

## VALUE CREATION UNDER INTELLECTUAL ENTREPRENEURSHIP

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**Abstract.** The paper analyses the importance of intangible assets, especially intellectual capital (IC), to a contemporary firm. Referencing to the literature, the article reveals the company of Lithuanian market which can be truly called as intellectual entrepreneurship and therefore provides evidence of increased value creation ability of this company. The study showed that the companies which exercise increased intangible assets and intellectual capital performance are engaged in obtaining superior corporate performance variables. The supporting correlation analysis espouses the hypothesis that companies having higher IC can benefit from improved value creation. As a consequence, adequate management of intellectual capital helps to obtain the unique core competence which contributes heavily to enrichment of company's financial position and therefore can be applied as a successful tool for long-term value creation. The valuation approaches proposed in the paper can be easily implemented by enterprises.

**Keywords:** intangible assets, intellectual capital (IC), intellectual entrepreneurship, corporate financial performance, value creation.

**Jel classification:** G3, J2, J24, G32, P34, O16.

### 1. Introduction

The transition of the world's economy from industrial to "new economy" or knowledge-based economy has developed a several decades ago stressing the attention of academics and business people to the subject-matter of intangible assets and all related elements. Therefore, the knowledge-based economy can be explained best by Choudhury (2010) that "old economy" corresponds to materials while "new economy" stands for creativity and knowledge. At the moment, Melnikas (2012) observes that the creation of knowledge-based economy is the most important priority in the European Union.

Management theories attempt to provide different views to overall success factors of organizations. The intangible assets as a core element of companies' success are broadly investigated in resource-based theory of the firm. Surroca, Tribo, Waddock (2010) and Kristandl, Bontis (2007) state that resource-based view describes intangible assets as having the ability to create competitive advantage. Flatt and Kowalczyk (2008) observe that under the resource-based view assets, skills and capabilities are the fundamental elements obtained by companies which can lead to generation of competitive advantage and improved financial performance.

Speaking generally, intangible assets are such assets which do not have any physical shape or appearance, e. g. goodwill, trademarks, trade secrets, software, etc. Scholars propose various definitions and categories of intangible assets; although, many academics do not differentiate the intangible assets from intellectual capital as they come in very close relationship with each other (Barros *et al.* 2010).

The majority of scholars (Marr 2008; Radneanțu, Gabroveanu, Stan 2009; Choudhury 2010; Mačerinskienė, Survilaitė 2011a; Znakovaitė, Pabedinskaitė 2010; Rehman, Ilyas, Rehman 2011) propose the three main categories of intangible assets and intellectual capital and observe that such differentiation is used extensively in literature:

Human capital – the expertise, skills, entrepreneurial flair and satisfaction of employees;

Relationship/ relational/ customer capital – customer capital (e.g. relationships with customers), business partner capital (e.g. relationships with suppliers) and other stakeholder capital (e.g. relationships with investors);

Structural capital/ organizational capital – intellectual property involved in company's daily activities.

## **2. Coherence of intangible assets and value creation**

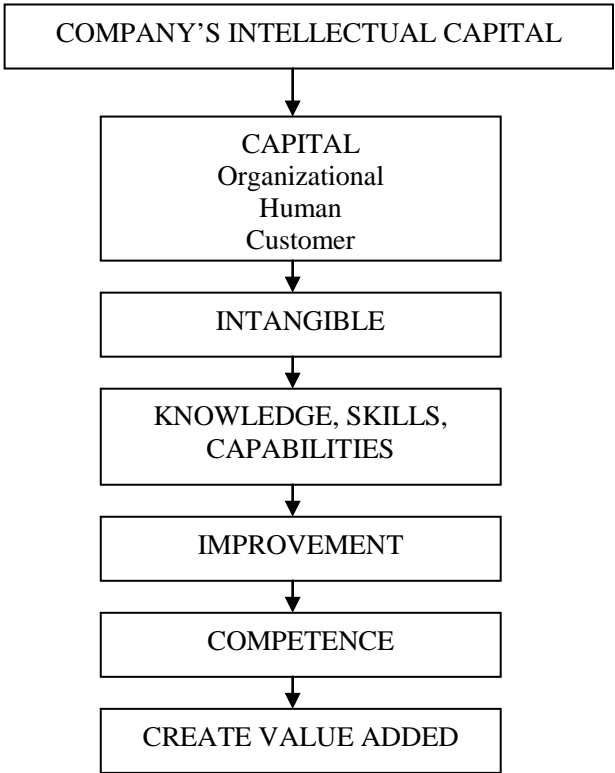
Scholars observe the positive influence of intangible assets on corporate performance. Volkov, Garanina (2008), Kashirina (2012), Battor, Zairi, Francis (2008) stress the importance of elements of knowledge-based economy and their ability to provide competitive advantage. Surroca, Tribo, Waddock (2010) point the most important intangible assets of the company – reputation, technology and human capital. Choudhury (2010) observes that adequate management of knowledge-based resources leads to improvement of corporate performance.

