

INTELLECTUAL CAPITAL IN THE ENTERPRISE VALUE FORMATION

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Abstract. This article deals with intellectual capital value, as it is a very urgent problem at present. The aim of the article is a complex analysis of asset valuation methods. The role of intangible assets in business is analyzed. The concept of valuation is given. Three categories of valuation methods of intellectual property are presented. Four groups of income valuation methods are analyzed. The analysis of brand value is considered. Direct and indirect methods of brand value determination are analyzed.

Key words: intellectual capital valuation, tangible and intangible assets, risk valuation, investments, calculation

INTRODUCTION

The completion of various forms of enterprise financial accounting causes nowadays huge difficulties for accountants, auditors and other specialists. It is necessary to determine specific value indicators of various intangible assets, brands and intellectual property (for example information computer systems, chemical or technological production formula) in balance sheets. Sometimes, even highly qualified specialists make mistakes filling in records that indicate this kind of an asset value. It often leads to fatal consequences: losses of partners, irrational economic actions, as well as to a decrease in product competitiveness and an overall enterprise activity, which may result in its bankruptcy. Taking possible negative consequences into consideration, the problem of intellectual capital valuation is of crucial concern.

ANALYSIS OF RECENT RESEARCH

The objective of the research is a complex analysis of assessed valuation methods that can give true information and may be used for intangible assets exactly. The completion of the objective has a great theoretical and applied importance as it facilitates the elimination of many mistakes and errors. This problem has been studied by a lot of scientists, such as V. Suhomlyn, V. Makarov, O. Kozyrev, V. Butyrskiy and others. Nevertheless, it has not been investigated yet. This problem has a certain degree of novelty as a unitary (single) positive system of intangible assets valuation has not been developed yet. Intellectual capital is considered to be the most important asset of a number of the largest and the most powerful world companies. It is a basis for the domination in the market and the support of a constant profitability for leading corporations. Intellectual capital often plays a key role in mergers and take-overs, and well-informed companies widely use license possibilities for the transfer of these assets to the jurisdiction with low taxation.

COMPONENTS OF INTELLECTUAL CAPITAL

However, a role of intangible assets in business is not interpreted fully. Common accounting standards cannot reflect the value of intellectual property rights, for they are not evaluated, used and managed at the required level. Despite the importance and complexity of problems concerning intellectual property rights, the necessary coordination between various professional specialists who are engaged in corresponding problems is, as a rule, absent.

The concept of intellectual capital in the form formulated in the convention establishing the World Intellectual Property Organization (WIPO) is really broad. It includes all the rights referring to literary, artistic and scientific works, performances of actors, phonograms, and radio and TV broadcasting, inventions in all fields of human activities, scientific inventions, industrial design, trademarks, service marks, firm names and commercial names, protection against unfair competition, and all other rights relating to intellectual activity in the industrial, scientific, literary or artistic fields. Such understanding of intellectual property rights includes not only property rights, but also moral rights, including the right to the integrity of the work, copyright etc. These rights do not necessarily generate revenue. Therefore, they cannot be attributed to intellectual capital.

While evaluating cost of capital of any enterprise, it is important to determine correctly sources of finance. Capital value of every separate capital investment should be calculated on the basis of a characteristic of the given capital invest-

ment-risk, borne by both creditors and shareholders, and an appropriate capital structure [Ogyer et al. 2007, p. 107].

“In recent years an increase of an intellectual capital share in a capital structure of an enterprise has been predetermining a necessity of the valuation of its protection level both the current enterprise activity and in business as a whole” [Kožuško 2010, p. 201].

One of the key factors that influences a company's successes and failures, is the level of efficient use of intellectual property and risk valuation. Without a doubt, the way how a company administration should know the value of intangible assets and interrelated risks (on the same account) and the value of tangible assets belonging to the company, because managers of an enterprise should know the value of assets and liabilities under this value. The use of these assets can have different forms starting with direct assets sale, an organization of a joint venture or a conclusion of license agreement. There is no doubt that their use increases risk valuation [Kozyrev, Makarov 2008].

