

The role of intangible assets in the process of value creation and models for measurement

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Abstract. The strategy of a company aims at generating value for its shareholders. To attain the performance objectives, the non-financial indicators have an increasingly important role, which impact sensitive points of the organization, such as the quality of management and of the intellectual capital in general. Setting these realities as a starting point, this research focused on presenting an evaluation method of intangible assets that could offer a numerical value of the intellectual capital of the companies from category I of the Bucharest Stock Exchange (except the ones which derive their business from financial services or act as intermediary agents). The study revealed the existence of a considerable volume of intangible assets which are unquantifiable in the financial statements of these companies.

Keywords: intangible assets, model, shareholder.

1 Introduction

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Performance measurement relies on information introduced in the measurement system and on the employed instruments.

The strategy of the company targets value creation for shareholders, the impact on the company's management being crucial. The development of administration and steering methods are dedicated to the aforementioned value creation .

Due to criticism regarding the information given by both classics and modern financial indicators, an increasing number of analysts use at the moment a new type of indicators, i.e. nonfinancial indicators. Such indicators describe the company's performance by impacting sensitive points of the organization such as the quality of management and of the intellectual capital in general.

The new economy asks for new methods of measurement of both tangible and intangible assets as well as the way they influence the performance of the company. Well designed indicators, based on theoretical frameworks are beneficial for managers who embrace the new methods and enable them to understand the importance of human relations and also to envision how high performance in business is achieved.

Intangible resources and human capital are important aspects when discussing the sustainability of the competitive advantage but also for long-term development. Although old rivalry for natural resources is of present interest, today's reality determines companies to compete in employing talented individuals. Therefore there has been a shift of stake, i.e. talent is greatly sought. However, the struggle for human capital is not only between companies, but also between countries, this fact explains why international organization focuses primarily on people and their competencies.

One of the most encountered definitions of competitive advantage (M. Porter, 1990) argues that one can obtain the same benefits as those gained by the competitors with either lower costs (cost advantage) or better quality of products or services (differentiation). Both are positioning advantages because they distinguish the company's leader position on a specific market segment.

There are different approaches from which one can consider the notion of competitive advantage such as the evolutionist approach or knowledge management. A series of studies revealed the role of intangible assets in convergence and competition in both companies' segment but also at a national and European level.

Considering the approach which is based on resources, the company exploits its resources and capabilities to create a competitive advantage which will consequently lead to enhanced value.

Sustainable competitive advantage describes the possibility of the company to maintain and improve the competitive position which a company has on the market.

In the new economy, competitive advantage will accrue especially to the well informed professionals who can understand that the real resources of the 21st century are knowledge, information, innovation, creativity and human capital, which transcends from visible to invisible, from tangible to intangible.

At this point, accounting has an important role as it reflects the reality of the economic and financial situation. At the moment accounting fails to highlight some of the most important intangible assets such as: value of brands, value of client portfolios, value of the employees and partners or value of knowledge and intellectual capital.

In knowledge based societies, there are four central correlated dimensions of competition: resources and inputs, intangible assets, change management and generation of competitive advantage and of efficiency as essential factors of performance at macro- and microeconomic level. Competitive advantage steams from intangible assets.

Intangible assets are defines as "... resources controlled by the company which have the following attributes: have no physical nature; are capable of producing net profits in the future; are legally protected" . Such assets represent almost 80% from the market value of modern companies.

2 Intangible assets, decisive factors for value generation

Even though the intangible assets represent decisive factors for value generation at the enterprises' level, the managers, the accountants and the financial analysts are taking the decisions or analysis exclusively based on them. This is due to the high risk associated to this type of assets compared to the one associated with the tangible assets.

The firm's capitalization of intangible assets is conditioned by the way their partners and investors recognize their value and pay for it.

The intangible assets' value is determined by a series of factors like the innovation rate of products and provided services, the quality of human resources and of the management, the level of clients' and employees' satisfaction, the firm's politics regarding the safety of environment. For most of the factors there are no standard measuring indexes or any information available.

Regarding the present financial statements there is scarce information on intangible assets. The strict rules of recognition in intangible assets accountancy of a firm cause the lack of information on intangible assets. For example, according to IAS 38 Intangible assets, an enterprise can register an intangible asset, purchased or internally created, only if it is possible for the company to obtain future benefits from exploiting these assets, and only if their cost can be accurately measured. According to IAS 38, there is not necessary to register in the firm's accountancy the intangible assets, the trained labor force, because same as it is stated in paragraph 15, "the enterprise has an insufficient control on

future incomes which are generated by the qualified and trained personnel and also on the ones generated by the management and technical skills.”

