

## The Study of Impact of Intellectual Capital (Human, Customer, and Structural) on Performance of Ferdowsi Financial and Credit Institute

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### Abstract

Knowledge economy is a branch of economy which considers knowledge and invisible assets of organizations as a main advantage of competition as organizations' success depends on ability of management and use of these invisible assets. For a simple classification, Invisible assets were divided into two groups supported by law . For intellectual capital, different classifications have been provided, which is divided into three components of human, communication and organizational. In this research, the study was done on mutual relations between components of intellectual capital and their impacts on financial performance of Ferdowsi financial and credit institute. The research method is descriptive correlation and is based on structural equations modeling . For this purpose, a questionnaire with 51 questions for components of intellectual capital was designed and rate of financial performance of Mellat Bank branches was obtained through covering analysis of data . In this research, firstly by using factor analysis in first stage, the factors of triple field of intellectual capital were extracted and then by using confirmatory factor analysis the validity of measuring models was confirmed. Results of data analysis, by using structural equation modeling showed that there is a strong relation between components of intellectual capitals but these capitals have no impact on organization performance in branches of Ferdowsi financial and credit institute. Finally, some suggestions were provided for use of balance evaluation card in improvement of financial performance of branches of Ferdowsi financial and credit institute.

**Keywords:** knowledge economy, intellectual capital, human capital, structural capital, customer capital, balance credit card, financial performance

### Introduction

Intellectual capital is a type of valuable capital which is known as invisible asset of an organization. Nowadays economy is based on intellectual capital and its goods are knowledge and information. Invisible resources are factors other than financial and physical assets which have participation in creating a company's value and are under its control.

Edinson (1997) introduced two components of intellectual capital human capital and structural capital which can be interpreted as who are in an organization and what will remain after they have gone . Intellectual capital is defined as assets, which at present time has been valued zero in balance.

Boking (1997) states that intellectual capital composed of invisible assets which make economic institution capable to perform responsibility. General idea or acceptable classification for intellectual capital is not available. Terms such as human assets-individual competence and employees competence totally are used for description of human capital.

In this research, impact of intellectual capital (human-structural and customer) on financial performance of Ferdowsi financial and credit institute all over the country from view of senior managers has been studied.

### **Research background**

Bontis et al (2000) studied the relation between intellectual capitals and business performance. The results indicated that there is a relationship between components of intellectual capital and this capital had relatively medium impact about 20 to 30 % on business and financial administration performance.

Meritium project (2000) was financed by European financial commission . Aim of this project, in fact, was giving a series of guidance for measuring and management of intellectual capital in order to improve decision-making for managers and share-holders.(Sanchez et al (2005) also did similar research with Malaysian. The research was done in Taiwan and information technology and relations between intelligence capital and performance were analyzed in a series of scientific models and confirmed the results of Malaysian research, Weng et al (2005) did the same research in Banking industry for measuring intellectual capital. Polik, by using added value intellectual coefficient ,has measured intellectual capital in Austrian banks during 1995-1993 and Croatian banks during 1996-2000 .Results of these two researches had cleared significant difference in grading banks based on performance criterions and traditional accounting .Polik study showed that, in many service institutions, intellectual capital is not thought at level of physical and financial capital . An intensive incompatibility was observed duly in new measuring models and he presented accounting system.

Belkooee (2003) provided an article titled intellectual capital and financial performance in multi-national companies in America. He studied relation between return rate of assets based on net added value and rate of intellectual capital in multi-national companies. Results of this research described strong and positive relation among research variables.

Rodwoo (2002) in an article titled “financial methods in measuring invisible assets” provided financial methods for measuring invisible factors and intellectual capital. This article is one of most important in field of intellectual capital and has been used as a guide for codification many next articles..

Sima Badri Koohi (2009), by providing intellectual capital model, has studied present situation of intellectual capital and its components in Saderat bank from viewpoints of chiefs of branches in Tehran. Result of this research showed that intellectual capital model used was confirmed and totally intellectual capital situation and its component including human capital, customer capital and structural capital in Saderat bank was evaluated a little higher than medium . By considering the results it is shown that Saderat bank of Iran has not suitable condition with respect to intellectual capital

A research by Madhooshi and Asghar Nejad Amiri also measured intellectual capital and studied its relation with financial efficiency of companies in investment companies in exchange market of securities in Iran . Results of research indicated the existence of direct relation between intellectual capital and future financial efficiency in mentioned companies.

