take a look back at financial and economic crisis during 2008-2011 And its consequences in the next period, significantly placed the idea of analyzing the relationship between organizational performance and its resources at the center of attention [6].
The main question of this research is that is there any significant relationship between intellectual capital and financial and marketing performance evaluation criteria of the banks listed in Stock Exchange? And if yes, how is the nature and extent of this relationship? Performing this project tries to provide concepts tailored to the banking system of the country about intellectual capital and its components as well as the organizational performance banks. And after determining the indicators for measuring the main research variables, the relationship between intellectual capitals will be examined as an independent variable and the performance of banks listed on the stock exchange will be examined as a dependent variable. In other words, the main purpose of this research is investigating the relationship between intellectual capital and marketing and financial performance of banks listed in the stock exchange.

1) Literature review
1-1 The concept of intellectual capital
The term intellectual capital was first introduced in scientific communities in 1969 by economist named John Kenneth Galbrith to explain the gap between the book value and the market value of enterprises. According to Stewart, Intellectual capital includes knowledge and competence of all individuals in the organization which creates a competitive advantage and wealth for the organization (Shin and Lim, 2011). Intellectual capital includes knowledge, creativity, reputation, organizational capacities, customer relationship, suppliers, information technology, etc. (Steenkamp and Hooks, 2011). The main focus of this capital is on the systems that create value for the organization (Hermans et al., 2011). The measurement of intellectual capital is of vital importance for knowing the financial position of the company. Intellectual capital will be measured using Value Added Intellectual Coefficient (VAIC) method and its association with financial performance indicators, such as ROA, ROE, EPS and capital adequacy ratio and marketing performance indicators, such as dimensions of brand, customer and innovation will be assessed.

2. Sample and Data Collection
The statistical population of this study including the bank listed in Stock Exchange which had the following conditions as a statistical sample, were selected as sample:

- The target bank must be listed in Stock Exchange from 2009 and must be active in Stock Exchange by the end of 2014.
- There must not be any change in the financial year ended in March and during the study period.
- The company during the study period is not removed from the list of companies listed on the stock exchange.
- The banks that are reported their audited financial statements to stock exchange during the study period.
- Information needed to carry out the research must be fully provided during the period. Banks with these conditions include Eghtesad-Novin, Ansar, Pasargad, Tejarat, Sina, Saderat, Kar-Afarin, Mellat, Parsian branches and Post Bank during 2009-2014 (6 year period). Sampling was not performed for selecting these banks and each of the banks studied as sample. Costumers of these banks were considered as statistical population in order to measure marketing performance. Due to the limited number of community members, 384 samples were selected Using Cochran formula. Since the accurate information about the number of statistical population of the study is unlimited, the following equation was used to obtain the sample size:
To measure the financial performance, a six-year data for regression of the dependent variables, ROA, ROE, EPS we used Rah-Avard Novin software for the years 2006 to 2013 and required data to measure intellectual capital variable and the capital adequacy ratio, financial statements and attached notes related to the bank listed in Tehran Stock Exchange on www.rdis.ir website were used. Audited financial statements related to 2014 also extracted from the Stock Exchange. In addition, in order to evaluate the marketing performance the bank customers were considered as the statistical population and a self-administrated questionnaire were collected and distributed among them which its reliability and validity scientifically examined and approved.

3. Variables definition

1.3 Independent Variables

In this study we used VAIC as independent variable. The steps are as follows:

1. First the value-added (VA) of the examined company calculated. The VA of a company can be calculated by the following formula:
   \[ VA = P + C + D \]
   Where in:
   \( P \) = Operating Profit
   \( C \) = Employee Costs (Including salary and other social costs of the employees)
   \( D \) = Depreciation

2. Calculate the human and the structural capital. HC is calculated by aggregating the salaries paid to employees. SC is calculated by deduction of HC from value added.
   \[ SC = VA - HC \]

3. Calculate Capital Employed Efficiency (CEE). This is calculated by value added divided by applied capital. CEE indicates that how much of the added value of the company is obtained through applied capital. Human Capital Efficiency (HCE) is also calculated by value added divided by human capital.
   \[ HCE = VA / HC \]
   HCE represents value-added efficiency of the human capital resources applied in a company. The third component of the efficiency is structural capital which is obtained by structural capital divided by value added.
   \[ SCE = SC / VA \]
   SCE indicates that how much of the added value of the company is obtained through structural capital.

