

---

## ECONOMICS

---

*Sociology*

**Rastislav Rajnoha,**  
*Tomas Bata University in Zlín,  
Zlín, Czech Republic,  
E-mail: rajnoha@fame.utb.cz*

**Petra Lesníková,**  
*Technical University in Zvolen,  
Zvolen, Slovak Republic,  
E-mail: lesnikova@tuzvo.sk*

**Antonín Korauš,**  
*Pan-European University in  
Bratislava,  
Bratislava, Slovak Republic,  
E-mail: akoraus@gmail.com*

*Received:* March, 2016  
*1st Revision:* October, 2016  
*Accepted:* November, 2016

**DOI: 10.14254/2071-  
789X.2016/9-4/8**

**JEL Classification:** M14,  
M21, Q56

Rajnoha, R., Lesníková, P., Korauš, A. (2016), From Financial Measures to Strategic Performance Measurement System and Corporate Sustainability: Empirical Evidence from Slovakia, *Economics and Sociology*, Vol. 9, No 4, pp. 134-152. DOI: 10.14254/2071-789X.2016/9-4/8

### FROM FINANCIAL MEASURES TO STRATEGIC PERFORMANCE MEASUREMENT SYSTEM AND CORPORATE SUSTAINABILITY: EMPIRICAL EVIDENCE FROM SLOVAKIA

**ABSTRACT.** Today's world brings in many new pulses for enterprises not to focus on well established performance management tools used in the past. There is an obvious need to use new methods of performance management within strategic-oriented management. A good example here is also the concept of corporate sustainability. This concept is focused on company's performance in the long term, whereby the company essentially follows not only profitability, but also takes into account the process and results of all activities in relation to surrounding community and environment. The main aim of this paper is to analyse different phases of measuring and managing business performance, and also to measure the impact of the selected measurement tools of performance management on the overall business performance of Slovak enterprises, as well as to highlight the relation of the composite index of sustainable development with business performance. The results show the very important link between business strategy and system for measuring and managing corporate performance, which is positively reflected in the achievement of the overall performance. Also confirmed is the relationship with the composite index of sustainable development.

**Keywords:** business measurement performance, financial measures, strategic performance management system, corporate sustainability, corporate sustainability measurement system.

#### Introduction

The main aim of research was to determine the effect of the selected parameters of strategic performance measurement and management on the overall business performance and through sustainable development composite index to determine its impact on business performance of Slovak industrial enterprises.

In our research we analyze the selected concepts of strategic and sustainable business performance measurement and management. Operating with an online questionnaire we focus

on the use of the selected methods of strategic and sustainable performance measurement and management for various industries in Slovakia. The main aim was to find out the key methods of strategic business performance measurement and management with positive effect on better business performance. The first stage of primary research presents the selected sample of Slovak enterprises along with their online questionnaire focused on the use of the selected parameters of performance measurement. The emphasis is on the investigation of the impact these parameters have on the overall business performance measured by ROE. In the second phase of research, we focus on exploring the issues of measuring corporate sustainability through a sustainable development composite index in a particular manufacturing enterprise and its impact on performance. The conclusion contains the assessment of achievements and the identification of mutual relationship and strategic performance measurement system and one of the ways to measure corporate sustainability. In this paper we publish the most significant results of our research in detail.

## 1. Literature review

For several years, measuring corporate performance has been in the centre of attention not only in the academic field but also in business area. New approaches to corporate performance which support traditional indicators have been preferred for many years. Measuring corporate performance has been studied by many authors from different points of view: the relationship of strategy and strategic orientation with business performance (Morgan, Strong, 2003), the view on strategic measurement performance system through strategic agenda and decision-making as a result of formulating or reformulating strategy (Bisbe, Malagueño, 2012), the effect of strategic measurement performance system on the important attributes of the process of formulating business strategy (Gimbert *et al.*, 2010; Mentel & Brožyna, 2015), the effect of the Balanced Scorecard (BSC) concept and its importance as a strategic tool for measuring and managing business and management performance (Knápková *et al.*, 2014), the effect of strategic performance measurement system of human resources and corporate results (Bento, White, 2014), the relations among customer satisfaction, customer loyalty and financial performance of a commercial bank (Belás, Gabčová, 2016), customer satisfaction in banking business and its importance for financial performance of a commercial bank (Korauš *et al.*, 2015), tax revenue administration and its process model for Slovakia's economic performance (Dobrovič, Korauš, 2015), strategic business performance management on the base of controlling and managerial information support (Zámečník, Rajnoha, 2015). Other study indicates there is a positive significant relationship between management tools and techniques utilization and organizational performance (Afonina, 2015). Štefko *et al.* analyzed prices as a key competitive factor in the steel industry for Slovakia and Poland (Štefko *et al.*, 2012). Another research was focused on business performance in the scope of investment measurement and management using investment effectiveness evaluation methods. Research results confirmed the assumption that the use of investment valuation methods is limited by foreign ownership of company and certain methods caused better business performance (Rajnoha *et al.*, 2016). Similar study is dedicated to process performance measurement in Czech companies (Tuček *et al.*, 2013). If we are talking about the need and the ability of the system to adapt and work in the long term at the current orientation of economic, environmental and social performance of the company, we are referring to corporate sustainability performance measurement system (Searcy, 2012).

In the current conditions, competition in the market is not easy for businesses, without a critical information and data even impossible. At present, information is becoming one of the factors of production enterprises and therefore the enterprise's information system is a key factor in business competitiveness (Frankovský *et al.*, 2006). Higher-quality, lower-cost

information is a key to unlocking more sources of finance for SMEs (Belás *et al.*, 2016). As the report of RSA Tomorrow's Company shows (Neely *et al.*, 2000), to achieve a sustainable corporate success in the demanding world market the enterprise should use a relevant indicators to measure business performance. Among the contemporary problems which businesses have to face in connection with the strategic management we can mention the problem of strategy implementation. Currently, performance measuring can significantly contribute to achieving and solving this problem. The importance of these problems has significantly increased during the economic crisis, because many enterprises in the world reduced their performance (Novák & Popesko, 2014).

### ***1.1. Financial business performance measurement system***

In general, in the case that the business does not measure any indicators, this business cannot improve its performance. Activities of enterprises are usually measured by the using of wide range of performance measurement indicators. Based on these results the company management can make concrete decisions. This wide range of measurements can indicate in which favorable, respectively less favorable situation the company is located (Jagdev *et al.*, 1997). Within the issue of performance measurement system there are two main phases. The first phase is characterized by a course from 1880 until 1980. At this phase, the focus was on financial indicators such as profit, return on investment (ROI) and productivity. The second phase, since 1980 is the result of changes in the world market. Enterprises have begun to lose market share against competitors who were able to provide better quality products with a lower costs and more variant. To regain a competitive advantage enterprises had to not only move their strategic priorities from low-cost production of quality, flexibility, reliable delivery and so on, but also they had to implement new technology and management philosophy of production (JIT, flexible manufacturing systems, TQM and so on). The realization of these changes pointed to the fact that traditional performance measurement systems have many limitations and the development of new systems of performance measurement are very necessary for the success (Ghalayini, Noble, 1996).

