

New insight into elements of Intellectual Capital

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Abstract. This paper deals with elements of intellectual capital and their impact on business performance of an enterprise. The authors analyze the concept of intellectual capital to provide the new approach for value defining of elements of intellectual capital, to create the base for future research and to develop the model for measurement of intellectual capital in Latvian conditions.

Keywords – intellectual capital, structural capital, human capital, relational capital, conceptualization of intellectual capital

I. INTRODUCTION

The major part of enterprise resources in developed countries are of a non-material sort nowadays: if in 1982 the tangible assets of the American companies made 62% of their market value, then in ten years time this index decreased to 38%, but according to the modern investigations, it's only 10-15%. At the end of 1999, the value of property covered in balance, made only 6,2% of marked value for Microsoft, 4,6% for SAP and 6,6% for Coca-Cola [1].

Since 1991 American enterprises are spending more on data processing equipment in comparison with other equipment. Data substitute material assets and the knowledge supersede material fixed assets [2].

Non-material asset management is dealing with a range of specific problems. First of all, it's the aptitude of value made by intellectual assets to acute and non-predictable fluctuations, as well as the absence of a typical conjuncture cycle. Secondly, non-material assets are difficultly secured to an enterprise, what is illustrated by pirate audio and video production. There are also significant difficulties with qualified staff control. Thirdly, there is no as reliable instrument of description, estimation and account as financial statements for non-material asset management.

One of the most promising directions in non-material asset investigation is the concept of an "intellectual capital" [2].

Consistent with the economic literature, "intellectual" capital is viewed in this paper a sub-set of "intangible capital", where the term intangible relates to assets without a physical existence [3]. The most universally recognized types of capital present themselves in tangible form, such as real estate and plant and equipment and accordingly, are well defined and measured in company accounts. However, it has become increasingly obvious to managers that intangible forms of capital also contribute to profits and financial stability.

Because in most cases intellectual capital cannot be seen, cannot be owned, cannot be used as collateral, have uncertain values and may not be separable from organization, it has proved difficult to obtain the agreement on how to systematically account for these items.

If measurement of intellectual capital is to be undertaken, it must serve purpose of management, such as a tool of internal control, strategic development and sustainable performance.

The aim of this research is the analysis of concept of intellectual capital to provide a new insight into elements of intellectual capital and its value defining, creation of the base for future research and development of model of measurement of intellectual capital in Latvian conditions.

II. CURRENT PRACTICES REVIEW AND ANALYZE

Methods for measuring intangible capital have sprung up around the world. A range of operational descriptions of intellectual capital have been developed by different authors and these are:

- Intellectual material that has been formalized, captured and leveraged to produce a higher valued asset (Klein and Prusak 1994); [4]
- Accumulated value of investments in employee training, competence and the future (Skandia, 1996); [5]
- Combined intangible assets of market, intellectual property, human-centred and infrastructure which enable the company to function (Brooking, 1996); [6]
- Information and knowledge applied to create value (Edvinsson, Malone 1997); [7]
- Knowledge, information, intellectual property that can be put to use to create wealth (Stewart, 1997); [8]
- The holistic meta-level capability of an organization to generate creative and effective responses to extant and emerging, present and potential challenges facing it, in an ongoing manner (Rastogi, 2000); [9]
- Individual knowledge stock of an organization as represented by its employees (Bontis 2002); [10]
- Company's market value and its book value (Pablos, 2003). [11]

Definitions and conceptualizations of intellectual capital are not significantly different among the researchers. Many intellectual capital models have similar constructs.

Figure 1. provides a comparison of key conceptualizations, drawn from various authors in North America and Europe. Human capital is defined by human intellect; it is one of internal elements of intellectual capital. The internal position is structural capital, defined by organizational routines.

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Relations with external environment of the company define relational capital.

