SELECTION OF THE INDICATORS TO MEASURE AN ENTERPRISE'S VALUE AND ITS CHANGES IN THE CONTROLLING SYSTEM FOR MEDIUM-SIZED ENTERPRISES

Daiva Tamulevičienė [1], Armenia Androniceanu [2]

[1]*Vilnius University, Faculty of Economics and Business Administration, Saulėtekio 9, LT-10222, Lithuania*
[2]*Bucharest University of Economic Studies, Faculty of Administration and Public Management, Piata Romana 6, 010374, Romania*
[2]*University of Social Sciences, Sienkiewicza St 9, Lodz and WSB University, Poland*

E-mail: [1]*daiva.tamuleviciene@evaf.vu*; [2]*armenia.androniceanu@man.ase.ro*

Abstract. In a rapidly changing business environment, it is important for many enterprises to create value. Yet the aim to manage the enterprise by focusing on maximizing its value does not guarantee the growth of its value. Appropriate management instruments and systems have to be selected for this purpose. Introducing a controlling system helps to improve the functionality of company and the process of decision making as well as to increase the enterprise's value. When the main purpose of an enterprise is to create value, then it is necessary to have means to monitor, estimate and assess the value creation activity. According to both theory and practice, it is proposed to estimate the value of an enterprise and its changes by applying various indicators. Different indicators measure an enterprise's value changes differently. Also, the level of complexity of indicators calculation differs a lot. Taking these two criteria into account it is important for every enterprise to create an appropriate set of indicators measuring the enterprise's value and its changes. The article analyses the significance of measuring an enterprise's value in the controlling system, the diversity of indicators to measure an enterprise's value and the issues connected with their selection in medium-sized enterprises. The aim of the article is to develop a set of indicators measuring an enterprise's value and its changes that could be introduced in the controlling system for medium-sized enterprises. The research methods are the analysis of scientific literature, collection, comparison, classification and generalization of information, expert evaluation, a questionnaire survey of Lithuanian medium-sized companies' managers, accountants, financiers. During the expert evaluation it was found out that the following set of eight indicators measures the value and its changes in the controlling systems for medium-sized enterprises the best: Net profit, EBITDA, ROE, ROS, ROA, EVA, MVA, and TSR.

Keywords: controlling system; enterprise's value; measurement of enterprise's value; accounting-based indicators; shareholders' wealth-based indicators; medium-sized enterprises

1. Introduction

In a rapidly changing business environment, it is important for many enterprises to create value. Increase of value has become the main managers' objective when ensuring the needs of current and future investors as well as balancing members' interests. Yet the aim to manage the enterprise by focusing on maximizing its value does not guarantee the growth of its value. The enterprise's strategy, management instruments, processes, activity assessment indicators have to be balanced by taking the main goal of the enterprise – the growth of its value – into account. Although the previous decades have been crucial for the management theory because various methods increasing management efficiency have been presented and applied in practice, yet most of them are oriented towards increasing a particular management function. Meanwhile, introduction of complex management systems oriented towards increase of enterprise's value allowing to coordinate the actions of all management links as well as to choose the most appropriate method and instruments was not developed.

One of such systems helping to spot the problems and deal with them in an integrated manner is controlling which could be called an innovative system applicable in the conditions of competitive market and dynamic business to achieve strategic and operational goals and ensure the growth of the enterprise's value in a long-term perspective. Introduction of such system could be a determining factor ensuring company's success. Studies conducted by many authors (Špac, Mašnja-Škare, 2009; Papp, Pajrok, 2010; Śliwczyński, 2011; Sestanj-Peric, Kukec, 2012; Bieńkowska, Zgrzywa-Ziemak, 2014; Vuko, Ovjan, 2013; Dobroszek, 2015; Perović et al., 2016; Todorović-Dudić et al., 2017 etc.) confirm that introducing a controlling system helps to improve the functionality of companies and the process of decision making as well as to increase the company's value growth.

When the main purpose of an enterprise is to create value, then it is necessary to have means to monitor, estimate and assess the value creation activity. According to both theory and practice, it is proposed to estimate the value of an enterprise and its changes by applying various indicators and methods. Their application possibilities, advantages and disadvantages have been studied by many authors (Rappaport, 1999; Hahn, Hungenberg, 2001; Scarlett, 2001; Sinevičienė, 2007; Dzikevičius, Michnevič, Ževžikova, 2008; Petravičius, 2008; Petravičius. Tamošiūnienė, 2008; Weber, Schäffer, 2008; Burkšaitienė, 2009; Damodaran, 2012; Makutėnaitė, Gliaubicas, Makutėnienė, 2014; Kumar 2016, Androniceanu, 2019, and others).

Controlling system oriented towards increase of an enterprise's value is more necessary for medium-sized and large companies rather that the small ones because the difficulties of management decisions usually increase as the company and its organizational and production structures grow. It is important to note that large enterprises usually have their own sets of indicators to measure the enterprise's value and its changes. Whereas medium-sized enterprises generally estimate their value through the prism of profit maximisation. Yet, the presence of profits does not guarantee that the enterprise is going to survive in the long run, since medium-sized enterprises often have to implement significant investments which can exceed the annual profit. These enterprises ought to use other indicators measuring their value and its changes as well. However, there is a lack of scientific and empirical studies focused solely on the indicators to measure value and its changes suitable for medium-sized enterprises. Therefore, it is important to analyse the main value-measuring indicators and determine which of them are the most suitable for medium-sized enterprises.

*The object of the research* is indicators for measuring an enterprise's value and its changes.

The aim of the article: is to develop a set of indicators measuring an enterprise's value and its changes that could be introduced in the controlling system for medium-sized enterprises.

The research methods are the analysis of scientific literature, collection, comparison, classification and generalization of information, expert evaluation, a questionnaire survey of Lithuanian medium-sized companies' managers, accountants, financiers.

2. The significance of measuring enterprises' value in the context of the controlling system

Instability of financial-economic environment, high level of competition, complicated technological processes, necessity to solve problems in short time, and other factors influence the decisions of enterprises' managers when considering the opportunity of introduction innovative management control systems. One of such systems is controlling. Controlling is an innovative system applicable in competitive and dynamic business conditions integrating planning, control, information provision, accounting and analysing activities, supporting management in achieving strategic and operational goals and ensuring creation of the enterprise's value in the long run. A properly designed controlling system can provide a variety of information on all the areas of activity, ensure the development of the enterprise, and increase its value.

