The Choice of Methodological Approaches to the Estimation of Enterprise Value in Terms of Management System Goals

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Abstract

Introduction. The issues of value management become an integral part of the enterprise management system. An important issue in the formation of managerial decisions on value is the selection of methodological approaches to the evaluation of enterprises which would ensure the determination of objective value characteristics. **The purpose** *of this article is to study the existing methodological approaches to the evaluation of the enterprise in terms of their advantages and disadvantages in practical use and the addition of new quantitative indicators that will increase the level of information support of administrative decisions on the questions of value.* **Results.** *There has been conducted the comparison of the current methodological approaches to the analysis of the enterprise value based on the generalization of scientific works. There has been defined the role of the evaluation of enterprises in the general system of the value characteristics management of the enterprise. The existing analysis methods have been supplemented with new indicators, the testing of which makes it possible to determine the opportunities to improve the level of information support of management decisions. There has also been proposed a common value management procedure, which is built on the basis of the comparison of the current methodological approaches and analysis practice needs in the objective evaluation.*

Keywords: value; values; price; methodological approaches; management system; market capitalization; book value; total assets.

1. Introduction

Nowadays, a large number of indicators of the enterprise value is used by analysts of financial institutions, managers and business owners, potential investors and creditors, and other people concerned.

In general, the question of determining the value of the enterprise is a complex problem:

❑ a scientific one – the academic economists continue to work on improving approaches to the analysis of the enterprise value and to the formation of the value management system in general;
❑ a methodical one – there is a large number of methodical value determining approaches, which can give quite good results;
❑ a practical and analytical one – users are forced to use different indicators and keep searching of the methods that enable to provide an objective analysis.

The questions of the company evaluation are matter of topical interest not only in cases of mergers and acquisitions, but they are also important in terms of understanding the content of activities which ensure the formation of the enterprises values and their sustainable development

Therefore, the problems of forming the enterprise value; of factors affecting the value; of the methods that will provide the most objective evaluation; of corporate efficiency and its impact on the value are still vital questions.

The increase in the value of the enterprise should not be the main target of its activities. However, the value indicators are indicators of the monitoring of efficiency of all enterprise subsystems. Accordingly, by means of the value drivers management, the management of the enterprise can provide management of its activities towards sustainable growth, including value characteristics.

2. Brief Literature Review

The basic scientific works which include the key methodological approaches to the evaluation of the enterprise value are articles of F. Modigliani and M. Miller (1963) [1], E. Fama and K. French (1992, 1993) [2, 3], S. Kaplan and R. Ruback (1995) [4, 5], M. Thenmozhi (2000) [6], A. Damodaran (2009, 2011) [7, 8], P. Fernandez (2004) [9] and others.

The research of the evolution of scientific approaches to the company evaluation issue has made it possible to single out several key stages:

❑ In the 1950-1960's, F. Modigliani and M. Miller's (1963) [1] approach, according to which the company value is not determined by the capital structure, but by the discounted future incomes was predominant.
❑ In the 1990's the most significant study was the research of the market value of the enterprise by means of forecasting cash flow values (S. Kaplan and R. Ruback

(1995) [4, 5]) and the research of the prices of financial assets. E. Fama and K. French (1992, 1993) [2, 3] proved that asset prices depend on the ratio of the book value to the market value.

❏ In the 2000's, scientists concentrated their efforts on the study of specific situations in which the evaluation is crucial, in the course of mergers and acquisitions – works by J. D. Finnerty and D. R. Emery (2004) [10], F. Evans (2009) [11]; while creating startup companies in the areas related to scientific and technological progress (A. Damodaran (2009) [7]); in situation with the threat of bankruptcy – work by Gilson, S. C., Hotchkiss, E.S. & Ruback, R. S. (2000) [12].

The development of the value indicators is still ongoing. The comparison of the basic methodological approaches to the evaluation are represented in works by P. Fernandez. (2004) [9], R. Lambert & D. Larcker (1987) [13]. Overall, the scientists have proposed to use more than two dozen indicators, the most common of which are EBIT, EBIDTA, Cash flow, EVA, Economic profit, and others.

An important direction of the value problems research is becoming the differentiation between value, price and company values. The differentiation of notions of price and value is studied in the work by P. Fernandez. (2004) [9]. He cites key situations where there is a need to determine the value of the company and when the value is transformed into the price.