In the past, within the corporate practice majority of methods were concentrated to measure corporate performance refers to in particular the financial performance of the company, whereby a basic parameter was considered an indicator of profit. Performance measurement indicators oriented on profitability we consider as traditional (Rajnoha *et al.*, 2013). Within these measurement systems is based on traditional accounting system (Ahmed *et al.*, 1999) outgoing on information from financial business accounting. Performance evaluation is traditionally done through evaluation of a set of indicators in five areas (liquidity, activity, profitability, capital structure, market value), evaluation of a set of indicators, which are grouped into pyramidal appeals (on top of the synthetic indicator, for example ROE, respectively recent model INFA), evaluation using a single aggregated indicator for example one of prediction models (Altman Z-score, etc.) (Kislingerová, 2011). In the context of financial indicators an important was consideration also capitalize on equity, when has within the scope of performance measurement system appeared enterprise value measured by the indicator EVA (Kiselařková *et al.*, 2016). *Table 1* shows a schematic development of financial performance indicators.

Table 1. The development of generation of financial performance indicators

1. generation	2. generation	3. generation	4. generation
Profit margin	Profit growth	Return on equity	Creating value for owners
Profit/Sales	Maximizing profit	Profit/Invested capital (ROA, ROE, ROI)	EVA, CFROI, FCF

*Source:* Pavelková, Knápková, 2005.

The mentioned financial indicators are focus only on outcomes and gradually become necessary to review the elements that lead to the production of these results. It may be concern about leadership, people, systems, strategy, communication and so on (Ahmed *et al.*, 1999). Shortcomings of traditional measurement systems triggered a revolution in the business performance measurement (Kennerley, Neely, 2002). The revolution is in essence a radical decision, concrete it changes from the processing of financial indicators as a basis for measuring performance for their processing as one of a wider set of measurements (Eccles, 1991). The inadequacy of traditional measurement systems pointed Research Institute of Management Accountants (1996), when only 15% of respondents considered their measurement system as supporting the objectives, while 43% of respondents considered it to be inadequate (Burgess *et al.*, 2007). This showed that enterprises can replace existing traditional measurement systems to those that reflect their current objectives and business surroundings (Kennerley, Neely, 2002). The current system of performance measurement should be based on non-financial indicators and also on the business strategy and not only of accounting standards. In addition to processing the data from the past should make use of internal and external indicators of future oriented, and their purpose is not simply monitor development, but on the continuous improvement (Burgess *et al.*, 2007).

## ***1.2. Strategic business performance measurement system***

Performance measurement system define X. Gimbert, J. Bisbe and X. Mendoza (2010) as a set of financial and non-financial measures to support enterprise decision-making by collecting, processing and analyzing quantified information regarding its performance and presented in a brief review. A subset of this category is a strategic performance measurement system (SPMS), whose typical feature is the design of these systems to support decision making by managers through financial and also non-financial indicators covering different perspectives and which in combination enables to transform strategy into a comprehensive set of performance measures (Chenhall, 2005). SPMS is simultaneously considered as a strategy implementation tool which is able to coordinate the diffusion activities and compliance goals through communication, analysis and evaluation of a diverse set of key performance indicators. By this, it contributes to the achievement of strategic goals through three mechanisms: a better understanding of the links between different policy priorities, effective communication between the objectives and activities and the efficient allocation of resources and tasks (Dossi, Pateli, 2010).

Performance measurement system in its current form has undergone several stages and its foundation was based mainly on accounting systems. Companies like DuPont, General Motors belong to those pioneers which started to use sophisticated budgeting and management accounting techniques (see section 1.1). From 80s traditional accounting measurement methods have been criticized in terms of promoting short-term decision, unsuitability for the modern manufactory techniques (Bourne, Neely, 2003), historical

character, lack of strategic focusing, highlighting the consequences not the causes (Kiseľáková *et al.*, 2016), which created space for creation and interest in developing a complex systems for measuring performance (Bourne, Neely, 2003).

The most typical example of such systems is a system of balanced objectives and indicators so called Balanced Scorecard (BSC). BSC methodology has become popular since their introduction by R. Kaplan and D. Norton in 1992. The system itself has undergone development in terms of the change from a traditional point of view to measure performance towards a process where the business is able to measure what it wants, while involving and intangible assets (Perkins *et al.*, 2013). This presents a fundamental change in the basic assumptions about performance measurement and complements traditional financial indicators with a measure the performance of the customer perspective, internal processes, perspective of growth and learning with a focus on current and future success of the business (Kaplan, Norton, 1993). These operational non-financial indicators are considered as the drivers the future financial performance of the company (Tangen, 2004). This is indicated by the results of research the global consulting firm Bain & Company in 2014, where the tool BSC was one of the six most widely used management tools among businesses all over the world (Rigby, Bilodeau, 2015), which confirms the assumption that businesses consider this tool to be a necessary and effective in strategy implementing and measuring business performance. BSC can be also useful in creating a new corporate culture, corresponding to the strategy in terms of shared assumptions about the mission, strategy and objectives, in understanding the means to achieve these goals, measuring results and reactions when events do not respond to the plan (Gibbons, Kaplan, 2015). On the other hand, it is important to misunderstand the BSC as a miraculous tool which somehow improve business performance. Instead it shall be regarded as one article of enterprise arsenal that can help effectively manage performance, whereby to achieve success, specific version of BSC must be carefully selected and adapted to the needs of the enterprise (Perkins *et al.*, 2012).

### ***1.3. Sustainable performance measurement system***

On the evaluation of the strategy success it is necessary to measure enterprise performance by adequate methods. In the last two decades there has been a significant movement of measurement methods in the right manner in which this is done. Moving from theory shareholder value to stakeholder theory, it meant that the enterprise was perceived in terms of responsibility to a wider group of businesses were just as business owners. From the base of stakeholder theory is founded BSC methodology. Linking operational and non-business activities by causal relationship with long-term corporate strategy leads to the promotion of business management according to their strategic importance (Figge *et al.*, 2002).

