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## Effect of Intellectual Capital on Firm Performance

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### Abstract

In the era of knowledge-based economy, organizations tend to use two distinct sources for making profit and value creation. These resources are material or tangible and intangible resources or intellectual resources. On the other hand, can be said to be the intellectual capital than physical capital, Could explain financial performance indicator. The purpose of this paper is to investigate the effects of intellectual capital on performance indicators. Variables were based on data collected. To calculate the performance of the corporate, balanced scorecard approach was used. A total of 89 questionnaires were distributed among the employees and operation administrators of 4 factories. Spss18 and Amos 20 were used for data analysis. The results showed that intellectual capital have positive and significant impact on financial performance, customer, business processes, and learning and growth.

**Keywords:** Intellectual Capital, Firm's Performance, Balanced Scorecard, Business Processes, Financial Performance.

### Introduction

Since the 1980s, the world economy is moving towards industrialization based on the data. In this new world that information and economy has significant role, should paid to the development and management of information and knowledge to earn money. Generally, the value is caused by information sources is called intellectual capital (Guthrie et. al, 2012). Organizations are moving towards knowledge-based economy, economy what knowledge and intangible assets are recognized as the most important competitive advantage of organizations.

Today, the use of intangible assets has a significant impact on the success and survival of the organizations, so that it creates a new field of study and research in the management. One of the most important intangible assets that have been studied is intellectual capital and its derivatives. Productivity and business performance of many organizations depends on effective management of intellectual capital, create value by investing in intellectual capital and focus on intellectual capital as a source of competitive advantage (Costa, 2012). So, the identification, measurement and management of intellectual capital have particular importance. Intellectual capital is all non-monetary and non-communication resources that

are fully or partially controlled by the company and will create value for the company (Ross et. al, 2005).

Intellectual capital has grown in the field of science and knowledge. The term intellectual capital was first introduced by John Kenneth Galbraith in 1969. Before that, Peter Drucker used the term knowledge worker instead of it. Yet there is no consensus on the definition of intellectual capital: accordingly, intellectual capital is processes and assets which are usually not reflected in the balance sheet. Intellectual capital in the organizations is recognized as an intangible asset based on knowledge (Min lu, 2012).

Measurement and management of intellectual capital has two important respects. First, inside the organization that it's goal is better allocation resource in order to efficiency and minimize costs of the organization. Second, outside the organization that its goal is the access to information of existing and potential funding organizations to anticipated future growth and long-term planning. As long as intellectual capital is known as a potential source to create economic value, it has been shown that Intellectual capital can be effective in predicting the company's performance (Abeysekera, 2011).

In the knowledge-based economy, intellectual capital is used to create value for the organization and in today's world; the success of any organization depends on the ability to manage these assets. Intellectual capital measurement is essential to compare different companies, determine their true value and even improve their controls. In some of today's organization, intellectual capital is used in order to evaluating innovation, creativity, efficiency, organizational performance and creating value. Advantages that intellectual capital makes them, such as knowledge, expertise, financial resources, operational strategy and report for investors are potential resource to improve organizational performance (Abdullah and Sofian, 2012).

In recent years with the increasing Changes in importance of science, the inability of traditional accounting systems can be seen more to measure the true value of intangible assets. So, in this study the true value of intangible assets based on knowledge will be included in the financial statements. The main aim of research is to find ways to increase and improve the financial performance according to intellectual capital. To examine the correlation between intellectual capital of firms listed in Tehran stock exchange and their financial performance, value added intellectual capital coefficient Pulic is used. In the continue, background and variables are presented. At the end, the methodology and the data analysis and the discussion are expressed.

### **Literature Review**

Wagiciengo and Belal (2012) investigate about Intellectual capital disclosures by South African companies. The main purpose of their study is to examine the extent and nature of intellectual capital disclosures in 'Top 20' South African companies over a 5 years period (2002–2006). The results show that intellectual capital disclosures in South Africa have increased over the 5 years study period with certain firms reporting considerably more than others. Out of the three broad categories of intellectual capital disclosures human capital appears to be the most popular category. This finding stands in sharp contrast to the previous studies in this area where external capital was found to be most popular category.

