

## Measuring the relationship between equity and intellectual capital

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### ABSTRACT

Human resources play essential role on the success of many organizations and it is essential to learn more about the effects of human capital on the success of business units. This paper presents an empirical investigation to study the relationship between equity and intellectual capital among stocks listed on Tehran Stock Exchange over the period 2001-2007. Using Pearson correlation test, the study selects a sample of 77 firms and investigates the relationship between equity and three components of intellectual capital, namely; human capital, structural capital and customer capital. The study has detected a positive and meaningful relationship between equity and all components of the survey ( $\alpha = 5\%$ ).

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## 1. Introduction

Human capital is considered as the most precious assets for most knowledge based organizations and there are several studies associated with the effect of human capital on the performance of organizations (Córcoles & Ponce, 2013; Mehralian et al., 2013). There are several studies to develop different methods for measuring intellectual capital (Gogan & Draghici, 2013). Boujelbene and Affes, H. (2013), for instance, investigated the impact of intellectual capital disclosure on cost of equity capital in a case study of French firms. They empirically examined the effect of intellectual capital disclosure (IC) on cost of Equity capital on companies listed in the French SBF 120 stock market index. They reported the existence of a significant and negative association between intellectual capital disclosure with its two components of human capital, structural and the cost of equity. However, the negative effect of the relational capital disclosure was not validated. The understanding of the effect of Intellectual capital disclosure on cost of equity capital helps policy makers in the evaluation of the costs and advantages of disclosure.

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Sydler et al. (2013) performed an investigation on relationship between intellectual capital and profitability of organizations. They showed that intellectual capital was associated with a higher return on assets over time. Ho and Williams (2003) performed a study on international comparative analysis on relationship between board structure and the efficiency of value added by a firm from its physical capital and intellectual capital resources. A firm with good intellectual capital could be more productive in terms utilizing the resources (Chen et al., 2014). Lu et al. (2014) in an empirical work performed an empirical investigation to study the relationship between intellectual capital and performance in the Chinese life insurance industry. A firm with good intellectual capital is believed to have better chance for customer retention (Longo & Mura, 2011) and it also contributes significantly on setting up appropriate strategies (Rexhepi et al., 2013).

## 2. The proposed study

In this paper, we present a survey to investigate the relationship between intellectual capital and equity on some selected firms from Tehran Stock Exchange (TSE). The main hypothesis of the survey is as follows,

Main hypothesis: There is a relationship between equity and intellectual capital on TSE listed firms.

The study considers three sub-hypotheses as follows,

1. There is a relationship between equity and human capital on TSE listed firms.
2. There is a relationship between equity and structural capital on TSE listed firms.
3. There is a relationship between equity and customer capital on TSE listed firms.

The study measures the equity from the official statements of the firms listed on TSE. To select the firms, we have excluded holdings as well as investment firms. In addition, the study determines the sample size as follows,

$$n = \frac{N \times z_{\alpha/2}^2 \times p \times q}{\varepsilon^2 \times (N - 1) + z_{\alpha/2}^2 \times p \times q}, \quad (1)$$

where  $N$  is the population size,  $p = 1 - q$  represents the yes/no categories,  $z_{\alpha/2}$  is CDF of normal distribution and finally  $\varepsilon$  is the error term. Since we have  $p = 0.5$ ,  $z_{\alpha/2} = 1.96$  and  $N = 444$ , the number of sample size is calculated as  $n = 77$ . In addition, the study designs a questionnaire adopted from some well known resources (i.e. Edvinsson & Malone, 1997; Roos et al., 1997; Stewart & Ruckdeschel, 1998; Bontis, 1998). The questions are designed in Likert scale and using Kolmogorov-Smirnov test, we have confirmed that the data were normally distributed. Therefore, we can use Pearson correlation test to verify different hypotheses of the survey.

## 3. The results

In this section, we present details of our findings on testing various hypotheses of the survey.

### 3.1. The main hypothesis: The relationship between equity and intellectual capital

The main hypothesis of the survey investigates the relationship between equity and intellectual capital. The Pearson correlation ratio between these two variables is equal to  $r = 0.642$ ,  $\text{Sig.} = 0.000$ , which means there is a positive and meaningful relationship between two variables. In addition, the implementation of regression analysis yields the following result,

$$\begin{aligned} \text{Equity} &= 0.372 \text{ intellectual capital} \\ R^2 &= 0.611 \quad \text{F-value} = 52.653 \quad \text{Sig.} = 0.000 \end{aligned} \quad (1)$$

Based on the result of the regression function given in Eq. (1), we can conclude that there was a positive and meaningful relationship between Equity and Intellectual capital. Therefore, the main hypothesis of the survey has been confirmed.

### 3.1.1 *The first sub-hypothesis: The relationship between equity and human capital*

The first sub-hypothesis of the survey studies the relationship between equity and human capital. The Pearson correlation ratio between these two variables is equal to  $r = 0.767$ ,  $\text{Sig.} = 0.000$ , which means there is a positive and meaningful relationship between two variables. In addition, the implementation of regression analysis is as follows,

$$\begin{aligned} \text{Equity} &= 0.582 \text{ human capital} \\ R^2 &= 0.767 \quad F\text{-value} = 106.942 \quad \text{Sig.} = 0.000 \end{aligned} \quad (2)$$

Based on the result of the regression function given in Eq. (2), we can conclude that there was a positive and meaningful relationship between Equity and human capital. Therefore, the first sub-hypothesis of the survey has been confirmed.

### 3.1.2 *The second sub-hypothesis: The relationship between equity and structural capital*

The second sub-hypothesis of the survey studies the relationship between equity and structural capital. The Pearson correlation ratio between these two variables is equal to  $r = 0.642$ ,  $\text{Sig.} = 0.000$ , which means there is a positive and meaningful relationship between two variables. Besides, the implementation of regression analysis is as follows,

$$\begin{aligned} \text{Equity} &= 0.412 \text{ structural capital} \\ R^2 &= 0.642 \quad F\text{-value} = 56.287 \quad \text{Sig.} = 0.000 \end{aligned} \quad (3)$$

According to the result of the regression function given in Eq. (3), we can conclude that there was a positive and meaningful relationship between Equity and structural capital. Therefore, the second sub-hypothesis of the survey has been approved.

### 3.1.3 *The third sub-hypothesis: The relationship between equity and customer capital*

The third sub-hypothesis of the survey tries to find out more about the relationship between equity and customer capital. The Pearson correlation ratio between these two variables is equal to  $r = 0.775$ ,  $\text{Sig.} = 0.000$ , which means there is a positive and meaningful relationship between two variables. Besides, the implementation of regression analysis is as follows,

$$\begin{aligned} \text{Equity} &= 0.595 \text{ customer capital} \\ R^2 &= 0.775 \quad F\text{-value} = 112.660 \quad \text{Sig.} = 0.000 \end{aligned} \quad (4)$$

According to the result of the regression function given in Eq. (4), we can conclude that there was a positive and meaningful relationship between Equity and structural capital. Therefore, the third sub-hypothesis of the survey has been approved.

In summary, we can conclude that all three components of intellectual capital, human capital, structural capital and customer capital, maintain positive and meaningful relationship with firms' equities. However, the effects of these components may be different.

## 4. Conclusion

In this paper, we have presented an empirical investigation to study the relationship between firms' equity and intellectual capital on selected firms from Tehran Stock Exchange. The proposed study has confirmed that there was a positive and meaningful relationship between intellectual capital as well as three components, human capital, structural capital and customer capital, and equities.

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