When enterprises gradually implemented BSC system, the public as well as whole community started to pay attention to the result of the activities on the environment and society. Increasingly it promotes the idea that businesses have a number of commitments to their stakeholders to behave responsible. It is also close to the truth that businesses cannot be successful in the long term period if it constantly ignores the interests of key stakeholders (Norman MacDonald, 2004). This means that enterprises are responsibly not only for the creation of economic value, but also for wider social relationships. For these reasons has discovered a new tool for measuring performance – Triple Bottom Line (TBL). The areas included in the measurement and evaluation of corporate performance can be understood that the responsibility of a business is not just about generating economic profit (profit), but also about caring for society as a whole (people) and the environment (planet). These three elements are the basis of TBL (Fauzi *et al.*, 2010). This framework for measuring

performance created by J. Elkington went beyond the traditional measure of profit and return on owner value to environmental and social dimensions, with the application of the concept it can be an important tool to promote of achievement objectives of corporate sustainability. Often it appears calculated TBL through the use of an index that can eliminate incompatible units of measurement, which further allows compares performance between businesses, cities, development projects, and so on (Slaper, Hall, 2011).

The concept is based on the globally-oriented concept of sustainable development. In general, the most acceptable definitions are those that come from the report of the World Commission of the United Nations Environment and Development. According to the report (Our Common Future 1987) "Sustainable development is such development that meets the needs of current generations without compromising the ability of meeting the needs of future generations." Since that report which is presented the conceptualization and explanation of the concept of sustainable development has increased a number of alternative concept definitions (Barkemeyer *et al.*, 2014). Environmentally responsible behaviour is associated with resource and energy savings, use of renewable energy sources instead of fossil fuels, waste recycling, and proper wastewater management and disposal.

Corporate sustainability strategy is essential for sustainable development, but also for the successful management of the company through the related social, legal, political and economic requirements in terms of market competition (Schaltegger *et al.*, 2012). This concept can be understood as the basic philosophy going through all levels, strategies, and activities of the company. Gradually, the concept of corporate sustainability is better integrated into business activities and culture, whereby it expects a deeper integration in terms of business (operations, strategy, organizational systems, and so on) as well as in terms of stakeholders (Lozano, 2015).

Within the frame of evaluating the corporate sustainability concept and sustainable development concept is to measure of performance extremely important in order to the progress was even possible record in the study areas (Hedberg, Malmborg, 2003). In the sustainability issue are also used the key performance indicators. This indicators measure progress toward sustainability and demonstrate the environmental, social and economic impacts. Before an enterprise decides to establish some key performance indicators, it is necessary to understand the right way of their using and integrating into enterprise management (Kocmanová *et al.*, 2012). According to Keeble *et al.* (2003) difficulties in measuring performance is especially complicated by the fact that many enterprises have a complex organizational structure with different trade flows, functions and projects. The development of measuring corporate sustainability is important to determine the proper set of indicators, which should be a balanced set of reflecting the interests of various stakeholders. The composition of indicators can vary depending on the nature of the concerns and expectations of the company, the nature of social and environmental impacts of business through operational changes, new products, new markets or business lines.

The corporate sustainability performance measurement is different from other systems of performance measurement by there is a need to measure the system's ability to adapt to change and continue over a long period of time and this system must focus on sustainability issues, respecting the concept of TBL. Therefore it is a system of indicators which provide businesses with information needed for short and long-term management, controlling, planning and performance of economic, environmental and social activities conducted by the company (Searcy, 2012). It is assumable that a positive perception of companies by their environment could stimulate their financial performance and accelerate the positive influences of these companies on the whole society (Belás *et al.*, 2015). Corporate sustainability performance management in all its perspectives and aspects requires management framework, which connects the environmental and social management of the business and competitive

strategies and management, and on the other hand, it integrates environmental and social information with economic (Schaltegger, Wagner, 2006). According to the results of research realized by Kocmanová *et al.* (2012) showed that the environmental performance and corporate governance individually contribute to overall performance. Companies with higher level of implementation of corporate governance principles have higher net profit margin and earnings per share (Todorovič, 2013). This findings we consider very important in the corporate sustainability issue in the future.

Strategic management tool in the form of the above mentioned BSC, reflecting the main issues and relevant business and representing a causal link that contribute to the achievement of business strategy can also refer to the concept of corporate sustainability. In relation to it brings out the 'sustainable' BSC, and the extension of the traditional dimensions (financial, customer, internal business process perspective, the perspective of learning and growth) with perspective on the environment and society. This may cover the central requirement of the corporate sustainability concept in continuous improvement of business performance in economic, environmental and social terms (Figge *et al.*, 2002). Based on the above mentioned, it is evident the link between performance measurement system in response to the reaction and the business sector the opportunity to present trends.

## 2. Objectives, Data Collection and Methodology

### 2.1. Objectives and research hypothesis

The main aim of research was to determine the effect of selected parameters of strategic performance measurement and management to overall business performance. The other the aim was to through the sustainable development composite index to determine its impact on the performance indicator – return on equity (ROE) in the particular industry enterprise. In the context of measuring business performance there is an interface to quantitative and qualitative research.

To identify the relationship between selected management tools and measuring corporate performance, we formatted the following research hypotheses:

- **H1:** We assume that there is a statistically significant dependence of business performance and the application of financial accounting, respectively financial indicators.
- **H2:** We assume that businesses applying the strategic performance management tools and methods will achieve demonstrably higher performance.
- **H3:** We assume that businesses applying in addition to traditional financial indicators and non-financial indicator in the form of orientation on the environment will achieve better performance.

### 2.2. Data collection

Data about the primary database of 1,457 enterprises from selected industries of the Slovak Republic we received from information of various industrial associations and those we have subsequently supplemented by other companies on the basis of extensive online survey. The questionnaire was distributed in two consecutive rounds. First via e-mail (time for completion was two months, low latency – there were completed only 45 research questionnaires), subsequently we are therefore used in the second round the form of telephone and the most common form of face-to-face interview (time for completion was next two months, there were filled other 119 research questionnaires). After these two consecutive rounds the questionnaires were correctly completed by 164 enterprises in the end. Relatively low return stemmed mainly from the reluctance of businesses, their negative mood and

skepticism from economic development, lack of time, lack of interest and so on. Nevertheless, we consider the size of the research sample – 164 enterprises as being sufficiently representative and this is 11.26% share of the total number of companies surveyed. The greatest extent was enterprises represented by engineering, wood and automotive industries. For this, we could identify and analyze parameters for measuring and managing corporate performance, a key finding was the size of ROE. Based on this, we have incorporated the companies of the performance categories (6 intervals of scale), which are influenced by the lower frequency reduced to 3 respectively 2 performance enterprise categories. Specification of enterprises is shown in *Table 2*.