Besides the way that the intangible assets are registered in accountancy, they also represent an important part of the market value of an enterprise.

In order to determine the intangible assets' impact on a company's market value it is important to identify them in the company's financial statements and to understand how they are evaluated by investors.

The relevance of measuring the intellectual capital and the difficulty to find an appropriate model calls for an enforcement of a series of factors.

As models, one could mention: market-to-book value, Q Quotient of Tobin, Balance scorecard, Sveiby's Intangible Asset monitor, Skandia's Intellectual capital navigator.

Thus a first indicator for measuring the value of intangible assets owned by a company was introduced by James Tobin and was named q coefficient.

Q coefficient is represented by the ratio of the market value of a listed company to the value of replacement of its tangible assets, decreased by the value to the overall debt. Gradually, due to the difficulty of an accurate estimation of the replacement value for large companies, q coefficient was substituted in the analysis and studies performed on the capital market with the ratio of the market capitalization to the net value of its assets.

Hence, most frequently, the analysis of the impact of intangible assets on the company's market value is managed by comparing the market value of companies to their net book value (net accounted assets), the model being called Market-to-Book value.

A significant difference between the two values proves that there is a decisive factor of the company's value, whose rate has not been estimated and included in the total assets, excluding the hypothesis of an evaluation at historical cost of the total assets comprised as part of the company's financial statements.

Q coefficient and market-to-book value offer an aggregated perspective of the intangible assets at a certain point in time.

Balanced scorecards as measurement model of intangible assets provide the management the possibility to map the mission and strategy in a comprehensive evaluation of performance. According to this model the company is viewed from four perspectives: learning and development, internal processes, clients and financial. A shortcoming of this model is the fact that relationships with suppliers and other important stakeholders are overlooked. Apart from the financial indicators, this measurement offers relevant information regarding the factors that lead to a superior performance.

Unlike the latter model, Sveiby's Intangible Asset Monitor, takes into consideration the suppliers and other relevant stakeholders. However, both models are very important as they offer not only the possibility to measure and report but also provide an important strategic instrument.

Skandia's Intellectual Capital Navigator is yet another model which consists of five areas of focus: clients, human capital, processes, real and development capacity and financial side, offering in this way a holistic outlook of the organization.

Although the assessments made by the investors on the capital market regarding the performance of the listed companies are oriented towards the future, their accuracy depends on the degree of informational efficiency which describes the respective capital market.

The impact of intangible assets on the company's market value supports the investment decision of the traders and this fact justifies the utility of studying the impact that mergers or creation of intangible assets have on the organization's market value.

A series of studies written by different authors revealed the correlation between the brands estimated and published by the Financial World and the market value of the companies that owned the brands. Also, other authors have distinguished in their studies the beneficial impact the brands have on the company's performance. A similar effect has been signalled also in the case of research and development spending. Unlike the period between 1980 and 1990 when the investors were only interested in the declared profits of the companies listed on the stock market, sacrificing future developments especially by decreasing R&D budgets, nowadays investors accept a decrease in profits when justified by increasing funding of research and development departments.

Another intangible asset in opinion of managers, investors and other financial analysts is the goodwill which impacts the company's market value. The difficulty is identifying and evaluating the added value that this asset generates. This issue becomes less problematic in the case of acquisition of goodwill, case in which its value is given by "any surpass of the acquisition cost over the net value of the assets identifiable at the point in time when the transaction was carried out" (IFRS 3). Although, the value of the goodwill, defined as representing a "payment made by the procurer in anticipation of future economic benefits", can be increased by the direct acquisition costs materialized in billed commissions for the juridical counsellors, accountants, experts and other consultants involved in the process of acquisition.

3. Evaluation study of intangible assets with Market-to-Book Value

This is a simple method, but one of the few which offer a numerical value for the human capital, being one of the most renowned evaluation methods of intangible assets. It is calculated as the difference between the market value of a company and the net book value. A method of improving the utility of this model is to calculate the ratio of market value to the net book value instead of the difference. Although this model entails many advantages, there are still some shortcomings associated to it. These issues are fuelled by the influence of some factors which cannot be controlled by the management, such as: the fluctuation of the shares' value, sometimes even for short periods, the net book value which depends on national and international accounting standards employed by each company as well as the degree that this value influences the managerial decision making process.

