Intellectual Capital as a Factor of the Fundamental Analysis

Natalia Tyulkova
Higher School of Economics, Saint-Petersburg, Russia
Nathalie.tyulkova@gmail.com

Abstract: Nowadays, society is at the new stage of the economic development when the quality and rate of continuous education of people and organizations play a major role. Those companies have the bigger financial success, which hold not only traditional factors of production but also technologies, and which develop actively the intellectual capital. So we can suppose that the increasing role of intellectual capital in modern society leads to the increasing internal company's value when it comes to generating good cash flow and keeping up sustainable growth is not enough to have visible assets. So, the investor on the stock market faces the problem when he or she makes investment decisions because of the reviewed gap between the market value and the internal value of company. The investment decision-making process is based on data from balance sheets as a traditional approach of fundamental analysis which does not consider intellectual capital. Therefore, the fundamental analysis does not respond to the modern demands showing more clearly the results of the companies' actions for making investment decisions. As a result, we need to find or propose new ways for fundamental analysis to keep up in reality. The research objective is to determine the role and the endowment of intellectual capital in creating the internal value of a company as a factor of the fundamental analysis, and also elaborate recommendations for the investment decision-making process based on updated methodology of fundamental analysis. In this research we attempt to modify a traditional approach of the fundamental analysis to increase its meaningfulness by adding a new factor – intellectual capital – and to provide recommendations for investors. The modified methodology was approved for analysis by the Company VimpelCom (telecommunications).

Keywords: intellectual capital, value of company, fundamental analysis

1. Introduction

In the last few years the scientists pay more and more attention to the questions of how to increase the value (and finally, the worth) of the company not only for owners and investors, but also for stakeholders and for this purpose they elaborate different methodologies to increase the efficiency of using the capital, resources, assets and so on. Because of the fact that tangible assets have limited period of useful utilization, and they could be easily repeated by competitors, it is necessary to determine any intangible, unique assets which add company's value and worth for owners and investors. Mostly, this is intellectual capital. So, the research objective is to determine the role and the endowment of intellectual capital in making the internal value of the company as a factor of the fundamental analysis by the example of the company VimpelCom. And, if the role is significant, we will elaborate recommendations for the investment decision-making process by updated methodology of fundamental analysis.

The research theoretical and methodological basis are based on the scientific papers devoted to problems of appraisal of intellectual capital, which creates the internal value of the company on passing the fundamental analysis; adding the new factor of (intellectual capital) in order to analyze how the company throws it in the process of using their financial models.

2. Definition of intellectual capital

The scientists propose different definitions of intellectual capital depending on the purpose of their research. We are going to consider the intellectual capital as an intangible resource which increases the worth of a company as a result of its long-term use. We emphasize that intellectual capital is not the same as intellectual property. The intellectual capital is a wider term which includes not only the results of the company's research and development (such as patents and know-how) and their legislative protection, but also people, organizational structure, formal and informal interactions etc.

In general, the intellectual capital can be divided in 3 components, as shown on Figure 1: A) Relationship B) Structure and C) Human capital (Edvinsson, 1997). The main objective of such division is to systematize and put in good order the different elements of the intellectual capital. This division is recognized in a certain sense over the world, but some researchers propose their own conceptions which differ slightly among themselves (Saint-Onge, 1996; Stewart, 1997a; Stewart, 1997b; Gratton, 2003; Gratton, 2007).

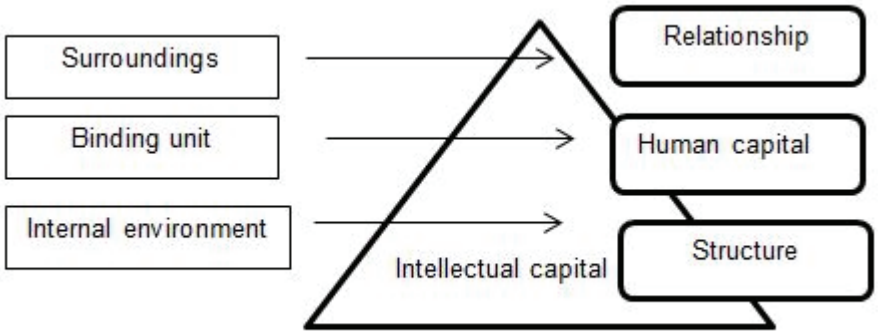

Figure 1: Elements of the intellectual capital

The part "relationship" includes simultaneously the elements of surroundings such as suppliers, customers, competitors, government. "Structure" encompasses the elements of internal environment such as organizational design, business process, decision-making process, the company's philosophy and so on. The part "human capital" is a binding unit between the first two and it leads to the answer of needs of the market and it operates in conditions of market uncertainty. The human capital consists of workers, managers, top-managers with their knowledge and skills, personality and character.