3. The Purpose

The Purpose of the article is to investigate the existing methodological approaches to the value estimation in terms of their advantages and disadvantages during practical use, and their complementation with new quantitative indicators that will increase the information support of management decisions on value problems and form a holistic understanding of the value management

4. Results

In recent years, especially during the economic crisis, companies have faced a practical problem of their value estimation: while the book value grows, the market capitalization falls significantly. Accordingly, it has become clear that the important object of control is value characteristics of the company. Managers and business owners have began to take into consideration the value questions not only during mergers and acquisitions, but also while working out the development strategy and justifying the need to develop corporate values as the basis of the market value.

Assuming that the value is the cost of creating the enterprise – then while developing management decisions mainly accounting data must be used. Considering the value characteristics in terms of the current rating of the shares of the enterprise, the data of stock exchanges and financial agencies, that is the market price that is used. If we talk about the price of the company, it is only formed at the time of the transaction. Describing the value of the enterprise from the standpoint of long-term development and future security of profits and dividends for owners, it is not only the indicators of value according to the accounting or market sources that are important, generally this is an issue of environmental and social development of the enterprise, and of its sustainable growth. Under such conditions, the value indicators are the only one group of indicators to be used in the justification of both strategic and operational management decisions.

In general, the use of a comprehensive approach to the process of value management identifies the need for understanding the following: Firstly, on the enterprises there has to be

created a system of value management, and secondly, the objects of management are not only the value indicators, but also value characteristics that do not always have quantity and cost status indicators (Fig. 1).
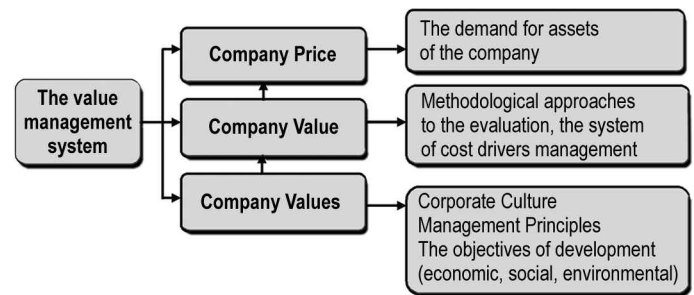

Figure 1.
The system of value management as a complex process

The system of value management is a complex process of enterprise values development that is the basis for growth in value and performance of the company and may, in case of sale, ensure the highest price for owners.

Information support plays an important part in value management system, since it depends on the methodological approaches which are used by the company to monitor cost performance of the activity.

Under such conditions it is appropriate to summarize the methodological evaluation approaches in terms of understanding their strengths and weaknesses, as that provides objective information on various indicators of value.

Processing of scientific literature [4-9, 14-16] has allowed to conduct a comparison of the existing basic methodological approaches to the value determination (Tab.1).

In general, the existing methods for determining the value of the company correspond to two basic approaches: the first approach is based on accounting data and has documentary confirmed indicators, and the second one is based on the perception of the company by the market, respectively, these indicators have instant nature. These approaches and methods to the evaluation of the enterprise do not give answers to the questions regarding getting the most objective and fair values of the indicator researched.

Scientists are trying to solve this contradiction by exploring the impact of accounting indicators on the market value of the company, which determines the need to combine the existing approaches. J. O. Hanlon (1991) [17], R. A. Lambert and D. F. Larcker (1987) [13], I. M. Pandey (2005) [18] and other scientists argue that improvement of the account indicators have a positive affect on the market value of the company.

As a result, in practice several indicators are used simultaneously, and researchers continue to explore the dynamics of the enterprise value indicators in different conditions.