Azam Azizi Asl (2011) studied the role of intellectual capital, based on added value model, on financial performance criterions of accepted companies in exchange market of securities during 2004-2010..In this research, since intellectual capital is one of invisible assets which at level of financial lists is not recognized and measured separately, it was tried to test impact of this asset on performance of present companies in exchange market of securities in Tehran. In this article, firstly components and models of measuring intellectual capital were introduced and then model of added value coefficient intellectual capital was used for measuring intellectual capital of companies.

Mohammad Nikoo Nesbati (2011) studied the relation between intellectual capital with market value and financial performance in accepted companies in exchange market of securities in Tehran. This research is noting that in world of present knowledge oriented, ability of organizations

depends on knowledge and managers must be aware of required abilities for protection competition advantage of organization . Researchers believe that intellectual capital is an important factor for protection competition advantage and acceptable performance of organization. So, recognition, valuation and management of intellectual capital have been made an important subject for companies .

Mehdi Khalili (2007) studied the relation between intellectual capital and financial performance of car industry companies. Main target of this research is providing vast scientific and experimental study about impact of intellectual capital on financial performance of car industries companies so that components of intellectual capital caused work force efficiency and competition in car market and development of financial performance of companies.

Mohammad Selgi (2010) studied impact of intellectual capital on financial performance and value of companies in exchange market of securities in Tehran. This research pointed out that, nowadays, world is passing industrial economic era and entered to economics based on knowledge. Companies, by using resources are growing and competing which are different from past .

Statistical population in this research are total companies accepted in exchange market of securities in Tehran during 2003-2007 in which 112 companies were selected for testing eight main and subsidiary hypotheses of this research

Amin Mehrabi (2010) studied the relation between intellectual capital and financial efficiency of companies accepted in exchange market of securities in Tehran. This research describes that in the present era, called era of knowledge oriented economy in which role and importance of knowledge capital in economy and business has made many changes and day by day its importance is increasing. This case caused an increase of intellectual capital importance as a subject of research and economics. Target of this research was the study of relation between intellectual capital and financial efficiency of companies.

### **Research hypothesis**

#### ***Main hypothesis***

There is a significant relation between intellectual capital and financial performance of Ferdowsi financial and credit institute.

#### ***Subsidiary hypothesis***

1. There is a significant relation between human capital and financial performance of Ferdowsi financial and credit institute.

2. There is a significant relation between structural capital and financial performance of Ferdowsi financial and credit institute.

3. There is a significant relation between customer capital and financial performance of Ferdowsi financial and credit institute.

### **Research method**

For evaluation of variables, SPSS software and specially Lisrel software were used for cause-and-effect relations of independent variables with dependent variables. Independent and dependent variables in this research are as follows:

With regard to the raised reasons in principles of theory, in this study, intellectual capital based on Palik model was regarded as independent variable including such criteria as performance of used capital, performance of human capital, performance of structural capital and customer performance, which were calculated based on coefficient of intellectual added value..

Dependent variables in this research was financial performance of Ferdowsi financial and credit institution, in which its performance was divided into two parts of performance and effectiveness.

For collecting information, library method and for gathering relevant data, observation and questionnaire have been used. For data analysis, different descriptive methods were used and SPSS software, specially Lisrel software, was used for making causative relations of independent variables with dependent variables. Also, Friedman test was used for studying strong and weak points of intellectual capital test.

**Statistical and sample population**

The type of research is experimental based on purpose and based on gathering data, descriptive correlation of structural equation model was used. The participants included all branches of Ferdowsi financial and credit institute in Iran.

**Research findings**

Hypothesis H0 and H1 have been designed as follows:

H01: There is no significant relation between intellectual capital and financial performance

H02: There is no significant relation between structural capital and financial performance.

H0 3: There is no significant relation between customer capital and financial performance.

For data analysis, first descriptive statistics for demographic information including sex, level of education was obtained. Then, analytical statistics is raised. In analytical statistics, Pearson correlation was used in order to study the relations between components of intellectual capitals (human capital and structural and customer) and impacts of this intellectual capitals on financial performance correlation and in case of having relation, test of regression and structural equation model have been used.

**Descriptive statistics**

In this part, samples were distributed based on sex, population, education, age, and experience in financial institutions.

**Table 1 : Frequency and percentage based on managers’ sex in different branches**

Sex	Frequency	Percentage	Cumulative frequency and percentage
Male	197	86.8	86.8
Female	30	13.2	100
Total	227	100	

As it is seen in table 1 ,86.8 % of respondents are men and 13.2 % remaining are women.