PRECONDITIONS OF VALUATION OF INTELLECTUAL CAPITAL

Experience shows that a lot of firms do not tend to reflect the components of intellectual capital in their balance sheets, even though they are trying to demonstrate them to potential investors. The result is a huge gap between the book value of the company and its market capitalization. In the case of Microsoft, this gap reached by two orders of magnitude in 2011. Much the same is observed in many Internet firms. From this point of view, the desire for a more accurate reflection of intangible assets in the balance sheet [Wyat 2002] is controversial. The above does not, so the accounting should be radically changed. Here we deal with fundamental contradictions between the accounting principles and the properties of the knowledge economy (or algebraic properties of knowledge itself). Accounting is based on the principles of ordinary arithmetic. If somewhere came the same should go down elsewhere. Knowledge comply with quite different algebraic rules (non-rivalrousness), they lack rarity [Stiglitz 1999]. This property was highlighted by three Nobel Prize winners (L. Kantorovich, V. Leontiev, K. Arrow).

The valuation is, first of all, a complex of an economic conception of value and a legal conception of property. Assets availability represents the function of their possibility to ensure income and determines the discount rate of this income. The core rule of commercial valuation is the value of something that cannot be indicated abstractly; everything that can be indicated is a value of a thing in a specific place at a specific time under specific circumstances. This rule is especially important for the valuation of intellectual property rights. As a rule, we talk about one or two interested parties and valuation for each of them depends on specific



conditions. If these conditions and the conditions of a rights' owner are not to be taken into consideration, the valuation will be senseless.

Assessing tangible assets value is not problematic if they have gotten official protection with trademarks, patents or copyright. Though it does not refer to such intangible assets, as know-how (including talent, professional skills and knowledge of labour resources), systems and methods of technological processes, list of buyers, distribution systems etc. (Table 1)

TABLE 1. Comparison of evaluation parameters of tangible and intangible assets

Features	Tangible assets	Intangible assets
Basis of evaluation	costs made	evaluation made on the basis of future performance
Evaluation indicators	with value indicators	with non-value indicators
Evaluation frequency	periodic process	continuing process
Outcome	tangible (profit)	intangible (social effect)

Source: Own elaboration.

These assets can be actually valuable. Nonetheless, they are subjected to a more complicated definition regarding income and profit they provide with. It is necessary to carry out a thorough preliminary analysis of a lot of intangible assets together with company's lawyers and accountants.

In today's world, the role of intellectual capital in company value is increasing. Scientists believe that corporation value is usually several times higher than the value of its tangible assets. According to various sources, this ratio is from 3:1 to 16:1. In other words, the value of today's businesses is mainly determined by the presence of their intellectual capital (Figure 1).

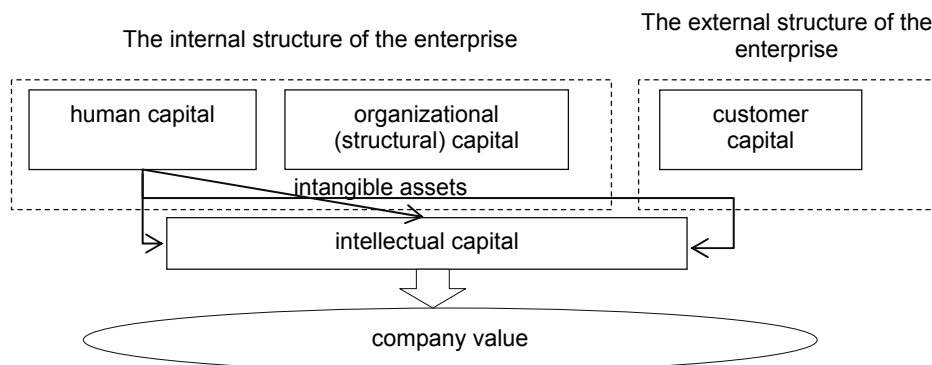


FIGURE 1. Formation of company value by intellectual capital components

Source: Own elaboration.

At the same time, one should be cautious when talking about intellectual capital value, since the intellectual capital largely consists of the elements that are, in principle, not sold, and therefore have no value in conventional sense. In any case, it is inappropriate to talk about the market value of intellectual capital. The situation in Ukraine is quite different from that in the US and the EU. Below is the data of the State Statistics Committee of Ukraine on scientific and technical works realized in Ukraine (Table 2).