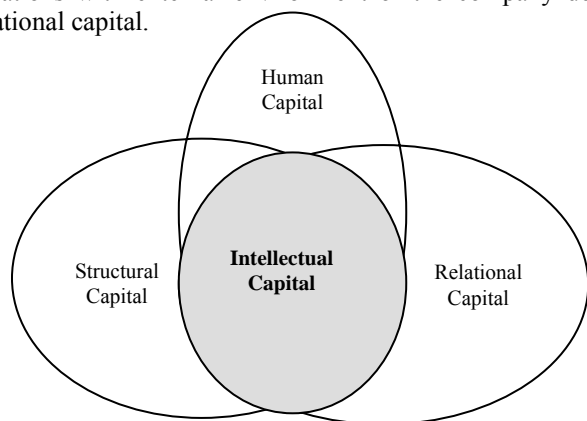


Fig. 1. The structure of intellectual capital

The authors conducted an analysis of the most common approaches of non-material asset estimation and evaluation. The results of an investigation as follows:

Market capitalization approach [2]

Intellectual capital is defined as a difference between the market value of a company and the balance cost of its tangible assets. This group of method gives an opportunity to take into account the following: the notion of current state and the prognosis of macroeconomic state of a country and the situation in the branch, as well as the terms of financing a definite enterprise and its politics of giving and receiving credits; all range of factors having influence on money flow. The method supposes that the future incomes of the company are relatively the same or have a constant value of annual rate change, what turns out to be its main disadvantage.

Tobin's coefficient [12]

The relation of the market value of an object to the value of its substitution. Advantages of method – the value of company is dealing not only with profit indexes, but also with its perspectives and risks. Disadvantages of method – the use of Tobin's index in the quality of information about an enterprise is based on the hypothesis of an effective financial market

Non-material asset profitability [13]

The profitability of non-material assets is counted as a difference between a real average annual profit of the company in period of last three years and its fixed asset cost, multiplied by average branch profitability of fixed assets and divided by a coefficient indicating the price of a capital for a company. The advantages of an approach are: easy use of a model and objectivity of the results, because the model includes numeric parameters. The most problematic issues here are difficulty of defining average branch profitability of fixed assets and a valid minimum allowable profitability level.

Intellectual asset monitoring by K.E. Sveiby [14]

The following method presumes that non-material assets are valued by a system of indicators put in order in a matrix, there one axis means the competency of personnel, inner structural characteristics of an organization, but the other one – advance, efficiency and stability. By considering knowledge data and transformation as a worth creation tool, Sveiby emphasizes the difference in processes on transferring material values and knowledge transfer. When transferring and using material values, their cost decreases, but when transferring knowledge it's the other way round. The disadvantage of this model is that is based on relative qualitative dimensions and does not allow to define the real cost of intellectual asset quantitatively.

Scandia Navigator [15]

This model distinguishes 30 key indicators. In addition to traditional financial indicators, they include client direction, process direction, human direction and development/update direction. Scandia navigator promotes an integral comprehension of a company and the process of value creation in five priority branches: financial component, consumer orientation, focus on processes, focus on development and updates, human focus. Intellectual asset is counted as an arithmetical sum of its components. Still, it is obligatory to take into account the collaboration between elements and their unequal role in company value creation.

Economical added value [1]

Economical added value is an indicator that includes variables of asset budgetment, financial planning, setting goals, activity estimation, and collaboration with shareholders, material stimulation. The advantage of this method is its connection between financial planning, capital budget creation and their rate of return, goal setting and remuneration. The disadvantage is the complicity of an approach, because this indicator consists of 164 characteristics.

Intellectual capital index [16]

Intellectual capital index is a methodology aimed at the creation of integral view of value making in the company. The approach unites strategy, non-financial characteristics, finances and an added value. The distinguishing characteristics of this method are: focus on monitoring the dynamics of intellectual capital, global review of the company diverse from the analysis of physical assets. The strong side of this method is that it allows the managers to comprehend the influence of a certain strategy on intellectual capital of the company. Intellectual capital index also gives an opportunity to conduct system test of future-oriented actions, allowing comparisons both on the level of organization unit and corporative level. Disadvantage of method is such that it limits the intellectual capital of the company by only those non-material assets that are controlled by the company itself.

Technology broker [17]

Broker technology consists of 20 auditing questions. The advantage of this approach is that it offers tools of categorization of values to intellectual capital and its

profitable use in organizations. The weakest side of a technology broker is the analysis to be conducted to convert quality results of the questionnaire page into real dollar value of these assets. The control questions of technological broker are subjective.

As the analyse reviews no one of mentioned methods of intellectual capital is universal, that's why company should chose the approach to evaluate the intellectual capital according to its available resources, competence, free time, and may be even adopt the methods to make it more appropriate.

