Intellectual capital and Financial Performance of Wood Processing Enterprises in Republic Croatia

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ABSTRACT

This paper deals with theoretical and empirical identification of interdependencies and impact of intellectual capital on the profitability of wood processing enterprises in the Republic of Croatia. The profitability of an enterprise depends on many external and internal factors. One of the key factors, if not the most crucial one, is its development and perspective. This problem can be analysed from the management standpoint, which leads to the hypothesis that the profitability and market position of an enterprise largely depends on its intellectual capital. The performance measures used were net profit margin, organization efficiency, return on assets (ROA), return on equity (ROE), Intellectual Capital efficiency, whereas IC efficiency was measured using value added intellectual coefficient (VAIC™).The empirical part of this study was based upon yearly financial reports of Croatian wood processing enterprises listed on http://www.biznet.hr/.

Key words: Wood Processing, Enterprises Intellectual capital, VAIC™, ROE, ROA

1 INTRODUCTION

In today's turbulent business environment, where various crises are alternated, there is a reason to wonder what should, in such circumstances, be the goal of business.

Industry awareness of the need for further reports on all available resources and their contribution to the overall value creation is increasing, despite numerous existing numerical reports on business performances, thus realistically expressing the value of the overall business and properly manages the entire process.

The basis of the measurement system that would fit the new business environment is the value, so it is logical, and so far the only understandable solution that the business results in the knowledge economy is an added value (Jurczak, 2008). By that, on one hand business ability of the enterprise is visualised, and on the other hand a bridge between intellectual capital, as intangible resource, and monetary sphere is created (Ross and etc., 2005).

While companies in the old economy were dependent on tangible assets, such as real estate and factories, today's new economy is based on a new type of companies that are dependent on intangible assets such as information and knowledge (Kolaković, 2003). Knowledge is what creates value (Perić and etc. 2010).Internet provides instant dissemination of knowledge throughout the world. The more people are involved in the sharing of knowledge it has greater value, because it increases, broadens and deepens (Kolaković, 2003).

Creating value refers to the creation of new knowledge and exploiting its value (Janošević and etc. 2013). The most important asset is intellectual property that has no physical feature. While traditional economic theory studied capital as physical items (land, factories, equipment and money), economists have recently expanded their views. As Lief Edvinsson (2002) says: „the invisible hand of the economy, of which Adam Smith speaks, has become even more elusive".

This concept has numerous advantages, and in addition it does not replace the existing measuring instruments, but complements them. Added value is completely objective indicator of business performance as both categories that form it, the output and input, are taken from market relations. In comparison, the profit is an indicator that is derived from a multitude of subjective, internal transactions and calculations. Furthermore, added value shows the company power in creating wealth (Pulić and Sundać, 2001).It is simply calculated at all levels, from the process in the wood processing enterprise, on the level of processing group, and it can be calculated on the regional and national level. Thus, the added value is one universal dimension that connects the entire economy. In addition, it can be calculated as needed, as well as current business reports: weekly, monthly, quarterly, annually.

It is a measure that indicates how employees and management contribute to the creation of value. Using the added value can be an important first step towards motivating employees to participate, with their contribution, in increasing created enterprises wealth. Evidently, this must be reflected in their salary. Greater added value with higher employee salaries provides greater dividends to investors - shareholders, higher payments to the state and investment in future growth. This measure does not differentiate participants in the economy, as it was the case in all previous economic systems; rather it connects them with a common goal: the creation of greater value.Generally speaking, the role of measurement is to allow us to focus on things that we want to observe.Therefore, the measurement provides a strong management tool that will affect organizational behavior and work (Kolaković, 2003).

Various authors (Bontis, 1996, Edvinsson and Malone, 1997; Sveiby, 2001; Sulivan, 2000, Chen ant etc, 2004.) have presented some definitions of intellectual capital, such as:

- Intellectual capital is the sum of the collective knowledge, experience, expertise, abilities and skills of the company on how to achieve greater results, provide better services or create other intangible value for companies;

- Intellectual capital is the knowledge that exists within the company and which can be used to create a competitive advantage - in other words, it is the sum of everything that all employees know and what sharpens competitive advantage of the company;

In essence intellectual capital represents knowledge as a dynamic human process, but only when the knowledge and intelligence are applied and transformed into something of value for the company and its customers, knowledge becomes a valuable asset, that is, intellectual capital of the enterprise. Otherwise, this knowledge remains merely unused intellectual potential (Kolaković, 2003).