TABLE 2. The volume of scientific and technical works in Ukraine

Year	Total, in current prices	Including				Significant share of completed scientific and technical activities in GDP (%)
		fundamental research	applied research	developments	scientific and technical services	
million EUR						
1996	111.17	14.06	32.16	60.69	4.26	1.36
1997	126.34	18.85	30.92	69.37	7.20	1.35
1998	126.90	20.55	29.75	68.28	8.32	1.24
1999	157.82	22.05	33.04	91.86	10.87	1.21
2000	197.84	26.66	43.67	110.63	16.88	1.16
2001	227.50	35.33	30.49	131.72	29.96	1.11
2002	249.68	42.49	34.36	138.66	34.17	1.11
2003	331.98	49.12	42.98	190.02	49.86	1.24
2004	411.24	62.97	57.37	221.40	69.50	1.19
2005	481.86	90.21	70.89	240.69	80.07	1.09
2006	535.46	114.10	84.15	274.16	63.05	0.98
2007	670.07	150.40	113.26	330.31	76.10	0.93
2008	853.89	192.74	154.57	408.82	97.77	0.90
2009	865.37	191.66	141.20	421.59	110.92	0.95
2010	986.71	218.84	161.71	503.70	102.46	0.90
2011	1 034.99	220.58	186.67	498.59	129.15	0.79

Source: the State Statistics Service of Ukraine.

According to Table 2, the amount of scientific work is increasing, but their share in GDP is very low and declining. This negative trend indicates that Ukraine does not build the intellectual capital which may cause economic problems in future. We have considerable scientific potential, though it remains unused as the majority of innovative deployments are imported today. The main reason for this situation is the lack of attention to scientific activity on the part of the state, as illustrated in Table 3.

TABLE 3. Sources of financing innovative activity (milion EUR)

Year	Total expenditure	Including funds			
		own	state budget	foreign investors	other sources
2000	175.71	139.93	0.77	13.31	21.70
2001	197.14	165.40	5.58	5.85	20.31
2002	301.38	214.18	4.55	26.41	56.24
2003	305.98	214.84	9.30	13.00	68.84
2004	453.46	350.15	6.34	11.24	85.73
2005	575.16	504.54	2.81	15.79	52.02
2006	616.00	521.14	11.44	17.62	65.80
2007	1 085.09	799.96	14.48	32.18	238.47
2008	1 199.42	726.40	33.69	11.54	427.79
2009	794.99	516.94	12.70	151.29	114.06
2010	804.55	477.52	8.70	241.14	77.19
2011	1 433.39	758.56	14.92	5.69	654.22

Source: the State Statistics Service of Ukraine.

As for 2012–2013 this indicator shows that the first country in the world was the United States of America. Nevertheless, in the coming decades, China could become the leader compared to 2012, in 2013 the US spending on research and development increased by 1.2% (to \$424 billion, accounting for 2.66% of the GDP), out of which the budget allocations were \$129 billion (1.4% higher than in 2012). However, the draft of the US federal budget for 2014 foresees an increase in funding to \$143 billion. China costs for research and development in 2013 were \$220 billion, which is 11.6% higher than in 2012, India – about \$45 billion, 12% higher than in 2012.

As we can see, the main sources of financing scientific works are private investments. State financing is carried out insufficiently.

INTELLECTUAL CAPITAL VALUATION METHODS

The acceptable valuation methods of the determined intangible assets and intellectual property are subdivided into three general categories: methods based on market relations, value or valuation of past, and future economic benefits [Kozyrev, Makarov 2008, p. 91].

Under ideal conditions an independent expert always will prefer to determine market value by referring to comparable market operations. It is rather difficult to evaluate such assets. While evaluating the object of intellectual property, the search of the comparable market operation becomes practically senseless. This is

not only connected with the absence of compatibility but also with the fact that the criteria of intellectual property sale, as a rule, have not been developed yet. Many cases of sale are only a small part of a bigger deal, the details of which remain strictly confidential. There are other obstacles restricting the use of the methods: special buyers, various negotiation skills and distorting effects of economic cycles' peaks and troughs [Bočarova 2003].