4. Calculate Intellectual Capital Efficiency by adding HCE to SCE.
   \[ ICE = HCE + SCE \]

5. Finally, calculate the value added intellectual coefficient by adding ICE to CEE.
   \[ VAIC = ICE + CEE \]

2.3 Dependent variables

Financial dependent variables of the study includes ROA, ROE, EPS and capital adequacy ratio, the definitions are presented in Table 1.
3.3 Control variables
In regression models of the study the control variables including financial leverage, company size and physical capacity are used as follows:

- Logarithm of the total assets of the bank: 
  \[ SIZE = \log(TA) \]

- Fixed assets to total assets ratio: 
  \[ PC = \frac{Fixed\ Assets}{Total\ Assets} \]

- Debt to equity ratio: 
  \[ DER = \frac{Total\ liabilities}{Total\ assets} \]

4. Results and Discussion
Since the research data is a combination of cross-sectional data and time series, we used regression models based on panel data. For taking in-depth view on the relationship between intellectual capital and financial performance measures, OLS and GLS regressions have been applied. Both Fixed effect and Random effect model has been applied on panel data. Hausman specification test has been used to check which model should be used for analysis. In case, if Hausman X2 result found significant, then fixed effect model is used and when it is found insignificant then Random effect model is used for the analysis. Models used to study primary and subsidiary research hypotheses are as follows:

**H1**: There is a significant relationship between intellectual capital and financial performance of banks listed on Tehran stock exchange.

\[ Financial\ Performance = \alpha_{i,t} + \beta_1 ic_{i,t} + \beta_2 lev_{i,t} + \beta_3 pc_{i,t} + \beta_4 size_{i,t} + \epsilon_{i,t} \]

This model also consists of 4 other models of financial variables and measurement of their relationship with intellectual capital is as follows.

**Model 1**: There is a significant relationship between intellectual capital performance and return on assets (ROA) of banks listed on the stock exchange.

Table 1: Introducing the dependent variables

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>Return On Assets = ( \frac{Net\ Income\ (After\ tax)}{Total\ Assets} )</th>
<th>Net income to total assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ROE</td>
<td>Return On Equity = ( \frac{Net\ Income\ (Before\ tax)}{Shareholder’s\ Equity} )</td>
<td>Net income before tax to shareholder’s equity</td>
</tr>
<tr>
<td>3</td>
<td>EPS</td>
<td>( EPS = \frac{\text{net income}}{\text{average out standing common shares}} )</td>
<td>Net income to average outstanding common shares</td>
</tr>
<tr>
<td>4</td>
<td>Capital adequacy ratio</td>
<td>( CAR = \frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk Based Assets}} )</td>
<td>Tier 1 Capital + Tier 2 Capital to Risk Based Assets</td>
</tr>
</tbody>
</table>
ROA\textsubscript{i,t} = \alpha_{i,t} + \beta_1\text{VAI}_{i,t} + \beta_2\text{lev}_{i,t} + \beta_3\text{PC}_{i,t} + \beta_4\text{size}_{i,t} + \epsilon_{i,t}

**Model 2:** There is a significant relationship between intellectual capital performance and return on equity (ROE) of banks listed on the stock exchange.

ROE\textsubscript{i,t} = \alpha_{i,t} + \beta_1\text{VAI}_{i,t} + \beta_2\text{lev}_{i,t} + \beta_3\text{PC}_{i,t} + \beta_4\text{size}_{i,t} + \epsilon_{i,t}

**Model 3:** There is a significant relationship between intellectual capital performance and capital adequacy ratio (CAR) of banks listed on the stock exchange.