1.1. Methods for measuring and managing Intellectual Capital

The best-known methods, which are now used for the measurement and management of intellectual capital are: EVA® (Stewart, 1991;1994), Balanced Score Card (Kaplan&Norton, 1996), Skandia Navigator (Edvison & Malone, 1997), Intangible Assets Monitor (Sveiby, 1997), ICE (Ross, 1997) and VAIC™ (Pulić, 1999). Business performance of each company, according to the author of the method for calculation, shows the efficiency of intellectual capital.

1.2. VAIC analysis

The VAIC™ model was developed and implemented by Ante Pulić (1998, 2004). Basically, it is a calculation of VA, as an indicator of a enterprises efficient use of IC. The basic idea behind this approach lies in determining the contribution of all enterprise resources (human, structural, and physical) to the creation of VA, which is calculated as:

$$VA = OUT - IN$$

Outputs (OUT) represent total sales realised on the market. Inputs (IN) entail all the costs of managing the company, except for those related to human resources, which are viewed in this model as an investment. Further steps involve calculating intellectual and physical capital efficiency coefficients. A enterprises IC comprises HC and SC. Calculation of HCE starts with employee salaries and wages, HCE is therefore calculated as:

$$HCE = VA / HC$$

Here, HC denotes total salaries and wages during one fiscal year. In this manner, the model describes the relative contribution of human resources to the creation of VA. The next component of IC, SC, represents everything that stays in the office when employees go home. SC comprises hardware, software, organizational structure, patents, trademarks, and all other factors that support or increase EP (Bontis,2001). SCE is calculated as:

$$SCE = SC / VA$$

SC represents the second component of an IC. The aforementioned equation indicates that SCEis inversely related to HCE. ICE is obtained by summing the partial efficiencies of HC and SC: ICE

$$ICE = HCE + SCE$$

In the context of the research value of the IC by method VAIC ™ is defined as an indicator of how efficiently intellectual capital creates value (Lolić, 2011).

1.3 Research Objectives and Hypothesis

This paper examines the relationship between IC and the financial performance of wood processing enterprises in the Republic of Croatia. Based on described problem, following hypothesis is set:
H1: The efficiency of intellectual capital affects the profitability of wood processing enterprises in Croatia.

2 MATERIALS AND METHODS

Empirical research included 32 small wood processing enterprises in Republic of Croatia. According to the 2007 National Classification of Activities, these enterprises fall into categories C16 - wood processing and C31 - furniture production, whose annual financial reports were listed on

for a period from 2010 to 2012. Data were analysed with the help of a software package Excel and Statistica. To be able to evaluate whether the size of some indicators are satisfactory or not, it is necessary to compare these indicators to specific sizes, which in fact represent a base of comparison.

Net profit margin (NPM) = Net profit / Sales earning

Indicator ofreturn on assets (ROA)= Net Profit / Assets

Indictor of return on equity (ROE)= Net Profit / Equity

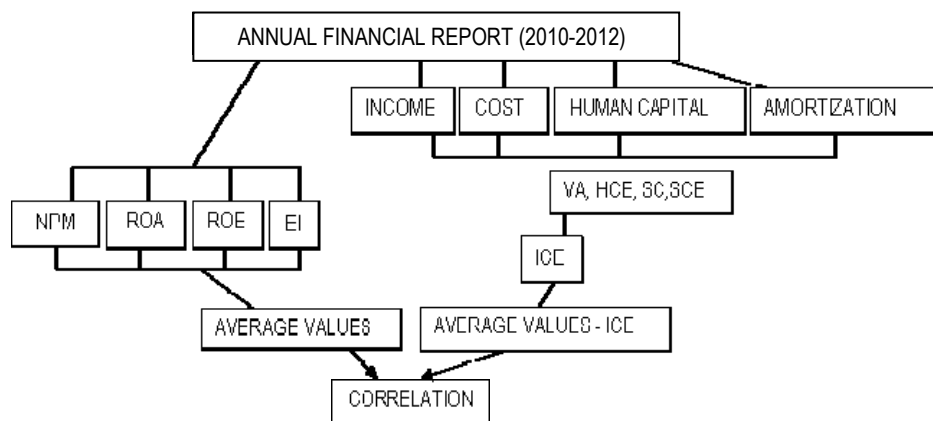The economic indicators (EI) = Total Income / Total expenses

Figure 1 Conceptual model of the research

Procedure of correlations between variables was performed by extracting average profitability and efficiency of IC, for each company individually, and a linear correlation between these averages was conducted, for all companies. A correlation between the business efficiency and ICE was conducted.