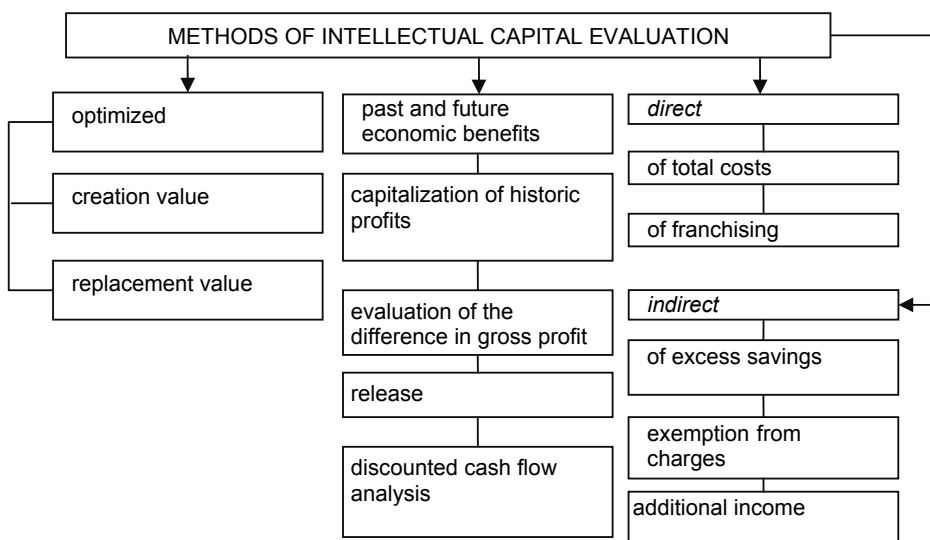


FIGURE 2. Classification of methods of intellectual capital evaluation

Source: Own elaboration.

Optimized according to the value methodologies, such as “formation cost” or “renewal cost” of a specific asset, assume that there is a definite interrelation between cost and value and this approach is of no interest but for its simple application. This method ignores the changes of money value considering time factor and it does not take into consideration different overheads [Moon 2006, p. 253].

The valuation methods resulted from the valuation of the past and future economic benefits (also called income valuation methods) can be divided into four groups: capitalization of historic earnings, all methods of gross profit difference, methods of excess earnings valuation, and exemption method [Suhomlyn 2004, p. 88].

Capitalization of historic earnings enables to determine intangible assets value by multiplication of supported historic earnings of asset multiple quantities (that was determined after the achievement of ITA relative comparative power). For example, multiple quantities are determined after brand valuation in the lights of such factors as leadership, stability, market share, internationality, profit-

ability trend, marketing and advertising support and protection. While the present process of capitalization takes into account some of the factors that should be taken into consideration, it has serious disadvantages mainly connected with the acquisition of the past income. This method almost does not take into account future possibilities.

Evaluation method of gross profit difference is often associated with trademarks and brands valuation. These methods consider the difference in trade (sales) price value corrected with the difference in market value that is the spread between the margin of fluctuation of a branded or patent product and a product without brand name or with a third name. This formula is used to provide the flow of funds and value estimation. The finding of sort equivalent for patent and definite distinctions in price is a more complicated task than the determination of price distinctions on retail brand.

The method of excess earnings valuation considers current value of net tangible assets used as a base for calculated rate of profit. It is used for calculation of profit needed for investors' encouragement to invest resources into these net tangible assets. Any income obtained above the profit necessary for investments' encouragement is considered as additional income provided by intangible assets. Though this method is based on the future economic benefits owing to assets used, it is related to the difficulty of alternative assets use adjustment.

The exemption method takes into account what a buyer can afford or what he is ready to pay for a license on similar intangible assets. After that the flows are capitalized reflecting the interconnection between investment's risk and profitability into the present asset.

Discounting cash flow analysis takes into account the latter three methodologies and is likely to be the most comprehensive valuation method. It is necessary to make thorough evaluation of potential profit and cash flows and then compare them with current value applying discount rate or rates. Mathematic modelling of discount cash flow proves the fact that €1 in our pocket today costs more than €1 next year or €1 in a year. The value of money taking into account time factor is calculated by the adjustment of expected future earnings in regard to current cash value applying discount rate. The discount rate is used to evaluate economic value and includes compensation for risks and expected inflation levels.

Considering an asset value should take into account an asset use environment to determine the increase potential of market earnings. Market earnings forecast will be a crucial stage in the valuation process. Potential income should be valued by the proportion of long-lasting asset nature and its marketability, thus the expenses consideration should be coordinated with residual value assessment or final value, if they are [Firer, Williams 2003, p. 348].

This method takes into account market conditions, future efficiency and potential and cash value considering time factor. It indicates cash flow potential and it does not indicate property and is widely used in financial community. The discount rate applied to cash flows can be determined by using various models including the accumulation method, patterns of dividends' growth and pricing model of fixing assets using considered mean value of capital cost. The latter is likely to be a preferable variant.