Table 2. The differentiation of enterprises into the performance groups

Size of ROE	Categories of enterprise	EVA probability values
Negative value /ROE < 0/ Positive value – from 0% to 2%	<i>Inefficient firms</i>	Likely to be negative
Positive value – from 2% to 4%	<i>Business reaching average performance</i>	Likely to +/- 0 or slightly positive
Positive value – from 4% to 7%		
Positive value – from 7% to 10%	<i>High performance firms</i>	Likely to be relatively high positive
Positive value – over 10%		

*Source:* own.

*Table 3* presents the data from the research sets. The initial data set consisted of all the surveyed firms (164 enterprises), out of which we created sets specifically aimed at firms from the industries of wood processing, engineering and automotive industry.

Table 3. Basic data on the data sets analysed

Set	The industry focus	Totals
Set 1	All industries	164 firms
Set 2	Wood Processing Industry	34 firms
Set 3	Mechanical engineering	30 firms
Set 4	Automotive industry	16 firms
Set 5	Selected industries (Wood processing, Engineering, Automotive)	80 firms
Set 6	Production companies	106 firms
Set 7	Trade and Services	58 firms

*Source:* own.

A separate set containing all the enterprises from the three industries was also studied. The final two sets are defined by their core business (focus) – manufacturing, the last set also includes enterprises of trade and services (*Table 3*).

In terms of size of company across the whole survey sample, the medium-sized (51-250 employees) and large enterprises (over 250 employees) formed 40.3% share. Small businesses (11-50 employees) accounted for 29.8% share. Micro sized to 10 employees accounted for 29.9% share of the survey sample. From that perspective the research sample was balanced and contained uniform representation of all size categories.

### 2.3. Methodology

We have used mathematical and statistical methods focusing on two-dimensional inductive statistics in the research of interdependencies and impacts of individual factors on achieved performance of companies. The research consisted from qualitative – nominal variables the association between variables we examined with contingency. We applied chi-squared test, which is commonly used for testing the independence between two categorical variables. Results of chi-squared tests describe selected statistics: Pearson's chi-square and significance p-value „p“, Pearson's contingency coefficient (CC) and Adjusted contingency coefficient (Adj. CC).

The results obtained by questionnaire survey were processed by statistical methods, whereby we except of selected variables of descriptive statistics for one variable (frequency, relative proportions) used mainly Chi-square test of independence. It is used to test the categorical variable whether there is a relationship between these variables or not. In the analyzing this relationship we started from Pivot Tables and Pivot coefficients. The analysis of the difference between observed (empirical) and expected (theoretical) frequency we used Pearson chi-square test. Besides this, we have also used a similar M-V chi-square test, which is based on the theory of maximum likelihood and is used in case there is a real between variables dependent. If the value corresponds to the chi-square probability  $p > 0.05$  this means that the relationship between variables is not statistically significant, and vice versa, if  $p \leq 0.05$ , it is possible strength of the relationship between two variables tested using one of the contingency factors. The Phi coefficient determines the degree of correlation between two categorical variables for 2x2 tables. Its value ranges from -1 to 1 (total dependence) or 0 (variables are not correlated with each other). The hypothesis was verified at the 5% significance level ( $\alpha = 0.05$ ). All data collected about enterprises were processed using MS Excel software Statistica and Statistica 10 CZ 10 Data Mining.

From the concepts, respectively tools for systematic and long-term corporate performance, we did not focus only on traditional financial tools, greater emphasis was therefore put to the BSC. This tool, now, takes an important place in the issue of measuring and improving business performance. In the area of non-financial indicators, we focused on companies and their orientation to the environment.

Enterprise within the reporting and evaluation of its activities not only focus on the assessment of the economic area using a variety of data and indicators. If the analysis focuses on social and environmental issues, it may be beneficial analysis through composite index. The using of composite index can be seen in the cognition of development trends in business decision making. In the qualitative part of the research we have created in the condition of particular enterprise a composite index of sustainability which we constructed based on the work of Glavič & Krajnc (2005).

For the analysis of industrial enterprise in the automotive industry, we aimed to extract the necessary data from relevant areas and to complete them by sub-indices into a single composite index. Specifically, the data we obtained from interviews with business leaders, on the annual reports and internal documents. In the analysis, we can point out that the company is primarily focused on achieving economic performance, and belongs to the middle of the pollutant, which means that the environmental focus lies primarily on the issue of waste. In terms of social areas it is an enterprise that provides to its employees many advantages. The data we have obtained for a given enterprise, we compared the time period of six years (2009-2014). The following *Table 4* contains indicators for the area in the specified units for the period, and its distribution corresponds classified based on the GRI guidelines.

Table 4. Indicators from different areas of corporate sustainability

Economic indicators	Social indicators	Environmental indicators
Sales (€)	Donations (€)	Electricity consumption (MWh)
Profit (€)	Training costs (€)	Natural gas consumption (m <sup>3</sup> )
Capital expenditure (€)	13. and 14. salary (% from gross wage)	Consumption of LPG, propane butane (t)
R&D costs (€)	Zero absence (%)	Fuel consumption (t)
Other fines and penalties (€)	No. of workers accidents (number)	Water consumption (m <sup>3</sup> )
Average value of PPM (number)	The number of days due to work. accidents (day)	Waste (t)
The cost of claims (€)	Gender inequality (%)	Investments in the environment (€)
		Fines and penalties (€)

*Source:* own.

In the economic field we included the traditional indicators used in accounting as well as intangible assets. Direct impact on the economics of the enterprise is mainly the quality of production, which is expressed through error rate (PPM) and the cost of the claims. Indicators of socio-social area reflect the attitude of enterprises to internal groups (employees) and external groups (public). Environmental indicators involve mainly the areas of consequences on the environment within the individual types of materials in the production. These include a balanced view of the environmental consequences of the inputs and outputs of the company. The enterprise had some sustainability areas in its strategy only partially mentioned (environmental protection, security and safety in the workplace), absent a coherent strategy in the long term, together with a comprehensive determination of each indicator and a measure of their progress. Just this realization would be helpful in the development, implementation and execution of the strategy. Composite index has helped us to develop an overall picture of the areas of corporate sustainability with the unveiling of visible reserves and potential opportunities for improvement. In conclusion, we investigated the impact rate of index on performance indicator ROE through Spearman's coefficient.

### 3. Research results

#### 3.1. Financial measures in relation to business performance

In the first part of the research we focused on traditional, financial indicators in relation to the performance of surveyed enterprises. This is concerned of enterprises most frequently used data from financial accounting, on the one hand they are the easiest available economic variables, but on the other hand they have some limitations (see section 1.1). In terms of performance groups, businesses are reduced to 2 groups.

The results show the statistically demonstrated significance of the impact of the financial indicators on business performance (*Table 5*).

Table 5. Pivot: Financial indicators x Performance – statistics

Statistics	Chi-square	sv	p
Pearson's chi-square	3.557303	df=1	p=.05928
The M-V chi-square	3.921208	df=1	p=.04768
Phi coefficient for 2x2 tables	.147278		
The contingency coefficient	.1457064		

Source: own.