Value indicators are difficult to estimate, as they should be considered in three time dimensions:

❏ retrospective analysis – the indicator of the historical value of the company is the value of its assets, i.e. of the capital which is owned by the company. Asset funds invested in the company had real value in the past and are currently reflected in the balance sheet at their residual value;

❏ operative analysis due to the evaluation of the company at a given time by evaluating shares on the market. A number of indicators of the market value are used to evaluate the company on the market (Market Cap, Enterprise Value and others);

❏ prospective analysis through forecasting prospective cash flows that the company expects to receive in the future based on the economic potential. Calculation of cash flows using the discount method has probabilistic

No. %	Approaches, Indicators	Advantages	Disadvantages
1 approach. Evaluation of the enterprise according to accounting data			
1.1.	The enterprises carrying value – is accounting estimate of the value of assets (as it is reflected in the company's balance sheet) minus intangible assets and liabilities	- is based on the value characteristics of real assets, which are reflected in the balance sheet	- a static viewpoint; - does not provide the consideration of influence of not only external but of internal factors as well; - is based on indicators of physical deterioration and does not include moral depreciation of assets
1.2.	Value which is based on income information. The annual net income is multiplied by a ratio called PER (price earnings ratio)	- provides incorporate market assessments through the calculation of the index value and profit	- is based on the use of factual information for the reporting period, which is not relevant at the time of evaluation
2 approach. Based on market estimates			
2.1.	Mixed methods are based on determining the value of the assets including the cost of assets and value of future income	- provides a reference to the real value (book value) and takes into account the value of goodwill (reflected in the financial statements or not).	- there are no accurate estimates of the value of goodwill; - the value of goodwill is not shown in balance by a lot of many enterprises
2.2.	Cash Flow Discounting- Methods	- allow to estimate the value of the company at any time in the future period; - forecasting is based on the account of the complex economic conditions	- the accuracy of the calculation depends on the evaluation of prospective appropriate discount rate
2.3.	Methods based on the research of value added: EVA – economic value added MVA – market value added SVA – shareholder value added	- describes the ability of business to create value added	- to determine the absolute values of value and thus have a low level of comparabilitythe indicators that determine absolute cost values, and therefore have a low level of comparing

Table 1. Advantages and disadvantages of the existing methodological approaches to determining the value of the company
Source: Compiled by the authors according to [4-9, 14-16]

Indicators	General Motors Company (GM)	Ford Motor (FM)	Toyota Motor Corporation	Volkswagen	Wal-Mart Stores (WM)	Apple Inc.	China Petroleum & Chemical Corp.
Market Cap	44.878	51.898	154.42	58.93	222.06	533.23	624.73
Enterprise Value	97.06	168.43	283.86	144.84	264.61	556.15	651.43
The Book Value of the Enterprise	34.376	28.751	148.665	27.124	67.835	110.346	106.137
Total Assets*	194.520	227.902	404.781	423.947	203.706	290.479	219.355
EBITDA	15.49	17.60	42.68	19.23	33.22	78.50	25.43
Enterprise Value / Revenue	0.63	1.10	1.05	0.61	0.55	2.44	2.19
Enterprise Value / EBITDA	6.26	9.57	6.79	7.53	7.96	7.08	25.62
Market Cap/ Enterprise Value	0.462	0.308	0.544	0.407	0.839	0.959	0.959
Enterprise Value / Total Assets	0.499	0.739	0.701	0.342	1.299	1.915	2.970
Market Cap / Total Assets	**0.231**	**0.228**	**0.381**	**0.139**	**1.090**	**1.836**	**2.848**
Market evaluation assets	**-0.77**	**-0.77**	**-0.62**	**-0.86**	**0.09**	**0.84**	**1.85**
Godwill and intangible assets*	5.947	-	-	-67.873	18.102	5.116 3.893	12.324 9.531
Revenue*	153.91	153.38	270.60	239.55	485.651	227.54	297.26
Revenue Per Share*	98.14	38.63	173.94	95.57	151.70	40.54	2.46
Capital Expenditures*	7.784	7.1	13.329	13.213	no data	no data	17.061
R&D*	7.5	6.7	14.605		no data	8.067	no data

*2015

Table 2. Indicators of enterprise value (2016)
Source: [19-25]

nature since it is based on expected rates of income and calculated values of the discount ratio that often do not provide confirmation of the forecasts in the future.

Accordingly, the existence of the set of indicators is logical, although they give us very different dimensions of value in practice.

Using financial statements of the company, data from stock exchanges, we present the most widespread value indicators of the companies included in the Global 500 (Tab. 2).

Such indicators as Market Cap, Enterprise Value, The Enterprise Carrying Value are used most frequently, but the data represented in the table are indicative of the fact that they give significantly different results. This confirms the existing problem:

using one of the value indicators can not give us accurate information. So, the book value (size of assets) in most cases exceeds the market value of the company, apart from that, all indicators of the market value are significantly different.