3 RESEARCH RESULTS

Mean values give us an insight into the overall correlation of parameters and their mutual influence on company business. Through the correlation of the mean values of indicators of all companies, as the most important element this paper hypothesis is tested.

The descriptive statistics is shown in Table 1, which includes minimum values, maximum values, values for means for all variables, and standard deviation for each variable. The data refer to the analysed period from 2010 to 2012.

Table 1 Basic data of descriptive statistics profitability and business efficiency with average values ICE wood processing enterprises

Variable	Descriptive Statistics (WOODEMA_STATISTICA_2014)							
	Valid N	Mean	Median	Minimum	Maximum	Variance	Std.Dev.	Standard Error
NPM	32	1,8372	1,10275	-6,1546	13,1776	10,9912	3,3153	0,5861
ROA	32	2,9968	1,49479	-4,7745	19,1365	23,6301	4,8611	0,8593
ROE	32	10,1214	5,47256	-13,4755	49,0837	180,3197	13,4283	2,3738
EI	32	1,1518	1,01608	0,7922	5,4526	0,6183	0,7863	0,1390
ICE	32	2,0719	1,58231	0,7971	16,0881	6,7054	2,5895	0,4578

Table 2 presents the results of correlation analysis. They indicate no correlation between ROE and bussines efficiency (correlation coefficient 0,65517 and -0,05407). In case of NPM and ROA, there is strong correlation with ICE (correlation coefficient 0.0,655 and 0,63055)

Table 2 The correlation of the average values of indicators of profitability and business efficiency with average values ICE wood processing enterprises

	Correlations Marked correlations are significant at p < ,05000N=32			
Variable	NPM	ROA	ROE	EI
ICE	0,6552	0,630557	0,246750	-0,054077

Figure 2 Net profit margins correlates with ICE and the highest correlation coefficient is 0, 6552. The correlation between the indicators with statistical significance at the 5% (p = 0.05) level and of that intensity is considered to be a strong connection.
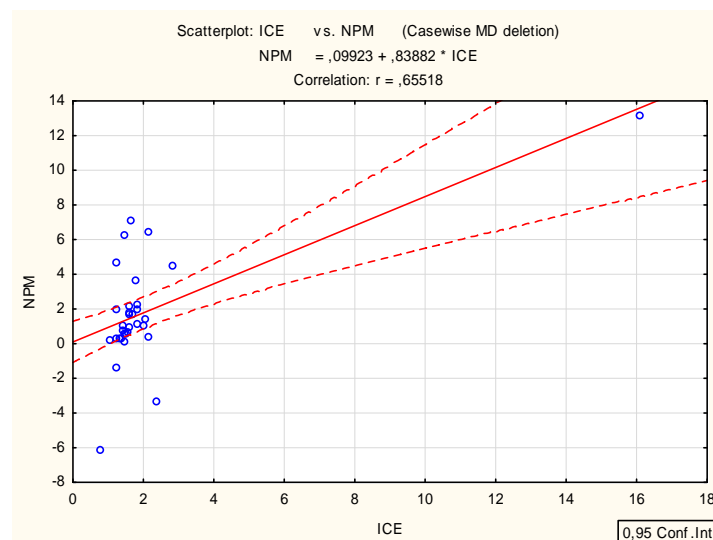

Figure 2 Correlation between mean values of ICE NPM

Figure 3 Correlation coefficient of the average values of ROA and efficiency intellectual capital in the reference period from 2010 to 2012, for 32 companies, amounts to 0.63056; such a correlation is positive and high.
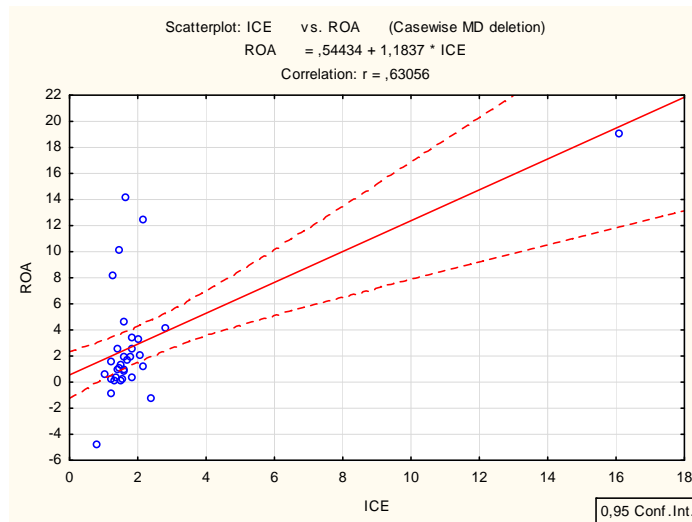
Figure 3Correlation between mean valuesICE andROA

Figure 4 Correlation of return on total equity and ICE is 0.24765, which is positive and very weak, thereof the conclusion is that there is no connection.