Abeysekera (2011) examine the effect of current-period intellectual capital disclosure on earnings and current annual stock return during a civil-war period. This study finds that firms do not include the current period intellectual capital disclosure in the current stock return and the increase in the current-period intellectual capital disclosure activity have no

influence on earnings included in the current stock return. Future accounting-based earnings, if stated in the current period, by contrast are included in the current stock return. The findings provide insights into the intellectual capital disclosure practice and its influence on stock return in a civil-war environment.

Ramezan (2011) seeks to investigate the relationship between organizational organic structure and intellectual capital improvement. Researches show that the organic structure and intellectual capital have a strong relationship but this relationship has not been examined systematically. The results support the view that organic structure has a positive impact on intellectual capital. Therefore, the organic structure can improve intellectual capital in the organization. The study helps managers to design flexible and dynamic organizational structures to enhance the intellectual capital in the organization and increase the ability to compete.

### **Hypothesis**

We expect manufacturing firms to experience the impact of intellectual capital on firm performance.

This suggests the following hypothesis:

Hypothesis 1: intellectual capital has positively impact on firm's performance.

Hypothesis 2: intellectual capital has positively impact on financial performance.

Hypothesis 3: intellectual capital has positively impact on firm's customers.

Hypothesis 4: intellectual capital has positively impact on business processes.

Hypothesis 5: intellectual capital has positively impact on growth and learning.

### **Intellectual Capital**

In recent decade, complexity and economic problems have highlighted the competitive challenges that organizations faced. The stability of any economic system depends on physical assets, development and management intangible assets such as intellectual capital. After knowledge is known as a strategic resource in the organization, the role of intellectual capital is substantial in improving the organization's competitive advantage. After years, defining and classifying intangible assets still remains a question. Studies in the field of intellectual capital as an intangible asset increased from the second half of the 1990s and in recent years many explanations have been offered by academics and administrators. According to one view, intellectual capital is dynamic system of intangible assets available in the organization, its effective management is guarantee for the organization, along with physical capital as a sustainable competitive advantage create value for the organization (Veltri, et. al, 2011).

Intellectual Capital covers three general areas; capital people-oriented, capital structure is based on technology policy and capital customer that focuses on customers. Thus, intellectual capital can be seen in three dimensions, including human capital, structural capital and customer capital investment is also called communication. The main value of human capital is the skill set that an employee gains through education and experience in career path and provide future value to the organization. This dimension is the basis of other aspects and has indirect effect on performance organization. Organizational members are included in two set, staff and managers. These different roles have different effects on the organization. Versus, structural funds aim to provide the conditions for improving business performance based on knowledge and competition. Capital structure includes organizational culture, organizational structure, organizational training, operational flow and information flow to lead operational efficiency of the organization and structure. Finally, Capital structure

is concerned the relationship between organization and its customer. Communicational capital is mechanism for converting structural capital into value. Communicational capital includes customer loyalty, customers, and distribution channels, knowledge of organizational patterns, treaties and contracts. Each of these three is key elements that will not alone lead to intellectual capital (Shih et. al, 2011).

Organizations need to have all three capitals simultaneity and make them interact each other to create value and competitive advantage. Leading Intellectual Capital generally focuses on implicit and explicit knowledge. Implicit knowledge is at the individual level and it is difficult to compilation it by the organization and make communicate base on it. But explicit knowledge has more ability to information sharing and communicates. Part of the intellectual capital management is to understand what type of information dealing with the organization, implicit or explicit (Erickson et. al, 2007). Correct management and Use of intellectual capital leads to innovation, advances in investment and competitive advantage. These factors are essential to improve organizational performance, sustainable profitability and provide a specific competitive situation in today's unpredictable economy (Abdullah and Sofian, 2012).

### **Balanced Scorecard**

Balanced scorecard is a performance appraisal method planned for measuring the organizational efficiency to develop their strategies. A BSC readily provides complex business information to managers at a glance and facilitates improved decision-making. However, BSC in its original form does not include any objective methodology, and when many perspectives are considered in the BSC framework with several measures in each perspective, the ability of managers to comprehend the huge volume of information becomes limited.

The Balanced Scorecard (BSC) methodology focuses on major critical issues of modern business organizations: the effective measurement of corporate performance and the evaluation of the successful implementation of corporate strategy. Despite the increased adoption of the BSC methodology by numerous business organizations during the last decade, limited case studies concern non-profit organizations (e.g. public sector, educational institutions, healthcare organizations etc.) (Grigoroudis et al., 2012).