In addition to the absolute indicators, academics use a range of ratios that are calculated as a ratio of absolute indicators of the value: Enterprise Value / Revenue, Enterprise Value / EBITDA, Market Cap / Enterprise Value.

Table 2 shows the ratio of Market Cap, which is the actual market evaluation of the company at the moment and Total Assets i.e. the value of all assets which is reflected in the balance sheet. The use of this indicator is appropriate, because quite a number of companies do not reflect such assets as goodwill and intangible assets in the balance, which means that

there is no no overstatement of assets due to their immaterial part.

Ratio of the market value and book value of the company, as a relevant indicator

$$(K(\frac{MC}{Ass})),$$

is, in our opinion, the most demonstrative, since it describes how much a unit of the company's property costs on the market. Generally there are three possible situations:

$$a) \quad K(\frac{MC}{Ass}) < 1,$$

means that the market evaluates existing assets significantly lower than they are reflected in the balance sheet at historical value;

$$b) \quad K(\frac{MC}{Ass}) = 1,$$

reflects theoretically possible situation where the market and book value are the same;

$$c) \quad K(\frac{MC}{Ass}) > 1,$$

means that the market has highly evaluated (probably, overestimated) the value of existing assets.
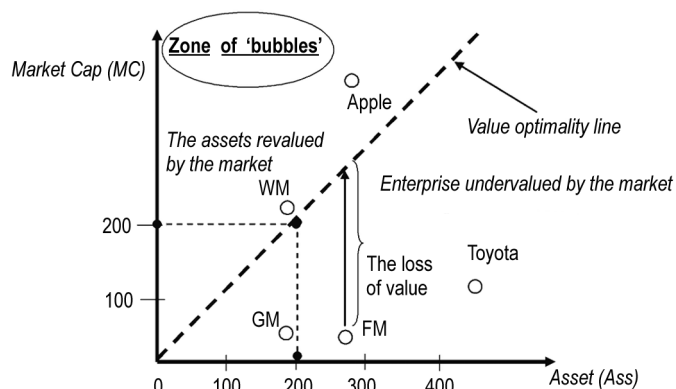Generically these situations can be represented graphically (Figure 2).

Figure 2. The correlation between the market and the book value of the enterprise

Value optimality line graphically represents the situation when the book value is equal to the market value. In addition, this line divides a plane in the coordinates "MS-Ass" into two sectors: within the first one the market price is lower than the book one, it means that despite the cost important assets the company has "low" evaluation on market; the second sector represents the position of the companies which have high market evaluation at the present.

Each company is interested in having a ratio of the market value and the book value that would exceed 1 or approach it. That is advisable that the position of the company in the coordinates "MS-Ass" approach the value optimality line, when MC = Ass. This gives the perception that the company retains its "value" at a particular time. Figure 1 also shows a "bubble zone" where there is a substantial increase in the market value of assets that have low book value. But the opposite situation when the assests of powerful enterprises significantly lose their market value is much more worrisome.

Thus, at a certain moment of time each company can evaluate their property in the coordinates of the market "re-underestimating". For instance, in June 2016 one dollar of General Motoroz's value assets cost on the market only 0.231 dollar. It is significant that the company Wal-Mart Stores has an

actual coincidence of the market and the book value ($ 1 property costs 1.1 dollar). The market value of such companies as Apple Inc. and China Petroleum & Chemical Corp. exceeds the value of assets 1.8 and 2.8 times respectively. These differences can be explained by the sectoral affiliation of the companies: corporate shares of oil – gas sector and industry of information communications have strong demand on the market, which leads to an increase in their market value.

In order to carry out the comparative analysis of how the market evaluates assets of some companies, we offer to calculate the rate of the market evaluation of the existing enterprise assets (market evaluation of assets) (MEAss):

$$ME(Ass) = \frac{MC - Ass}{Ass}$$

This indicator can have a negative dimension in case of impairment of the assets on the market and a positive one i.e. when the market revalues the assets. In other words, it is advisable when this indicator is about 0.