CAR\textsubscript{i,t} = \alpha_{i,t} + \beta_1\text{VAI}_{i,t} + \beta_4\text{size}_{i,t} + \epsilon_{i,t}

**Model 4:** There is a significant relationship between intellectual capital performance and earning per share (EPS) of banks listed on the stock exchange.

\[ \text{EPS}_t = \alpha_t + \beta_1\text{VAI}_t + \beta_3\text{lev}_t + \beta_5\text{PC}_t + \beta_6\text{size}_t + \epsilon_t \]

**Table 2** shows the regression results for 4 models: the relationship between VAIC and financial performance. The table presents the results of OLS and GLS panel regression, where according to models ROA, ROE, CAR, and EPS are taken as dependent variables. Assessment of the table reveals that adjusted R\textsuperscript{2} of the models in the table are 0.46, 0.58, 0.41, and 0.45 percent (in case of fixed and random effect) which indicates that the models have good explanatory power. These numbers indicate that the fixed effect and random effect model is able to explain the variance in the dependent variable for the whole sample. Result of Hausman test accepts the hypothesis of the test. From the table 1, it is clear that intellectual capital is playing a significant role for financial performance of the banks.

**Subsidiary hypothesis:**

H\textsubscript{1,-1}: There is a significant relationship between human capital performance and financial performance of banks listed on the stock exchange.

H\textsubscript{2,-1}: There is a significant relationship between physical capital performance and financial performance of banks listed on the stock exchange.

H\textsubscript{3,-1}: There is a significant relationship between structural capital performance and financial performance of banks listed on the stock exchange.

The following model is used to examine the mentioned hypothesis.

\[ \text{financial performance} = \alpha_{i,t} + \beta_1\text{hce}_{i,t} + \beta_2\text{cee}_{i,t} + \beta_3\text{sce}_{i,t} + \beta_4\text{lev}_{i,t} + \beta_5\text{PC}_{i,t} + \beta_6\text{size}_{i,t} + \epsilon_{i,t} \]

**Model 1:**

ROA\textsubscript{i,t} = \alpha_{i,t} + \beta_1\text{hce}_{i,t} + \beta_2\text{cee}_{i,t} + \beta_3\text{sce}_{i,t} + \beta_4\text{lev}_{i,t} + \beta_5\text{PC}_{i,t} + \beta_6\text{size}_{i,t} + \epsilon_{i,t}

**Model 2:**

ROE\textsubscript{i,t} = \alpha_{i,t} + \beta_1\text{hce}_{i,t} + \beta_2\text{cee}_{i,t} + \beta_3\text{sce}_{i,t} + \beta_4\text{lev}_{i,t} + \beta_5\text{PC}_{i,t} + \beta_6\text{size}_{i,t} + \epsilon_{i,t}

**Model 3:**

\[ \text{SENS}_t = \alpha_t + \beta_1\text{HCE}_t + \beta_2\text{CEE}_t + \beta_3\text{SCE}_t + \beta_4\text{LEV}_t + \beta_5\text{PC}_t + \beta_6\text{SIZE}_t + \epsilon_t \]
\[ CAR_{i,t} = \alpha_{i,t} + \beta_1 hce_{i,t} + \beta_2 cee_{i,t} + \beta_3 sce_{i,t} + \beta_4 lev_{i,t} + \beta_5 pc_{i,t} + \beta_6 size_{i,t} + \varepsilon_{i,t} \]

**Model 4:**
\[ EPS_{i,t} = \alpha_{i,t} + \beta_1 hce_{i,t} + \beta_2 cee_{i,t} + \beta_3 sce_{i,t} + \beta_4 lev_{i,t} + \beta_5 pc_{i,t} + \beta_6 size_{i,t} + \varepsilon_{i,t} \]

<table>
<thead>
<tr>
<th>Models</th>
<th>Random/Fixed effect</th>
<th>Model type</th>
<th>Constant value</th>
<th>HCE</th>
<th>CEE</th>
<th>SCE</th>
<th>Significant</th>
<th>Adjusted ( R^2 )</th>
<th>Prob(F-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>Random</td>
<td>GLS</td>
<td>201.796</td>
<td>0.176</td>
<td>0.04</td>
<td>0.00</td>
<td>0.008</td>
<td>0.35</td>
<td>0.000</td>
</tr>
<tr>
<td>Model 2</td>
<td>Fixed</td>
<td>OLS</td>
<td>224.021</td>
<td>0.195</td>
<td>0.87</td>
<td>0.21</td>
<td>0.05</td>
<td>0.59</td>
<td>0.000</td>
</tr>
<tr>
<td>Model 3</td>
<td>Random</td>
<td>GLS</td>
<td>67.45</td>
<td>0.02</td>
<td>0.002</td>
<td>0.43</td>
<td>0.172</td>
<td>0.42</td>
<td>0.003</td>
</tr>
<tr>
<td>Model 4</td>
<td>Fixed</td>
<td>OLS</td>
<td>3879.2</td>
<td>0.03</td>
<td>0.007</td>
<td>0.029</td>
<td>0.176</td>
<td>0.45</td>
<td>0.000</td>
</tr>
</tbody>
</table>

table 3-regression results for 4 models: the relation between HCE, CEE, SCE and financial performance