Business efficiency correlates with ICE in very low intensity, which is negligible at the level of -0.0541. (Figure 5).
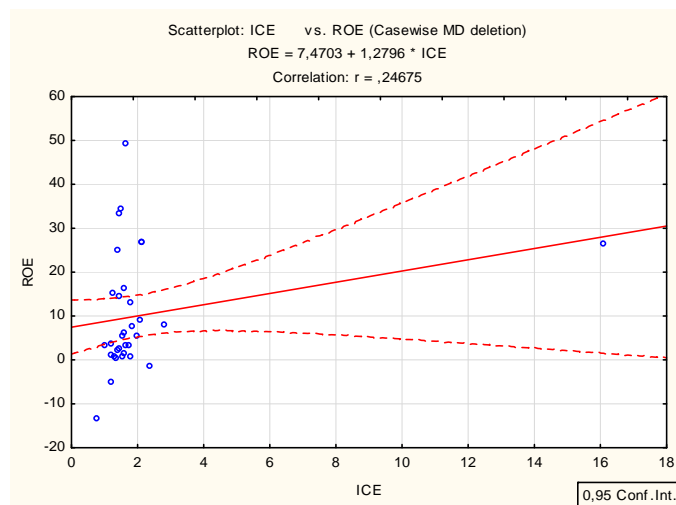

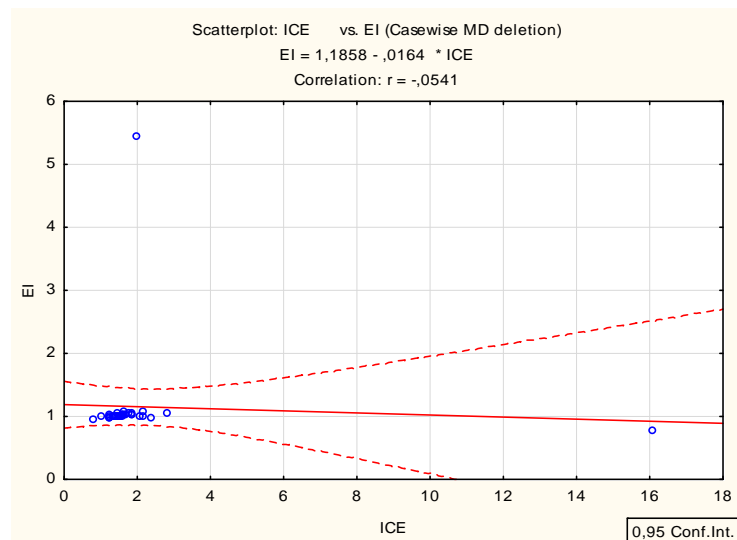Figure 4 Correlation between mean values ICE and ROE

Figure 5 Correlation between mean values ICE and EI

4 CONCLUSION

The intellectual capital efficiency and the need for quantifying insufficiently defined concepts introduced us into the sphere of intangible assets to which a numerical value was assigned to in this paper, and thus determine its importance. The study establishes the role and impact of IC efficiency as one of the key resources in creating new values and in company management. In assessing the importance the significance of human capital should not be underestimated. For this reason, this model was chosen, based on the annual financial statements and suitable for a comparative analysis of the enterprises. The profitability of the company is shown through three indicators of profitability, which are considered the most representative.

By testing set hypothesis about the impact of the intellectual capital efficiency on the profitability of the company for 32 wood processing enterprises in the Republic of Croatia, the results were obtained, from which we can conclude that the hypothesis is partially confirmed. There are connections between variables and they are positive (NOM and ROA), however, depending on the indicator of profitability the intensity varies. Distinct correlation exists between the net profit margin and ICE and is 0.65518, which is the highest value of the correlation in this research. The weakest intensity correlation is between the indicators of business efficiency and ICE, which is -0.0541.A correlation between the business efficiency and ICE was conducted, however there were no connections on significant level.

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