If the enterprise has applied financial indicators and regardless of the time of use, they have had a positive impact on business performance with higher ROE more than 4% (Table 6).

Table 6. Pivot: Financial indicators x Performance – frequency

Financial indicators	Group 1 (ROE<0, 0-2%, 2-4%)	Group 2 (ROE 4-7%, 7-10%, over 10%)	Row total
The observed frequency			
Do not use	19	4	23
Use a financial indicators	88	53	141
Total	107	57	164
Expected frequency			
Do not use	15.0061	7.99390	23.0000
Use a financial indicators	91.9939	49.00610	141.0000
Total	107.0000	57.0000	164.0000
Observed minus the expected frequencies (residue)			
Do not use	3.99390	-3.99390	0.00
Use a financial indicators	-3.99390	3.99390	0.00
Total	0.0000	0.0000	0.00

Source: own.

The hypothesis H1 related to the reliance of enterprise performance and using of financial indicators was confirmed. Mentioned findings, however, still does not offer the sufficient performance of enterprises, which we examined in detail in the following sections.

### 3.2. Non-traditional measures and their impact on business performance

Within the frame of using tools, respectively concepts conducive to improving the performance, we focused on the less frequently used tools in the form of BSC methodology. We were interested in a sub-analysis, whether this concept has a major impact on the overall performance of enterprises. The following Table 7 indicated achievements through selected statistical tests.

Table 7. Pivot: BSC methodology x Performance – statistics

Statistics	Chi-squared	sv	p
Pearson's chi-square	12.78406	df=2	p=.00167
M-V chi-square	10.11521	df=2	p=.00636
Contingency coefficient	.2689137		
Cramer's V	.2791981		

Source: own.

In the *Table 8* we can see that the BSC methodology has a demonstrable impact on the business performance and the value in terms of residues, it is clear that the use of the methodology can be achieved above-average performance (ROE value of 7%). If the enterprises do not use the BSC methodology, achieving an average or even below-average performance (ROE of 7% or less), which also reflects the hypothesis H2.

Table 8. Pivot: BSC methodology x Performance – frequency

BSC methodology	Group 1 (ROE>0, 0-2%)	Group 2 (ROE 2-4%, 4-7%)	Group 3 (ROE 7-10%, over 10%)	Row total
The observed frequency				
BSC is not used	68	58	23	149
BSC is used	4	3	8	15
Total	72	61	31	164
Expected frequency				
BSC is not used	65.41463	55.42073	28.16463	149.0000
BSC is used	6.58537	5.57927	2.83537	15.0000
Total	72.0000	61.0000	31.0000	164.0000
Observed minus the expected frequencies (residue)				
BSC is not used	2.58537	2.57927	-5.16463	0.00
BSC is used	-2.58537	-2.57927	5.16463	0.00
Total	0.0000	0.0000	0.0000	0.00

Source: own.

In terms of non-financial indicators we paid attention to especially orientations on the environment and analysis results revealed statistically significant dependence of business performance and the orientation of the environment (*Table 9*).

Table 9. Pivot: Non-financial indicator Orientation of environment x Performance – statistics

Statistics	Chi-square	sv	p
Pearson's chi-square	5.073809	df=1	p=.02429
The M-V chi-square	4.815006	df=1	p=.02821
Phi coefficient for 2x2 tables	.1758916		
The contingency coefficient	.1732323		

Source: own.

Similarly as in the previous case, typically achieve better business performance with ROE of 4% (*Table 10*).

Table 10. Pivot: Non-financial indicator Orientation of environment x Performance – frequency

Non-financial indicator Orientation of environment	Group 1 (ROE>0, 0-2%, 2-4%)	Group 2 (ROE 4-7%, 7-10%, over 10%)	Row total
The observed frequency			
Do not focus on environment	99	46	145
Focus on environment	8	11	19
Total	107	57	164
Expected frequency			
Do not focus on environment	94.637	50.39634	145.000
Focus on environment	12.3963	6.60366	19.0000
Total	107.0000	57.0000	164.0000
Observed minus the expected frequencies (residue)			
Do not focus on environment	4.39634	4.39634	0.00
Focus on environment	-4.39634	-4.39634	0.00
Total	0.0000	0.0000	0.00

Source: own.

The sample analysis of all relevant sectors (164 enterprises) showed that on the overall performance have impacts except to traditional indicators such as output of financial accounting also other factors. While the use of BSC methodology was foreseen higher, this fact is confirmed also in the area of non-financial corporate orientation to the environment. Hypothesis H3 is also accepted. All of the above findings and conclusions may have great importance on the business practices due to the fact that at present Slovak enterprises use these tools in a relatively lesser extent compared to the research carried out abroad.

### 3.3. Analysis of corporate sustainability through composite index and its impact on overall business performance

Within the qualitative research, as we declared in the Methodology section we at first in the corporate sustainability issues collected the necessary data for indexes to be created in each area and then summarize in a composite index of sustainable development. The results of the sub-index and also the composite index are shown in *Table 11*.

Table 11. Results of individual sub-indexes and the composite index of sustainable development

Shortcut	Title	2009	2010	2011	2012	2013	2014
Is,1	Economic sub-index	0.345	0.545	0.510	0.430	0.751	0.592
Is,2	Social sub-index	0.244	0.151	0.689	0.746	0.619	0.527
Is,3	Environmental sub-index	0.681	0.241	0.181	0.331	0.174	0.470
I <sub>CSD</sub>	Composite index of SD	0.424	0.312	0.460	0.503	0.515	0.530

Source: own.

*Table 10* shows that the composite index of sustainable development ranges from 0.31 (2010) to a value of 0.53 (2014). These values can be considered as an average. In principle: the higher value of the composite index, the higher is also improvement of the enterprise towards sustainability. The same we can say about the evaluation of sub-indices. In 2009 and 2010 were the lowest reported values, while drop was mainly due to the significant decrease of the environmental and moderate decrease of social sub-index. The total average value of the composite index is 0.46, which means that in the enterprise are substantial reserves for the improvement, whereby the individual sub-indices should point out the potential hazards that cause this status. To a closer look at these sub-indices is evident that their curves indicate a greater fluctuation. The aim of corporate sustainability is the ability to maintain favorable and desired state in the long term, without major fluctuations. Our aim was also to find out whether there is a relationship between the composite index of sustainable development and individual sub-indices and indicators of ROE. For this purpose we used Spearman's rank correlation coefficient. The results are summarized in *Tables 12, 13*.