The controlling system comprises different, however interconnected, subsystems and their elements whose interaction helps to make optimal decisions. Although there are many authors who analysed the elements of the controlling system there is no unanimous opinion neither on the controlling system structure nor on the elements comprising it and the interactions among them. Tamulevičienė, Subačienė (2019) studied the opinions of different authors on the structure of the controlling system and identified the necessary elements of the structural scheme of the controlling system. When creating the structural scheme of the controlling system all the characteristics specific to systems were maintained: 1) the system must be comprised of elements; 2) the system must consist of several hierarchical levels; 3) the elements must be related via connections; 4) the system must have boundaries; 5) the system must be dynamic; 6) the system must have a goal (Tamulevičienė, Subačienė, 2019, p. 132). Figure 1 presents a structured scheme of the controlling system architecture that depicts elements of the controlling system, its hierarchical levels, the relationships between them, its goal (results), and the boundaries of the system. The prepared structure of a controlling system shows a generalized view of a controlling system; therefore, it can be used as an exemplary structure for all types of companies planning to form a controlling system, regardless of their size, type of activity, legal form, or other features.
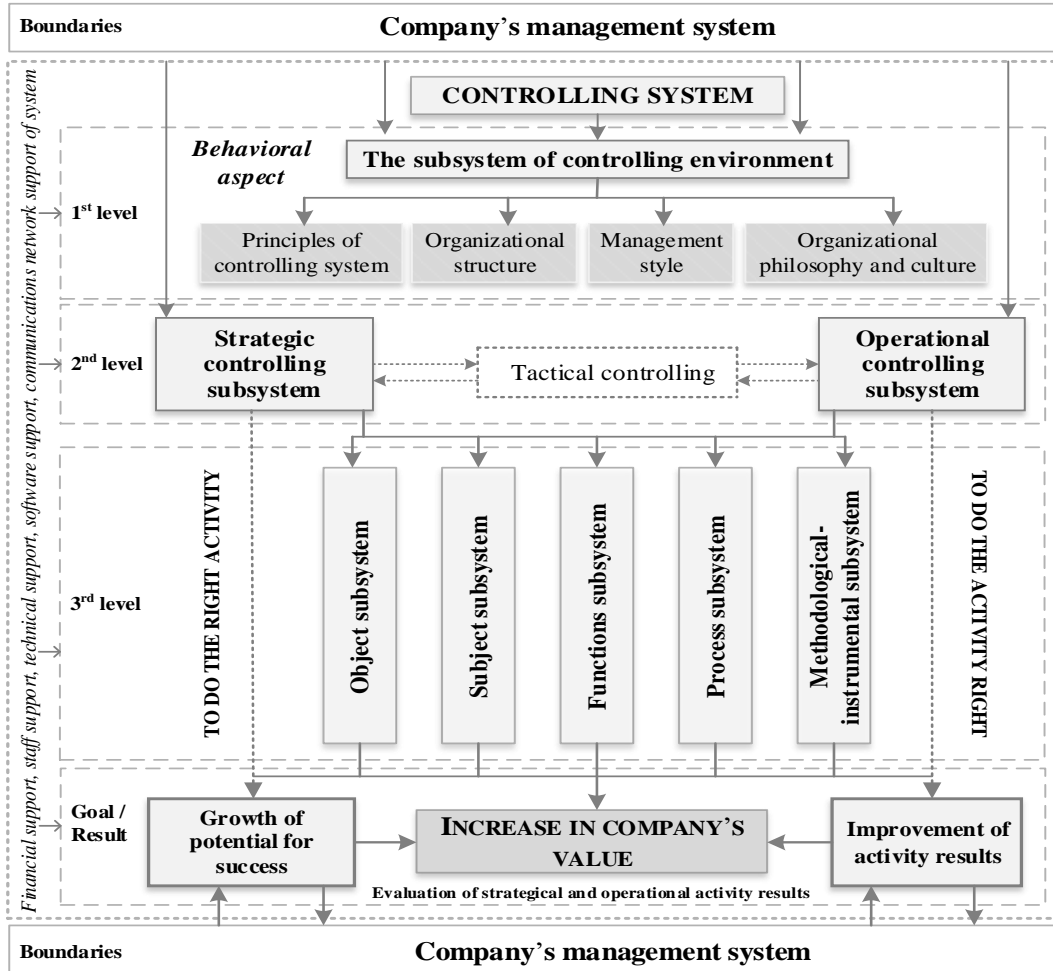
Figure 1. Structural scheme of the controlling system
Source: Tamulevičienė, Subačienė, 2019, p.141

Even though every system is comprised of various elements of different significance, yet the *goal* of the system or the sought *result* should be considered the most important element of the system. Every system has to have a clearly measurable outcome based on which the effectiveness of the system can be assessed. As can be seen from the Figure 1, the goal of the controlling system is expressed through a specific result – an increase in the value of the enterprise. How well the controlling system achieves this goal must be evaluated in two aspects: 1) in the prism of the strategic controlling subsystem as the growth of potential success; 2) in the prism of the operational controlling subsystem as an improvement of the operational performance. In order to increase the possibilities of companies to create value, it is important to monitor and improve the lower level measures indicating the company's value and its changes. This requires constant systematic assessment of the company's activity both in operational and in strategic levels. The indicators and criteria applicable for assessment of the operational and strategic activity may vary depending on the company. The enterprises can introduce both individual indicators and sets of indicators. Systems of indicators measure the results of a company's strategic and operational activity better than individual indicators yet the view towards the efficiency of systems of indicators differs (Tamulevičienė, 2016).

And even though it is important to assess the operational and strategic activities indicators, the final effectiveness of the controlling system should be determined with regards to the changes in an enterprise's value size. Value, as the essential criterion to measure the effectiveness of a modern enterprise activity, is emphasized in various contexts in the works by many authors (Rappaport, 1999; Hahn, Hungenberg, 2001; Scarlett, 2001; Sinevičienė, 2007; Petravičius, 2008; Dzikevičius, Michnevič, Ževžikova, 2008; Venanzi, 2010; Damodaran, 2012; Markevičiūtė, Jucevičius, 2013; Makutėnaitė, Gliaubicas, Makutėnienė, 2014; Kumar, 2016; Fijałkowska, Macuda, 2017; Kobiela-Pionnier, 2019, Hilkevics, Semakina, 2019; Androniceanu, Tvaronavičienė, 2019; Mura et al., 2017 and others). As Scarlett (2001) notes, for a while there has been an increasing pressure on corporate executives to measure, manage and report the creation of shareholders value on a regular basis. Increase of value has become the main managers' objective when ensuring the needs of current and future investors as well as balancing members' interests. As Dzikevičius, Michnevič, Ževžikova (2008) notes, the changes in value in a certain period is the criterion of an enterprise's effectiveness assessing nearly all the information related to its activity. Cican, Lala-Popa, Anis (2013) stress the harmony of strategic and operational activity as the essential factor ensuring the value growth.

3. Diversity of indicators measuring an enterprise's value and its changes

When the main purpose of an enterprise is to create value, then it is necessary to have means to monitor, estimate and assess the value creation activity. According to both theory and practice, it is proposed to estimate the value of an enterprise and its changes by applying various indicators and methods that fall into two main groups: 1) *traditional ones*, accounting-based; 2) *new ones*, shareholders' wealth-based. Estimations from both groups consider maximisation of shareholders' interests as the key goal of the enterprise, regardless of the different principles used in estimations. As Scarlett (2001) notes, it does not mean that by creating value for the shareholders other participants, for example employees, customers, suppliers, and community, are ignored. On the contrary: the enterprises that create value make decisions that tend to strike a fair balance among the participants. Becker (1990, 2011) in particular supported this approach by creating and advocating a controlling concept based on *the orientation towards added value and optimization of stakeholders' interests*.

However, his state that prioritizing external stakeholders, for example customers, when the interests' of the whole cannot be fully aligned, is open to debate. Many authors who analyse the issues of estimation of the created value (Rappaport, 1999; Venanzi, 2010; Darškuvienė, 2013, and others) admit that it is the shareholders rather than other participants who are the most important ones in this process because those enterprises which do not meet its shareholders' demand to grow face the risk of losing their capital. The creator of the *cognition oriented* controlling concept, Lingnau (2004, 2009), supports this position and emphasizes that it is of vital importance to be aware of the interests of every shareholder group, strike a proper balance among them and ensure the growth of the shareholders' value. Taking this into account, it can be said that a controlling system oriented towards the growth of an enterprise's value faces a challenge of how to maximize the shareholders' wealth and strike a balance among the interests of the rest of the participants. In order to determine the changes of an enterprise's value, it is important to measure them properly. Yet not all measurements assess the activity results and their impact of the shareholders' wealth as well as of the growth of the enterprise's value equally precisely. This is particularly true of the group of accounting-based measurements of which the most important ones are presented in the Tables 1 and 2.

Table 1. Absolute accounting-based indicators for measuring an enterprise's value and its changes and their description

Indicator	Description
Net Profit	shows the final result of the enterprise's activity which is estimated by subtracting all expenditures, including income tax, from the revenue
Earnings Before Interest and Taxes, (EBIT)	shows how much profit did the enterprise make before assessing the enterprise's funding policies and the impact of the income tax on profits
Earnings Before Interest, Taxes and Amortization, (EBITA)	shows how much profit did the enterprise make before assessing the enterprise's funding policies, amortization, and the impact of the income tax on profits
Earnings Before Interest, Taxes Depreciation and Amortization, (EBITDA)	shows how much profit did the enterprise make before assessing the enterprise's funding policies, amortization, depreciation, and the impact of the income tax on profits

Source: compiled by the authors based on Weber, Schäffer (2008); Damodaran (2012); Makutėnaitė, Gliaubicas, Makutėnienė (2014)

As it can be seen from the Table 1, all absolute accounting-based measurements with the purpose to determine the changes in an enterprise's value are related to profit and its various modifications. These indicators are very popular because they clearly show the changes in the shareholders' capital due to changes in the activity results. Yet these measurements are criticized. As Weber, Schäffer (2008), Makutėnaitė, Gliaubicas, Makutėnienė (2014), and others state, the net profit and its other expressions do not assess the cash flows; only explicit costs (such as materials, salaries, interests, taxes, etc.) are considered as expenditures whereas cost of capital is not taken into account; alternative accounting methods used have an impact on the volume of the net profit. Also, growth of the profit does not necessarily mean the creation of value for the shareholders. The value increases only if the enterprise is more profitable than the amount a current shareholder or a potential investor might receive from alternative investments of similar risks. When measuring the changes of the shareholder's value, this drawback is eliminated by applying relative indicators because these indicators measure the ratio of the profit with a selected criterion rather that the absolute profit volume (see Table 2).