Value creation can be described as the process of value procurement (Murale, Jayaraj, Ashrafali 2010). The number of academics (Chareonsuk, Chansangavej 2008; Choong 2008; Moeller 2009) highlight that intangible assets are key resources in corporate value creation.

Scholars observe that value creation is stipulated by the value drivers which are available to the business. Lin and Tang (2009) observe the following sequence of intangible value drivers – innovation, technology, quality, customer and employee relations, brand value, managerial and social responsibility issues.

The process of value creation from intangible assets is broadly investigated by academics. Muhammad and Ismail (2009) discovered that Malaysian banking sector depend mostly on intellectual capital performance – there was found the existence of positive relationship between intellectual capital and profitability of the company and return on assets. Makki and Lodhi (2009) revealed that the efficiency of intellectual capital influences the return on investment of particular company. Murale, Jayaraj, Ashrafali (2010) discovered the relationship between the efficiency of intellectual capital and financial performance of a company.

In Lithuania, the value creation from intangible assets is also broadly ventilated by scholars (Karalevičienė, Matuzevičiūtė 2008; Mačerinskienė, Survilaitė 2011a, 2011b; Palumickaitė, Matuzevičiūtė 2007; Užienė 2010; Znakovaitė, Pabedinskaitė 2010). Mačerinskienė, Survilaitė (2011a) carried out a survey on importance of intellectual capital, its composition and the effects of intellectual capital on value added of the company in SME of Lithuania. It showed that human capital influences the company's value added mostly. Karalevičienė, Matuzevičiūtė (2008) conducted a survey Lithuanian industrial sector companies and discovered that the highest level of intellectual capital has contributed to construction and IT sectors while the lowest – to textiles sector companies. Znakovaitė, Pabedinskaitė (2010) found that intellectual capital is a key for successful boosting of revenue in Lithuanian and Latvian transport sector companies. Mačerinskienė, Survilaitė (2011b) explain that the value added can be influenced by intellectual capital of a company (Fig. 1).



**Fig. 1.** Intellectual capital's influence over company's value added (Mačerinskienė, Survilaitė 2011b)

According to Mačerinskienė, Survilaitė (2011b), the intellectual capital is composed of the free types of capital organizational, human and customer. This capital is intangible by nature and it also involves the knowledge, skills and capabilities in its each type. Thus, the development of these knowledge-related elements leads to the overall improvement of company's performance and therefore leads to creation of value added.

Academics also observe the contribution of employees, their knowledge and intellectual capabilities to corporate performance. Choudhury (2010) observes that employees tend to be the cornerstones of organizations. Thom, Grief (2008) find that knowledge of employees plays a vital role in knowledge-based economy. Ramirez, Hachiya (2008) highlight that the knowledge of employees improves corporate performance, helps to increase efficiency and upgrade productivity. Matei (2010) points out that the overall success of the company depends on its ability to employ the intelligence and knowledge of each employee and develop the intellectual capital of the company. Aksoy, Dinçmen (2011) observe that company's market value can be higher than accounting value can be a result of influence of intangibles like knowledge. Lithuanian academics (Bivainis, Morkvėnas 2012; Bivainis, Morkvėnas 2008; Atkočiūnienė 2008; Choudhury 2010; Ramirez, Hachiya 2008; Murale, Jayaraj, Ashrafali 2010; Matei 2010) also ventilate the area of employees' and organizational knowledge and its impact on organization.