The results of this indicator calculations are presented in the table. According to the data given this indicator for Ford Motors is -0.77, which means that company has lost 77% of the value of assets. For all the investigated automobile companies it is characterised by the existing asset value loss on the market and this indicates an underestimation of automotive industry assets on the market at the current time, and not the decrease in the value of individual enterprises.

That is why, it is necessary to highlight that it is of great importance for the modern management to form the enterprise values, adherence to which will ensure the transformation of the existing assets in the long-term positive perception of the enterprise by the market, indicators of which will increase demand for stocks and the market price of the company.

The conducted research provides an opportunity to offer the author's definition of value as a monetary expression of value of the integral property complex, i.e. of the property that is reflected in Financial Statements; characteristics of image and competence, which are often not shown in the assets, but form the positive perception of the company on the market and provide the formation of its market value.

Accordingly, the research of value indicators should be complemented by those, which also form valuables of the enterprise, including the value of goodwill, intangible assets, investment in fixed assets, investment in research and development. Figures presented in Table 1 indicate that not all the companies in the balance sheet reflect their value of goodwill and intangible assets. This means that their book value is based solely on the value of fixed assets and current assets, and, accordingly, there is no overstating of the value of assets due to the image. On the other hand, these companies have intangible assets and goodwill, and therefore, logically their market value must exceed the book one. Such indicators as the value of investment in fixed assets and investment in R&D and their comparison with the competitors, determine the value characteristics of the enterprise in the future and should always be used for understanding the growth prospects of the value.

In terms of management it is really important to research the value of assets and their market evaluation in dynamics to determine general trends. To some extent this analysis can be carried out by examining, for example, the dynamics of value of assets and of the average cost of the shares, the results of which according to the company Ford are shown in Figure 3.

Within the investigated period of 15 years the share price has not changed dramatically and amouts for 15 dollars despite the significant dynamics within this period. The magnitude of assets has been changing significantly over these years, and in 2015 accounted for only 81.1% of their value in 2001. It is very revealing that the highest price for shares of the company was when the value of assets was the lowest. Since 2011 there has been a gradual increase in the value of assets and the share price of the company.
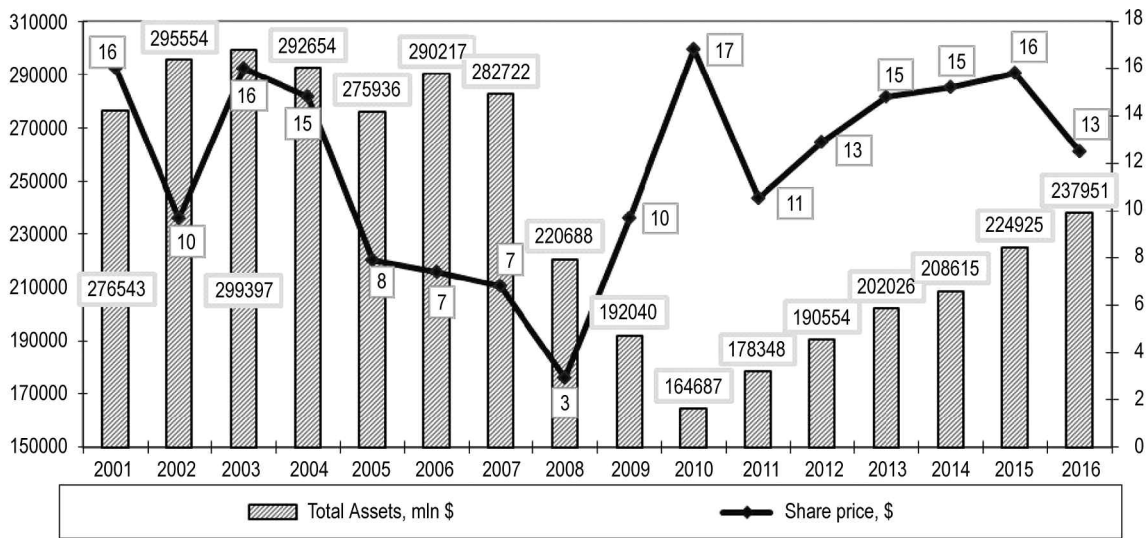
Figure 3. Dynamics of assets and average share price of Ford Motors
Source: Compiled by the authors according to [20]

For more in-depth study of the processes of the dynamics of the enterprise evaluation we offer to calculate the ratio of market value advancing of the book value (*Kacs*):

$$Kacs = \frac{MC_n - MC_{n-1}}{Ass_n - Ass_{n-1}}$$

where n is the study period (year).

