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Analysis of the Efficiency of Company's Intangible Assets Management

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ABSTRACT: The article compares accounting and valuation of intangible assets in Russian and international practice. We provide recommendations to assure accurate information for analysis of intangible assets (hereafter, IA) in a company's financial statement. We consider existing methodology for analyzing the efficiency of the use of IA in the scientific literature. We introduce the calculation method for companies which independently develop intangible assets. Calculations are made using data of the company which operates in more than 70 regions of Russia, as well as the CIS countries. The main short comings of accounting process are revealed. We suggest main instruments for increasing the efficiency of the use of IA, which can be applied to business entities, regardless of the type of their activity. The suggested approach makes a certain contribution to the development of methods to analyze the efficiency of the use of intangible assets, which will allow making sustainable management decisions in order to ensure growing performance through the active use of intangible assets.

Keywords: Intangible assets, profitability, evaluation, efficiency, financial reporting.

I. INTRODUCTION

The rise of intangible assets such as brand names, research and development, patents and other forms of abstract capital such as digital platforms and data flows has confounded extant measures and concepts of capital and accumulation. However, in practice economic analysis of intangible assets is often limited to analysis of structure and dynamics. In order to make sustainable management decisions, it is necessary to analyze the profitability of intangible assets, taking into account their features. Therefore, it is important to study methods of valuation and accounting for intangible assets, as well as criteria for their recognition and the procedure of disclosing information about them in financial statements. There are three main approaches to assessing the real value of intangible assets: cost, income and comparative approaches. Appraisers usually give preference to income and comparative approaches, while the Russian accounting practice is focused on cost approach.

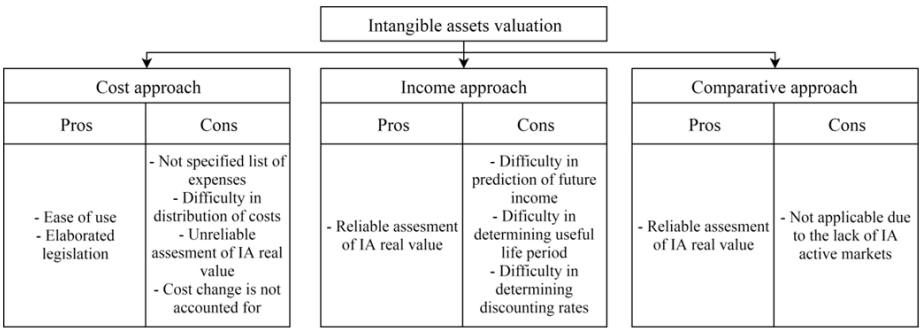

Fig. 1. Comparison of cost, income and comparative approaches to valuation of intangible assets.

High level of risk and uncertainty, the lack of active markets, and the inadequate elaboration of legislation determine the complexity of accounting for intangible assets. The cost approach is the easiest in calculations; however the real value of intangible assets is rarely associated with their historical value. A comparative approach may be the best choice, but it is rarely used in practice due to the lack of sufficient information. The income approach reflects the economic essence of intangible assets, but is associated with the risk of significant errors in predicting future income and determining the duration of its acquisition. As a result, the best solution is a comprehensive analysis of output from all approaches applied as complementary.

We carried out a comparative analysis of accounting principles in accordance with the international and Russian accounting system (here after RAS). There are still some fundamental differences between them. The first difference is connected to the fact that in some cases the RAS is based on the priority of form over substance. A typical example is the exclusion of software licenses from the intangible assets. Another example is related to the amortization of intangible assets, which begins only after the documented recognition has taken place.

The next difference is connected to the fact that the RAS prefers the valuation of intangible assets based on their historical cost. Testing for impairment is viewed as the right of companies, and not as their obligation. The RAS also does not allow companies to include subsequent costs to the value of intangible assets. This approach may significantly reduce the accuracy of the valuation of intangible assets.

Another difference is connected to the fact that RAS does not take into account the concept of time value of money, which can also lead to a distortion of the value of intangible assets acquired in installments.

The last difference is connected to the fact that RAS does not regulate the accounting for R & D sufficiently, allowing to capitalize the research costs in the value of an intangible asset; however at a research stage it is not certain whether it brings a positive result. In this case, the value of investments in non-current assets is overstated, and the value of current spending is underestimated.

The company carries out analysis of intangible assets based on financial statements and disclosures, sub ledgers, intellectual property documents. As a result, the company may find sources of inefficient use and protection of intangible assets, and identify the ways to increase financial performance by improving management.

II. METHODS

Researchers distinguish two basic approaches to the analysis of the efficiency of intangible assets:

(a) an analysis of return on a ruble of capital invested in intangible assets (Prokopyeva Y.A., Ovchinnikova O.A.);

(b) an analysis of intangible assets profitability using the general formula for ROA (Golubev F.V.).