### 3. Research methodology

The research analyses the coherence of intangible assets or intellectual capital of companies with corporate financial performance. The companies selected for the research are listed on NASDAQ OMX Vilnius Stock Exchange (NASDAQ OMX Vilnius Stock Exchange, 2012). The financial data is taken for the year 2010. The study analyses 13 companies of various sectors: manufacturing – AB “Vilniaus Baldai”, AB “Vilkyškių pieninė”, AB “Pieno žvaigždės”, AB “Rokiškio sūris”, AB “Utenos trikotažas”, AB “Grigiškės”, AB “Sanitas”; construction – AB “Panevėžio statybos trestas”; service to buildings – AB “City Service”; retail trade – AB “Apranga”; telecommunications – AB “TEO LT”; and electricity, gas, steam supply sectors AB “LESTO”, AB “Lietuvos dujos”.

The first part of the study represents the estimation of appreciation of intangible assets. Here, the intangible assets/intellectual capital is appraised via application of three methods. The overall value of intangible assets/ intellectual capital of firms is determined through the Calculated Intangible Value (further – CIV) method which is known as a useful tool in benchmarking companies. The efficiency of intellectual capital is evaluated using Value Added Intellectual Coefficient (further – VAIC) method, which includes calculation of value added, capital employed, structural capital, human capital and intellectual capital efficiencies obtained by companies. In this study Tobin's  $q$  helps to assess ability of companies to create value for shareholders, be competitive and attractive for investors.

The second part of the study investigates corporate performance of companies. There are applied the following financial analysis – Return on Assets (further – ROA) and Return on Equity (further – ROE), Economic Value Added (further – EVA) and Market Value Added (further – MVA).

The third part of the study determines the link between intangible assets/intellectual capital and corporate performance. The coherence is determined through correlation analysis of intellectual capital appraisal results and corporate performance variables.

### 3.1. Intangible assets/intellectual capital performance variables

Volkov and Garanina (2008), Garanina (2009), Garanina and Pavlova (2011), Stankevičienė, Jasaitė, Čepulytė (2012) offer a calculation variant of CIV method which is based on residual operating income model:

$$V_I^{REOI} = \frac{REOI_I}{k_w} = NA_T^{BV} \times \frac{RONA - RONA_{IAVG}}{k_w} \quad (1)$$

Where:  $V_I^{REOI}$  – the fundamental value of equity;  $REOI_I$  – residual operating income;  $k_w$  – weighted average cost of capital (WACC);  $NA_T^{BV}$  – book value of net assets;  $RONA_{IAVG}$  – industry average return on net assets (further – RONA);  $RONA$  – RONA of a company.

In this research CIV is applied for the determination of overall value of intangible assets/intellectual capital.

According to academics (Barros *et al.* 2010; Kujansivu, Lönnqvist, 2007; Makki, Lodhi, 2009; Muhammad, Ismail, 2009; Murale, Jayaraj, Ashrafali, 2010; Rehman, Ilyas, Rehman 2011; Zeghal, Maaloul, 2010; Znakovaitė, Pabedinskaitė, 2010; Stankevičienė, Jasaitė, Čepulytė, 2012), the calculation of VAIC falls into several steps:

$$\text{Step 1. Value added: } VA = P + C + D + A \quad (2)$$

where P – operating profits; C – employee costs, equal to the sum of salaries and social insurance payments of employees; D – depreciation, A – amortization;

$$\text{Step 2. Structural capital: } SC = VA - HC \quad (3)$$

where HC, human capital equal to the sum of total salaries of the company;

$$\text{Step 3. Capital employed efficiency: } CEE = VA / CE \quad (4)$$

where CE, capital employed, equal to the difference between total assets and current liabilities;

$$\text{Step 4. Human capital efficiency: } HCE = VA / HC \quad (5)$$

$$\text{Step 5. Structural capital efficiency: } SCE = SC / VA \quad (6)$$

$$\text{Step 6. Intellectual capital efficiency: } ICE = HCE + SCE \quad (7)$$

$$\text{Step 7. VAIC} = ICE + CEE \quad (8)$$

Referencing to Kujansivu and Lönnqvist (2007), VAIC can be applied for evaluation of efficiency of intellectual capital.