3. Research methodology

Because Intellectual capital is one of the resources that increases value and, as a result, company's worth, it is necessary to understand its form and state, and what we should do for its development. In this case, scientists and experts propose different approaches to evaluate intellectual capital.

The experts propose to divide the methodology of intellectual capital's estimation into 5 groups:

- Direct Intellectual Capital Methods (DICM) which estimates the monetary value of intangible assets by showing up its various components. After components' determination, they could be estimated separately or by using aggregated coefficients.
- Market Capitalization Methods (MCM) show up the value of intellectual capital or intangible assets as a difference between market capitalization and cost of its share capital.
- Return on Assets Methods (ROA) count on an average profit of a company before taxes and divide it on aggregate cost of tangible assets. Then, the coefficient ROA is compared with aggregated indexes within branch. After that, the difference is multiplied by the value of the tangible assets to count an average of annual profit from the intangible assets. By dividing the average annual profit by WACC or the cost of money, we can get an approximate value of its intangible assets or intellectual capital.
- Scorecard Methods (SC) display different components of intangible assets or intellectual capital. Then experts determine indicators and indexes and represent them as evaluative chart or diagram.
- Proper Measurement Systems (MS) get all factors which have value for a company or its environment and divide them on components–that are measurable. These components result into a measured system which is known as Conjoint Value Hierarchy, CVH. To receive reliable values' calculation, real data should be used.

These methods used to estimate intellectual capital have some advantages and disadvantages. Methods such as ROA and MCM, which propose estimation of cash flow, might be useful for mergers and acquisitions, as well as for estimation of stock market. They also could be used to compare peer companies, or illustrate the financial value of intangible assets. Moreover, accountants find them easy to understand because they are based on the principal rules of accounting. Nevertheless, these methods have some disadvantages. The method ROA is sensitive to the interest rate, while MCM can't be used in non-commercial organizations, internal departments or the public sector.

The methods DIS and SC may show us a more comparable picture of the company's financial position, and could be used for different organizations and departments. The results of their estimations are close to reality and derive faster and more accurately than the financial evaluations. We are going to indicate as

disadvantages of DIS and SC methods a complexity for comparison, since the indicators are unique for each company. Furthermore, they may require an enormous volume of data that could be difficult to analyze and pass. (Sveiby, 1998).

However, in the author's opinion, the methodology proposed by Paul Strassman (2002) is significant because of the idea of estimation of intellectual capital or the capital of knowledge is based on informational output. Paul Strassman used a conception of "informational management" meaning all intellectual actions in a process of firm's management. He argues that the traditional ways to measure the effectiveness such as Return on Equity (ROE), Return on Assets (ROA), and Return on Investment (ROI) are not suitable and he proposes the coefficient ROM – return on management (Klimov, 2002).

Paul Strassman (1987) supposes that the knowledge and intellectual capital of management are the major factors of getting competitive advantages and redistribution profit to companies that have the lowest costs and produce the most winning goods for customers. At the same time, the efficiency of management is estimated as a part of the net profit that could be suited to the skill and intellect of management as opposed to tangible assets when the competitors can have an access to them and imitate them.

Paul Strassman proposes to pass 4 stages:

- Determinate the expenses of informational management: The expenses of informational management=expenses of selling+aggregated and administrative expenses+expenses on research and development
- Determinate the value added by information: The part of profit added by information = Net profit – (Assets*Average rate of profit)
- Determinate ROM: ROM = Profit added by information/ expenses of informational management
- Determinate the value of intellectual capital: Intellectual capital = Profit added by information/ Cost of Capital

Proposed by P.Strassman the methodology is relatively simple for estimation and at the same time it is informative because it allows us to estimate the intellectual capital based on the interaction between the elements of internal and external environment of the company.

4. Estimation of intellectual capital and investment's decision-making process

By knowing the different methodology of estimation of intellectual capital and its elements, we can evaluate the company's capacity for future growth and also its appeal for investments. We are going to analyze one company as a potential object for investments.

First, we carry out the fundamental analysis as a traditional approach. We chose the company VimpelCom as an object of research because nowadays the investors have a great interest to the telecommunications sphere where the innovations are at a high level and, the part of intellectual capital is also high.

VimpelCom is one of the largest integrated telecommunications services operators which provides voice and data services using a range of traditional and broadband mobile and fixed technologies in Russia, Italy, Ukraine, Kazakhstan, Uzbekistan, Tajikistan, Armenis, Georgia, Kyrgyzstan, Laos, Algeria, Bangladesh, Pakistan, Burundi, Zimbabwe, Central African Republic and Canada.

VimpelCom's operations around the globe cover territory with a total population of approximately 753 million people. VimpelCom proposes services under the Beeline, Kyivstar, djuice, Wind, Infostrada, Mobilink, Leo, banglalink, Telecel, and Djezzy brands (Understanding VimpelCom, 2013).