Table 12. Testing correlation through Spearman correlation coefficient

		Is,1	Is,2	Is,3	I <sub>CSD</sub>	ROE	
Spearman'srho	Is,1	Correlation Coefficient	1.000	-.200	-.900*	.300	.700
	Is,2	Correlation Coefficient	-.200	1.000	-.100	.700	.300
	Is,3	Correlation Coefficient	-.900*	-.100	1.000	-.500	-.600
	I <sub>CSD</sub>	Correlation Coefficient	.300	.700	-.500	1.000	.700
	ROE	Correlation Coefficient	.700	.300	-.600	.700	1.000

*Source:* own.

Direct moderate correlation is apparent between economic sub-index and also composite index of sustainable development and indicator of ROE (*Table 13*).

Table 13. Relationship between Sustainability Index and indicator ROE

Sustainability Index	Without shifting	With shifting
	ROE	ROE
Economic sub-index	0.7	-0.4
Social sub-index	0.3	1
Environmental sub-index	-0.6	0
Composite index	0.7	1

*Source:* own.

The connection of environmental and social sub-index separately to ROE had not been shown sufficiently. For the once, we assume that the measures it has taken place in the context of sustainable development (which are captured in various sustainability indices) may have a delayed effect, respectively there is a time lag between the adoption of certain measures and economic (financial) consequences.

#### 4. Discussion

With a growing awareness of natural limits and social issues comes to the fore the concept of corporate sustainability along with its measurement. In this area are still some

limitations, especially in linking economic, environmental and social performance. We can say that strategic system for measuring business performance and corporate sustainability measurement system they stand in the same relation. Decision support company in a comprehensive framework in terms of improved performance, the ability to manage the company in a predetermined direction of the longer term and on the other, respecting the change in global thinking with the need for sustainable development. The development of particular performance measurement phases is shown in *Figure 1*.

As shown in *Figure 1*, periods of purely financially oriented performance management based largely on financial indicators can be considered obsolete. More and more businesses are willing to invest their resources on building strategic measurement system and performance management focused on non-financial objectives and indicators, as well as sustainable development of enterprises. These endeavors, however, definitely not be inconsistent with the achievement of the overall economic performance of the company measured by ROE, which confirmed the partial results of our empirical research.

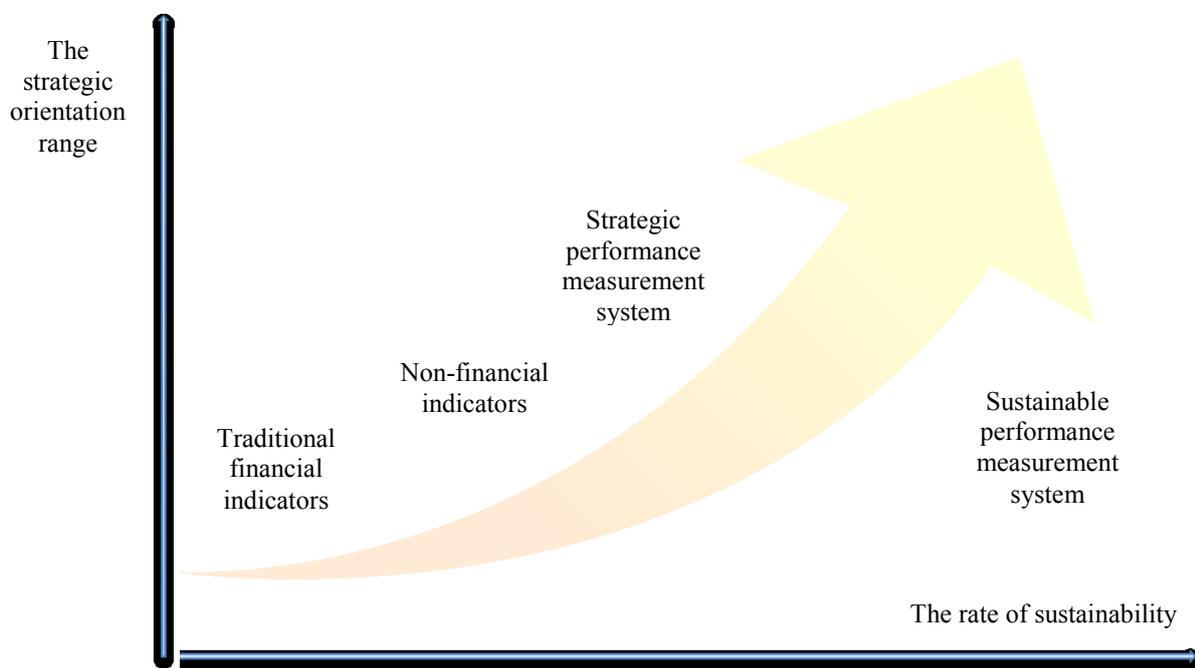


Figure 1. The development of the different stages of corporate performance measurement  
*Source:* own.

Performance measurement system has undergone for several stages into its present form. At the beginning of focusing solely on financial indicators based on accounting documents meant mainly data registration from previous years. As businesses do not operate in a closed system of relations, but rather in a dynamically evolving environment, it was necessary to also look at the performance of the company in any other way and take account of its nature. The attention is given non-financial indicators and more complex systems to support business performance, with an emphasis and respect for the strategy and business objectives. Many of completed research confirm that the system is properly configured measurement, the impact on overall business performance.

## Conclusion

On that basis of the above mentioned, we can say that strategic performance measurement system in its current form already gone through certain stages of development

characterized by particular features. Between this and the system of measuring corporate sustainability, we see the same connection. Both are rooted in a complex enterprise decision support aimed at improving performance. How does the system performance measurement and system for measuring corporate sustainability are mainly intended for larger companies that have decided on the one hand through the less used tool to improve their performance, ability to manage the business in a predetermined direction of the longer term and on the other, respecting the change in global thinking with for sustainable development. The results of quantitative research show the very important link between business strategy and system for measuring and managing corporate performance, which is positively reflected in the achievement of the overall performance. In examining tools showed statistically significant dependence on the BSC methodology indicator ROE, and enterprises which are actually applied the instruments can be found in the performance of a higher category.

In the relation of business performance by the ROE it was confirmed the relationship with the composite index of sustainable development, especially because the index has in its structure included the economic area. Environmental and social area cannot be positively expressed immediately. A limited factor in this context seems to be the question of the actual performance of the company without the construction index. However, we can conclude that it is the index of sustainable development is a challenge for businesses reflecting a growing need for change purely short-term oriented, consumerist patterns of production and consumption. In order to both studied systems operate efficiently and effectively require them to adequately define the corporate strategy, from which they will derive the indicators measuring the achievement of the objectives. Because without the key and the corresponding data it is not possible to determine the current status and progress in a business sustainability it is essential to create a system for measuring and reflecting the needs of the enterprise. An appropriate parameter can be in the paper studied the BSC methodology expanded to include perspectives related to sustainable development. Definition the different development stages of performance measurement and examining the impact of certain parameters for the actual performance it is clear that the trend does not stop, but under national conditions, we expect to extend it through further research.