First devised by Kaplan and Norton in 1992, the balanced scorecard approach consists of four perspectives: learning and growth perspective, internal process perspective, customer perspective, and financial perspective (Kaplan & Norton, 2006). The BSC model contains four new management processes that, separately or together, help to link long-term strategic objectives with short-term actions. Numerous companies and industries have adopted BSC, which meets several management needs. The BSC model is more than a collection of financial and non-financial measurements, and represents a translation of business unit strategy into a linked set of measures that define both long-term strategic objectives and the mechanisms for achieving/obtaining feedbacks regarding those objectives (Huang et al., 2011).

### **Conceptual Model**

As previously described three dimensions of intellectual capital, human capital, structural capital and relational capital is formed. This form of intellectual capital in relation to the dimensions of the flash is show. In this study, the impact of intellectual capital on firm performance ,including learning and grow, business processes, customer performance and financial performance may be reviewed by the arrows shown in Figure 1.



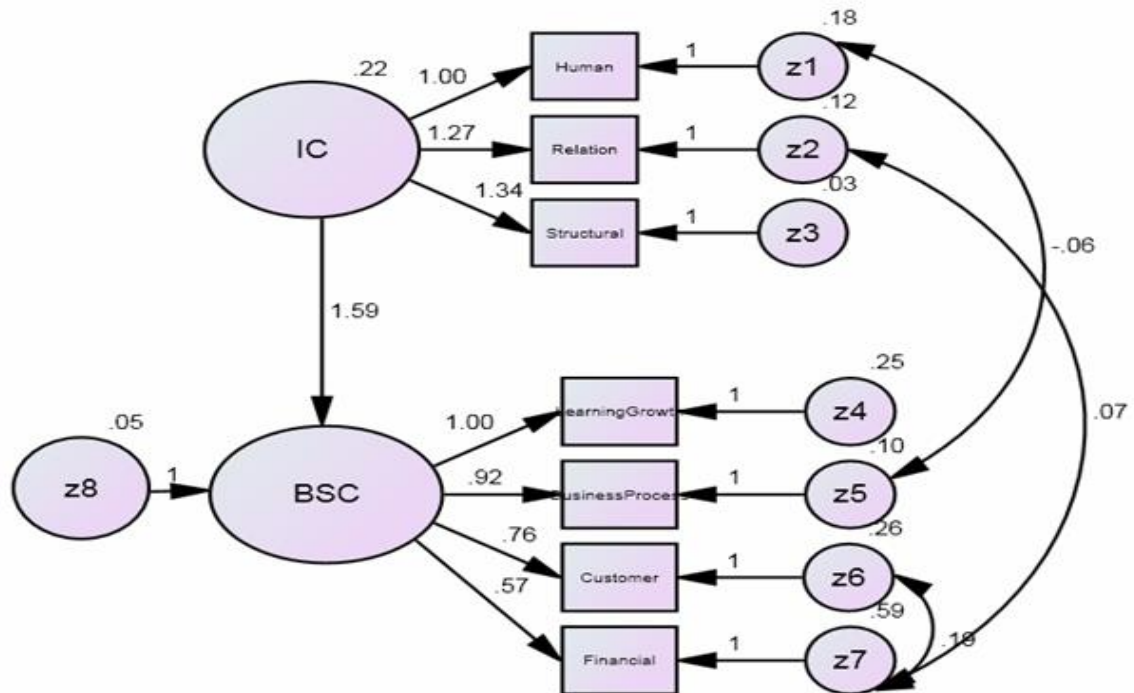


Figure 1. Research conceptual model

### Methodology of Research

We collected data for this study through a combination of questionnaires and secondary sources. Different key informants were used for obtaining survey information for the independent (intellectual capital) and dependent variables (firm's performance).

Also intellectual capital and balanced scorecard were developed based on questionnaire with the staff and operational manager. Questionnaire was based on Likert type and was used in the questionnaire to collect the required quantitative and qualitative data for the study.

#### a. sampling

The statistical populations in this study are composed of all automobile manufacturing plants of Iran. The sampling method adopted here is the categorical sampling fit to the capacity. By distributing the initial questionnaires and using Cochran formula 4 plants are selected as samples for evaluation. Based on the calculated sample capacity and specified numbers to each category, the plants that were selected randomly are: Iran Khodro, Saipa, Diyar Khodro and Zagros Khodro plants.