Table 3 represents the results taking into account \( H_1, H_2, H_3 \) respectively. This table presents the results of OLS and GLS panel regression, where according to models ROA, ROE, CAR and EPS are taken as dependent variable and HCE, CEE and SCE considered as independent variables. Assessment of the table reveals that adjusted \( R^2 \) of the models in order are 0.35, 0.59, 0.42 and 0.45 percent (in case of fixed and random effect) which indicates that the models have good explanatory power. These numbers indicate that the fixed effect and random effect model is able to explain the variance in the dependent variable for the whole sample. Result of Hausman test accepts the hypothesis of the test; From the table 2, it is clear that human capital, capital employed and structural capital are playing significant role for financial performance of the banks.

**The results of hypothesis test:**

<table>
<thead>
<tr>
<th>hypothesis</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Final test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>The relationship between intellectual capital performance and financial performance</td>
<td>Confirmed</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
<tr>
<td>The relationship between human capital performance and financial performance</td>
<td>Confirmed</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
<tr>
<td>The relationship between physical capital performance and financial performance</td>
<td>Confirmed</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
<tr>
<td>The relationship between structural capital efficiency and financial performance</td>
<td>Confirmed</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
</tbody>
</table>
Table 4: The results of hypothesis test, relationship between intellectual capital and its components with financial performance (Source: research data and research calculation)

H₂: There is a significant relationship between intellectual capital and marketing performance of banks listed on stock exchange.

\[ \text{marketing performance} = \alpha_{i,t} + \beta_1 \text{VaIC}_t + \beta_2 \text{lev}_t + \beta_3 \text{pc}_t + \beta_4 \text{size}_t + \varepsilon_t \]

Three models were used to examine the main hypothesis. The results are presented in the following table.

H₁₁: There is a significant relationship between intellectual capital performance and brand of the banks listed on stock exchange.

Model 1

\[ \text{brand} = \alpha_{i,t} + \beta_1 \text{VaIC}_t + \beta_2 \text{lev}_t + \beta_3 \text{pc}_t + \beta_4 \text{size}_t + \varepsilon_t \]

H₁₂: There is a significant relationship between intellectual capital performance and customer satisfaction of the banks listed on stock exchange.

Model 2:

\[ \text{customer satisfaction} = \alpha_{i,t} + \beta_1 \text{VaIC}_t + \beta_2 \text{lev}_t + \beta_3 \text{pc}_t + \beta_4 \text{size}_t + \varepsilon_t \]

H₁₃: There is a significant relationship between intellectual capital performance and innovation of the banks listed on stock exchange.

Model 3:

\[ \text{innovation} = \alpha_{i,t} + \beta_1 \text{VaIC}_t + \beta_2 \text{lev}_t + \beta_3 \text{pc}_t + \beta_4 \text{size}_t + \varepsilon_t \]

<table>
<thead>
<tr>
<th>Models</th>
<th>VAIC Coefficient</th>
<th>Constant value</th>
<th>Adjusted R²</th>
<th>Durbin-Watson stat</th>
<th>Prob(F-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.0002</td>
<td>12.88</td>
<td>0.3</td>
<td>1.6</td>
<td>0.000</td>
</tr>
<tr>
<td>Model 2</td>
<td>0.041</td>
<td>18.95</td>
<td>0.28</td>
<td>1.59</td>
<td>0.54</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.75</td>
<td>12.52</td>
<td>0.35</td>
<td>1.52</td>
<td>0.031</td>
</tr>
</tbody>
</table>

table 5-regression results for 3 models: the relation between, VAIC and marketing performance

Table 5 represents the results taking into account H₂ respectively. This table presents the results of regression, where according to models brand, customer satisfaction and innovation are taken as dependent variable. Assessment of the table reveals that adjusted R² of the models in order are 0.30, 0.28 and 0.35 percent which indicates that the models explanatory power. According to the significant (confidence level of %95), there is a significant relationship between brand and customer satisfaction with the intellectual capital as independent variable. This relation was not statistically significant with innovation.