### Acknowledgements

This paper is the partial result of the Ministry of Education of Slovak Republic grant project VEGA Nr. 1/0537/16 – Methods and models of Strategic Business Performance Management and their comparison in companies and multinational corporations.

### References

- Afonina, A. (2015), Strategic Management Tools and Techniques and Organizational Performance: Findings from the Czech Republic, *Journal of Competitiveness*, 7 (3), pp. 19-36.
- Ahmed, P. K, Lim, K. K. & Zairy, M. (1999), Measurement practice for knowledge management, *Journal of Workplace Learning: Employee Counselling Today*, 11 (8), pp. 304-311, doi:10.1108/13665629910300478.
- Barkemeyer, R., Holt, D., Preuss, L. & Tsang, S. (2014), What Happened to the „Development“ in Sustainable Development? Business Guidelines Two Decades After Brundtland, *Sustainable Development*, 22 (1), pp. 15-32, doi: 10.1002/sd.521.
- Bento, A., Bento, R. & White, L. F. (2014), Strategic Performance Management Systems: Impact on business results, *Journal of Computer Information Systems*, 54 (3), pp. 25-33.

- Belás, J., Bilan, Y., Demjan, V. & Sipko, J. (2015), Entrepreneurship in SME Segment: Case Study from the Czech Republic and Slovakia, *Amfiteatru Economic*, 17 (38), pp. 308-326.
- Belás, J. & Gabčová, L. (2016), The Relationship among Customer Satisfaction, Loyalty and Financial Performance of Commercial Banks, *E + M Ekonomie a Management*, 19(1), pp. 132-147, doi: 10.15240/tul/001/2016-1-010.
- Belás, J., Vojtovič, S. & Ključnikov, A. (2016), Microenterprises and Significant Risk Factors in Loan Process, *Economics and Sociology*, 9(1), pp. 43-59, doi: 10.14254/2071-789X.2016/9-1/3.
- Bisbe, J. & Malagueño, R. (2012), Using strategic performance measurement systems for strategy formulation: Does it work in dynamic environments? *Management Accounting Research*, 23 (4), pp. 296-311, doi: 10.1016/j.mar.2012.05.002.
- Bourne, M., Neely, A., Mills, J. & Platts, K. (2003), Implementing performance measurement systems: a literature review, *International Journal of Business Performance Management*, 5 (5), pp. 1-24, doi: 10.1504/IJBPM.2003.002097.
- Burgess, T. F., Ong, T. S. & Shaw, N. E. (2007), Traditional or contemporary? The prevalence of performance measurement system types, *International Journal of Productivity and Performance Management*, 56 (7), pp. 583-602, doi: 10.1108/17410400710823633.
- Dossi, A. & Pateli, L. (2010), You Learn From What You Measure: Financial and Non-financial Performance Measures, *Long Range Planning*, 43 (4), pp. 498-526, doi: 10.1016/j.lrp.2010.01.002.
- Dobrovič, J. & Korauš, A. (2015), Management Trends in Slovakia's Tax Revenue Administration and its Process Model for Slovakia's Economic Performance, *12th International Scientific Conference on European Financial Systems 2015*, Brno: Masarykova univerzita v Brne, pp. 87-92.
- Eccles, R. G. (1991), *The Performance Measurement Manifesto*, Harvard Business Review, January-February issue, pp. 131-137.
- Fauzi, H., Svensson, G. & Rahman, A. A. (2010), „Triple Bottom Line“ as „Sustainable Corporate Performance“: A proposition for the Future, *Journal of Sustainability*, 2 (5), pp. 1345-1360, doi: 10.3390/su2051345.
- Figge, F., Hahn, T., Schaltegger, S. & Wagner, M. (2002), The Sustainability Balanced Scorecard – Linking sustainability management to business strategy, *Business Strategy and the Environment*, 11 (5), pp. 269-284, doi: 10.1002/bse.339.
- Figge, F., Hahn, T., Schaltegger, S. & Wagner, M. (2002), *The Sustainability Balanced Scorecard – Theory and Application of a Tool or Value-Based Sustainability Management*, Center for Sustainability Management: University of Lueneburg, retrieved from: <http://www.ecnc.org/uploads/documents/the-sustainably-balanced-scorecard-theory-and-application-of-a-tool-for-value-based-sustainability-management.pdf>
- Frankovský, M., Štefko, R. & Baumgartner, F. (2006), Behavioral-situational approach to examining social intelligence, *Studia psychologica*, 48 (3), pp. 251-257, retrieved from: <http://search.proquest.com/docview/220103058?accountid=49283>.
- Ghalayini, A. M. & Noble, J. S. (1996), The changing basis of performance measurement, *International Journal of Operations & Production Management*, 16 (8), pp. 63-80, doi.org/10.1108/01443579610125787.
- Gibbons, R. & Kaplan, R. S. (2015), Formal Measures in Informal Management: Can a Balanced Scorecard Change a Culture? *American Economic Review*, 105 (5), pp. 447-451, doi: 10.1257/aer.p20151073.
- Gimbert, X., Bisbe, J. & Mendoza, X. (2010), Measurement Systems in Strategy Formulation Processes, *Long Range Planning* 43 (4), pp. 477-497, doi:10.1016/j.lrp.2010.01.001.

