

## THE RELATIONSHIP BETWEEN THE FINANCIAL PERFORMANCE AND INTELLECTUAL CAPITAL IN THE FOOD AND BEVERAGE ENTERPRISES

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**ABSTRACT:** *Increase in the gap between companies' market value and their book value has resulted in numerous investigations into identifying the factors eliminated from the financial statements of companies. Intellectual capital value affects the value of companies but is not reflected in financial statements. This research investigated the relationship between financial performance of the companies in food and beverage industry listed in Tehran Stock Exchange and the components of intellectual capital. Accounting profit (loss) was used as a performance indicator. Pulic's value added intellectual coefficient was used to measure the performance of intellectual capital. Kolmogorov-Smirnov and Mann-Whitney U tests were used to analyze the information about 127 firms-years of 23 active companies in the industry. The results indicated that the communication and human capital efficiency coefficients were higher in profitable companies compared to unprofitable companies. However, structural capital efficiency coefficient was higher in unprofitable companies.*

**KEYWORDS:** Financial Performance, Intellectual Capital, Value Added Coefficient

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### INTRODUCTION

The initial goal of financial accounting is to provide useful information for investors to anticipate the performance of the economic unit. The necessity to report the profit as an initial source for investors' decision-making is well-documented and profit report is helpful in different ways such as presentation of a basis to calculate tax, a criterion for assessment of company's performance achievement, a criterion to determine the degree of divisible profits, a criterion to manage the profit distribution, a criterion to manage an economic unit and others that help the economy of the society (Kordestani&Hedayati,2011) . Profit index is one of the important indexes to measure the performance of the economic units and for this purpose, the scientists of financial affairs and accounting have made vast attempts to study the concepts, measurement methods and study of the behavior of the accounting profits. Bure believes that attention to the concept of accounting profit and its performance scope in company's performance provides a developing ground for experimental investigations of accounting and financial affairs and eventually leads to growth in companies (Saghafi &

Aghaei, 1995). The index of accounting profit is also considered as one of the most important information in economic decision-makings and a massive part of the conducted studies in the history of accounting and financial affairs is related to this area of accounting, and presentation of financial reports regarding the outcome of activities of economic firms is defined as sums that are consumable without return of the principal capita (Dornbusch et al, 1942). Hix in his definition of profit calls it a sum that the individual could consume during a period of time, while the beginning of the term is similar to the end of the term as far as welfare is concerned. Alivar, 1998 also defines profit as net profit in accounting which is an extra income compared to the costs in a certain period. This extra amount indicates the net increase in shareholders' equities and results from ongoing activities of the commercial unit, minor operation, random developments and other operations and developments together with the effective conditions on the commercial unit which are identified and measured according to the accepted principles of accounting. Experimental studies have shown that accounting profit has information concept and that is why professional accountants and financial analysts always emphasize on calculating it as far as compliance with the principle of integrating information and using disciplined measurements methods are concerned (Sepehr Duost & Motiee, 2011). Although the initial goal of profit reporting is to supply and present useful information for the individuals who make the best of the financial reports, description of more transparent goals including use of profit as a criterion to measure management efficiency, use of historical amounts of profit to anticipate the future of the profit unit, distribution of dividend and use of profit as a criterion to measure achievements and also a sign of future decisions of the management to grow and develop the company to have a better understanding of profit reporting are necessary (Shabahang, 2007). On the other hand, the model of traditional accounting focuses on financial and physical properties and ignores most of the properties of intellectual capital. Lack of knowledge about intellectual capital accounting and its role in the process of creating value cause the financial statements not to show most of the values for the shareholders and other users (Abbasi & Sedghi, 2010). The goal of this study is to find the relation between the elements of intellectual capital and performance of industrial companies producing foodstuff and beverages recognized by Tehran Stock Exchange Company.