Despite the fact that some of the above-mentioned methods are widely used, it should be noted that the valuation is more the art than the science and has an interdisciplinary research nature covering the fields of law, economics, finance, accounting and investments. It would be inconsiderately to make evaluation applying the so-called industrial (branch) standards without taking into account profound theoretical valuation basis. Evaluating intangible assets a valuer should take into consideration the context of actual assets cost.

Transactions of buying companies owners of well-known brands testify considerable price of intangible assets. Brand valuation is necessary for any company as it allows not only making a decision about brands purchase or sale, but also regulating accounting in companies and allocate available recourses efficiently.

Intangible assets including brands influence directly company's earnings and expenses. The determination of brand value is usually a combination of direct and indirect assessments. Direct assessments are made on the basis of money spent on communication investments into brand development. Indirect assessment is made on the possibility of brand to add something to commodity value without brand from the same category [Bontis 2004, p. 63].

Let's consider direct methods. The method of cumulative expenses is one of them. It consists of the calculation of old brand creation and promotion expenses on researched and development, artistic decision and package, incorporation and protection, advertising, promotion and public relations. The advantage of this method is the accessibility to each producer. The disadvantage is that this valuation is a highly internal affair of a company. You can invest \$10 million into researches, developments, advertising and promotion, but the brand formation may not be a success. And brand value is naught. Another more interesting but rarely used direct method is franchise valuation. Brand managers planning future sales volume usually use equations that enable to transfer ad budget into publicity, publicity into specimen and specimen into final consumption volume. The valuation method uses the same way of judgment, but in reverse direction. The advantages of this method are: it is easily used and demands less researches comparing with the previous one. This method also gives the figure of current investment value into brand not depending on what kind of money was used and how it was spent in the past [Butyrskyj 2009].



Financiers prefer indirect valuation methods though they are more problematic than others. The method of excess accumulation determines how income increase depends on the definite brand. At first the cash flow that provides an ordinary product for 10 years (standard product life cycle) is determined, then discounted cash flow analysis is made. This analysis consists of the calculation of cash flow for each year per investment risks into brand and their realization at that moment. The amount of this flows per each year plus brand's residual value at present give brand value for the whole period of time [Chen 2005, p.159]. The method of exemption from allocations is based on the assumption that if a company does not use its brand itself, it can give the brand in use to companies for determined amount. These allocations are usually calculated based on sales volume. The amount of such allocations per year is calculated by this method and then is checked for expected brand life cycle [Kozyrev, Makarov 2008, p.103].

Additional income is the most popular method. Brand product is supposed to be sold at a higher price than no branded [Kannan 2004, p. 389].

CONCLUSIONS

As all these financial valuations are more or less precise with regard to brand value, it is impossible to count on any of them completely. Therefore evaluating brand several methods are used at the same time.

Thus, intellectual capital value is becoming more and more important aim both for enterprises under formation and well-established enterprises that have been operating for years. Though there are several various methods of brand value calculation in the world it is impossible to choose one multipurpose method. Each enterprise has its own indices set of its financial and economic activity, its own history and own possibilities. None of given methods can be used independently. The value calculated according to several methods can give a true result. Though, we cannot say that there is determined brand value. The fact that no one can positively predict the true of the brand is a peculiarity of the brand value evaluation.

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KAPITAŁ INTELEKTUALNY W KSZTAŁTOWANIU WARTOŚCI PRZEDSIĘBIORSTWA

Abstrakt. W artykule przedstawiono ważne i aktualne zagadnienia związane z wartością kapitału intelektualnego. Celem artykułu była kompleksowa analiza metod wyceny aktywów. Analizie poddano również znaczenie wartości niematerialnych i prawnych w działalności przedsiębiorstw. Przedstawiono koncepcję wyceny tych aktywów. W artykule zaprezentowano trzy kategorie metod wyceny wartości intelektualnej przy podziale analizowanych dochodów na cztery. Analizie poddano wartość marki oraz bezpośrednie i pośrednie metody szacowania wartości marki.

Słowa kluczowe: wycena kapitału intelektualnego, aktywa trwałe oraz wartości niematerialne i prawne, wycena ryzyka, inwestycje, kalkulacje