In the first case, efficiency of intangible assets is calculated according to the formula (1):

$$RCI = \frac{P_{IA}}{IA} = \frac{P_{IA}}{Am_{IA}} * \frac{Am_{IA}}{\overline{IA}} \qquad (1)$$

Where RCI – return on a ruble of capital invested in intangible assets;

P_{IA} – profit acquired from intangible assets;

$\overline{IA}$ – average annual value of intangible assets;

Am_{IA} – amount of annual amortization of intangible assets.

In our opinion, if company's product is the result of its R & D, i.e. directly related to intangible assets, then formula (1) can be transformed to the formula (2):

$$RCI = \frac{EBITDA}{\overline{IA}} = \frac{EBITDA}{Am_{IA}} * \frac{Am_{IA}}{\overline{IA}} \qquad (2)$$

To identify potential growth by improving the efficiency of intangible assets, the following formula is used (3):

$$EBITDA = \overline{IA} * RCI \qquad (3)$$

To analyze the sources for decline of efficiency of intangible assets, the general formula of return on assets is applied (4):

$$ROA_{IA} = \frac{EBITDA}{\overline{IA}} = \frac{EBITDA}{Rev} * \frac{Rev}{\overline{IA}} \qquad (4)$$

Where ROA_{IA} – return on intangible assets;

Rev – sales revenue.

It is clear from formulas (2) and (4) that calculation of return on a ruble of capital invested in intangible assets and the return on intangible assets is identical. Approaches differ only in the composition of the factors that affect the studied indicators.

To identify potential revenue growth through enhancing the efficiency of intangible assets, the following formula is used (5):

$$Rev = \overline{IA} * ROA_{IA} \qquad (5)$$

III. RESULTS

To study the analysis of the efficiency of intangible assets we used data of chemicals manufacturing company which carries out the following activities: production and sales of detergents and disinfectants; production of polymer packaging for its own use. The Company's products are sold in more than 70 regions of Russia, as well as the CIS countries. The Company independently develops its disinfectant formulation. For that purpose, the Company has its own scientific laboratories, production facilities and warehouses.

Calculation of the efficiency of intangible assets according to the formula (2) is represented in Table 1.

Table 1: Analysis of the efficiency of intangible assets of the Company in 2015-2016.

Index	Legend	2015	2016	Absolute deviation
(1) Earnings Before Interest, Taxes, Depreciation and Amortization, RUB '000	EBITDA	95 427	100 461	5 034
(2) Average Annual Value of Intangible Assets, RUB '000	$\overline{IA}$	8 903	13 033	4 130
(3) Amount of Annual Amortization of Intangible Assets, RUB '000	Am_{IA}	1 231	2 119	888
(4) Return on a ruble of Capital Invested in Intangible Assets, RUB (1/2)	RCI	10,72	7,71	-3,01
(5) Return on a ruble of Amortization of Intangible Assets, RUB (1/3)	R_{Am}	77,52	47,41	-30,11
(6) Intangible Assets Turnover Ratio (3/2)	TO_{IA}	0,14	0,16	0,02

According to Table 1, the return on a ruble of capital invested in intangible assets in 2016 decreased by 3.01 rubles, since the growth rate of the average annual value of intangible assets outran the growth rate of profit. That indicates a decline in the efficiency of intangible assets, which may be due to the following reasons:

(a) The lack of control over the degree of obsolescence of formulation

(b) Weak legal protection of intangible assets

(c) The absence of control measures to ensure the protection of a trade secret

(d) The lack of control over illegal use of patented formulation by competitors.

When analyzing the efficiency of intangible assets,
(a) The increase in intangible assets has an impact on the financial result with a time lag due to the life cycle of the product
(b) The value of intangible assets, calculated using the cost approach, does not reflect the economic benefits from their use
(c) The calculation does not take into account the plurality of factors affecting financial results.

three constraints must be taken into account:
The decline analysis of return on a ruble of capital invested in intangible assets is represented in Table 2.
To evaluate the efficiency of intangible assets researchers also suggest using the method of partial coefficient multiplication. Calculation of the integral coefficient of the efficiency of intangible assets is represented in Table 3.

Table 2: Decline analysis of Return on a ruble of Capital Invested in Intangible Assets of the Company in 2016.

Factors	Formula	Influence
(1) Influence of change in Return on a ruble of Amortization of Intangible Assets, RUB.	$(R_{Am}1 - R_{Am}0) * TO_{IA}0$	–4,16
(2) Influence of change in Intangible Assets Turnover Ratio, RUB	$R_{Am}1 * (TO_{IA}1 - TO_{IA}0)$	1,15
Balance, RUB	x	–3,01

Table 3: Calculation of the integral coefficient of the efficiency of intangible assets of the Company in 2016.