### **Theoretical grounds**

Intellectual capital is an intangible property that is formed by technology, customer's information, credibility and culture of organizations which is very important and vital for the competitive ability of the organization (Bakhshani, 2014). Intellectual capital is divided into three components of human capital, structural capital and customer capital (Namazi & Ebrahimi, 2012) in fact, IC all over the world has become known as one of the most

important resources of profit-seeking and not-for-profit organizations(Hajeb et al,2015).Human capital: It is the knowledge reserve of the organization which is shown by the staff ( Bontis and et al,2000)Human capital is the basis of intellectual capital and is the main element to materialize intellectual capital (Stewart, 1997).Structural capital is comprised of all the non-human knowledge reserves in the organization and entails the databases, organizational charts, strategies, processes and guidelines and everything whose value for the company is more than its materialistic value. Customer capital (communication): It is located in the hidden knowledge in marketing channels and customer's relations.These three components of intellectual capital are the key stimuli of the performance of the organization and create the future wealth of the organization. Measurement of intellectual capital is important from two aspects, one intra-organizational whose goal is to better allocate the resources in line with efficiency and to minimize the organizational costs and the other is inter-organizational whose goal is to make the information about existing and potential capitals of the organization accessible to anticipate the future growth and long-term planning (Bontis et al,2000).

### **Research background**

Chang Vahsieh, 2011 studied the relation among elements of intellectual capital and financial performance and market in Taiwan stock exchange market in industry of electronics. The results of the study showed that there is a positive relation between operational performance & used capital and no relation between the operational performance and the structural and human capital (Chang, 2007).

The outcome of the study conducted by Maditinos et al, 2011 in Greece showed that there is a significant relation between intellectual capital and financial performance & shares market. It also shows that there is only relation between human capital and outcome of shareholders' equities (Madininos et al 2011).Ze' ghal and Maaloul, 2010 measured the intellectual capital and the index of added value and studied the results on financial and economic performance and market value of 300 English companies. The results of the study showed that there is a positive relation between efficiency of intellectual capital and economic and financial performance. Also there is a negative relation between the used capital (physical and financial) and economic performance, but there is a positive and significant relation between performance of market value and financial performance (Ze' ghal & Maaloul, 2010).Abbasi and Sedghi, 2010 also studied the effect of efficiency of intellectual capital on financial performance in Tehran Stock Exchange Market. In this study, the intellectual capital was calculated using added value coefficient (Pulic). The result of this study shows that the efficiency coefficient of each of the elements of intellectual capital has positive and

significant effect on the return rate of the shareholders' equities. The effect of efficiency coefficient of physical and human capital on equities is positive, but the effect of efficiency coefficient of structural capital is negative and significant. It also shows that the companies that have more intellectual capital show better financial performance (Abbasi & Sedghi, 2010). Namazi and Ebrahimi conducted a study to investigate the effect of intellectual capital (Pulic's added value model) on current and future financial performance of companies using minimum minor square regression. The results showed that regardless of the company's size, the debt structure and the old financial performance, there is a positive relation between intellectual capital and current and future financial performance of the company both at the level of the entire companies and industries (Namazi & Ebrahimi, 2012). The outcome of the studies conducted by Hemmati and Mehrabi, 2011 regarding the relation between intellectual capital and financial return of companies recognized by Tehran Stock Exchange Market showed that there is a positive and significant relation between intellectual capital and companies' financial outcome (Hemati & Mehrabi, A, 2011). Talebnia et al used panel regression method to study the relation between intellectual capital and market value and financial performance of the active companies in cement industry. The results showed that there is a significant relation between intellectual capital and market value and financial performance of these companies (Talebnia and et al, 2012). The author has never found any researches in Iran regarding study of the relation between elements of intellectual capital and financial performance measured by the accounting profit (loss) criterion.