Table 2. Relative accounting-based indicators for measuring an enterprise's value and its changes and their description

Indicator	Description
Return on Equity, (ROE)	is measured by dividing the net profit from equity; shows the profit created by equity and managers' work effectiveness when using this equity
Return on Assets, (ROA)	is measured by dividing the net profit from all assets. This indicator shows how effective assets, obtained by the funds from equity and debt capital, are managed, i.e. determines how much net profit goes to one euro of assets. Another modification of how to apply this indicator is possible: in this case ROA is measured by dividing the Earnings before interest and taxes from all assets, i.e. operating profit after eliminating the impact of taxes and interests are used for assessment
Return on Investment, (ROI)	shows how effectively investments are used. Taking into account the fact that both equity and debt capital can be considered as investments, ROI is usually estimated by dividing net profit from the sum of equity and long-term liabilities. Investment is a long-term process; thus short-term liabilities are usually not taken into account when measuring ROI. ROI can be also measured as the difference of the benefits from investments and the sum of investments divided from the sum of investments
Return on Sales, (ROS)	estimated by dividing the net profit from the sales revenue. Shows how successfully can profits be created from the sales revenue from the shareholders' perspective. ROS can be estimated by including into the analysis the Earnings before interest and taxes instead of net profit.
Return on Capital Employed, (ROCE)	is estimated by dividing Earnings before interest and taxes from the difference between the total assets and current liabilities. It shows the level of the enterprise's functionality and potential development as well as abilities of managers to use equity and long-term liabilities.
Earnings per Share, (EPS)	estimated by dividing the net profit for the shareholders of ordinary shares (i.e. after subtracting the dividends from preference shares) from the average number of ordinary shares in circulation. It is an indicator of the enterprise''s attractiveness to which investors pay a special attention.

Source: compiled by the authors based on Weber, Schäffer (2008); Damodaran (2012); Mackevičius, Giriūnas, Valkauskas (2014); Masa'deh, et al. (2015); Tamulevičienė (2016); Tamulevičienė, Mackevičius (2019)

Although the measurements provided in the Table 2 are widely spread because it is relatively easy to measure them and the data is accessible, they have some fundamental weaknesses. First of all, as Rappaport (1999), Christauskas, Kazlauskienė (2009), Venanzi (2010), Horváth (2011), Makutėnaitė, Gliaubicas, Makutėnienė (2014), and others state, these indicators can only be partially associated to the creation of value because they, like the absolute accounting-based measurements, do not assess the cash flows, economic life of assets and, most importantly, capital costs. Also authors list more drawbacks of the accounting-based measurements, for instance, problems evaluating an enterprise's economic effectiveness due to certain aspects of the enterprise's accounting policy that influences calculation of profit; the changes in the value of money due to inflation; the needs of capital needed for growth and risks that appear in different departments of an enterprise are not taken into account; there is a slight correlation between the changes in the value of assets and changes in the stock market, etc.

Taking all this into account it is safe to state that it is only partially possible to reliably assess the changes in an enterprise's value creation (losses) by using traditional accounting-based methods. Thus scientists (Rappaport, 1999; Hahn, Hungenberg, 2001; Scarlett, 2001; Sinevičienė, 2007; Dzikevičius, Michnevič, Ževžikova, 2008; Petravičius, 2008; Petravičius. Tamošiūnienė, 2008; Weber, Schäffer, 2008; Burkšaitienė, 2009; Damodaran, 2012; Makutėnaitė, Gliaubicas, Makutėnienė, 2014; Kumar 2016, and others) offer to apply the measurements from another group, the shareholders' wealth-based one, besides the methods from the first group; the most important of these measurements are provided in the Tables 3 and 4.

In the Table 3 absolute indicators assessing the size of the enterprise's value and its changes are provided; the purpose of some of these indicators, for example Economic value added, Cash value added, Equity spread, is to measure the changes in the enterprise's value in a short-term one year period. Whereas the purpose of Market value added and Shareholder value added is to determine the changes in the enterprise's value in the long run. Discounted cash flow and Shareholder value at risk measurements can be applied both during the short run and the long run, regardless of the selected assessment period.

Table 3. Absolute shareholders' wealth-based indicators for measuring an enterprise's value and its changes and their description

Indicator	Description
Economic Value Added, (EVA)	measured as the difference between net operating profit after taxes (NOPAT) and cost of invested or operating capital. The positive value of EVA means that a company increases its value whereas the negative value means that the value is decreasing. The EVA indicator can be estimated for the enterprise, department, production line or other smaller unit of the enterprise, also, can show the input of every chain of the business in the creation of value
Market Value Added, (MVA)	shows the expected success of the enterprise through the additionally created market value. From the market position the MVA indicator is measured as the difference between total market value and invested capital. The total Market value is determined by adding the share price multiplied by their number and book value of the debt capital. From the enterprise's position the MVA indicator is estimated as the current value of all future EVA indicators. The value added of the market can either be created or lost. Enterprises seek to maximize the created value added of the market
Cash Value Added, (CVA)	shows the residual amount of the cash flows generated from the investments. Estimated as the difference between the adjusted operating cash flow and the product of the total investment and weighted average cost of capital. If CVA is applied together with Cash flow return on investment (CFROI), then the cash value added can be estimated as the difference between Cash flow return on investment and weighted average cost of capital multiplied by the amount of the total investments. Positive value of the CVA shows the potential of an enterprise to create value
Shareholder Value Added, (SVA)	evaluates the capital gains for the shareholders and shows the difference between the estimated share capital and the book value of the share capital. When estimating the value of the share capital, all free cash flows of the future periods are discounted and the weighted average cost of capital is considered as the discount rate. The amount received is adjusted by adding the value of the assets used for other than the principal activity and subtracting the volume of the debt capital
Equity Spread, (ES)	estimated by multiplying the amount of the equity by the difference between the Return on equity (ROE) and required Return on equity. Positive value of the ES shows that the company is creating value whereas the negative one shows that the value is being lost
Discounted Cash Flow,	the value of an enterprise is determined by taking into account the enterprise's abilities to generate cash flows in the future which are discounted into present value. The DCF method is universal since it can be modified in different

(DCF)	ways by taking the sought goal into account and using the net profit, dividends, interest, etc. instead of the cash flows when calculating. The longer the period for predicting the future CF, the more difficult the discounting process. Usually the period for predicting is divided into several stages in the last of which the constant discount rate is selected
Shareholder Value at Risk, (SVR)	with the help of Monte Carlo simulation method, distribution of the enterprise's cash flow Net present value (NPV) is estimated. The SVR evaluates uncertainty, i.e. the value of an enterprise is presented in the form of probability distribution by assessing possible fluctuation margins of the predicted variables. The method presents not only the enterprise's value but also other statistic characteristics which reflect the risk of the enterprise's activity

Source: compiled by the authors based on Rappaport (1999); Hahn, Hungenberg (2001); Scarlett (2001), Žaptorius, Garbanovas (2006); Sinevičienė (2007); Dzikevičius, Michnevič, Ževžikova (2008); Petravičius (2008); Weber, Schäffer (2008); Damodaran (2012); Makutėnaitė, Gliaubicas, Makutėnienė (2014); Kumar (2016); Mert, Erkiran Dil (2016)

Although absolute shareholders' wealth-based indicators for measuring an enterprise's value are very informative since they allow to measure the changes in the value in monetary terms, they are not always applied in order to compare several alternatives for making decisions. In this case relative indicators are more appropriate. Table 4 shows three principal relative shareholders' wealth-based indicators for measuring an enterprise's value and its changes and their description.