The indicator offered will have the following meanings:

if $0 < Kacs < 1$, it means that the market value grew more slowly than the value of assets;

if *Kacs* > 1, it means that the market evaluation of the company grew more dynamically than the assets of the company increased;

if *Kacs* = 1, it means that there were similar changes in the market value and the value of assets;

Kacs < 0 indicates that there was a reduction either in the market value or the value of assets.

To test this ratio in practice of value indicators analysis we graphically present the dynamic of coefficient calculated, the amount of change in the market value and the value of asset indicators, using the example of Toyota (Fig. 4, 5).
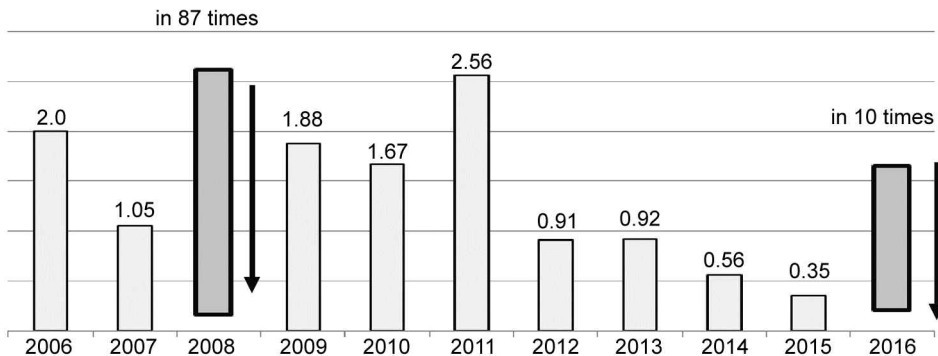

Figure 4. The rate of the market value advancing of the book value of Toyota

Source: Compiled by the authors according to [22]
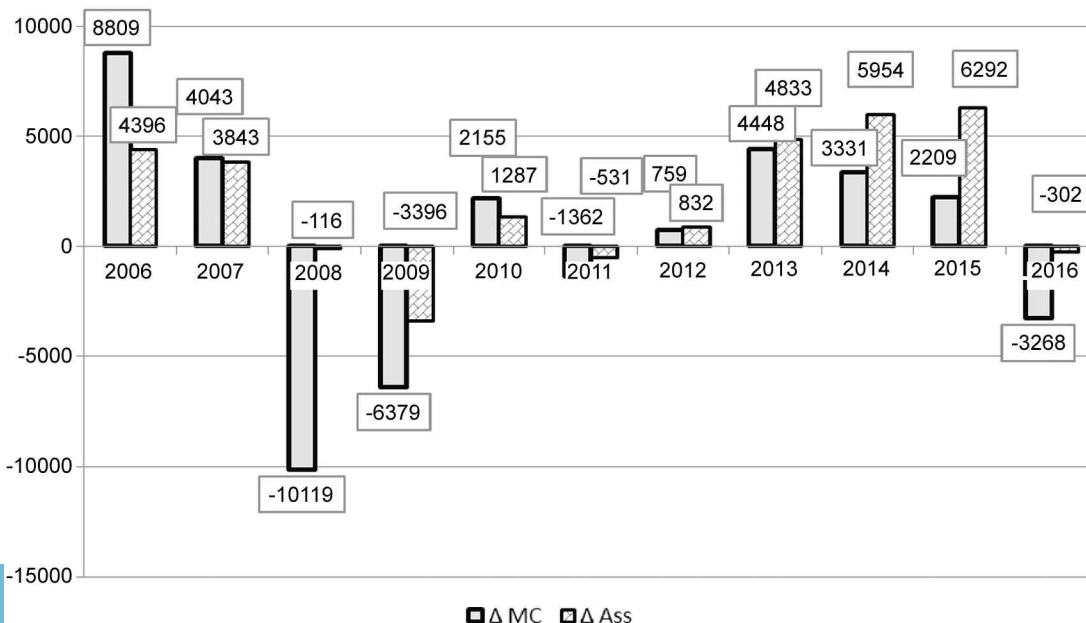

Figure 5. The dynamics of the market capitalization and the value of assets of Toyota

Source: Compiled by the authors according to [22]

This indicator has a significant disadvantage: it does not reflect a situation when there is a reduction in both indicators i.e. market capitalization and the value of assets. The calculation results which are presented in Fig. 4 shows that it happens in times of economic crises and these situations require more detailed research.

