The Assess Model of Intellectual Capital and a Company's Value Added Cohesion

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Abstract

Nowadays intangible assets are especially important in every company and can help to increase a company's value added. The importance is so huge that many companies invest more money in intellectual capital than in material assets. Why has this happened? Scientists answer this question very quickly and easily - many companies have already been disappointed and damaged by their materials, goods, equipment, buildings, cars, machinery that cost a lot of money but do not give effective productivity. On the contrary, intellectual capital that usually costs only the salary of an employee brings significant benefits. **The research purpose** is to evaluate the cohesion between intellectual capital and a company's value added and to provide the model of this cohesion. **The methods used** are analysis of scientific literature, GBN matrix method, expert evaluation, average comparison method, and Kendall's coefficient of concordance. **Scientific aims:** to reveal the cohesion between intellectual capital and a company's value added; to introduce a model of a company's value added and its intellectual capital; to demonstrate the results of expert evaluation on the model of intellectual capital and a company's value. **The findings** are as follows: intellectual capital is considered as a unit of social capital, communicational capital, and psychological capital; intellectual capital has a huge influence for the growth of a company's value added; employee motivation is the most important factor either for the growth of intellectual capital or a company's value added. **Conclusions:** expert evaluation was performed in order to investigate the importance of intellectual capital factors for the growth of intellectual capital itself and a company's value added. Experts were taken from two areas: business environment and academic environment. It is possible that experts from other environments could answer the questions in a completely different way, and this model could be improved even more.

Keywords: a company's value added, intellectual capital, social capital, communicational capital, psychological capital.

JEL Classification: D24, D92, G32, M21

Introduction

There are many scientific papers about intellectual capital, its theory and its relation with a company's value added (Edvinsson and Malone (1997a), Thomas A. Stewart

(1997a), Bontis (1998a, 1998b, 1999, 2010, 2011a, 2011b, 2011c), Bueno Campos (1998a), Dave Ulrich (1998a), Calvo *et al.* (1999a), Soler and Cuello (2007a), Sanchez (2007a), Zéghal and Maaloul (2010a), Diez *et al.* (2010a), Huang and Kung (2011a), Curado, Henriques and Bontis (2011a), Bontis, Richards and Serenko (2011a)). Although there are many literature sources about this topic the definition of intellectual capital is unclear and not uniform. Many scientists do not agree on the structure of intellectual capital and its main components. Usually it depends on the area, which is investigated, and what direction is chosen. That **the research problem** is how to identify the cohesion of intellectual capital and a company's value added. **The object of research** is the cohesion of intellectual capital and a company's value added.

1. The theory of intellectual capital and a company's value added: the new structure of intellectual capital

Intellectual capital as a theory is quite new and has not been deeply analysed. That is why a well known definition of intellectual capital has not been found yet. Scientists, who investigated the theory of intellectual capital (Edvinsson and Malone (1997b), Thomas A. Stewart (1997b), Bontis (1998a, 1999), Bueno Campos (1998b), Dave Ulrich (1998b), Calvo *et al.* (1999b), Hughes (2010), Soler and Celestino (2007b), Sanchez (2007b), Zéghal and Maaloul (2010b), Diez *et al.* (2010b)), mainly emphasize knowledge, skills, motivation, experience, positivity of employees, education, routines, structures in a company as the main factors of intellectual capital. Usually intellectual capital is identified with human capital and human knowledge, but the definition should be broader. As intangibility is the main feature of intellectual capital, this scientific paper considers intellectual capital to be the sum of all intangible assets that are present in a company. These are not only assets from human perspective, but also from technical, relational, and legal points of view.

Bueno Campos (1998a) emphasizes that intellectual capital helps to create a competitive advantage for the company, and then value added is higher. Ulrich (1998a) in the same year proposes how to evaluate intellectual capital. He considers that a company's intellectual capital is employee competence multiplied by assets. Ulrich explains that in order to get intellectual capital there should be a corresponding amount of employees' knowledge, education, experience, motivation, and skills, and those factors should be multiplied by a willingness to work hard.