Table 4. Relative shareholders' wealth-based indicators for measuring an enterprise's value and its changes and their description

Indicator	Description
Cash Flow Return on Investment, (CFROI)	estimated as the ratio of the difference between the total cash flows and economic depreciation with the invested capital. In order to determine the amount of each of these indicators, additional adjustments are made by evaluating non-monetary items, inflation, capital expenditure, economic lifetime of the assets and other aspects. In its more sophisticated form, CFROI incorporates the principles of the Internal rate of return (IRR) concept. It presents the discount rate that discounts the future annual cash flows that are expected to arise over the average life of the company's assets, back to current cash value of the enterprise's net operating assets. Yet, although the increase of the Cash flow return on investment is considered as a positive thing because of slower growth (lower investments) or higher risk the increase in profitability does not ensure the creation of value. The CFROI indicator is usually used to evaluate the profitability in the long run, however after modifying the formula it can also be used for a period of one year
Total Shareholder Return, (TSR)	shows the rate of return earned by a shareholder through a combination of price changes and dividends received. One year TSR indicator is estimated by subtracting the initial price of a share from the current price of a share, adding the dividends for a share and dividing the result from the initial price of a share. By modifying the formula, the method can also be applied to evaluate the profitability of shareholders' equity in a longer period
Annual Economic Return, (AER)	determined as the ratio between the market value of equity at the end of the year by subtracting the externally raised capital and adding dividends and market value of equity at the beginning of the year. In the calculations, the externally raised capital, the dividends paid and the value of equity at the beginning of the year are specified by taking the cost of capital rate into account. The measurements are based on evaluation of two alternatives. In the first case (denominator of the indicator) it is assumed that an enterprise is liquidated when the shareholders pay the amount equal to the market value of the equity which they can later use for other investments and receive adequate return which is usually equated to the cost of capital rate. In the second case (numerator of the indicator) the activity of the enterprise is continued as the shareholders receive dividends and, if necessary, the external capital is increased. Positive ratio of these alternatives of the market values of an enterprise shows that the enterprise is creating value; whereas a negative ratio shows that the value is being lost.

Source: compiled by the author based on Rappaport (1999); Hahn, Hungenberg (2001); Scarlett (2001); Petravičius (2008); Weber, Schäffer (2008); Damodaran (2012); Makutėnaitė, Gliaubicas, Makutėnienė (2014)

Without the indicators shown in Tables 3 and 4, more measurements to determine the changes in the value of an enterprise can be found in the scientific literature, for instance, Value return on investment (VROI) that evaluates the created value for one discounted euro from investments; Total business return (TBR) that evaluates the capital gains and the dividends paid for the shareholders; Earnings less riskfree interest charge (ERIC) that allows to determine the changes in value and reveal what caused them by assessing whether they were influenced by managers' effectiveness or favourable conditions. Yet the possibilities of wider application of these measurements in practice have not been studied and described in detail. And although the shareholders' wealth-based

measurements do not have the drawbacks characteristic to accounting-based indicators since they evaluate the cost of capital, the impact of inflation for the cash flows, and other aspects, each of the presented methods have certain limitations. Henceforth the statement that only the indicators from this group or a particular indicator measure the changes in an enterprise's value adequately is incorrect. Also, as Venanzi (2010) notes, there is little information and empirical studies results on the effectiveness of different measurements and the results are inconsistent because the published results directly depend on the authors' commercial interests. On one hand, during the last two decades consultancy firms have been constantly stating that their approaches are better while the ideas proposed by their competitors do not measure the value fully. On the other hand, enterprises have implemented various shareholders' wealth-based measurements in their practice by choosing different methods all the time which shows that more in-depth studies are needed to create a proper measurement of an enterprise's value changes regardless of the group to which the indicators are attributed.

It is important to note that large enterprises usually have their own sets of indicators to measure the enterprise's value and its changes. Whereas medium-sized enterprises generally estimate their value through the prism of profit maximisation. Yet, the presence of profits does not guarantee that the enterprise is going to survive in the long run, since medium-sized enterprises often have to implement significant investments which can exceed the annual profit. However, medium-sized enterprises have fewer opportunities to attract loan capital in favourable conditions than the large ones. Thus these enterprises have to use other indicators measuring their value and its changes.

Besides the study by Horváth (2011), there are barely no scientific studies focused exceptionally on tools to measure the value and its changes of medium-sized enterprises. In this study, the author revealed how do strategic and operational controlling contribute to the increase of the value in medium-sized enterprises and described the aspects of how to measure the changes in value creation that are characteristic exceptionally to medium-sized enterprises. According to the author, the medium-sized enterprises should focus not only on operational approach, oriented towards introduction of accounting-based indicators, but also on strategic approach and in order to measure value introduce indicators measuring shareholders wealth – the essential one among which, is the Economic value added indicator.

Nonetheless, it is impossible to unambiguously state which indicators are appropriate to measure the value of medium-sized enterprises and its changes after taking into account all the indicators, their advantages and disadvantages, level of complexity of calculations as well as specific introduction conditions. In order to offer a set of indicators to measure an enterprise's value and its changes which could be introduced in the controlling system of medium-sized enterprises, an empirical study was conducted.

3. Methodology of the empirical study

The empirical study was comprised of two stages: 1) expert survey; the aim of this stage was to determine which and how many of the specified indicators are the most appropriate to measure the value of medium-sized enterprises as well as its changes in the controlling system; 2) survey of the Lithuanian medium-sized enterprises' managers, senior accountants, senior financial officers and other specialists; the aim of this stage was to assess the validity of the set of indicators to measure the value and its changes selected by the experts.

The expert evaluation is a procedure that makes it possible to harmonize the opinions of different experts and make a mutual decision (Augustinaitis et al., 2009). The expert survey method was chosen because of the lack of reliable quantitative and qualitative information which allows one to find a scientific basis for the analysed phenomenon. The non-probability sampling technique integrating judgemental, convenience and snowball sampling methods was applied for expert evaluation. Taking into account the sample size recommended in the

literature (Pranulis, Dikčius, 2012; Tidikis, 2003; Augustinaitis et al., 2009), thirteen experts were selected for the expert evaluation.

The expert evaluation survey was carried out in September 2017 in a form of a questionnaire survey. The questionnaire was comprised of four parts – every one of which presents various indicators to measure an enterprise's value and its changes – divided into four groups based on two criteria: 1) indicators are absolute/relative; 2) calculation of indicators is accounting-baseshareholders' wealth-based. The experts were asked to: 1) list the presented indicators from every group in the order of importance by indicating which are appropriate to measure the value of medium-sized enterprises and its changes; 2) specify the optimum number of indicators from every group by determining the value of medium-sized enterprises with regards to the data collection and calculation complexity and to how precisely the value has been measured.

After receiving the expert survey results, the agreement of expert estimates was assessed by applying the coefficient of concordance. The statistical functions of the Microsoft Excel application were applied to process and analyse the expert survey data; the procession of data was based on the methods of descriptive and inferential statistics.

The second stage of empirical study consisted of the survey of medium-sized enterprises. When carrying out a questionnaire survey it is important to determine the sample size and choose a proper sampling method. Since the object of the study is the validity of the set of indicators to measure the value and its changes in Lithuanian medium-sized enterprises, the population consists of all medium-sized enterprises operating in Lithuania. According to the definition provided in the Law on the Development of Small and Medium-sized Businesses of the Republic of Lithuania (2017), a medium-sized enterprise is a business that meets the conditions laid out in the article 3 of the law: 1) the number of employees is below 250; 2) financial data corresponds to at least one of the following conditions; a) annual revenue does not exceed 50 million EUR, b) carrying value of the assets does not exceed 43 million EUR. At the beginning of 2017, there were 2,425 companies that met these conditions.