Index	2015	2016	Growth ratio (GR)
(1) Revenue, RUB '000	700 475	806 026	1,15
(2) EBITDA, RUB '000	95 427	100 461	1,05
(3) Average Annual Value of IA, RUB '000	8 903	13 033	1,46
(4) IA, acquired during the year, RUB '000	8 326,16	3 306,27	0,40
(5) Value of IA at the end of the year, RUB '000	12 450,93	13 615,40	1,09
(6) Average number of workers and engineers, PPL	199	207	1,04
(7) Output Coefficient of IA (1/3)	78,68	61,85	0,79
(8) ReturnonIA(2/3)	10,72	7,71	0,72
(9) Coefficient of Intellectuality (3/6)	44,74	62,96	1,41
(10) Coefficient of Renewal of IA (4/5)	0,67	0,27	0,40
(11) Integral Coefficient of the Efficiency of IA$((GR7 * GR8 * GR9 * GR10)^{0,5})$	0,56		

The use of factor analysis allows us to identify the risk areas in the Company's intangible assets management. We recommend the Company following:
– To review the useful lives and methods of amortization of intangible assets
– To determine intangible assets value using the income approach
– To analyze the existing patents in the industry
– To control the competitors' adherence to patent legislation, etc.

IV. DISCUSSION

In the scientific literature, authors study different approaches to the analysis of intangible assets for each classification group separately. Researchers mostly pay attention to the goodwill that arose as a result of the acquisition of an enterprise (in whole or in part).A growing body of research argues that good corporate reputations have strategic value for the firms that possess them (Dierickx and Cool, 1989 ; Rumelt, 1987; Weigelt and Camerer, 1988). Those whose assets are also difficult to imitate may achieve sustained superior financial performance (Barney, Grant 1991). However, reputation research suggests that a reputation performance effect may operate in both directions: a firm's financial performance affects its reputation and its reputation affects its performance (McGuire *et al*., 1990). Over years many studies focused on correlation between the return on intangible assets and the stability of company's business (De Luca, M.M.M, 2014). Nowadays, the majority of works are devoted to the study of intellectual capital.
Intellectual Capital (IC) is knowledge that can be converted to value and researchers consider it to consist of the following components: human capital, structural capital, customer capital, and social capital. In the light of the high degree with M/B ratio, ROA and ROE, the results demonstrate that increase the firms' intellectual capital will positively influence firms' market value and profitability. The estimations also allow exploring the role of intangible assets in profitability, revealing that intangible assets play a prominent role among the firm-specific drivers of performance. The evidence confirms the resilience of intangible assets as drivers of competitive advantage in an emerging environment. (Andonova, V, 2016)

V. SUMMARY

While the cost approach to valuation of intangible assets does not reflect their economic benefits, business entities should develop a model for valuating intangible assets for management purposes. Since the usage of the comparative approach is not applicable in practice, due to the lack of active markets of intangible assets, the company usually may apply only the income approach. The main issue when using the income approach is to find applicable valuation method. That can result in significant costs to employ professional appraisers since companies usually do not have staff with expertise in the field of intellectual property valuation. In our view, in order to improve the efficiency of intangible assets companies should develop their own valuation model using the income method (e.g. royalty exemption method).
Since software licenses meet all the criteria for recognition as intangible assets, companies are recommended to separately disclose information about them in their financial statements. For example, notes to the statement of financial position of the studied Company in terms of non-exclusive rights and licenses are given in Table 4.

Table 4: Note to the statement of financial position of the Company as of 2016. Non-exclusive rights and licenses.

Name of asset	Balance as of 31.12.2014	Additions	Disposals	Balance as of 31.12.2015	Additions	Disposals	Balance as of 31.12.2016
Software licenses (less than 12 months)	41	139	(73)	107	135	(176)	66
Software licenses (more than 12 months)	554	246	(188)	612	323	(194)	741

We consider it necessary to disclose information about the possible risks associated with the disposal of intangible assets due to the specifics of the patent legislation. For example, notes to the statement of financial position of the studied Company in terms of risks of disposal of intangible assets are given in Table 5. Notes and disclosures are used in order to relieve financial statements, detail certain types of assets and liabilities, clarify company's accounting policies and management judgments, characterize significant events and risks.

Summing up the recommendations on intangible assets analysis, it should be noted that the results of factor analysis can be inaccurate, since they do not take into account the plurality of factors affecting financial results. Thus, sales of products directly related to intangible assets are influenced not only by the return on the assets, but also by the prices, equipment performance and its degree of depreciation, skills and productivity, marketing, company's goodwill, etc.

