

ANALYSIS AND VALUATION OF INTELLECTUAL CAPITAL. THE RESULT OF A STUDY

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Abstract: In present the intellectual capital is a key factor in company's profitability. Two major forces have driven the high performance workplace over the past two decades: globalization and increasing in technological changes. In an environment lead by globalization and fast technological change, intangible assets are the key success factor because the knowledge assets provide a sustainable competitive advantage. The valuation of intangible assets is fundamental to support management decision in allocation investment and investor's decision regarding the value versus price. In our research we consider a group of Romanian companies and analyze the importance of intangible value into the total market value of the equity. From accounting point of view the importance of intangible assets is very low but from the market evidence was indicated around 50% importance of intangible value in total market value.

1. The changing of the Economy. The Intangible Economy

The intangible point of view looks at the economy or individual entity as a combination of three ingredients: resources, flows and transformations of resources. Resources could be tangible, financial or intangible.

The intangible perspective has stressed on resources that are not material and has considered the importance of this hidden wealth for companies and the national economy.

Drucker (1993) considers that intangible assets induce a process of transformation of the society. This process has created a society in which the major resource is knowledge. In the "knowledge society" values are created not by the allocation of capital or labour but by innovation.

According to Drucker (1993) there are three phases in the development toward the "knowledge economy"

1. Industrial Revolution (1750 – 1880), companies used knowledge to produce tools and products;

2. Production Revolution (1880 – 1956), companies used knowledge to improve labor processes

3. Management Revolution (after 1945), companies use knowledge to improve knowledge.

Today because of the globalization the competition between companies is global and characterized by the next issues:

a) The internationalization of clients which in some cases replace local clients.

b) The finance industry encourages cross-border transactions.

c) The market position of local services providers has changed and continues to change. Markets are more transparent and efficient due to technology advancement.

As a result of the global competition, the life cycle of the products is getting shorter and shorter. New products and services require an important stream of innovation. With a global competition, it is crucial for the companies, in order to survive, the development of a unique business advantage. Uniqueness could come only from intangibles, for example from a distinctive image through branding activity.

The intangible economy has several characteristics that make it different from the past economies:

1. knowledge replaces labour and capital as a fundamental resource in companies activity. According to certain studies, there is proof that intangibles have a growing importance for the company value (Stewart, 1997, Nakamura 2003 etc).

2. in intangible economy the concept of resource ownership has changed. Because knowledge is mainly in the people's mind, companies no longer own their most distinctive resource. In many cases the management will try to transform personal goodwill or human capital into an intangible belonging to the company (patent, trademark, copyright etc.);

3. the knowledge content of products and services is growing very fast. Today, the value of electronic component of a car is higher than the value of the steel (Stewart, 1997);

4. in the intangible economy services are more important than products. For example in PC industry, the internet access service is more important than the product (personal computer);

5. the management of intangible resources is different from the management of tangible or financial assets. Today there are "knowledge companies", that show a small amount of assets into the balance sheet but a huge amount of value added and profit in profit and loss account.

2. Intellectual Capital Definition

In the 1990s was developed the concept of intellectual capital, when people realized that two problems regarding the company's management and valuation are only two sides of the same coin:

- ✓ what you want to manage you have to measure;
- ✓ what you can measure you could manage.

Intellectual Capital represents the fusion between these two streams of thought (Roos et.al, 1997).

Today the (intangible) economy is based on intellectual capital and the prime commodities are knowledge and information.

Markets of all types require information in order to function. Investors must know what sellers are offering and what is the price in comparison with value. A couple of studies observed increasing the importance of IC and intangible value 60-75% in corporate value (Lev, 2000).

On the other hand intellectual capital management has been found to be significant for the firm's long-term success. Firms managing their IC outperform other companies (Brennan & Connell, 2000).

The intellectual capital of an organization is formed by its human capital (the know-how of its employees) and by « *its structural capital (its organization and its intellectual property)* » (Encyclopédie de la gestion et du management, 1999, p. 110).

Analyzing this definition we can see that the central point of the intellectual capital theory is given by a new approach, which considers knowledge (human or organizational) as a specific resource, and even as a capital, with all the related consequences, for the individual or for the firm. Marshall, for instance, (cited by Nahapiet, 1998, pp. 245), considers that “*capital consists in a great part of knowledge and organization...Knowledge is our most powerful engine of production*”, this being, in fact, the economists’ point of view on the issue. The management science has brought, afterwards, many contributions on the topic (Stewart, Kogut & Zander, Nonaka & Takeuchi, Spender, etc.).

The emergence and fast development of the intellectual capital concept have also touched, in the most pragmatic ways, the accounting and finance fields. Therefore, it is a real challenge to measure and value the intellectual capital of a firm, especially due to the fact that financial reporting has not yet developed an accurate set of tools in order to disclose it to its beneficiaries. “*We easily admit the importance of immaterial issues, but at the same time we omit to make the efforts justified by their importance*” (du Montcel, 1997, p. 1722), this referring to accounting measurement, recognition, disclosure and normalization.