According to Stankevičienė, Jasaitė, Čepulytė (2012), Tobin's  $q$  can be calculated using the following equation:

$$\text{Tobin's } q = (\text{Capitalization} + \text{preferred stock} + \text{DEBT}) / \text{TA} \quad (9)$$

Where:

*DEBT* – difference between short-term liabilities and short-term assets plus book value of long-term debt; *TA* – total assets.

Herein, the Tobin's  $q$  is used to assess the competitiveness, the investment attractiveness and shareholder value creation of a company.

### 3.2. Corporate performance variables

ROA can be used as a proxy indicator of the high profitability company (Omil, Lorenzo, Liste, 2011). ROA can be calculated as:

$$\text{ROA} = \text{Net Income} / \text{Total Assets} \quad (10)$$

Saksonova (2006) explains that ROE shows the quantity of revenue generated by the one unit of equity. ROE can be calculated as:

$$\text{ROE} = \text{Net Income} / \text{Equity} \quad (11)$$

Academics (Petravičius, 2008; Wibowo, Berasategui, 2008; Stankevičienė, Jasaitė, Čepulytė, 2012) propose the formula for calculation of MVA:

$$\text{MVA} = \text{Capitalization} - \text{Invested Capital} \quad (12)$$

As explained by Wibowo; Berasategui (2008), if  $\text{MVA} > 0$ , then value of an investment exceeds the amount of invested capital and, if  $\text{MVA} < 0$ , then the quantity of invested capital is more considerable than the value which can be generated from the investment.

Referencing to Wibowo and Berasategui (2008), Stankevičienė, Jasaitė, Čepulytė (2012) EVA can be calculated:

$$\text{EVA} = \text{NOPAT} - \text{WACC} * \text{CAPITAL EMPLOYED} \quad (13)$$

Where: *NOPAT* – net operating income after tax; *WACC* – weighted average cost of capital.

Wibowo and Berasategui (2008) explain that positive EVA corresponds to value creation while negative indicates value destruction.

### 3.3. Hypothesis development

The study tests the following hypotheses:

*H1* – the value of intangible assets (CIV) influences the corporate performance (ROA, ROE, MVA, EVA) and capitalization;

*H2* – competitiveness, the investment attractiveness, and ability to create shareholder value (Tobin's *q*) influences the corporate performance (ROA, ROE, MVA, EVA) and capitalization;

*H3* – intellectual capital, value added, capital employed, human capital, structural capital and intellectual capital efficiencies, measured with VAIC, influence the corporate performance (ROA, ROE, MVA, EVA) and capitalization;

*H4* – overall number of employees, number of employees with higher education and number of employees without higher education influences the value of intangible assets (CIV), competitiveness, the investment attractiveness, ability to create shareholder value creation (Tobin's *q*), the efficiency of intellectual capital (VAIC) and value added, corporate performance (ROA, ROE, MVA, EVA) and capitalization;

*H5* – capitalization influences corporate performance (ROA, ROE, MVA, EVA).

### 3.2. Results

The results of intangible assets/intellectual capital performance for selected companies are represented in the Table 1. The categories of investigation correspond to the value of intangible assets/intellectual capital, VA, CEE, HCE, SCE, ICE, efficiency of intangible assets/intellectual capital and competitiveness, investment attractiveness and shareholder value creation.