- Hedberg, C. J. & Malmborg, F. (2003), The global report initiative and corporate sustainability reporting in Swedish companies, *Corporate Social Responsibility and Environmental Management*, 10 (3), pp. 153-164, doi: 10.1002/csr.038.
- Chenhall, R. H. (2005), Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study, *Accounting, Organizations and Society*, 30 (5), pp. 395-422, doi: 10.1016/j.aos.2004.08.001.
- Jagdev, H., Bradley, P. & Molloy, O. (1997), A QFD based performance measurement tool, *Computers in Industry*, 33 (2-3), pp. 357-366, doi:10.1016/S0166-3615(97)00041-9.
- Kaplan, R. S. & Norton, D. P. (1993), Putting the Balanced Scorecard to Work, *Harvard Business Review*, pp. 4-17, retrieved from: <https://hbr.org/1993/09/putting-the-balanced-scorecard-to-work>.
- Keeble, J. J., Topiol, S. & Berkeley, S. (2002), Using Indicators to Measure Sustainability Performance at a Corporate and Project Level, *Journal of Business Ethics*, 44 (2), pp. 149-158, retrieved from: <http://link.springer.com/article/10.1023/A:1023343614973#/page-1>
- Kennerley, M. & Neely, A. (2002), A framework of the factors affecting the evolution of performance measurement systems, *International Journal of Operations & Production Management*, 22 (11), pp. 1222-1245, doi: 10.1108/01443570210450293.
- Kiselačková, D., Horváthová, J. & Šofranková, B. (2016), *Controlling rizik podnikania v modeloch ovplyvňujúcich výkonnosť a prognózovanie rizík v EÚ*, Prešov: Prešovská univerzita v Prešove, 230 p., ISSN 978-80-555-1561-8.
- Kislingerová, E. et al. (2011), *Nová ekonomika – nové príležitosti?* Praha: C. H. Beck, 344 p. ISBN 9788074004032.
- Kocmanová, A., Němeček, P. & Dočekalová, M. (2012), Environmental, social and governance (ESG) key performance indicators for sustainable reporting, *Vilnius Gediminas Technical University: 7th International Scientific Conference „Business and Management 2012“*, pp. 655-662, doi:10.3846/bm.2012.085.
- Korauš, A., Štefko, R. & Dobrovič, J. (2015), Acquisition Activity in Financial Sector, *12th International Scientific Conference on European Financial Systems 2015*, Brno: Masarykova univerzita v Brne, pp. 277-286.
- Knápková, A., Homolka, L. & Pavelková, D. (2014), Utilization of Balanced Scorecard and the effect of its use on the Financial Performance of Companies in the Czech Republic, *E + M Ekonomie a Management*, 17 (2), pp. 146-160, doi: doi.dx.org/10.15240/tul/001/2014-2-011.
- Krajnc, D. & Glavič, P. (2005), A model for integrated assessment of sustainable development, *Resources, Conservation & Recycling*, 43 (2), pp. 189-208, doi: 10.1016/j.resconrec.2004.06.002.
- Lozano, R. (2015), A holistic Perspective on Corporate Sustainability Drivers, *Corporate Social Responsibility and Environmental Management*, 22 (1), pp. 32-44, doi: 10.1002/csr.1325.
- Mentel, G., Brožyna, J. (2015), Compatibility of market risk measures, *Journal of International Studies*, 8 (2), pp. 52-62, DOI: 10.14254/2071-8330.2015/8-2/5.
- Morgan, R. E. & Strong, C. A. (2003), Business performance and dimensions of strategic orientation, *Journal of Business Research*, 56 (3), pp. 163-176.
- Neely, et al. (2000), Performance measurement system design: developing and testing a process-based approach, *International Journal of Operations & Production Management*, 20 (10), pp. 1119-1145.
- Norman, W. & MacDonald, CH. (2004), Getting to the bottom of „Triple Bottom Line“, *Business Ethics Quarterly*, 14 (2), pp. 243-262, doi: 10.5840/beq200414211.

- Novák, P. & Popesko, B. (2014), Cost Variability and Cost Behaviour in Manufacturing Enterprises, *Economics and Sociology*, 7 (4), pp. 89-103, doi: 10.14254/2071-789X.2014/7-4/6.
- Our Common Future (1987), *Chapter 2: Towards Sustainable Development* Retrieved from: <http://www.un-documents.net/ocf-02.htm>.
- Pavelková, D. & Knápková, A. (2005), *Výkonnost' podniku z pohledu finančního manažera*, Praha: Linde, 302 p., ISBN 8086131637.
- Perkins, M., Grey, A. & Remmers, H. (2013), What do we really mean by „Balanced Scorecard“? *International Journal of Productivity and Performance Management*, 63 (2), pp. 148-169, doi: 10.1108/IJPPM-11-2012-0127.
- Rajnoha, R. et al. (2013), *Meranie a riadenie výkonnosti podnikov*. 1th edition, Zvolen: Vydavateľstvo Technickej univerzity vo Zvolene.
- Rajnoha, R., Novák, P. & Merková, M. (2016), Relationships between Investment Effectiveness Controlling and Business Performance, *Montenegrin Journal of Economics*, 12 (2), pp. 29-44, doi: 10.14254/1800-5845.2016/12-1/1.
- Rigby, D., & Bilodeau, B. (2015), *Management Tools and Trends 2015*, Boston: Bain & Company, retrieved from: <http://www.bain.com/publications/articles/management-tools-and-trends-2015.aspx>.
- Searcy, C. (2012), Corporate Sustainability Performance Measurement Systems: A Review and Research Agenda, *Journal of Business Ethics*, 107 (3), pp. 239-253, doi:10.1007/s10551-011-1038-z.
- Schaltegger, S., Lüdeke-Freund, F. & Hansen, E. G. (2012), Business cases for sustainability: the role of business model innovation for corporate sustainability, *International Journal of Innovation and Sustainable Development*, 6 (2), pp. 95-119, doi: 10.1504/IJISD.2012.046944.
- Schaltegger, S. & Wagner, M. (2006), Managing Sustainability Performance Measurement and Reporting in an Integrated Manner, In: Schaltegger, S., Bennet, M. & Burritt, R. *Sustainability accounting and reporting*, retrieved from: <http://link.springer.com/book/10.1007/978-1-4020-4974-3#page-1>.
- Slaper, T. F. & Hall, T. H. (2011), The Triple Bottom Line: What Is It and How Does It Work? *Indiana Business Review*, 86 (1), pp. 4-8, retrieved from: <http://www.ibrc.indiana.edu/ibr/2011/spring/pdfs/spring2011.pdf>.
- Streimikiene, D. (2014), Comparative Assessment of Environmental Indicators of Quality of Life in Romania and Lithuania, *Economics and Sociology*, 7 (1), pp. 11-21, doi:10.14254/2071-789X.2014/7-1/2.
- Štefko, R., Slusarczyk, B., Kot, S. & Kolmasiak, C. (2012), Transformation on Steel Products Distribution in Poland and Slovakia. *Metalurgija*, 51 (1), pp. 133-136.
- Tangen, S. (2004), Performance measurement: from philosophy to practice. *International Journal of Productivity and Performance Management*, 53 (8), pp. 726-737, doi: 10.1108/17410400410569134.
- Todorovič, I. (2013), Impact of Corporate Governance on Performance of companies, *Montenegrin Journal of Economics*, 9 (2), pp. 47-53.
- Tuček, D. Hájková, M. & Tučková, Z. (2013), Utilization level of Business management in Czech enterprises – objectives and factors, *E + M Ekonomie a Management*, 16 (2), pp. 81-98.
- Zámečník, R. & Rajnoha, R. (2015), Strategic Business Performance Management on the Base of Controlling and Managerial Information Support, 4th World Conference on Business, Economics and Management, WCBEM, Book Series: *Procedia Economics and Finance*, Publisher Elsevier, Vol. 26, pp. 769-776, doi: 10.1016/S2212-5671(15)00843-6.