## METHODOLOGY

This research is of descriptive and applied type. The goal of the study is to investigate the relation between the components of intellectual capital and performance of the companies active in foodstuff and beverages industry recognized by Tehran Stock Exchange Market. The index is the accounting profit (loss) performance. In order to calculate the intellectual capital, Pulic intellectual added value coefficient model was used. This method is a simple and transparent technique. The simplicity of this method enables the beneficiaries outside the organization to use it. This method was used in different researches including Firer and Willimas, Shiu, Chang, Kamath (Shabahang, 2007. Hemati & Mehrabi, 2011. Firer & Williams, 2003. Chang, 2007). The statistical society was the companies active in foodstuff and beverages industry of Tehran Stock Exchange Market. The file of financial statements of this company was received from the website of Stock Exchange Market during 2004-2009. The following were considered to select the sample:

1. Date the company was recognized by the stock exchange market had to be before 2001.

2. The financial information should be at least available for two consecutive terms as far as the studied terms are concerned.

## Result

Considering the above restrictions, 23 companies were found. The financial statements of all these companies were studied and no sampling was made. The total number of financial statements of 127 institutes was investigated using spss19 software. In the first step, the companies were classified into two groups of profit-making and incurring loss in every fiscal year as shown in table 1 as far as the accounting profit (loss) situation was concerned.

**Table 1: the accounting profit (loss) situation**

percentage	Number(compa ny- year)	situation	percentage	Number(com pany- year)
68.5%	87	profit	68.5%	87
31.4%	40	loss	31.4%	40
100%	127	Total	100%	127

In the next step, using Value Added Intellectual Coefficient (VAIC) model, the components of intellectual capital for each institute per year were calculated. This model was presented by Pulic (Madhooshi & Asgharnejad, 2010). The grounds to measure this model were three dependent variables for intellectual capital, i.e., 1. Communication Capital Efficiency (CEE), 2. Human Capital Efficiency (HCE) and 3. Structural Capital Efficiency (SCE).

The formula of VAIC coefficients is according to the following algebra equation formula 1:

$$VAIC_i = CEE_i + HCE_i + SCE_i$$

-Calculation of the added value of VA I of the company in i year is as follows formula 2:

$$VA_i = I_i + DP_i + D_i + T_i + M_i + R_i$$

$I_i$  is the total costs of company's profit for i year.

$DP_i$  is the total amortization costs of the company for i year

$D_i$  is the company's dividend for i year.

$T_i$  is the company's tax for i year.

$M_i$  is the shareholders' equity capital for i year

$R_i$  is the company's accumulated profit for i year

CEE<sub>i</sub> calculation is defined using the following phrases formula 3:

$$CEE_i = VA_i / CE_i$$

Where CEE<sub>i</sub> is the communication efficiency coefficient for the company. VA<sub>i</sub> is the total added value of i company. CE<sub>i</sub> is the book value of the net properties of i company (Sveiby, 2001)

-Salary and wages is one of the indexes of human capital of the company (HCE<sub>i</sub>). Thus HCE<sub>i</sub> is calculated as follows formula 4:

$$HCE_i = VA_i / HC_i$$

Where HCE<sub>i</sub> is the human capital coefficient for i company., VAI is the total added value of i company, HC<sub>i</sub> is the total invested amount for salary and wages of the i company.

-Calculation of SCE<sub>i</sub> which is the structural capital coefficient for i company is the first step to determine SCE<sub>i</sub> and to calculate the structural capital of company (SC<sub>i</sub>) which is calculated as follows formula 5:

$$SC_i = VA_i - HC_i$$

SC<sub>i</sub> is the structural capital of i company. VA<sub>i</sub> is the total added value of i company. HC<sub>i</sub> is the total invested amount for salary and wages of i company.

Pulic said that there is a proportionate reverse relation between SC<sub>i</sub> and HC<sub>i</sub> and as a result, SCE<sub>i</sub> is calculated as follows formula 6:

$$SCE_i = SC_i / VA_i$$

Where SCE<sub>i</sub> is the structural capital coefficient for i company. SC<sub>i</sub> is the structural capital for i company and VA<sub>i</sub> is the total added value of i company.