Knowing what the population is the sample size may be estimated and on the basis of its study results one can make assumptions on the population as a whole. When estimating the sample size, a 5% margin of error is usually selected. However, knowing that only managers and top level experts were supposed to take part in the study and it is often problematic to reach them, the margin of error was increased to 10%. According to Kardelis (2016), in order to determine the sample size one has to take the aim of the study into account and determine how accurately they want to prove the statement. Accuracy of 10% is sufficient in order to evaluate the trends of validity of the set of indicators to measure the value and its changes in Lithuanian medium-sized enterprises. With the population of 2,425 and the margin of error of 10%, then the sample is 93 respondents.

After identifying the necessary number of respondents, a method of their selection was determined. Taking the specific nature and sample size of the study into account, the group of respondents was selected by applying simple random sampling method, i.e., all randomly selected medium-sized enterprises were surveyed without distinguishing them based on any features (type of activity, legal form, etc.). The studied group was chosen by selecting the surveyed companies from the prepared list of Lithuanian medium-sized enterprises by following a certain pattern. If the population is 2,425 enterprises and the sample is 93 enterprises then every 27th company should be surveyed. However, the possibility that not all respondents may agree to take part in the survey was taken into account. Then, even if a small portion of the results were not received, the margin of error would increase even more. Therefore, every 20th enterprise was surveyed and the number of respondents increased to 123 respectively. The questionnaire was uploaded to the online surveying website http://www.manoapklausa.lt/. A request to fill out the questionnaire and a link to it were e-mailed to the companies. The survey was conducted in April-May 2018. 95 respondents took part in it. On the basis of the prepared methodology of the study, 123 surveys were sent out; 77% of them were completed.

1449

4. The results of the expert evaluation and survey of medium-sized enterprises

As it has already been mentioned, various indicators measuring the value and its changes divided into four groups were provided to the experts. The first group contained four absolute accounting-based indicators to measure the enterprise's value and its changes: 1) Net profit; 2) EBIT; 3) EBITA; 4) EBITDA. The experts were supposed to rank all the indicators; 4 points mean that the indicator is the most appropriate (first position in rank), whereas 1 point means that it is the least appropriate (last position in rank). The aggregated expert evaluation results are provided in the Figure 2.
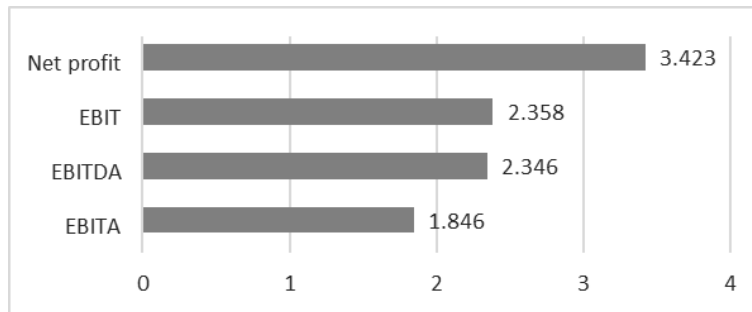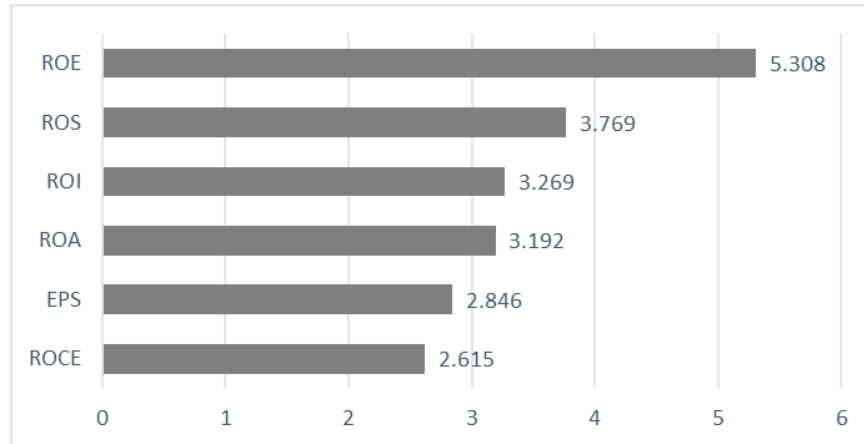

Figure 2. Suitability of absolute accounting-based indicators measuring the enterprise's value and its changes to determine the value changes in medium-sized enterprises

The Net profit indicator received the highest number of positive assessments: its average mark was 3.423 out of 4. As many as seven experts gave this indicator the first position and another five gave it the second position. Earnings before interest and taxes (EBIT) and Earnings before interest, taxes, depreciation and amortization (EBITDA) indicators' were rated as nearly equally valid. The EBIT indicator has a bit higher ranking in terms of average points, yet the mode and median of this indicator are equal to 2 whereas the mode and median of the EBITDA indicator amounts to 3 points. That shows that more experts gave the latter a higher mark. EBITA indicator received the least points (mean was equal to 1.846; mode and median are equal to 2). Such evaluation results from the fact that when one estimates the profit, amortized intangible assets value is eliminated, yet the depreciation of fixed assets is not eliminated. Even though Weber, Schäffer (2008) assessed introduction of this indicator to determine changes in an enterprises' value positively, according to other authors this indicator is not crucial. The results of expert evaluation confirm this. Agreement of expert estimates is not high (W=0.2633; after introducing consistent ranks W=0.2695). However the agreement of expert estimates can be considered sufficient because the estimated χ^2 value is 10.269 whereas the critical value is 7.815 (the p value 0.0164<0.05).

Another thing that the experts were asked to assess was the optimum number of the indicators from this group necessary to determine the medium-sized enterprises value changes. Six experts specified that application of one indicator is enough because every indicator of this group reflects the same result, which is profit, only expressed differently; five experts said that two indicators can be introduced since it is easy to estimate them and the shareholders' capital changes would be reflected better due to the changes in activity results. It should be noted that one expert claimed that introduction of specified indicators to determine the value changes in medium-sized enterprises is hardly appropriate since profit indicators are only partially related to the size of the enterprise's value. Taking the statistical data evaluation results into account (the average number of recommended indicators from this group is 1.62 whereas the mode and median are equal to 2) it is recommended to apply the following two indicators: Net profit and Earnings before interest, taxes, depreciation and amortization (EBITDA).

The second group of indicators contained six relative accounting-based indicators to measure the enterprise's value and its changes: 1) ROE; 2) ROA; 3) ROI; 4) ROS; 5) ROCE; 6) EPS. Respectively, the experts had to rank the indicators from 6 (the most appropriate) to 1 (the least appropriate) points.

Figure 3. Suitability of relative accounting-based indicators measuring the enterprise's value and its changes to determine the value changes in medium-sized enterprises

As we can see from the Figure 3, according to the experts the most suitable indicator for medium-sized enterprises is Return on equity (ROE) whose mean accounts to 5.308 out of 6 (mode and median account to 6). As many as nine experts said this is the most suitable indicator whereas the other five gave it the second position. The second place goes to Return on sales (ROS) (mean 3.769; mode and median 4); the third place goes to Return on investment (ROI) whose mean accounts to 3.269 (whereas mode and median are 3). Return on assets (ROA) had a similar mark with the mean accounting to 3.192. However, the mode and median of the latter indicator are equal to 4 which shows that more experts gave ROA more points than ROI. Agreement of expert estimates can be considered sufficient because the coefficient of concordance is 0.40034, the estimated χ^2 value is 26.02 whereas the critical value is 11.07 (the p value 0.00008<0.05).