Actually this is an important evaluation ratio due to the fact that it indicates the value that the financial markets confer to the managerial team and organizational structure of the company. An efficient organizational structure which demonstrates growth possibilities will have a market value higher or equal with its equity. However, there is also the possibility of an efficient management which acts in an economy that transits a recession period, a time when generating business is difficult and the ratio between the market value and the net book value is a proper function. This demonstrates the fact that the values of the ratio dependent on the macroeconomic factors or variables of the specific market segment but also on the factors that pertain only to the organization.

For a better understanding of the aforementioned aspects, the evolution of the ratio for the period 2006-2008 was scrutinized for companies belonging to category I of the Bucharest Stock Exchange (BSE) (except the companies which derive their business from financial services or act intermediary agents). The selection of companies used in the analysis and data gathering was possible due to the information transparency policies to which these organizations have to comply. Companies from other categories and segments of the capital market are not forced to provide such information.

Table 1 Economic - Financial Indicators - 2006 (Thousand RON)

-Indicators	ALRO	Azomureş	Antibiotice	Biofarm	Transelectrica	Impact
Cash flow net	29044	10900	-2775	-5206	287014	48962
Total assets	2005840	454564	260388	85844	3960434	385486
Bonds	145266	77825	28992	10870	775132	29558
Liabilities	514206	203138	71210	13622	1797985	209380
CA	2197659	709301	195678	57830	2503786	115847
Gross Profit	2330076	753331	197748	58297	2609129	137086
Net Profit	380869	-1037	23839	12715	277260	18293

Source: www.cnvmr.ro

Table 2 Economic - Financial Indicators - 2006 (Thousand RON)

Indicators	Oil Terminal	Oltchim	Petrom	Transgaz	SOCEP	Turbomecanica
Cash flow net	715	24339	-1046935	13072	2976	-4243
Total assets	157533	1377317	19369775	2184515	59535	159628
Bonds	23415	369492	2257230	248848	2164	9927
Liabilities	30974	1040338	2279371	918158	4409	53594
CA	121537	1731805	13078309	909017	39130	91892
Gross Profit	122544	1810114	13933309	982296	43127	103051
Net Profit	1561	8780	2285490	237913	1985	7995

Source: www.cnvmr.ro

Table 3 Economic - Financial Indicators - 2007 (Thousand RON)

Indicators	ARLO	Azomureş	Antibiotice	Biofarm	Transelectrica	Impact
Cash flow net	157325	-1916	-505	5661	-156113	111543
Total assets	2373138	507590	344868	166116	4049675	558982
Bonds	197096	72130	84282	10783	649992	44247
Liabilities	708658	173558	88089	13170	1766623	225229
CA	2045525	820607	229416	62344	2314304	108646
Gross Profit	2263038	914557	237527	64610	2392335	182079
Net Profit	436261	55614	32456	13514	50347	7401

Source: www.cnvmr.ro

Table 4 Economic - Financial Indicators - 2007 (Thousand RON)

Indicators	Oil Terminal	Oltchim	Petrom	Transgaz	SOCEP	Turbomecanica
Cash flow net	-1266	-63093	-2696391	287360	3709	-4243
Total assets	199495	1649174	21065657	2609440	64062	159628
Bonds	22582	960417	2580025	236863	3087	9927
Liabilities	30147	1624671	2609007	919826	5184	53594
CA	123495	1749872	12284378	1038867	44018	91892
Gross Profit	128540	1958989	12983244	1064237	47815	103051
Net Profit	7496	-95894	1778042	224006	3124	7995

Source: www.cnvmr.ro

Table 5 Economic - Financial Indicators - 2008 (Thousand RON)

Indicators	ARLO	Azomureş	Antibiotice	Biofarm	Transelectrica	Impact
Cash flow net	-185172	12510	7688	11010	26133	-98310
Total assets	2294421	578365	367780	146866	4020418	582045
Bonds	234831	102736	111376	11406	893014	155299
Liabilities	801131	102736	112829	15259	2085846	242155
CA	1968016	1144100	215806	65094	2988066	151687
Gross profit	2450512	1350795	231224	70487	3029275	255143
Profit net	244130	50577	10573	-21335	50367	8227

Source: www.cnvmr.ro

Table 6 Economic - Financial Indicators - 2008 (Thousand RON)