III. THE MODEL OF INTELLECTUAL CAPITAL AND FINANCIAL FOCUS ON EVALUATION OF ITS ELEMENTS

Making the review of existed practice of evaluation the intellectual capital the authors of research have made the conclusion that value of intellectual capital is the function of structural capital, human capital and relational capital, where each kind of intellectual capital consists of many components, which should be defined and measured first of all.

$$TIC = f(SC, HC, RC) \quad (1)$$

where

TIC – total value of intellectual capital, Lats
 SC – the value of structural capital, Lats
 HC – the value of human capital, lats
 RC – the value of relational capital, lats

The authors of the paper provide their research on components of intellectual capital in table 2, which review the possible methods of component value defining. Valuation of each component is based on next algorithm:

1. The components of each kind of intellectual capital needs to be defined
2. Each component should be defined in terms of financial base, it means, how it could be valued quantitatively in currency.
3. Each base should be corrected on coefficient, which actually characterize the component as intangible value.

9 elements of intellectual capital were defined in this research. They are: processes, information, management style and organizational structure, knowledge and skills, attitude and ability, customers, distribution channels, vendors and investors.

Authors suggest choosing the investments or costs of the company as financial base for valuation the elements of intellectual capital. Base should corrected on coefficient, which can define it as intangible asset. The component of intellectual capital could be measured as the additional intangible value of investments or costs.

The authors suppose that value of concrete component of intellectual capital should be calculated using the formula below:

$$CV_i = X_i * Y_i \quad (2)$$

where

CV_i – the value of i-component, Ls

X_i – financial base of i-component, Ls

Y_i – correction coefficient of i-component

TABLE I
 THE VALUATION OF COMPONENTS OF INTELLECTUAL CAPITAL

Intellectual Capital	Name of component of intellectual Capital	Financial Base	Correction coefficient
TIC	i	X _i	Y _i
Structural capital SC	Processes	Annual investments on process improvement, could be measured as Ls per employee working in this area, quality improvement costs etc.	(Velocity of assets at the end of the year/ Velocity of assets starting the year)-1
	Information	Annual investments on employees and equipment for data bases gathering, preparation and analyze	(Real profit /planned profit) -1
	Management style and organizational structure	Costs on administration staff	(Profit at the end of year/profit at the end of previous year) -1
Human capital HC	Knowledge and skills	Costs on employee trainings in the actual year	(Wage costs at the end of year /wage costs at the end of previous year)-1
	Attitude and ability	Costs on employee wages in the actual year	Number of promoted employees per all employee
Relational Capital RC	Customers	Customer related investments (costs on brand, media, marketing researches and so on)	(Number of Customers at the end of the year/number of customers at the beginning of the year) -1
	Distribution channels	Investment on distribution channels per year	(Time from order to real product or service providing to customer at the end of the year/ Time from order to real product or service providing to customer at the beginning of the year) -1
	Investors	External investments per year	Profitability of external investment
	Vendors	Costs for vendor relationship establishment (manager's wage, sourcing department costs, etc.)	(Number of agreements at the end of year/number of agreements at the beginning of the year) -1

It should be marked that mentioned components of intellectual capital has the synergetic interrelationship, what

should be analyzed before the defining the total value of intellectual capital.

IV. CONCLUSIONS

By supplementing accounting measures with non-financial data about intellectual capital and company performance, enterprises can communicate objectives and provide incentive for managers to address long-term stability and sustainable development. Non-financial measures can be better indicators of future financial performance. Although non-financial measures are increasingly important in decision-making and performance evaluation, companies should not simply copy measures used by others. The choice of measures must be linked to factors such as corporate strategy, value drivers, organizational objectives and competitive environment. In addition performance measurement choice is a dynamic process – measures may be appropriate today, but the system needs to be continually reassessed as strategies and competitive environments evolve.

A new insight into valuation of elements of intellectual capital is a base for a future research of level of intellectual capital in Latvian business environment, supposing the following:

1. collection of statistic information about the components of intellectual capital of the main components in Latvia's market and companies of different sizes
2. Computation of component values according to the method discussed in this article
3. Static definition of synergic connection of components
4. Creation of a mathematical model of intellectual capital evaluation
5. Evaluation of intellectual capital on level of different sectors of national economy and the level of enterprises of different sizes

Estimation and analysis of intellectual capital is necessary to define its influence on the financial stability of the company and defining methods of its management in order to increase financial stability of companies.

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