When analysing the experts' assessment on the optimum number of the indicators from this group it was determined that opinions tend to vary a lot. For instance, one expert recommended not to introduce any indicators from this group because profitability indicators are only partially related to the size of the enterprise's value. Whereas another expert recommended introducing all six indicators from this group because the processes of data collection and profitability indicators calculation are not difficult yet the results may provide comprehensive and complex information on the enterprises' value. Even though the opinions of some experts varied but statistical assessment of the data shows that the average number of indicators the experts recommended is 2.69 whereas the mode and median are 3. Taking the results into account it is recommended to introduce three indicators from this group into the medium-sized companies controlling system: Return on equity (ROE), Return on sales (ROS) and Return on assets (ROA). Even though the mean of the latter indicator was lower than that of the Return on investment (ROI) by 0.077 point but its mode and median are higher. Also, one expert substantiated her choice to introduce more than one indicator from this group by saying that essentially only one indicator, ROE, matters, however then the information on why this indicator has changed is lost. According to the expert, a set of three indicators (ROE, ROA and ROS), reveals the changes appearing due to changes in the capital structure, assets turnover and sales and provides comprehensive information. The third group of indicators provided for experts to evaluate was the absolute shareholders' wealth-based indicators to measure an enterprise's value and its changes: 1) EVA; 2) MVA; 3) CVA; 4) SVA; 5) ES; 6) DCF; 7) SVR. The results of their suitability to determine the value changes in medium-sized enterprises are provided in Figure 4.
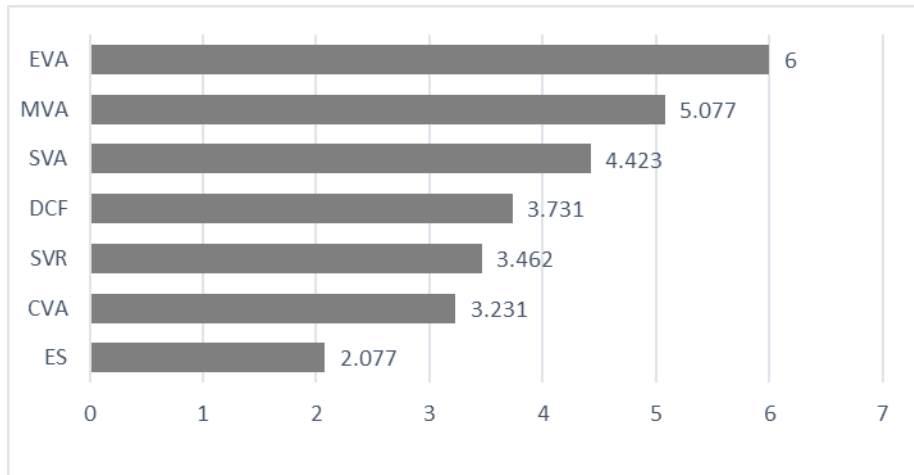
Figure 4. Suitability of absolute shareholders' wealth-based indicators measuring the enterprise's value and its changes to determine the value of medium-sized enterprises

Experts were almost unanimous in their choice to give the first place to the Economic value added (EVA) indicator giving it 6 points out of 7 (mode and median account to 7). The second place goes to the Market value added (MVA) indicator (mean 5.077; mode and median 5). The third place goes to Shareholder value added (SVA) (mean 4.423; mode 3; median 4). The agreement of expert estimates is sufficient (W is 0.357; the estimated χ^2 value is 27.83 whereas the critical value is 12.59; the p value 0.0001<0.05).

The opinions on the optimum number of indicators in this group were rather similar. The highest number of respondents – eight – said that the optimum number of the indicators from this group is two when choosing to determine the enterprise's value in different periods (in one year and in the long run). The indicators from this group have difficult data gathering and calculation procedures and introducing more of them would be excessive, according to the experts. Taking the overall experts' evaluation results into account (average optimum number of the indicators from this group is 2.38; the mode and median are 2) it is recommended to introduce two indicators from this group in the medium-sized enterprises controlling system: 1) Economic value added (EVA) which could be used as a measure to determine the enterprise's value and its changes in the short run (one year); 2) Market value added (MVA) which is related to measurement of the value creation (losses) in the long run. The last group the experts were asked to evaluate was comprised of three indicators from the group of relative shareholders' wealth-based indicators measuring the enterprise's value and its changes: 1) CFROI; 2) TSR; 3) AER. Figure 5 shows the results of this assessment.
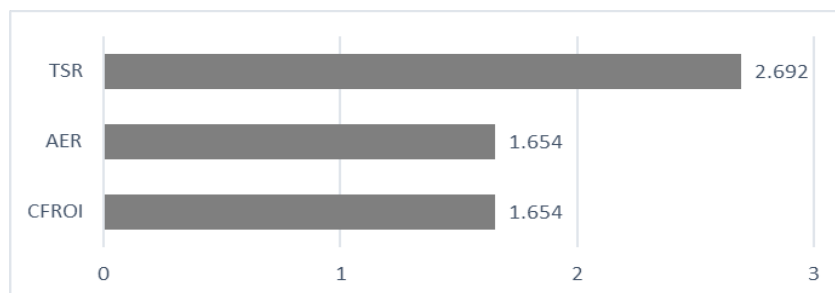
Figure 5. Suitability of relative shareholders' wealth-based indicators measuring the enterprise's value and its changes to determine the value of medium-sized enterprises

As we can see from the Figure 5, the experts evaluated the Total shareholder return (TSR) indicator the most positively and on average gave it 2.692 points out of 3 (the mode and median amount to 3). The experts gave the same score to Total shareholder return (AER) and Cash flow return on investment (CFROI); on average they received 1.654 points. When asked to provide the optimum number of indicators from this group, most of the experts recommended introducing only one. According to them, these indicators have difficult data gathering and calculation procedures and introducing more of them would be excessive. Thus medium-sized enterprises are recommended to introduce only Total shareholder return (TSR) to whom the experts gave the highest score. Agreement of expert estimates can be considered sufficient because the coefficient of concordance is 0.359, the estimated χ^2 value is 9.346 whereas the critical value is 5.99; the p value 0.00934<0.05.

To conclude the results of the expert evaluation, the following set of indicators to measure a medium-sized enterprise's value and its changes is recommended to be introduced into the controlling system: 1) Net profit; 2) Earnings before interest, taxes, depreciation and amortization (EBITDA); 3) Return on equity (ROE); 4) Return on sales (ROS); 5) Return on assets (ROA); 6) Economic value added (EVA); 7) Market value added (MVA); 8) Total shareholder return (TSR). This set of eight indicators would ensure complex measurement of medium-sized enterprises' value creation (losses) in their controlling system.

The validity of the set of indicators to measure the enterprise's value and its changes was assessed by surveying the Lithuanian medium-sized enterprises' managers, senior accountants, senior financial officers and other specialists. The survey was carried out by respondents submitting a list of statements that describe the enterprises' approach towards the significance of creating value and the indicators to measure it. The respondents were asked to express their agreement/disagreement with the submitted statements on a 5-point Likert scale, where 1 means that the respondent completely disagrees with the statement; 2 – disagrees; 3 – neither agrees nor disagrees; 4 – agrees; 5 – completely agrees.

The first question was aimed at identifying the enterprises' approach towards the significance of value creation on effective operation of the enterprise. Four statements were given and the respondents had to express their agreement/disagreement. The average level of agreement to the statement *The changes in the enterprise's value in a certain period is an important criterion for effective operation of the enterprise* is 4.53 points; to the statement *Increase of the enterprise's value has to become the main goal in order to ensure the needs of current and future investors* – 4.33 points; to the statement *The enterprises that create value are able to balance between the needs of all stakeholders (shareholders, employees, clients, suppliers, society, etc.)* – 4.37 point; and to the statement *The increase of the enterprise's value ensures its existence in the long run* – 4.51 points. Such a high level of agreement shows that every medium-sized enterprise is interested in increasing its value; therefore the introduction possibilities of the recommended set of indicators to measure the value and its changes are very wide.