Indicators	Oil Terminal	Oltchim	Petrom	Transgaz	SOCEP	Turbomecanica
Cash flow net	974	-79073	-491196	-37756	1881	391
Total assets	195048	1500314	24890580	3291189	91893	148212
Bonds	24898	1111960	3145499	347640	2375	41390
Liabilities	30306	1729646	4950122	933030	4717	68295
CA	134573	1946943	16750726	1119390	58818	63049
Gross profit	136980	2024314	19331387	1175886	62467	72613
Profit net	1106	-225647	896000	239007	7614	-28935

Source: www.cnvmr.ro

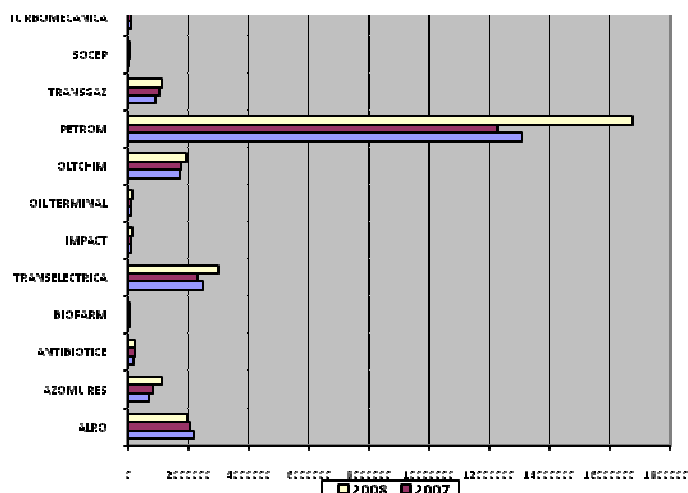


Figure 1 Evolution of sales figure for category I companies listed on BSE

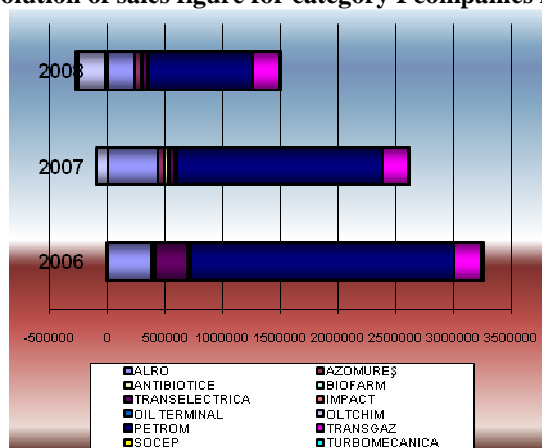


Figure 2 Evolution of net profit for category I companies listed on BSE

Table 7 Shares' condition for the years 2006, 2007 and 2008.

Company	Shares 2006	Shares 2007	Shares 2008	Par Value
ALRO	704.794.656	704.794.656	713.779.135	0,5000
Azomureş	526.032.633	526.032.633	526.032.633	0,1000
Antibiotice	454.897.291	454.897.291	454.897.291	0,1000
Biofarm	359.272.892	469.503.942	977.554.909	0,1000
Transelectrica	65.968.079	73.297.866	73.303.142	10,0000
Impact	796.528.221	1.000.000.000	2.000.000.000	0,1000
Oil Terminal	582.430.253	582.430.253	582.430.253	0,1000
Oltchim	3.546.956.001	3.546.956.001	323.588.641	0,1000
Petrom	56.000.506.078	56.644.108.335	56.644.108.335	0,1000
Transgaz	10.380.320	10.383.037	10.388.888	10,0000
SOCEP	343.425.744	343.425.744	343.425.744	0,1000
Turbomecanica	369.442.475	369.442.475	369.442.475	0,1000

Source: www.cnvmr.ro

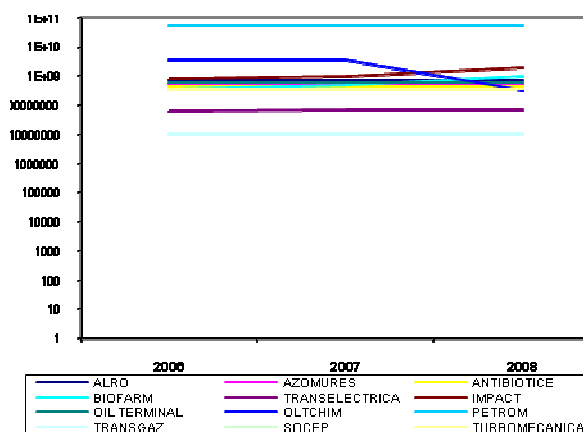


Figure 3 Evolution of the number of shares of category I companies listed on BSE

Table 8 Price per share on BSE for the companies scrutinized in the research (2006-2008)