The concept has a strategic importance for the business valuation, and the specialists are looking for practical means to properly value this key element for the firm (Manate, 2007), especially in the present economic context, characterized by an increasing number of mergers and acquisitions (with two main consequences – determining the value of the business and determining the post-transaction strategy of the firm). Guillard and Roussel consider that the great loss of the HP-Compaq titles after 2001 (a loss of value of 7.6 %, in a growth context for the market) is due to the improper management of the intellectual capital and especially of the human capital, after the ’99 gigantic merger. (Guillard A., Roussel J., 2005, p. 401).

3. Intellectual Capital Valuation Models

In accordance with Petty & Guthrie (2000) point of view there is no generally accepted theoretical model for understanding and measure IC. On the last 25 years several models have been developed:

Economic Value Added (EVATM)

EVATM method of value measurement has its bases in the traditional accounting. As defined by Stern Stewart, EVATM is the difference between a company’s net operating income after taxes and its cost of invested capital (equity plus debt).

The goal in calculating EVATM is to arrive at earnings that are close to cash and compare with the return on invested capital.

EVATM is not a very new concept because it is an economic term related with income and capital concepts. In 1890 the economist Alfred Marshall defined economic profit as total net gains less the interest on invested capital at the current rate.

Market Value Added (MVATM)

MVATM method, similar to EVATM derives from the Alfred Marshall concept of “economic profit”. MVA is the difference between actual market value of the company (invested capital) and the present value of invested capital. In other words MVATM is the difference between “cash out” or what investors could get by selling at the present conditions of firm and market, and “cash in” or what investors contributed over the

years from the beginning of the firm.

Tobin's Q Ratio

Named *Q ratio* or *q* this is the market value of invested capital relative to assets replacement cost (Tobin, 1969). The economist Tobin, a Nobel Prize winning, developed it as a measure to help predict investment decision independent on macroeconomic factors such as interest rate. Tobin's Q ratio was not developed as a measure of intellectual capital, but former Federal Reserve chairman Alan Greenspan has noted that high Q and market to book ratios reflect the value of investments in technology and human capital (Stewart, 1997).

Norton and Kaplan's Balance Score Card (BSC)

BSC was created by Robert Norton and David Kaplan to help managers to transform organization's strategy into a reliable set of performances. This will provide the framework for a strategic measurement and management system. The BSC was developed considering the ability of a company to mobilize and develop its intangible assets.

BSC suggests a view of the firm from four perspectives: Customer, Financial, Internal Business Process and Learning plus Growth (Kaplan & Norton, 1996).

Skandia's IC Navigator

The IC navigator was developed by the Edvinsson and Malone into a Swedish financial services firm named Skandia (Edvinsson & Malone, 1997).

The presumption in this method was that the difference between market and book value of the company represent the value of intellectual capital.

The concept in Skandia IC Navigator was that the market value of a company is equal with Financial Capital plus Intellectual Capital.

$$\text{Market Value} = \text{Financial Capital} + \text{Intellectual Capital} \quad (1)$$

$$\text{Market Value} = \text{Financial Capital} + (\text{Human Capital} + \text{Structural Capital}) \quad (2)$$

Sveiby's Intangible Assets Monitor (SIAM)

Sveiby considers that financial statements are not a good measure of a company's wealth and most of the value of a firm is in "invisible knowledge-based assets".

In accordance with Sveiby the market value of a company consists of its visible equity and three kinds of intangible assets (Sveiby, 1997).

The visible equity is represented by the book value of the assets and intangible assets are:

- ✓ external structure: brands, customer relations;
- ✓ knowledge capital: internal structure with management system, legal structure, R&D, software etc;
- ✓ knowledge capital: individual competences with education and experience of the people from the firm.

The Brooking Methodology

Brooking (1998) developed a model to consider the value of the IC belonging to a company.

In accordance with Brooking point of view the components of intellectual capital are:

- ✓ market assets: brands, distribution channel, customers relationship;
- ✓ intellectual property: copyrights, patents, trade secrets etc;
- ✓ human centred assets: education and work related knowledge and competences
- ✓ infrastructure assets: management processes, networking, information system.

4. The importance of Intellectual Capital for Romanian listed companies

As we discussed intangible assets value is now estimated at 60-75% in the companies' value (Lev, 2002). We have already presented a couple of methodologies for the measurement of intellectual capital (IC) at the firm level.

MVA, EVA and Tobin Q Ratio do not directly measure IC, they came in response to the fact that book value of assets of the firm was lacking in valuable information. For our research purpose we will calculate Tobin Q ratio and also the gap between market value and asset value (similar with MVATM methodology).