The following two questions of the survey were aimed at determining whether the indicators to measure an enterprise's value and its changes recommended by the experts would be acceptable to enterprises that have introduced or are planning to introduce the controlling system.
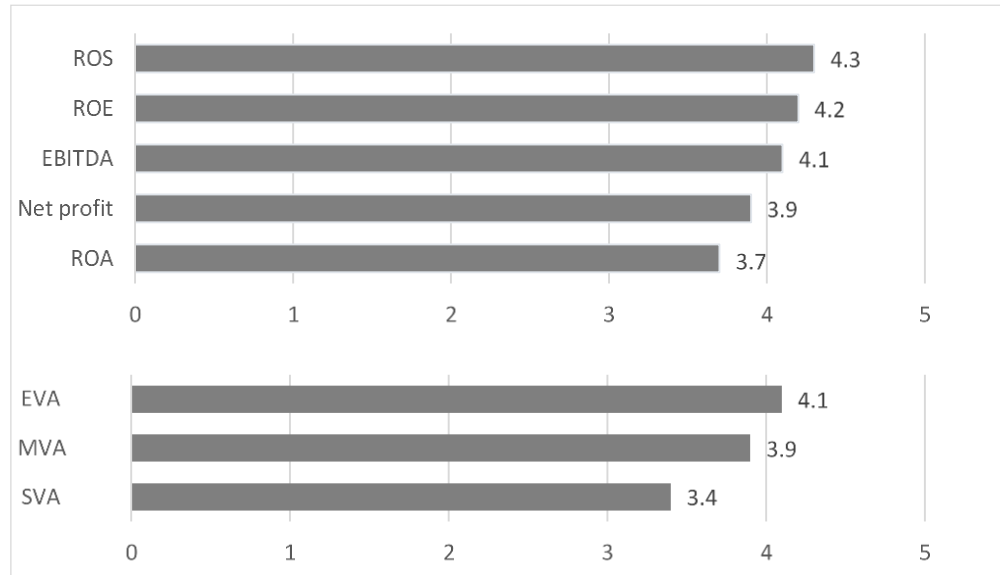
Figure 6. Assessment of suitability of indicators measuring an enterprise's value and its changes

The respondents were asked to express their level of agreement with accounting-based and shareholders-wealth based indicators separately. The respondents were also given a possibility to choose an answer "I am unable to answer" or give an alternative opinion/comment. No respondents have chosen to give an alternative opinion but seven respondents said that they cannot answer any of the questions related to all eight indicators. Figure 6 shows the results of the level of agreement with the recommended enterprise's value and its changes measurement indicators. When estimating the averages, the answers of the seven respondents who had no opinion were eliminated. The medium-sized enterprises survey results show that the enterprises agree that the recommended indicators measure a medium-sized enterprise's value and its changes appropriately and they are willing to introduce them.

Conclusions

The controlling system comprises different, however interconnected, subsystems and their elements whose interaction helps to make optimal decisions. Yet the goal of the system should be considered the most important element of the system, which is expressed through a specific result – an increase in the value of the company. Changes in value in a certain period is the criterion of an enterprise's effectiveness assessing nearly all the information related to its activity. A properly introduced controlling system allows the enterprise to ensure its value growth and successful operation in the long run.

According to both theory and practice, it is proposed to estimate the value of an enterprise and its changes by applying various indicators and methods that fall into two main groups: 1) traditional ones, accounting-based; 2) new ones, shareholders' wealth-based. Different indicators measure an enterprise's value changes differently. Accounting-based indicators are easy to calculate but can only be partially associated to the creation of value, because they do not assess the cash flows, economic life of assets, capital costs, and other factors. Shareholders' wealth-based measurements evaluate the cost of capital, the impact of inflation for the cash flows, and other aspects, but it is difficult to calculate them. Taking this into account, every enterprise should choose proper indicators to measure its value and its changes.

To measure the efficiency of the controlling system oriented towards the increase of a company's value for medium-sized Lithuanian companies, a set of value creation measures was proposed. These indicators have been selected based on the results of the expert evaluation since there are not enough scientific studies identifying the value creation measures of a medium-sized company's activity. Ten accounting-based value creation measures were provided for the expert evaluation and five of them were selected as the most appropriate: Net profit; Earnings before interest, taxes, depreciation and amortization (EBITDA); Return on equity (ROE); Return on sales (ROS); Return on assets (ROA). Out of ten shareholders' wealth-based value creation measures, application of the following measures has been approved: Economic value added (EVA), Market value added (MVA) and Total shareholder return (TSR). Inclusion of these eight measures into the controlling system for medium-sized Lithuanian enterprises would allow to objectively measure and evaluate the size of these enterprises' value and its changes. This combinations of indicators can be successfully applied not only in Lithuania's but in other countries practice as well.

References

Androniceanu, A. 2019. Social responsibility, an essential strategic option for a sustainable development in the field of bio-economy, *Amfiteatru Economic*, 21(52), 347-364.

Androniceanu, A., Tvaronavičienė, M. 2019. Developing a holistic system for social assistance services based on effective and sustainable partnerships. *Administratie si Management Public*, 33, 103-118, https://doi.org/10.24818/amp/2019.33-06

Augustinaitis, A.; Rudzkienė, V.; Petrauskas, R.A.; Dagytė, I.; Martinaitytė E.; Leichteris E.; Malinauskienė E.; Višnevska V.; Žilionienė I. 2009. *Lietuvos e. valdžios gairės: ateities įžvalgų tyrimas [Lithuanian e. authority guidelines: investigation future insights]*. Vilnius: MRU.

Becker, W. 1990. Funktionsprinzipien des controlling, *Journal of Business Economics*, 60(3): 295-318.

Becker, W. 2011. *Controlling: Konzepte, Methoden und Instrumente*. Bamberg.

Bieńkowska, A.; Zgrzywa-Ziemak, A. 2014. Coexistence of controlling and other management methods, *Operations Research and Decisions*, 2: 7-34. https://doi.org/10.5277/ord140201.

Burkšaitienė, D. 2009. Measurement of value creation: economic value added and net present value, *Ekonomika ir vadyba [Economics and Management]*, 14: 709-714. Available at: <http://ecoman.ktu.lt/index.php/Ekv/article/view/9461>.

Christauskas, Č.; Kazlauskienė, V. 2009. Modernių veiklos vertinimo sistemų įtaka įmonės valdymui globalizacijos laikotarpiu [Influence of modern systems in assessment of activities on enterprise administration in a period of globalization], *Ekonomika ir vadyba [Economics and Management]*, 14: 715-722. Available at: http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=6ac5a4ef-33e5-480f-b60f-617d461864e8%40sessionmgr4006>.

Cican, S.; Lala-Popa, I.; Anis, C. N. 2013. Modern indicators derived from value creation and discounted cash flow methods, *Annals of Faculty of Economics*, 22 (1): 601-607. Available at: <https://ideas.repec.org/a/ora/journl/v1y2013i1p601-607.html>.

Damodaran, A. 2012. *Investment valuation: tools and techniques for determining the value of any asset*. 3rd ed. Chichester: John Wiley & Sons, Inc.

Darškuvienė, V. 2013. Company value creation and its impact on shareholder return: evidence from the Baltic States, *Journal of International Scientific Publication: Economy and Business*, 7(2): 488-498.

Dobroszek, J. 2015. Analysis of factors affecting the implementation of controlling in logistics enterprises and the resulting effects – case of Poland, *Procedia - Social and Behavioral Sciences*, 213: 248-253, https://doi.org/10.1016/j.sbspro.2015.11.533.

Dzikevičius, A.; Michnevič, E.; Ževžikova, O. 2008. Stochastinis verslo vertinimo modelis [Stochastic model of business valuation], *Verslas: teorija ir praktika [Business: Theory and Practice]*, 9(3): 229-237. https://doi.org/10.3846/1648-0627.2008.9.229-237.

Fijałkowska, J.; Macuda, M. 2017. Value creation disclosure in CSR reports – evidence from Poland, *Theoretical Journal of Accounting*, 93(149): 61-78. https://doi.org/10.5604/01.3001.0010.3189.

Hahn, D.; Hungenberg, G. 2001. *Planung und Kontrolle - Planungs - und Kontrollsysteme - Planungs - und Kontrollrechnung*. Wiesbaden: Gabler.

Hilkevics, S.; Semakina, V. 2019. The classification and comparison of business ratios analysis methods, *Insights into Regional Development* 1(1): 48-57. https://doi.org/10.9770/ird.2019.1.1(4)

Horváth, P. 2011. *Controlling*. 12th ed. München: Vahlen.

Kardelis, K. 2016. *Mokslinių tyrimų metodologija ir metodai [Scientific research methodology and methods]*. Vilnius: Mokslo ir enciklopedijų leidybos centras.