Curado, Henriques and Bontis (2011b) present quite a new attitude to intellectual capital and its nature. Scientists emphasize that nowadays the most important element of intellectual capital is Knowledge Based-View of the firm (KBV). **Knowledge** is considered to be the main factor for growth of intellectual capital. Curado, Henriques and Bontis (2011) presented a new methodology called MMRIC – Measure, Manage and Report of Intellectual Capital – which encouraged companies to measure, manage, and control their intellectual capital. The methodology allows managers to increase a company's value added with little costs.

Bontis, Richards and Serenko (2011b) emphasized the importance of Knowledge Management (KM). Knowledge Management is defined as accumulation, concentration, maintenance, and sustention of intellectual capital. This also depends on the type of the company and on the area the company is working in. Nevertheless, Knowledge

Management depends also on the mission and vision of the company and its anticipated goals and tasks.

Many scientists (Stewart (1997c), Bontis (1998b), Zéghal ir Maaloul (2010c)) consider intellectual capital as a composition of three main elements or structural parts: human capital, structural capital, and customer capital. Others (Bourdieu (1986), Swart (2006)) consider that structural parts of intellectual capital are human capital, structural capital, and social capital. Huang and Kung (2011b) even created a new structure of intellectual capital – the so-called “green intellectual capital”, consisting of three main “green” parts: green human capital, green structural capital, and green relational capital. Mainly all classifications are similar, but some of them are too broad, and some of them are too narrow. That is why a new structure of intellectual capital was proposed: intellectual capital in this scientific paper is understood as the composition of **social capital**, **communicational capital**, and **psychological capital**. **Social capital**, according to Bourdieu (2005), is the bunch of all necessary relations and communication within a company. Mačerinskienė and Vasiliauskaitė (2004) presented that social capital consisted of social networks, values, norms, sanctions, rules, regulations, and trust. Trust is considered to be the main factor of social capital - this is the most important element, which creates motivation, abilities and capabilities for employees. The importance of **communicational capital** was emphasized by Malmelin (2007). According to Malmelin, communication capital consists of four main parts: juridical capital, organizational capital, relational capital, and human capital. Juridical capital comprises protection provided by law, legally protected rights, information owned by an organization: patents, copyrights, confidential documents, technology and computer systems. Simply juridical capital is everything immaterial that belongs to a company. Organizational capital refers to procedures, routines and management styles that are created in an organization. Relational capital comprises all types of communication: internal and external, it gives a sign of how a company is perceived by clients, partners, stakeholders, and other groups of people that surround every company. Human capital is employees’ knowledge, education, skills, motivation, competence, and never ending training. According to Mačerinskienė and Survilaitė (2011) communicational capital helps to create an excellent image of a company, and customers are more reliable and loyal. It gives a company a competitive advantage, and value added is increased. **Psychological capital** is quite a new concept but it can be defined as a part of intellectual capital. Luthans et al. (2004) consider that psychological capital is comprised of four main parts: resilience, optimism, effectiveness, and hope. Bontis, Richards and Serenko (2011c) also mention job autonomy and job satisfaction as two main factors of psychological capital. It is considered that positive psychological capital increases employees’ motivation, and then the growth of a company’s value added is significant and obvious.

To sum up, in this scientific paper a new structure of intellectual capital is proposed: it consists of social capital, communicational capital, and psychological capital. Social capital is mainly comprised of networks, relations, ties, and trust. Communicational capital includes both internal and external communication. Psychological capital is more focused on the personality of employees, their needs, their condition, etc. All structural parts of intellectual capital influence a company’s value added, and usually they reflect its growth.

2. The model of coherence of intellectual capital and a company’s value added

In order to show the relation between intellectual capital and a company's value added a model was composed. The model was created using the method of contingencies' dimensions and the Global Business Network (GBN) matrix method. The main point of this model is scenario writing and the choice of the best suitable one. The model is based on the creation of four scenarios (the so-called sectors).