We considered a sample with 14 Romanian listed companies. These companies are the major Romanian firms, with the following figures for the period 2004-2005:

Table 1

Data for Romanian listed companies (sample)

<i>Indicator</i>	2004	2005	%
Total assets	8.716	13.175	51,2%
Total equity	4.165	5.910	41,9%
Operating revenues	3.074	4.034	31,2%
Profit Before Tax	82	770	841,6%
Market value (capitalization)	5.604	11.003	94,9%

Mil. Euro

Note: values in Euro based on average exchange rate (flow indicators) and end of the year exchange rate (stock indicators)

Our research follows two major objectives:

A. To analyze the importance of IC and intangible assets from the accounting point of view.

Considering this issue we observed a very low importance of intangible assets in terms of book value. There is a decreasing trend: from 0,4% intangible asset value in 2004 to 0,2% in 2005.

Considering the companies from the sample we observed a decreasing in book value of intangibles from 135 to 32 mil. Euro.

The maximum value of this ratio is 2,9% in case of BRD Company which acquired bank software in 2004. After that, because of amortization, the intangible value of BRD dropped from 340 mil. RON (2004) at around 30 mil. RON (2005).

The minimum value of this ratio is 0% in case of SIF Oltenia in 2004.

It this case it is obvious that from accounting point of view that Romanian listed Companies have a small intangible book value. We consider that this is due to the internal creation of intangible value, and in this case, in accordance with IAS 38 – Intangible assets, the company will not record the intangible value.

B. To evaluate the importance of IC and Intangible Value considering Tobin Q Ratio and other measures of IC.

This second issue was related to the existence of intangible value in the total market value of the companies.

We have estimated the market value of the equity like average price multiplied with the number of shares issued by the company and after that we have deduced the book value of net assets. The difference indicates intangible value not recorded in the balance sheet.

Considering data from the sample we have the follow conclusions:

✓ The market value of the equity (14 companies) increasing with 95% in 2004-2005, from 5.604 mil. Euro to 11.013 mil. Euro;

✓ The book value of assets (most of them tangible assets) increasing with 37% in 2004-2005, from 4.256 mil. Euro to 5.810 mil. Euro;

✓ Indicated intangible value is the difference between total equity market value and net assets book value and recorded a large increase from 1.348 mil. Euro in 2004 to 5.193 mil. Euro in 2005;

✓ The average indicated intangible value growing up from 24% to 47% in equity market value.

Table 2

Intangible value ratio (sample)

Mil. Euro

<i>Indicator</i>	2004	2005	%
1. Intangible assets book value (sample figures), mil.Euro	135	32	-76,3%
2. Intangible/ Total assets value	0,4%	0,2%	-50,0%
3. Total equity market value (capitalization)	5.604	11.003	94,9%
4. Net asset (book value)	4.256	5.810	36,5%
5. Indicated intangible value (not recorded in balance sheet)	1.348	5.193	274,0%
6. Indicated intangible value/ equity market value	24%	47%	91,8%
7. Tobin Q (Market Value/ Asset Value)	1,33	1,89	42,8%

The figures from the table 2 help as to observe increasing the gap between the market value of the equity and net asset value in case of the Listed Romanian companies. This is a trend that explains increasing in the importance of intangible value near the value reported for other developed markets (average intangible value is 60-75% in accordance with Lev 2002).

On the other hand there is a small amount of intangible value recorded in the financial reports. We consider that is because of undeveloped market in terms of mergers and acquisitions operations. In accordance with IAS 38 – Intangible Assets and IFRS 3 – Business Combination when intangible assets were internal created could be recorded only when are confirmed by a transaction (merger or acquisition).

These two conclusions derived from our empirical study – the recognition, by the market, of the importance of the intellectual capital issues and the lack of accounting records that would recognise this same importance in the financial statements of the companies – are in accordance with our theoretical approach from the beginning, and we consider that only the development of major transactions on our market will bring significant IC elements in the balance sheet of the companies. How accurate will it be? This should be the purpose of future investigation.

Even more, this evidence brings up other issues, strategy orientated, in relation to the transactions cited above. It is extremely important to manage the Intellectual Capital of the company and to ensure the preservation and, hopefully, the growth of its value. In fact, problems of ownership and control related to the internal created intangible assets makes them also more vulnerable to expropriation, especially when important human capital changes occur after a major merger or acquisition. This strategic approach also represents another direction for future research, based on the conditions of our market.

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THE LIST OF ANALYSED COMPANIES

1. ALRO SLATINA
2. ANTIBIOTICE IASI
3. BANCA COMERCIALA CARPATICA SIBIU
4. SC BIOFARM SA
5. BRD - GROUPE SOCIETE GENERALE BUCURESTI
6. IMPACT BUCURESTI
7. OTELINOX TARGOVISTE
8. OLTCHIM RM VALCEA

SIF BANAT CRISANA ARAD
SIF MOLDOVA BACAU
SIF TRANSILVANIA BRASOV
SIF MUNTENIA BUCURESTI
SIF OLTENIA CRAIOVA
SC PETROM SA