Nr.	Issuer	2006		2007		2008	
1.	ALRO	2,6100	4,5900	5,2500	8,7096	8,5000	0,12600
2.	Azomureş	0,2400	0,1450	0,1530	0,1990	0,1910	0,1550
3.	Antibiotice	0,9850	1,7200	1,8300	2,0500	2,0000	0,3600
4.	Biofarm	0,5300	0,8580	0,6850	1,3176	0,6150	0,0874
5.	Transelectrica	22,8000	33,8000	36,0000	40,0000	38,6000	11,0000
6.	Impact	0,4450	0,5850	0,6100	1,0000	0,4600	0,0314
7.	Oil Terminal	0,2730	0,2740	0,2730	0,9500	0,9100	0,1600
8.	Oltchim	0,3890	0,4770	0,4590	1,2000	1,1800	1,1470
9.	Petrom	0,4870	0,5650	0,6050	0,4970	0,4990	0,1810
10.	Transgaz	NA	NA	NA	NA	274,5000	122,0000
11.	Socep	0,2450	0,2450	0,2600	0,2720	0,2680	0,1600
12.	Turbomecanica	0,7500	0,7500	0,7700	0,6600	0,6300	0,0712

Source: www.cnvmr.ro, closing prices from the first and respectively last trading day.

Notes:

- In the case of ALRO, Biofarm, Impact, the prices are updated with the capital accretion which applied in the specific years.
- In the case of Turbomecanica the share list of 2006 is adjusted at the afferent value afferent of stock split (0,1 ROL compared to 2,5 ROL).
- Transgaz went public during 2008.

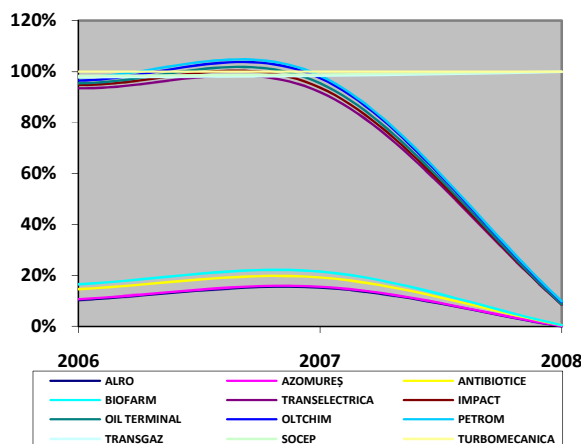


Figure 4 Percentage based evolution of the closing price on the last day of trading for category I on BSE (2006-2008)

4. Calculation of ratio market value to net book value

ALRO(year 2006) = 3.276.246.230/1.491.634.000 = 2,196
 ALRO(year 2007) = 6.216.730.754/1.664.480.000 = 3,735
 ALRO (year 2008) = 899.361.710/1.493.290.000 = 0,602

Azomureş (year 2006) = 76.274.732/251.426.000 = 0,303
 Azomureş (year 2007) = 104.680.494/334.032.000 = 0,313
 Azomureş (year 2008) = 81.535.058/475.629.000 = 0,171

Antibiotice (year 2006) = 782.423.341/189.178.000 = 4,136
 Antibiotice (year 2007) = 932.539.447/256.779.000 = 3,632
 Antibiotice (year 2008) = 163.763.025/254.951.000 = 0,642

Biofarm (year 2006) = 838.742.112/72.222.000 = 11,613
 Biofarm (year 2007) = 1.288.026.348/155.333.000 = 8,292
 Biofarm (year 2008) = 85.438.299/135.460.000 = 0,631

Transelectrica (year 2006) = 2.477.646.200/2.162.449.000 = 1,146
 Transelectrica (year 2007) = 2.932.125.680/2.283.052.000 = 1,284
 Transelectrica (year 2008) = 806.334.562/1.934.572.000 = 0,417

IMPACT (year 2006) = 585.000.000/176.106.000 = 3.322
 IMPACT (year 2007) = 1.000.000.000/333.753.000 = 2.996
 IMPACT (year 2008) = 62.800.000/339.890.000 = 0.185

Oil Terminal(year 2006) = 159.585.889/126.559.000 = 1.261
 Oil Terminal(year 2007) = 553.308.740/169.348.000 = 3.267
 Oil Terminal(year 2008) = 93.188.840/164.742.000 = 0.566