According to GBN, it is necessary to identify eight steps in order to create a script. The following steps comprise the GBN methodology:

- *Step 1:* Identify the main problem.
- *Step 2:* What are the major domestic factors (muscles) with the greatest impact for addressing the problem in question?
- *Step 3:* What are the most important external factors that are owned and controlled by local factors? What happens if they are to be removed or replaced by the action line?
- *Step 4:* The factors, listed in the second and third step, are ranked in order of importance and uncertainty.
- *Step 5:* Definition of scenario logic. This is needed in order to find out the main axes in the model. These axes will form a matrix, which has different and detailed scenarios. This is the hardest step of the script method.
- *Step 6:* Developing a script. The aim of this step is to create script stories.
- *Step 7:* Checking scenarios. In this step it is necessary to answer what conclusions can be made. It is necessary to step back to the basic problems and to decide, if scenarios can be considered as fixed ones, or if in some cases there is a common scenario.
- *Step 8:* Monitoring the establishment. In this step the model should be observed in order to modify some discrepancies (Mačerinskienė and Survilaitė, 2011a).

In this scientific paper the model created according to the GBN matrix method is presented and tested empirically (Fig 1).

Figure 1: The model of intellectual capital and a company's value added

Figure 1 shows that this model is designed from two different axes – one axis demonstrates a company's intellectual capital, and another axis demonstrates a company's value added. They are related and show the size of intellectual capital, present in a company, and they also show the size of the value added created by a company and its employees.

The field between these two axes is divided into four main scenarios, and companies can be divided into four main sectors according to these scenarios.

I scenario (sector). A company's intellectual capital is high but its value added is low. This could mean that there is a sufficient level of intellectual capital, but it is possible that this asset is not used properly. It is possible that the company does not cover all possibilities that intellectual capital could offer.

II scenario (sector). A company's intellectual capital and its value added are low. This means that there is not enough intellectual capital, and it neither creates nor increases a company's value added. It can happen due to inappropriate use of intellectual capital, and also it is possible that the company does not cover all the possibilities that intellectual capital could offer. In order to increase the company's value added and its intellectual capital it is necessary to pay attention to human capital – whether it is qualified, educated, and motivated enough (Mačerinskienė and Survilaitė, 2011b).

III scenario (sector). A company's intellectual capital is low, but its value added is high. This is not the worst scenario, but management of the company should think of how to improve the company's intellectual capital and how to motivate staff more. It is possible that this sector is an exception – this could be the sector of construction or farming, where strength and machinery have more power than intellectual capital. Despite the fact these sectors also have a high level of intellectual capital.

IV scenario (sector). A company's intellectual capital and its value added are high. It looks like this sector is the best position a company can have, but here danger also might be present – the main issue for companies that are in this sector is how to maintain the existing level of intellectual capital and value added. As companies face challenging issues every day, this task is hard enough.

To sum up, the model created according to the Global Business Network matrix was composed, and the relation between a company's intellectual capital and value added was revealed. The model proposes four main scenarios or so-called sectors. According to the level of intellectual capital and value added created by a company and employees managers can find out in which sector their company is and what to do if they want to move the company from one sector to another. In order to improve this model and to find out the main factors influencing both axes expert evaluation on intellectual capital and a company's value added was performed.

3. The results of expert evaluation on intellectual capital and a company's value added

In order to investigate and qualitatively evaluate factors that affect a company's intellectual capital and value added expert evaluation was performed in November of

2011. Experts were selected from two areas – from academic community and from business environment. Selected experts from academic community were highly educated professors, who have been working for many years in various Lithuanian universities. Selected experts from business environment were either directors of various Lithuanian companies or owners of companies. In total 12 experts were selected from both sides (6 from academic environment and 6 from business environment). Due to inconsistencies of opinions answers of 2 experts were removed in order to get further precise results.

The experts had to grade and to evaluate given factors according to the five point Likert scale. All results were analysed by the gained means:

[0 – 1.5) – has no influence at all

[1.5 – 2.5) – does not have influence

[2.5 – 3.5) – neither has nor does not have influence

[3.5 – 4.5) – has a big influence

[4.5 – 5.0] – has a huge influence

First of all, a hypothesis was raised and tested according to the Kendall's coefficient of concordance.