Kobiela-Pionnier, K. 2019. Definiowanie tworzenia wartości w raporcie zintegrowanym według Założeń koncepcyjnych IIRC – analiza krytyczna [Defining value creation in the integrated report according to the International <IR> Framework – a critical analysis], *Zeszyty Teoretyczne Rachunkowości [Theoretical Journal of Accounting]*, 103(159): 81-98. https://doi.org/0.5604/01.3001.0013.3076.

Kumar, R. 2016. *Valuation: theories and concepts*. Academic Press.

Lingnau, V. 2004. Kognitionsorientiertes Controlling, *Controlling: Theorien und Konzeptionen*, ed. Scherm, E. and Pietsch, G. Munchen: Franz Vahlen, p. 729-753.

Lingnau, V. 2009. Shareholder value as the basis for a "controlling" theory? A knowledge based approach with analogies to marketing science, *Management*, Spec.ed: 25-46.

Mackevičius, J.; Giriūnas, L.; Valkauskas, R. 2014. *Finansinė analizė [Financial analysis]*. Vilnius: Vilniaus universiteto leidykla.

Makutėnaitė, J.; Gliaubicas, D.; Makutėnienė, D. 2014. Ekonominės pridėtinės vertės metodo tinkamumas įmonės vertei nustatyti [Appropriateness of economic value added method for the company's value determination], *Apskaitos ir finansų mokslas ir studijos: problemos ir perspektyvos [Science and Studies of Accounting and Finance: Problems and Perspectives]*, 1(9): 137-145. https://doi.org/10.15544/ssaf.2014.15.

Markevičiūtė, I.; Jucevičius, G. 2013. The role of creativity in organizational value creation: creative competencies in different organizational, *Economics and Management: current issues and perspectives*, 2(30): 44-55. Available at: <https://epubl.ktu.edu/object/elaba:6080388/>.

Masa'deh, R.; Tayeh, M.; Iarrah, I.; Tarhini, A. 2015. Accounting vs. market-based measures of firm performance related to information technology investments, *International Review of Social Sciences and Humanities*, 9(1): 129-145. Available at: <https://www.semanticscholar.org/paper/Accounting-vs-.-Market-based-Measures-of-Firm-to/09129ef57aa649f3ea7265f8521614d923fa3d31>.

Mert, H., Erkiran Dil, S. 2016. Effect of depreciations methods on performance measurement methods: a case of energy sector, Journal of Economics, *Finance and Accounting*, 3(4): 330-344. https://doi.org/10.17261/Pressacademia.2016.347.

Mura, L., Ključnikov, A., Tvaronavičienė, M., Androniceanu, A. 2017. Development trends in human resource management in small and medium enterprises in the Visegrad Group, *Acta Polytechnica Hungarica*, 14 (7): 105-122.

Papp, L.; Pajrok, A. 2010. The role of controlling and its admission within SMS enterprises in Hungary – especially in the hospitality industry, *Annales Universitatis Apulensis Series Oeconomica*, 12(1): 288-297. Available at: <https://ideas.repec.org/a/alu/journl/v1y2010i12p15.html>.

Perović, V.; Osmanagić - Benedik, N.; Bojanić, R.; Todorović - Dudić, A. 2016. Recent situation of controlling in Serbia and comparison with its implementation in Croatia, *Auditor. Journal for Theory and Practice*, XIX (76): 39-48.

Petravičius, T. 2008. Projekto veiklos efektyvumo matavimas vertės metodais [Measuring project performance with value-based methods], *Verslas: teorija ir praktika [Business: Theory and Practice]*, 9(4): 295-305. https://doi.org/10.3846/1648-0627.2008.9.295-305.

Petravičius, T.; Tamošiūnienė, R. 2008. Corporate performance and the measure of value added, *Transport*, 23(3): 194-201. https://doi.org/10.3846/1648-4142.2008.23.194-201.

Pranulis, V.P.; Dikčius, V. 2012. *Rinkodaros tyrimai. Teorija ir praktika [Marketing research. Theory and practice].* Vilnius: Vilniaus universiteto leidykla.

Rappaport, A. 1999. *Creating shareholder value. A guide for managers and investors.* New York: Simon and Schuster.

Scarlett, R. 2001. *Value based management*. London: Elsevier.

Sestanj-Peric, T.; Kukec, S.K. 2012. The application of management accounting (controlling) instruments in small and medium size enterprises in Nord-Western Croatia, *Advanced Research in Scientific Areas*, 1(1): 664-669. Available at: <https://www.bib.irb.hr/612612>.

Sinevičienė, L. 2007. Vertės nustatymo metodų taikymo aspektai įmonėse, kurių akcijomis viešai neprekiaujama [The aspects of applying value determination methods at companies the shares of which are not publicity traded], *Ekonomika ir vadyba [Econimics and Management]*, 12: 247-253. Available at: <http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=7be534d0-d16a-41d9-b986-7c04d8991c6c%40sdc-v-sessmgr02>.

Śliwczyński, B. 2011. Operational controlling – a tool of translating strategy into action, *Scientific Journal of Logistics*, 7(5): 45-59. Available at: <http://www.logforum.net/pdf/7_1_5_11.pdf>.

Špac, D.; Mašnja-Škare, L. 2009. Controlling in transition environments: empirical evidence from Croatia, *South East European Journal of Economics and Business*, 4: 63-80. https://doi.org/10.2478/v10033-009-0005-4.

Tamulevičienė, D. 2016. The indicator systems and the suitability of their application in controlling department activity, *New Challenges of Economic and Business Development Society, Innovations and Collaborative Economy*, 801-816. Available at: <https://dspace.lu.lv/dspace/handle/7/31838>.

Tamulevičienė, D., Mackevičius, J. 2019. Methodology of complex analysis of tangible fixed assets, *Entrepreneurship and Sustainability Issues*, 7(2), 1341-1352. http://doi.org/10.9770/jesi.2019.7.2(38).

Tamulevičienė, D.; Subačienė, R. 2019. Integrating a behavioral aspect when developing the structure of a controlling system oriented towards increasing a company's value, *Theoretical Journal of Accounting*, 104(160): 129-148, https://doi.org/10.5604/01.3001.0013.4359.

Tidikis, R. 2003. *Socialinių mokslų tyrimo metodologija [Social science research methodology]*. Vilnius: Lietuvos teisės universitetas.

The Law on the Development of Small and Medium-sized Businesses of the Republic of Lithuania, 2017. Nr. VIII-935. Available at: <https://www.e-tar.lt/portal/lt/legalAct/a615fb20e1fe11e68503b67e3b82e8bd>.

Todorović-Dudić, A.; Stanišić, M.; Perović, V. 2017. Contribution of controlling to business efficiency, *Industrija*, 45 (1): 25-44. http://doi.org/10.5937/industrija45-11003.

Venanzi, D. 2010. Financial performance measures and value creation: a review. Available at *SSRN*: http://dx.doi.org/10.2139/ssrn.1716209.

Vuko, T; Ovjan, I. 2013. Controlling and business efficiency, *Croatian Operational Research Review*, 4: 44-52. Available at: <https://hrcak.srce.hr/97377>.

Weber, J.; Schäffer, U. 2008. *Introduction to Controlling*. Stutgart: Schaffer - Poeschal Verlag.

Žaptorius, J., Garbanovas, G. 2006. Finansavimo politikos įtaka nustatant įmonės vertę [Influence of financing policy to company's value], *Tiltai [Bridges]*, 2: 1-18. Available at: <http://vddb.laba.lt/obj/LT-eLABa-0001:J.04~2006~ISSN_1392-3137.N_2_35.PG_1-18>.

Dr. Daiva TAMULEVIČIENĖ is Associate Professor of Accounting and Auditing Department, Faculty of Economics and Business Administration, Vilnius University. Scientific interests: controlling, management accounting, modern cost accounting systems, financial management, financial analysis.
ORCID ID: orcid.org/0000-0002-0187-037X

Dr. Armenia ANDRONICEANU is Full Professor of the Administration and Public Management Department, Faculty of Administration and Public Management, Bucharest University of Economic Studies; Senior Researcher of the University of Social Sciences, Lodz, Poland, Researcher of the WSB University, Poland. Scientific interest: management of change; public management; comparative public administration.
ORCID ID: orcid.org/0000-0001-7307-5597

Register for an ORCID ID:
https://orcid.org/register