Conducted analysis of coefficients (market capitalization, coefficient P/E, coefficient P/S, coefficient ROS, coefficient EV/EBITDA) for the company VimpelCom showed that if the dynamic of the main financial indicators and coefficients of fundamental analysis rest the same investors should buy VimpelCom's shares (see Table 1).

Table 1: Showings and coefficients of fundamental analysis of VimpelCom (Coefficients of VimpelCom, 2011)

Showings/ Years	2006	2007	2008	2009
1	2	3	4	5
Market Capitalization, $ mln	16410,55	43291,46	2564,05	22581,5
P/E	20,18	29,6	4,89	20,13
P/S	3,37	6,03	0,2532	2,59
ROS	16,7	20,39	5,18	12,88
EV/EBITDA	8,28	13,11	2,89	7,34

According to the theory of fundamental analysis, the market share fluctuates and deflects at its own choosing from its internal value and average meaning of real price of share and internal price should be close to each other during a long period of time. So we also need to estimate internal price of the company's share.

The internal value of VimpelCom the considered discount rate and the coefficient of growth is $ 1 720 354 127,56 , or $1,056 per share.

If we compare the internal value of VimpelCom with the company's market price, we see that the last one is higher (see Figure 2)[1]. According to the traditional approach of the fundamental analysis, if the internal value of the company's share is higher than its market price of one share, the shares are unappreciated and have the potential to grow. Otherwise, it is considered that the shares are over appreciated by the market and the investors expect that the market price is going to decline. So, we can conclude that the shares of the company VimpelCom are not the best for investments and that those investors should not buy any of the company's shares.

Figure 2: The rate of ADR of VimpelCom on NYSE during period of time May 2010- December 2012 (Share price chart, 2013)

We should emprise that we took into account only tangible assets when we passed the fundamental analysis as a traditional approach. As we said above, nowadays intangible assets play the major role because of the fact that they make the substantial part of cash flow and, so they influent value of the company. In this connection, it is necessary to evaluate the VimpelCom's intellectual capital.

Using the factor of intellectual capital will help us reflect not only on the assets at the expense of which the internal value of shares is formed but also by means of interaction. So, estimating the intellectual capital will help to see not only the object but also the subject which generates the cash flow.

What is the cost of the intellectual capital? What is its price? The Company VimpelCom identifies its intellectual capital as goodwill and brands as we see in the balance sheet. But the term of intellectual capital is

[1] According to the legislation, foreign companies can float and send their own shares in USA's stock market only as American Depositary Receipt (ADR).

broad – it also includes relations between workers and managers, the business process, knowledge and skills etc.

Table 2 presents the essential data to estimate the intellectual capital and the results of estimation.

Table 2: Data to estimate the intellectual capital of VimpelCom

Showings/ Years	2009	2010
1	2	3
Expenses of informational management, $ thousand	2 389 998	3 063 548
Net profit, $ thousand	1 121 830	1 673 341
Assets, $ thousand	2 966 608	2 289 474
Average rate of profit[2]	20%	20%
Profit added by information, $ thousand	528508,4	1215446,2
ROM	0,221133407	0,396744624
WACC[3]	15,00%	15,00%
Intellectual capital, $ thousand.	3523389,333	8102974,667

By knowing the quantity of company's shares, we can consider which part of intellectual capital suits to one share. In other words, how much of intellectual capital is in the price of the company's share – this is $2.16 in 2009 and $4.98 in 2010. Our estimation had taken place in 2011 and we had made a forecast.
Table 3 presents the forecasting estimation of intellectual capital of VimpelCom.

Table 3: Forecasting estimation of intellectual capital of VimpelCom

Showings	2011 r.	2012 r.	2013 r.
1	4	5	6
Intellectual capital, $ thousand	10982994,6	12630443,8	14525010,4
Part of Intellectual capital in one share, $	6,75	7,76	8,92

Consequently, comparing the market price of VimpelCom's combined with the cost of intellectual capital estimated on the Paul Strassman's methodology, we see how the market price of one share is closer to the cost of intellectual capital than to the internal value estimated as a traditional approach. So, the market price of one share varies not only around the internal value estimated as a traditional approach but also may include the amount of the intellectual capital of company. As a result, we underline again how the intellectual capital is necessary when we estimate the internal value based on tangible assets by passing the fundamental analysis. Here, we do not discuss the different market forces and factors such as anticipations, attitude to the risks, market conditions, and so on, – we suppose that the market is absolute and the factors are rational.