H1: evaluations of experts from business and academic environment are contradictory

H2: evaluations of experts from business and academic environment are comparable

Chosen significant level was $\alpha = 0.05$, it is bigger than estimated value. Kendall's coefficient of concordance was $W=0.424$, that is why the first hypothesis was rejected and the second alternative was accepted (Table 1). That means that the evaluations of experts from business and academic environments are comparable. Due to this reason we can proceed with questions that were asked, to analyse them and to make conclusions.

Table 1: Kendall's coefficient of concordance

Test Statistics	
N	10
Kendall's W	.424
Chi-Square	84,740
df	20
Asymp. Sig.	,000

First of all, the experts were asked to evaluate how structural parts of intellectual capital affect a company's value added (Fig 2). They had to evaluate these parts according to the five point Likert scale.

Figure 2: The importance of structural parts of intellectual capital

Fig 2 shows us that opinions of the experts from business and academic environments are slightly different. The experts from business environment consider that social capital has the most influence for a company's value added (mean - 4.2). The experts from academic environment state that both communicational and psychological capitals have the most influence for a company's value added (means - 4.0, 4.0). Nevertheless, the experts agreed that all structural parts of intellectual capital have a big influence for a company's value added. People who work in business environment are used to investing in social capital, motivating employees, having many contacts and links with different groups: customers, financial institutions, governmental institutions, suppliers, partners, and many others. That is why the experts from business environment consider social capital as the main part of intellectual capital, which helps to increase a company's value added.

Also the experts were asked to evaluate factors that have influence for the growth of intellectual capital (Fig 3). It is necessary and useful for intellectual capital management or knowledge management in a company.

Figure 3: Factors that influence the growth of intellectual capital

Figure 3 shows that according to the experts from both environments the most important factor for the growth of intellectual capital is motivation of employees. But the experts from business environment consider that this factor has a big influence for the

increase of intellectual capital (mean – 4.2), and the experts from academic environment consider that this factor has a huge influence (mean – 4.6). The experts from business and academic environments agreed that the following factors have big influence for the growth of intellectual capital: resilience (means – 3.6 and 3.8), positive psychological environment (means – 4.0, 4.0), education of employees (means – 4.2 and 4.4), and collaboration and communication in a company (means – 4.4 and 3.6). In addition to this, experts from both business and academic environments agreed that the following factors neither have nor do not have influence for growth of intellectual capital: law requirements (means – 3.2 and 3.2), reliable and loyal clients (means – 3.4 and 3.4), and relations with governmental institutions (means – 2.8 and 3.0). One factor – relations with financial institutions – was discussed a bit more as the experts from business environment considered that this factor from one side had an influence for the increase of intellectual capital (mean – 3). But the experts from academic environment think that this factor does not have an influence (mean – 2.2). This could be due to the fact that usually companies are dependent on loans that are provided by financial institutions. So in this case relations with financial institutions could have an influence for growth of intellectual capital.

The last question was asked about the importance of intellectual capital factors for the increase of a company's value added. The experts were trying to evaluate, which factors were the most important for successful growth of a company's value added (Fig 4).

Figure 4: Factors that influence growth of a company's value added

Figure 4 shows that opinions of the experts from business and academic environments are slightly different. Business experts unanimously agreed that employee motivation (mean – 5.0) and reliable and loyal clients (mean – 4.6) had a huge influence for growth of a company's value added. The experts from academic environment consider that only reliable and loyal clients have a huge influence (mean – 4.6), and employee motivation has a big influence (mean – 4.4) for the increase of a company's value added. This could be due to the fact that business environment is focused on two sources: employees and customers. The goal of each company is motivated personnel, which attracts more reliable and loyal customers. Customer is the power of normal and stable life of a company. Despite differences in these factors, the experts from business and academic environments agreed that resilience (means – 4.4 and 3.8), positive

psychological environment (means – 4.2 and 3.8), employee education (means – 4.2 and 4.2), and collaboration and communication (means – 4.4 and 4.2) had a big influence for growth of intellectual capital. Also the experts agreed that relations with governmental institutions did not affect growth of a company's value added (means – 3.2 and 3.4). Law requirements and relations with financial institutions were two factors, where opinions of the experts were varied. The experts from academic environment think that law requirements have a big influence for growth of a company's value added (mean – 3.6) while the business experts consider this factor to be non-essential (mean – 2.6). Also the experts from academic environment consider that relations with financial institutions have a big influence for the increase of a company's value added (mean – 3.6) and also as in the previous case the business experts consider this factor to be non-essential (mean – 3.2).