Therefore, to understand the value characteristics of the enterprise the following should be used:

Firstly, the indicators which are based on accounting data, because they reflect the costs of establishing and further development of the company and allow it to form a picture of the property at the current time and in the future;

Secondly, market evaluation of the enterprise according to international analytical agencies and stock exchanges that allow company management to determine the perception of the company on the market.

In the case, if the market undervalues the company and there is a loss of value characteristics, management should identify the causes of negative processes and work in the direction of the neutralization of negative influence. Under such conditions, it should be taken into account that the choice of methods for evaluation of the company and formation of the set of indicators become the first step in the integrated system of the value management which should be formed in the company.

To transform the results of the research in the actual processes of growth of the enterprise value, there has been offered the algorithm of functioning of the value management systems (Fig. 6).
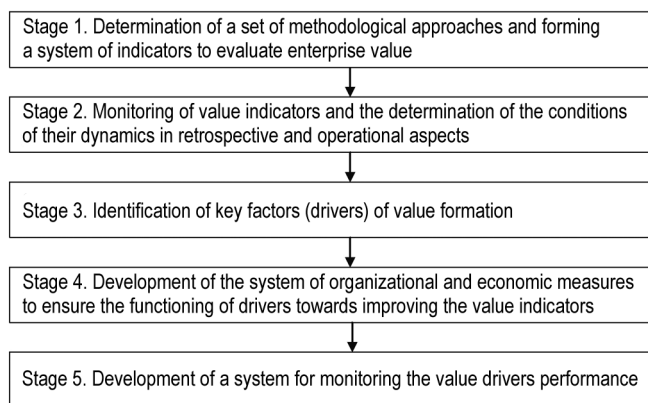
Stage 1. Determination of a set of methodological approaches and forming a system of indicators to evaluate enterprise value

Stage 2. Monitoring of value indicators and the determination of the conditions of their dynamics in retrospective and operational aspects

Stage 3. Identification of key factors (drivers) of value formation

Stage 4. Development of the system of organizational and economic measures to ensure the functioning of drivers towards improving the value indicators

Stage 5. Development of a system for monitoring the value drivers performance

Figure 6.
Stages of the value management procedure at the enterprise

In general, every company should choose methodological approaches to the analysis of the value and form a set of relevant indicators. The selected indicators are included to the obligatory part of analytical reviews that are developed at the enterprise at regular intervals, and form information base for decision-making on strategic development of the company. The value figures are the result of the enterprise operation, so it is of great importance to identify the key drivers of the value through the development of value creation card for the company. As far as the value indicators are formed as a result of external evaluation of internal business processes, research of cause-effect relationships has to be conducted and the contents of organizational and economic measures that will ensure their improvement have to be identified.

5. Conclusions

This study makes it possible to assert that the figures of the enterprise value are increasingly used not only by external users of information to purchase shares, but also by the management of the company to monitor the market perception of the company. In such circumstances, the problem of developing methodological approaches to the analysis of the value, which

would ensure getting the most objective data, remains significant.

The existing methodological approaches to the evaluation of the company, the comparison of which has been conducted in the context of their strengths and weaknesses, have been expanded by the proposed relative ratios, in particular, the ratio of market capitalization and value of assets, the indicator of market evaluation of the existing assets of the enterprise, the advancing coefficient of the market value of the balance value. The calculation of the relevant indicators will increase the level of information support analysis of the value characteristics of the company. In addition, it has been offered to consider the process of selecting methodoical approaches to the evaluation as a part of the evaluation management system.

Thus, on the basis of an integrated approach this article has proved the importance of implementing an integrated system of the enterprise value management, it has determined the role of the methodological approaches in this system, conducted comparison of existing methodological approaches in terms of their advantages and disadvantages, proposed the extension of the list of indicators of evaluation in the dynamics and developed the value management algorithm based on the information formed as a result of the analysis.

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