This model was selected as the model to measure the intellectual capital in this study due to its advantages over the other models (Chang, 2007). Following calculation of the components of intellectual capital for all companies, Kolmogorov-Smirnov test was conducted to study the normality of data distribution. The results of the test are shown in table 2:

**Table 2: Results of Kolmogorov-Smirnov test**

Variable title	Level of significance
Human Capital Efficiency Coefficient	0.00
Communication Capital Efficiency Coefficient	0.00
Structural Capital Efficiency Coefficient	0.022
Performance Situation	0.00

Since the level of significance is less than 0.05, distribution of the coefficients of human, structural and communication capitals efficiency and also the companies' performance situation are not normal. To raise and statistically analyze and compare the two independent groups, if the data of at least one of the groups are abnormal and or data is collected by steps, Mann-Whitney test will be used (Hajizadeh & Asghari ,2011).

**Table 3: Ranks table**

Variable	Performance situation	Number	Average rank	Total ranks of variables
Communication capital	Profit-making	86	77.19	6638
Communication capital	Incurred loss	41	34.08	1363
Communication capital	Total	126		
Human capital	Profit-making	86	75.73	6513
Human capital	Incurred loss	40	37.20	1488
Human capital	Total	126		
Structural capital	Profit-making	74	39.24	2904
Structural capital	Incurred loss	7	59.57	417
Structural capital	Total	81		

As it is noticed in the above table, the average rank of communication capital efficiency coefficient and human capital efficiency coefficient in profit making companies is more than the loss incurred companies. But the average of structural capital efficiency coefficient is higher in loss incurred companies



**Table 4: results of Mann-Whitney test**

	<b>Communication capital</b>	<b>Human capital</b>	<b>Structural capital</b>
U Mann-Whitney statistic	543	668	129
Bilateral level of significance	0.00	0.00	0.029

Considering the results of the above tables, the bilateral level of significance which is used to compare the average of variable in two groups of profit making and loss incurred companies is less than 0.05. That is why the assumption of equal averages of the two groups is rejected. To conduct further study, table 3 could be referred to. Considering the fact that the average (total) rank of communication capital efficiency and human capital efficiency is more than the average (total) rank of these coefficients in loss incurred companies, it seems that the group of profit making companies has higher average rank in comparison with the group of loss-incurred companies.

## DISCUSSION

It was tried in this study to assess the effect of the components of intellectual capital on company's performance by using intellectual added value coefficient method. The results of Mann-Whitney Statistical test showed that the two parameters of communication capital and human capital ameliorate the company's performance. Hence communication capital and human capital play important roles to reduce costs and to create value for shareholders so that the profit making companies have higher communication and human capital efficiency coefficients. On the other hand the loss incurred companies have higher structural capital efficiency coefficient. Considering the above results, it seems that one of the reasons for the loss of companies active in the state foodstuff industry is their intensive dependence on properties and less use of knowledge, ability and creativity of human being. It seems that companies resort to increasing communication capital and human capital in order to improve their performance and profitability. It is worth mentioning that the results of this study correspond with the study conducted by Abbas and Sedqi in 2010. On the other hand, the results of the studies conducted by Namazi, Madhooshi, Hemmati, Chang, Ze ghal also approved the effect of intellectual capital on financial performance and return (Ze'ghal & Maaloul, 2010. Namazi & Ebrahimi, 2012. Madhooshi & Asgharnejad, 2010. Hemati & Mehrabi, 2011, Chang, 2007).



## SUGGESTIONS

According to the results of this study, the following suggestions are made:

1. Directors should increase the human capital efficiency coefficient and communication capital efficiency coefficient to improve the company's performance.
2. Government could use added value coefficient method to assess different economic companies.
3. The researchers are recommended to study the effect of components of intellectual capital on the other indexes of performance

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