Subsidiary hypothesis:

1) There is a significant relationship between human capital and marketing performance of banks listed on the stock exchange.

2) There is a significant relationship between physical capital and marketing performance of banks listed on the stock exchange.

3) There is a significant relationship between structural capital and marketing performance of banks listed on the stock exchange.

The following model is used to examine the mentioned hypothesis.

\[ \text{marketing performance} = \alpha_{i,t} + \beta_1 \text{hce}_t + \beta_2 \text{ce}_t + \beta_3 \text{sce}_t + \beta_4 \text{lev}_t + \beta_5 \text{pc}_t + \beta_6 \text{size}_t + \varepsilon_t \]

Model 1:

\[ \text{brand} = \alpha_{i,t} + \beta_1 \text{hce}_t + \beta_2 \text{ce}_t + \beta_3 \text{sce}_t + \beta_4 \text{lev}_t + \beta_5 \text{pc}_t + \beta_6 \text{size}_t + \varepsilon_t \]
Model 2:
\[ \text{customer satisfaction} = \alpha_{1t} + \beta_1 \text{HCE}_t + \beta_2 \text{CEE}_t + \beta_3 \text{SCE}_t + \beta_4 \text{lev}_t + \beta_5 \text{pc}_t + \beta_6 \text{size}_t + \epsilon_t \]

Model 3:
\[ \text{innovation} = \alpha_{i,t} + \beta_1 \text{HCE}_t + \beta_2 \text{CEE}_t + \beta_3 \text{SCE}_t + \beta_4 \text{lev}_t + \beta_5 \text{pc}_t + \beta_6 \text{size}_t + \epsilon_t \]

<table>
<thead>
<tr>
<th>Models</th>
<th>HCE</th>
<th>SCE</th>
<th>CEE</th>
<th>Constant value</th>
<th>Adjusted R(^2)</th>
<th>Durbin-Watson stat</th>
<th>Prob(F-statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.59</td>
<td>0.23</td>
<td>0.000</td>
<td>19.9</td>
<td>0.49</td>
<td>1.6</td>
<td>0.000</td>
</tr>
<tr>
<td>Model 2</td>
<td>0.455</td>
<td>0.041</td>
<td>0.008</td>
<td>2.63</td>
<td>0.37</td>
<td>1.59</td>
<td>0.021</td>
</tr>
<tr>
<td>Model 3</td>
<td>0.000</td>
<td>0.000</td>
<td>0.29</td>
<td>37.12</td>
<td>0.32</td>
<td>1.52</td>
<td>0.00013</td>
</tr>
</tbody>
</table>

table 6-regression results for 3 models: the relation between HCE, CEE, SCE and marketing performance

Table 6 represents the results taking into account \( H_{1-2}\), \( H_{2-2}\) and \( H_{3-2}\) respectively. This table presents the results of regression, where according to models brand, customer satisfaction and innovation are taken as dependent variable and HCE, CEE and SCE considered as independent. Assessment of the table reveals that adjusted \( R^2 \) of the models in order are 0.49, 0.37 and 0.32 percent which indicates that the models explanatory power. According to significant (confidence level of %95), There is a significant relationship between brand and customer satisfaction with the intellectual capital as independent variable.

<table>
<thead>
<tr>
<th>hypothesis</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Final result</th>
</tr>
</thead>
<tbody>
<tr>
<td>The relationship between human capital and marketing performance</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
<tr>
<td>The relationship between physical capital and marketing performance</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Rejected</td>
<td>Confirmed</td>
</tr>
<tr>
<td>The relationship between structural capital and marketing performance</td>
<td>Rejected</td>
<td>Confirmed</td>
<td>Confirmed</td>
<td>Confirmed</td>
</tr>
</tbody>
</table>

Table 7: The results of hypothesis test, relationship between intellectual capital and its components with marketing performance (Source: research data and research calculation).