#### b. Data collection

This study collected data from the library and field methods are used. For data collection Fish collection and compilation of data in order to extract relevant and the impact of intellectual capital on firm performance of the questionnaire based on a thesis Lady Sarah Rashidi was used. Also the standards of intellectual capital and firm performance in this study are qualitative to quantitative 5-point Likert scale was used to them. Data collected and then classified using Spss18 program variables to test the research hypotheses were analyzed using Amos 20 software.

c. Analyzing methods

H1: intellectual capital has positively impact on firm’s performance.

In Wagiciengo and Belal’s longitudinal investigation of intellectual capital, they find that out of the three broad categories of intellectual capital disclosures human capital appears to be the most popular category. Data has been released and show in table 1.

Table 1. Analysis of Hypotheses

| Results | Hypothesis                 | Standards estimate | SE    | Fit indices |       |       | CR    | p   |
|---------|----------------------------|--------------------|-------|-------------|-------|-------|-------|-----|
|         |                            |                    |       | GFI         | CFI   | RMSEA |       |     |
| accept  | IC → Performance           | 1.593              | 0.217 | 0.966       | 1.000 | 0.006 | 7.354 | *** |
| accept  | IC → Financial performance | 1.213              | 0.156 | 0.928       | 0.997 | 0.01  | 6.80  | *** |
| accept  | IC → Customer              | 0.993              | 0.141 | 1.000       | 0.987 | 0.087 | 7.057 | *** |
| accept  | IC → Business processes    | 1.170              | 0.143 | 0.967       | 0.998 | 0.02  | 8.199 | *** |
| accept  | IC → Growth and learning   | 1.456              | 0.218 | 0.963       | 0.984 | 0.01  | 6.682 | *** |

As specified in the above table for fitting the model, the fit indices were used. GFI index the relative amount of variance and covariance of the joint through the evaluation model. GFI range is between zero and one. GFI value should be equal to or greater than 0/90 .The value of this indicator for all assumptions was larger than 0/90. It shows that the research model fit index is high. Another indicator is CFI, this index by comparing a model in which the so-called independent variables is no connection with the proposed model, the improvement also examines. This index in all of the hypotheses was larger than 0/90. RMSEA, the following indicators were used. This index is the root mean square approximation. That more than 05/0 is a smaller model would be more efficient. In the all assumptions this fact is true. The P value smaller than 0.05 and be more efficient model of CR is greater than 2 is CR model will be more efficient. The main hypothesis test P value equal to zero and the critical region (CR) was equal to 7.354. It concludes that the original assumption that the impact of intellectual capital on performance models of verification error is 0.006 and Shows that Intellectual Capital has an impact on performance and direction this relationship is positive.

Table 2. Indices of regression

| Variable   | Financial performance | Firm’s customers | Business processes | Growth and learning |
|------------|-----------------------|------------------|--------------------|---------------------|
| Regression | 75%                   | 78%              | 91%                | 84%                 |

As shown in Table 2 Hypotheses 2, 3, 4 and 5 will also confirm that the effects of each of these dimensions are different. The next highest correlation between the dimensions of business processes. After later learning and development, customer performance and financial performance after the last post is that it has the least impact.

As shown in the table above, the model is accepted and approved. There is also a positive regression weights can be said about the sub-hypotheses are confirmed. Weighted regression model is positive and significant correlations have been estimated at a high level.

### Discussion & Conclusions

Intellectual capital as an intangible asset has a great impact on today's knowledge-based economy. Organizations with a focus on intellectual capital have become a competitive advantage. In this study it has been observed that the higher intellectual capital, also have higher overall performance. In this study were used to assess the performance of the balanced scorecard approach Based on the findings of the four dimensions of intellectual capital, financial performance, customer, business processes, and learning and growth is positive and significant impact. As previously mentioned, cannot get to any of the three dimensions of intellectual capital that looked separately. But to achieve the intellectual capital of the organization must have all three together. Therefore, to improve the financial performance of all three intellectual capital should be paid enough attention Practical insights, this study suggests the importance of the role of intellectual capital on performance Hence it is necessary that the Businesses internal resources and capabilities have paid more attention.

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