**Table 2: Frequency and percentage relevant to education levels of managers in respondent branches**

Level of education	Frequency	percentage	Cumulative frequency and percentage
Diploma	95	42.6	42.6
Higher diploma	17	7.6	50.2
BA	105	46.3	97.3
MA	6	2.6	100
Total	227	100	

As is observed from the above table ,42.6 % of respondents have diploma , 7.6 % higher than diploma, 46.3 % bachelor degree , and 2.6 % M.S. degree and others.

**Table 3 : Frequency and percentage regarding age of managers in respondent branches**

Age	Frequency	Percentage	Cumulative frequency and percentage
Under 30 years	1	0.5	0.5
Between 30 to 35	34	17.3	17.8
Between 35 to 40	85	43.1	60.9
Between 40 to 45	48	24.4	85.3
Between 45 to 50	20	10.2	95.4
Upper than 50	9	4.6	100
Total	227		

**Table 4: Frequency distribution relevant to experience of managers in respondent branches**

Experience in financial institutes	Frequency	Percentage	Cumulative frequency and percentage
Under 10 years	22	10.4	10.4
Between 10 to 15 years	67	31.8	42.2
Between 15 to 20 years	89	42.2	84.4
Between 20 to 25 years	3	1.4	85.5
Between 25 to 30 years	29	13.7	99.5
Upper than 30 years	1	0.5	100
Total	227		

***Inferential statistics***

In order to study the relation between each of intellectual capitals in branches of Ferdowsi financial and credit institute, test of correlation coefficient Pearson was used. Pearson correlation test brings the possibility of considering level of significance ( $\alpha=5\%$ ).

If significance level is higher than .5, assumption of zero is accepted and shows there is no significant relation between the desired variables. In this part, hypotheses of research were studied and analyzed.

***First Hypothesis testing***

**H1:** Human capital causes improvement of financial performance in branches of Ferdowsi financial and credit institute.

**H01:** There is no significant relation between human capital and financial performance in branches of Ferdowsi financial and credit institute.

First, it is necessary to prove hypothesis of significant correlation between these two fixed variables and then in case of having significant correlation, regression test was used for effect size of human capital impact on financial performance .

**Table 5 : Pearson correlation test between human capital and financial performance**

Variable	Correlation coefficient	Sig.	Result
Human capital performance	-0.091	0.05	No

As it is clear from the above table ,Pearson correlation coefficient between two variables is - 0.091. But, value of significance observed is equal to 0.171 and is higher than 0.05. So, the hypothesis is confirmed at 95% confidence level.. In other words, there is not significant relation

between these two variables. So, human capital did not cause improvement of financial performance.

**Second subsidiary hypothesis testing**

H2: Structural capital causes improvement of financial performance in branches of Ferdowsi financial and credit institute.

H02: There is no significant relation between structural capital and financial performance in branch of Ferdowsi financial and credit institute.

**Table 6: Pearson test of correlation between structural capital and financial performance**

Variable	Correlation coefficient	Sig.	Result
Structural capital performance	-0.05	0.05	No

With regard to table 6, Pearson correlation coefficient between two variables is -0.051 . But, value of significant number (sig) is observed to be equal 0.477 and is higher than 0.05. Therefore, hypothesis H02 is confirmed at 95% confidence level. In other words, there is not significant relation between these two variables. Therefore, structural capital did not cause improvement of financial performance.

**Third subsidiary hypothesis**

H3: Customer capital causes improvement of financial performance in branches of Ferdowsi financial and credit institute.

H03: There is no significant relation between customer capital and financial performance in branches of Ferdowsi financial and credit institute.

**Table 7: Pearson correlation test between customer capital and financial performance**

Variable	Correlation coefficient	Sig.	Result
Customer capital performance	-0.054	0.05	No

By looking at table 7, the amount of Pearson correlation coefficient between these two variables is -0.054. But, significant value observed is equal to 0.419 and higher than 0.05 . Therefore , the third hypothesis is confirmed at 95% confidence level. In other words, there is no significant relation between customer capital and financial performance.

Finally, it should be stated that, because of these three capitals have not any impact on financial performance , testing based on structural equation modelling is no important.

**Conclusion**

After knowledge economy came into existence, invisible assets like intellectual assets played a significant role in some variables such as business and organization performance. Therefore, competition advantage of organization future is related to effective and suitable use of these types of invisible assets . So, in this research, attempts have been done for studying the mutual relations between components of intellectual capital (human capital and structural capital and customer capital) and impacts of these capitals on financial performance in branches of Ferdowsi financial and credit institute .

For this purpose, resulting data from questionnaire has been analyzed and finally a model also provided for studying the mutual relations between components of intellectual capitals (human capital and structural capital and customer capital ) and impacts of these capitals on financial performance .

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