**Table 1.** Intangible assets valuation results summary (Source: compiled by authors)

COMPANY	CIV (mln. LTL)	VA (mln. LTL)	CEE	HCE	SCE	ICE	VAIC	TOBIN' S Q
<i>Apranga</i>	26.710	27.890	0.31	1.93	0.48	2.42	2.73	3.19
<i>City Service</i>	2.593	27.363	0.01	1.51	0.34	1.85	1.86	0.09
<i>Grigiškės</i>	-112.859	19.479	0.18	5.00	0.80	5.80	5.98	1.35
<i>LESTO</i>	4.956.560	303.790	0.11	4.53	0.78	5.31	5.43	0.66
<i>Lietuvos dujos</i>	1.641.451	198.015	0.08	2.89	0.65	3.54	3.62	0.54
<i>Panevėžio statybos trestas</i>	89.574	44.229	0.32	1.54	0.35	1.89	2.21	0.15
<i>Pieno žvaigždės</i>	-4.957	46.840	0.24	1.94	0.48	2.42	2.66	1.00
<i>Rokiškio sūris</i>	-54.971	232.938	1.25	1.15	0.13	1.28	2.53	0.55
<i>Sanitas</i>	-112.184	8.440	0.03	1.74	0.43	2.17	2.20	1.72

End of Table 1

<i>COMPANY</i>	<i>CIV</i> (mln. LTL)	<i>VA</i> (mln. LTL)	<i>CEE</i>	<i>HCE</i>	<i>SCE</i>	<i>ICE</i>	<i>VAIC</i>	<i>TOBIN'</i> <i>S Q</i>
<i>TEO LT</i>	412.653	359.055	0.35	2.21	0.55	2.76	3.11	1.46
<i>Utenos trikotažas</i>	-25.834	23.288	0.56	1.66	0.40	2.06	2.62	0.70
<i>Vilkyškių pieninė</i>	-28.831	26.086	0.31	1.94	0.49	2.43	2.74	0.91
<i>Vilniaus baldai</i>	627.053	27.270	0.35	1.89	0.47	2.37	2.72	0.78

In each category there are highlighted the five leading companies. The values of intangible assets/intellectual capital are highest in energy, gas, steam supply and telecommunications sectors. The value added is also the biggest in the same industries. The leading companies in CEE reside in manufacturing and telecommunications sectors. Therefore, the highest HCE, SCE, ICE values and efficiency of intellectual capital are of companies engaged in manufacturing, energy, gas, steam supply and telecommunications industries. The most competitive, investment attractive and able to create value for shareholders are the companies engaged in retail trade, manufacturing and telecommunications. The research has discovered the company which obtains the largest variables of intangible/intellectual performance – TEO LT. It could be stated that TEO LT is developing business towards the intellectual entrepreneurship. This phenomenon is best described by Sennikova and Kurovs (2006) “[...] the most important features attributed to intellectual entrepreneurs are their ability to generate knowledge and innovate, offer non-standard solutions for standard situations and create extraordinary ventures in ordinary spheres.” The results of assessment of corporate performance of selected companies are depicted in Table 2.

**Table 2.** Corporate performance valuation results summary (Source: compiled by authors)

<i>COMPANY</i>	<i>ROA</i>	<i>ROE</i>	<i>Capitaliza-</i> <i>tion (mln.)</i>	<i>MVA</i> (mln. LTL)	<i>EVA</i> (mln. LTL)
<i>Apranga</i>	5.88%	7.83%	395.380	306.223	0.969
<i>City Service</i>	6.86%	10.49%	30.560	-112.928	1.685
<i>Grigiškės</i>	1.02%	1.90%	160.560	80.451	-2.833
<i>LESTO</i>	2.31%	3.92%	808.760	-636.035	24.117
<i>Lietuvos dujos</i>	5.90%	7.68%	1.182.310	-896.301	30.260
<i>Panevėžio statybos trestas</i>	8.99%	15.03%	110.080	-8.779	14.922
<i>Pieno žvaigždės</i>	5.70%	12.63%	277.000	129.957	6.566