Nowadays, we have the opportunity to compare our estimation of intellectual capital and our forecasting estimation. After our estimation, we made recommendations for investors to buy the shares of the VimpelCom or to save them in the portfolio. As we see in Figure 3 the rate of shares of VimpelCom is higher than the value of the intellectual capital mostly from 2011 till 2013 despite June 2012. The fall in June 2012 is explained not by changing in tangible assets of company or not by declining of intellectual capital but rather than by external forces which have the short-term character. So, our estimation was reliable; and including the intellectual capital to fundamental analysis is reasonable.

So, according to our estimation and analysis, we propose some recommendations for investors on stock market. If the company has a significant part of the intellectual capital, the investors should not refuse to invest in this company because of the fact that the company has the potential of growth and should use it in the future and then the worth of the company will increase. So, the investors may make investment decisions initially by including or excluding the shares to the investment's portfolio according to the value of intellectual capital.

[2] Average rate of profit means a degree of capital increase that was used for production.
[3] Average meaning in branch in Russia.

Figure 3: The rate of ADR of VimpelCom on NYSE during period of time July 2011- July 2013 (Share price chart, 2013)

Moreover, by comparing rival companies in one field as an object for investment, the investor could be guided by intellectual capital to make the decision because the intellectual capital is such a major factor that is very difficult to duplicate (in contrast to labor, land and capital). So, all other things being, the companies-competitors could have similar coefficients of fundamental analysis and various internal value because of the different methods of amortization; but the quantity of intellectual capital will reflect the potential of growth in the best way and therefore the company's worth. As a result, the investor could make well-weighed investment decision.

5. Conclusion

Considering the quantity of intellectual capital while estimating the internal value of the company, investors could make decisions on the early stage of the investing process to include or not the company's shares to the investment's portfolio by adding the new representative factor such as intellectual capital.

There is no doubt that it is necessary to justify the Paul Strassman's methodology more clearly: on different companies from various branches of economy and on different stock markets during long periods of time to have the more representative estimations, and compare the results of the Paul Strassman's methodology with other ways of estimation of intellectual capital (which we mentioned above): It will be the next step of our research.

References

Andriessen D., Tissen R. (2001) Weightless Wealth: find your real value in a future of intangible assets, N.Y.: Financial Times Management.

Brooking A. (1996) Intellectual Capital. London: International Thomson Business Press.

Coefficients of VimpelCom (2011), [Online], Available: http://quote.rbc.ru/exchanges/emitent/816 [31 March 2011]

Edvinsson, L. (1997) Intellectual Capital: Realizing your company's true value by finding it's hidden brainpower, N.Y.: HarperCollinsPublishers.

Gratton, L. (2003) The Democratic Enterprise: Liberating your Business with Freedom, Flexibility and Commitment, London.: Financial Times/ Prentice Hall.

Gratton, L. (2007) Hot Spots: Why Some Teams, Workplaces, and Organizations Buzz with Energy - And Others Don't, London.: Berrett-Koehler Publishers.

Kaplan R.S., Norton D.P. (1996)The Balanced Scorecard: Translating Strategy Into Action, Boston: Harvard Business Review Press.

Klimov, S. (2002) Intellectual Resources of Society, Saint-Petersburg.: Znanie.

Petty R., Guthrie J. (2000) 'Intellectual capital literature overview: measurement, reporting and management', Journal of Intellectual Capital. vol. 1, no 2, pp. 155–176.

Roos J.(1997) Intellectual Capital: Navigating the New Business Landscape. London: Macmillan Press ltd.

Saint-Onge, H. (1996) 'Tacit Knowledge: The Key of the Strategic Alignment of Intellectual Capital',
Strategy and Leadership, vol. 24. no. 2, pp. 10-15.

Share price chart (2013), [Online], Available: - http://www.vimpelcom.com/#Investor-relations/Share-information/Share-price [1 October 2013].

Stewart, T.A. (1997a) Intellectual Capital: The new Wealth of Organization, London.: Nicolas Brealey.

Stewart, T. (1997b) Intellectual Capital: The New Wealth of Organizations. N.Y.: Bantam Doubleday.

Sullivan P. (2000) Value-Driven Intellectual Capital. NY: John Wiley and Sons.

Sveiby, K.E. (Aug 5, 1998) Measuring Intangibles and Intellectual Capital - An Emerging First Standard, [Online], Available: http://www.sveiby.com/articles/EmergingStandard.html [1 October 2013].

Sveiby, K.E. (January 2001) Methods for Measuring Intangible Assets, [Online], Available: http://www.sveiby.com/articles/IntangibleMethods.htm [1 October 2013].

Strassman, P. (1987) Information in age of electronics: the problems of management, Moscow.: Economika.

Strassman, P. (2002) Assessment of Productivity, Technology and Knowledge Capital, New Canaan.: The Information Economics Press.

Understanding VimpelCom (2013), [Online], Available: http://www.vimpelcom.com/#Profile/Understanding-VimpelCom [1 October 2013].