Table 5: Note to the statement of financial position of the Company as of 2016 Risks associated with the disposal of intangible assets.

Name of disposed intangible asset	As of 2016		Name of disposed intangible asset	As of 2015	
	Reason for disposal	Risks		Reason for disposal	Risks
Presentation video	Expiry of useful life	Not applicable	-	-	-
Patent "Disinfectant in tablet form"	Patent litigation with rival company	Risk of significant legal expenses if right holder of the similar patent sues the Company for patent infringement	-	-	-

VI. CONCLUSION

The study examined different approaches to valuation of intangible assets, their advantages and disadvantages. The cost approach is the easiest in calculations, but it does not reflect the real value of intangible assets. The comparative approach is the most accurate, but is rarely used in practice due to the lack of active markets. The income approach reflects the economic essence of intangible assets, but is associated with the risk of significant errors in predicting future income from their use.

As a result of comparative analysis of the international and Russian accounting systems, we indicated following differences:

– In some cases RAS is based on the priority of form over substance

– RAS views testing for impairment as the right and not as the obligation

– RAS does not allow including subsequent costs to the intangible asset value

– RAS does not take into account the concept of time value of money

– RAS allows to capitalize the research costs in the value of an intangible asset, when it is uncertain whether it brings a positive result.

Usually, financial statements in terms of intangible assets are not detailed enough. We recommend the following notes to the balance sheet:

– "Unfinished R & D and unfinished operations for the acquisition of intangible assets" (to identify trends in the development of investment activity in terms of the development of new products)

–"Risks associated with the disposal of intangible assets" (to identify the risks of future expenses and to develop mitigation measures)

–"Non-exclusive rights and licenses" (to assure safety of the software).

To improve the efficiency of intangible assets we recommend:

– To establish reasonable useful lives and amortization methods and to revise them on a time basis.

– To conduct sudden stock-takings of intangible assets (to check availability of technical documentation and ensure the protection of trade secrets).

– To include in the employment agreement the article of confidentiality.

–To introduce card access control system.

–To search for similar patents in the industry on a time basis (to avoid patent litigation in the future).

–To examine the competitors' products for illegal use of the company's patents (to make licensing agreements to receive profits).

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RERECENCES

[1]. Federal Law of July 29, 1998 N 135-FZ On Appraisal Activity in the Russian Federation (with the Amendments and Additions of July 29, 2017).

[2]. Order of the Ministry of Finance of the Russian Federation N 153N of December 27, 2007. On the Approval of Russian Accounting Standard Accounting for Intangible Assets (PBU 14/2007) (with the Amendments and Additions of May 16, 2016).
[3]. International Accounting Standard (IAS) 38 Intangible Assets.
[4]. IFRS Foundation: Training Material for the International Financial Reporting Standard (IFRS) for Small and Medium-sized Entities (SMEs). Section 18 Intangible Assets other than Good will. International Accounting Standards Board on 9 July 2012.
[5]. Peter W., Roberts I., Grahame R., Dowling. (2002). Corporate Reputation and sustained superior financial performance. *Strategic Management Journal Start. Mgmt. J., 23*: 1077-1093.
[6]. De Luca, M.M.M., Maia, A.B.G.R., da Costa Cardoso, V.I., de Vasconcelos, A.C., da Cunha, J.V.A. (2014). Brazilian Administration Review. Intangible assets and superior and sustained performance of innovative Brazilian firms Vol. *11*, Issue 4, Pages 407-440.
[7]. Contractor, F., Yang, Y., Gaur, A.S. (Nov. 2016) Firm-specific intangible assets and subsidiary profitability: The moderating role of distance, ownership strategy and subsidiary experience. *Journal of World Business* Vol. *51*, Issue 6, 1, Pages 950-964.
[8]. Bryan, D, Rafferty, M., Wigan, D. (Jan. 2017). Capital unchained: finance, intangible assets and the double life of capital in the offshore world. *Review of International Political Economy.* Vol. *24*, Issue 1-2. Pages 56-86.
[9]. Stephen H. Penman. (2009). Accounting for Intangible Assets: There is Also an Income Statement. *Abacus*, Vol. *45*, No. 3.
[10]. Robert F. Reilly, Robert P. Schweihs. (2014). Guide to Intangible Asset Valuation, Revised Edition © Wiley – 784 p.
[11]. Fazullina, A.I., Khasanova, S.F. (2015). Assessing of the competitiveness level in the industry using the correlation analysis on the example of agriculture of the republic of Tatarstan, Russian federation. *American Journal of Agricultural and Biological Science*, *10*(1), pp. 12-17.