Oltchim (year 2006) = 1.691.898.012/336.979.000 = 5.021
 Oltchim (year 2007) = 4.256.347.201/24.503.000 = 173.707
 Oltchim (year 2008) = 371.156.171/-229.332.000 = -1.618

Petrom (year 2006) = 31.640.285.934/17.090.404.000 = 1.851
 Petrom (year 2007) = 28.152.121.842/18.456.650.000 = 1.525
 Petrom (year 2008) = 10.252.583.609/19.940.458.000 = 0.514

SOCEP (year 2006) = 84.139.307/55.126.000 = 1.526
 SOCEP (year 2007) = 93.411.802/58.878.000 = 1.587
 SOCEP (year 2008) = 54.948.119/87.176.000 = 0.630

Turbomecanica(year 2006) = 11.083.274/110.481.000 = 0.100
 Turbomecanica(year 2007) = 243.832.034/106.034.000 = 2.300
 Turbomecanica(year 2008) = 26.304.304/79.917.000 = 0.329

Transgaz: 2006 unlisted
 Transgaz: 2007 unlisted
 Transgaz: 2008 = 1.267.444.336/933.030.000 = 1.358

Table 9 Ratio of net market value of the company to its net book value

Nr.	Company	2006	2007	2008
1.	ALRO	2,196	3,735	0,602
2.	Azomureş	0,303	0,313	0,171
3.	Antibiotice	4,136	3,632	0,642
4.	Biofarm	11,613	8,292	0,631
5.	Transelectrica	1,146	1,284	0,417
6.	Impact	3,322	2,996	0,185
7.	Oil Terminal	1,261	3,267	0,566
8.	Oltchim	5,021	173,707	-1,618
9.	Petrom	1,851	1,525	0,514
10.	SOCEP	1,526	1,587	0,630
11.	Turbomecanica	0,100	2,300	0,329
12.	Transgaz	unlisted	unlisted	1,358

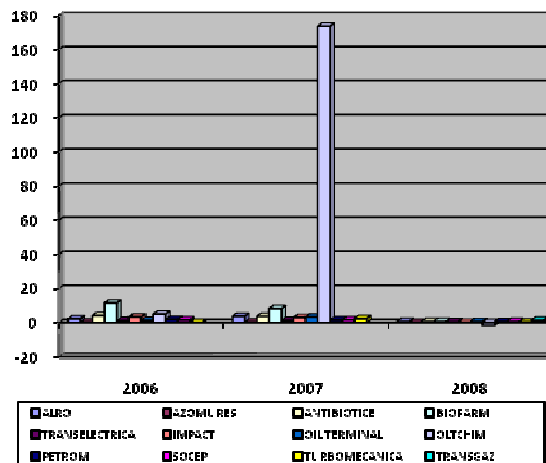


Figure 5 Evolution of the ratio of net market value of the company to its net book value

5 Conclusion

Considering the study performed on the 12 companies from category I of BSE, one can notice an increase of the ratio of market capitalization to the book value for the year 2007 for seven of analyzed companies and a decrease in the case of four companies, Transelectrica being for the years 2006 and 2007 unlisted. The resulted ratio emphasizes that for the companies where the ratio is in the range from 3 to 4 and sometimes above 4, there has been a large volume of unidentifiable and unquantifiable intangible assets in the companies' financial statements.

Regarding the situation of SC Oltchim SA the result of the research does not demonstrate a real evolution, fact proved by the considerable ratio fluctuation between the years. Due to the impact of the economic crisis on this market segment, the ratio dropped from a value of 172.707 in 2007 to negative values (-1,618).

A particular situation can also be noticed in the case of SC Antibiotice SA which scores in 2006 a ratio of market value to book value of 11,613, and drops to 8,292 in 2007 and to 0,631 in 2006.

For the year 2008, as a consequence of the financial crisis, the indicator reveals a conspicuous decrease for all the scrutinized companies, indicating that is increasingly difficult for companies to obtain financing from the external environment.

Baruch Lev has authored a study which aimed at identifying the value of this ratio on a sample of 300 companies between 1973 and 1992. The results of the research concluded that the proportion of market value to book value has increased, more precisely doubled within this interval.

The indicator has followed the ascending pattern until 2007, but as noticed, starting with 2008 this ratio indicates a severe drop caused by the financial-economic crisis. The study conducted by the same author and based on data available from the companies which compose the S & P 500 index, emphasizes a ratio market value to book value which, for the period before 2007, varies from 3 to 4. This fact revealed the existence of a considerable volume of unidentifiable and unquantifiable intangible assets as part of the financial statements of the companies.

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