To sum up, in most cases opinions of the experts from business and academic environments were similar. The differences came from environmental differences – business environment is more focused on customers and employees motivation, while academic environment usually has a theoretical point of view. Nevertheless, mainly all experts agreed on the same factors, which influence growth of intellectual capital or a company's value added. After results of the expert evaluation are received, the model of intellectual capital influence over a company's value added can be improved.

4. *Improved model of intellectual capital and a company's value added*

The results of the expert evaluation allow to improve the created model and to add the most important factors to both axes (Fig 5). This is useful for managers, who are trying to manage intellectual capital successfully and to increase a company's value added.

Figure 5: The model of intellectual capital and a company's value added (improved)

Figure 5 shows the model with two additional boxes with the most important factors. Underlined factors are those, which have a huge influence on growth of either a company's intellectual capital or a company's value added. Managers looking into this model can control each factor and achieve desirable targets. According to the experts the most important factors influencing a company's intellectual capital and a company's value added are presented in the table below (Table 2).

Table 2: The importance of factors

Company's intellectual capital	Company's value added
Employee motivation	Employee motivation
Employee education	Reliable and loyal clients
Collaboration and communication	Collaboration and communication
Positive psychological environment	Employee education
Resilience	Resilience
	Positive psychological environment

To sum up, the most important factor for growth of a company's intellectual capital or a company's value added is motivation. Managers can motivate, stimulate or promote employees in order to achieve desirable goals and targets. The importance of reliable and loyal clients is indisputable, but nowadays it is hard to reach. Reliable and loyal clients are a result of motivated employees. Motivated employees work better, faster, and more productively, they respect all customers and treat them perfectly. As a sequence, a company has more loyal clients as they want to collaborate with employees, who work with respect and in a professional way. Nevertheless, every company has its advantages and disadvantages, its weaknesses and strengths, so all managers can use the intellectual capital and value added model for their needs.

Conclusions

In this scientific paper a new structure of intellectual capital was proposed. Intellectual capital was considered as a composition of social capital, communicational capital, and psychological capital. Social capital is mainly comprised of networks, relations, ties, and trust. Communicational capital includes both internal and external communication. Psychological capital is more focused on the personality of employees, their needs, condition, etc. Based on the GBN (Global Business Network) matrix a model of intellectual capital and a company's value added was created, and the relation between a company's intellectual capital and value added was revealed. The model proposes four main scenarios, and based on the level of intellectual capital and value added created by the company and employees, managers can find out, which sector their company belongs to, and what to do if they want to move the company from one sector to another.

In order to improve the model of intellectual capital and a company's value added and to find out the main factors influencing both study objects expert evaluation was performed. Experts were chosen from two areas: business environment and academic environment. In most cases opinions of the experts from business and academic environments were similar. The differences are due to the fact that business environment

is more focused on customers and employee motivation. Academic environment usually has a theoretical point of view. Nevertheless, mainly all experts agreed on the same factors, which influence growth of intellectual capital or a company's value added – employee motivation is considered to be the most important factor for growth of intellectual capital and a company's value added. Managers can motivate, stimulate or promote employees in order to achieve desirable goals and targets.

The model of intellectual capital and a company's value added was improved by adding two boxes to each axis. These boxes represent the most important factors that increase each study object. The most important factors that affect growth of intellectual capital are: employee motivation, employee education, collaboration and communication, positive psychological environment, and resilience. The most important factors that help to increase growth of a company's value added are: employee motivation, reliable and loyal clients, collaboration and communication, employee education, resilience, and positive psychological environment.

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