5. Conclusion

The present study was carried out to investigate the relationship between intellectual capital and marketing and financial performance of banks operating in the Tehran Stock Exchange. The results based on regression models showed that there is a significant relationship between financial and marketing performance of the target community banks with intellectual capital. So it can be said that these banks should take action to promote intellectual capital to improve their performance. This study provides important insights to researchers and managers to give due consideration to intellectual capital for improving organisation performance. According to
the confirmation the relationship between intellectual capital and financial performance of banks, we suggest:

- The banks should take action to promote intellectual capital to improve their performance. We recommend investors in order to make investment decisions and provisions; they should assess the intellectual capital situation and measure it in banks and other organizations more carefully, besides using the basic financial statements. Due to the unawareness of users and traditional customers of banks about modern banking system and its advantages, it is recommended that to provide these bank services to customers as much as possible without ambiguity and with the necessary transparency in different ways (Through the media or employees explanation). Carry out the wishes and needs of bank customers, can be effective in achieving the customer expectations with simplicity and ease and not in the context of the administrative complex workflows. There is no doubt that the brand which provides fast and easy service will be image a stronger brand. Complain about failure to perform services on time, employees fault in providing services and etc. are the keys in the hands of managers who want to create a sustainable competitive advantage for their organization in the market. In this regard, banks could think of producing short and appealing movies and present them on a videotape or disc to the customers to make them familiar with service processes.

- Affability, Punctuality, Bailment, Appearance, verbal communication and appropriate behavior by bank employees with customers must be in a way that when the customer go to the bank, percept customer orientation in these organizations obviously.

According to the confirmation the relationship between human capital and financial and marketing performance of banks, we suggest:

- Measuring the performance of employees during the period and the resulting analysis and comparison with performance standards and measures like the reward and punishment.

- Attracting, hiring and employment of competent people in the bank: Bank employees, particularly those who are in direct contact with the customer, Must be competent and have the required nobility.

- In marketing, for development of organization, employees are considered as customers within the organization and internal customer satisfaction depends on external customers’ satisfaction. Therefore it is necessary to increase the rights and welfare of employees in order to make honesty and easy services more available. With respect to self-similarity as one of the features of chaos theory, it is required to the employees of the bank to be a symbol of the entire organization by forming a specialized team for training employees and the implementation of job rotation process in the bank.

According to the significant relationship between physical capital and financial and marketing performance of banks, we suggest:

- The banks should invest in Physical expansion of organization, Equipment, tools and especially technology In the Office Automation and relationship with customers. Since the role of physical equipment (The physical facilities such as cooling, heating and ventilation inside the bank, decoration ...) is inevitable On customer attraction, the banks should be equipped with suitable working environment. Physical facilities are
important in quality of services and customer perspective and play an important role in attracting them. In this regard; it is recommended that the following be considered:

- The branch Interior design (Booth spaces and office design)
- Signs of various parts of the branch
- Facilities within the branch (Chair, desk, phone, ventilation, issues, sufficient light)
- Ornamentation within the branches (paintings, mirrors, vases, etc.)
- Ornamentation of outside the branches (The entrance beautiful boards, frontage of the branch)
- Physical facilities of outside the branches (ATMs, Parking)
- sufficient lighting and proper ergonomics and Color rendering of branches

According to the significant relationship between structural capital and financial and marketing performance of banks, we suggest:

- It is required to develop the process in accordance with the terms of the day and based on customer demand. Because in modern banking Customer demands are criteria for the operation of the banking activities. Therefore Business Process Reengineering (bpr) is recommended for banks up with identifying and elimination of non-productive processes with employees who are responsible for it and simplification of the process try to attract more and more customer satisfaction.

- In order to maintain customers, higher productivity of employees and Enhancing competitive advantages, the banks need to identify competitors, tools and Compare their performance in different fields of work. Bench marking or modeling of their behavior is one of these strategies. Therefore, it is necessary for banks to consider this industry with research and development of banking services in developing countries, and Attempt to modify and implement them according to the requirements their organization by identifying and extracting of new processes in this regard.

- Given that a significant amount of employee knowledge is located in their minds and this knowledge is created by staff recruitment and investment in the company over the years, it will be lost due to retirement, dismissal, death, etc. This further exposed the necessity of knowledge management in all organizations, especially banks. Therefore it is recommended to share employee knowledge, with strategies such as Brainstorming sessions, Nominal Group and exchange of views sessions.

- Using the Suggestions System within the company to seek the views of employees and outside the organization to get feedback of customers.

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DER = \frac{\text{Total liabilities}}{\text{Total assets}}
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References