COMPANY	ROA	ROE	Capitalization (mln.)	MVA (mln. LTL)	EVA (mln. LTL)
Rokiškio sūris	8.07%	13.61%	237.870	55.061	18.943
Sanitas	-0.49%	-0.61%	590.280	290.093	-10.827
TEO LT	14.15%	16.14%	1.923.130	920.480	59.125
Utenos trikotažas	-1.31%	-4.17%	25.960.	7.453	-1.586
Vilkyškių pieninė	9.59%	23.77%	70.930	21.117	18.637
Vilniaus baldai	25.63%	38.30%	127.480	54.763	9.147

**Table 3.** Correlation analysis (Source: compiled by authors)

	ROA	ROE	MVA	EVA	Capitalization
Value added	0.1	-0.01	-0.1	0.9	0.8
Human capital efficiency	-0.3	-0.3	-0.4	0.1	0.2
Structural capital efficiency	-0.2	-0.2	-0.3	0.2	0.4
Intellectual capital efficiency	-0.3	-0.3	-0.4	0.1	0.2

**Table 4.** Correlation analysis continued (Source: compiled by authors)

	CIV	Tobin's q	VAIC	Value Added	ROA	ROE	MVA	EVA	Capitalization
Number of employees	0.3	-0.3	0.1	0.7	0.1	0.1	-0.1	0.7	0.6
Number of employees with higher education	0.6	-0.3	0.3	0.9	-0.03	-0.1	-0.3	0.7	0.7
Number of employees without higher education	-0.1	-0.2	-0.3	0.4	0.3	0.2	0.2	0.5	0.3

**Table 5.** Correlation analysis continued (Source: compiled by authors)

	ROA	ROE	MVA	EVA
Capitalization	0.1	-0.1	0.2	0.8

The highest ROA and ROE can be found in manufacturing, telecommunications and construction industries. The biggest capitalization is in energy, gas, steam supply, telecommunications and manufacturing sectors.

The investments which paid off and generated additional value were made by companies engaged in telecommunications, retail trade and manufacturing industries. The best value creation can be found in energy, gas, steam supply, telecommunications and manufacturing sectors. The company which has the best corporate performance is also TEO LT.

As a result, it is obvious that the intangibles/intellectual capital contributes to improvement of corporate performance and helps to create value. The results of correlation analysis are depicted through tables 3 – 5. There are highlighted the

highest values. The investigation has demonstrated the findings of scholars that intangibles (Chareonsuk, Chansa-ngavej 2008; Choong 2008; Moeller 2009), value added (Mačerinskienė, Survilaitė 2011a; Mačerinskienė, Survilaitė 2011b) and capitalization (Kashirina 2012) have impact on value creation. Moreover, intangibles, human capital and intellectual capital efficiencies, company's competitiveness and investment attractiveness create value for investments of the company.

The employees of the organization, especially those, having the higher education contribute greatly to corporate value creation. The research has showed that the number of employees having no higher education correlate only with value added and EVA. However, value added and EVA also correlated with overall number of employees and number of employees having the higher education, and actually here the results were better, meaning that absence of higher education destructs value. This means that it is more beneficial for organizations to attract and retain more educated employees. As a result, the best suggestion for companies is to develop a learning and knowledge-sharing business culture.

#### 4. Conclusions

The study showed the advantages that can be obtained from conducting the intellectual entrepreneurship. The companies with higher intellectual performance enjoy improved corporate performance and therefore exercise value creation:

1. The research showed that the highest values of intellectual capital are in sectors employing the sophisticated technologies in daily operations – energy, gas, steam supply and telecommunications. The best efficiency of intellectual capital are of companies engaged in energy, gas, steam supply and telecommunications and manufacturing industries. On the other hand, the most competitive, investment attractive and able to create value for shareholders are retail trade, manufacturing and telecommunications and retail trade industries.
2. The corporate performance is highest in energy, gas, steam supply telecommunications and manufacturing industries.
3. The research has proven the existence of relationships between the intellectual capital and corporate performance. Moreover, the research has demonstrated the importance of human capital on value creation, stressing the significance of the knowledge, skills and competences of employees.

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