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## Strategic business performance management on the base of controlling and managerial information support

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### Abstract

The paper present selected research results related to strategic business performance management carried out in Slovak industry enterprises. Measuring and managing of business performance is a complex and difficult process, which at the present time in the theory and corporate practice pass the significant changes. The theoretical part of the paper provides a detailed characterisation of the current state of affairs regarding the investigated strategic business performance management issue. We also analyze the possibility of controlling and controlling information support, based on Business Intelligence for the purpose of strategic business performance management. The following part of the paper defines the basic research methodology and expected contributions of the study. The aim of the paper is also to analyse and synthetize findings regarding the chosen, mainly not traditional methods and models, which have started to be used for strategic business performance management. The results of our empirical scientific study provides an interesting and valuable findings that the overall performance of industrial enterprises, it is necessary to look comprehensively strategically and not just in financial terms. Based on of our research, we recommend for industry enterprises to apply selected methods and models of strategic business performance management.

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*Keywords:* Business intelligence; controlling; strategic business performance management; performance measurement;

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### 1. Introduction

Strategic performance management of business is relatively complex and difficult process, which at the present time in the theory and practice of corporate undergoing significant changes. Previously used indicators, methods and models have been largely based on financial indicators and methods of financial management, which has been

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gradually modified and improved to provide owners and managers sufficiently good and fair view of business performance. Despite these efforts for continuous improvement, it appears that the traditional management of business performance based primarily on financial management hit its limits and lately in the world are beginning to promote new non-traditional indicators, methods and models, based primarily on non-financial, strategic and often and qualitative indicators, methods and models. Strategic management and planning is the primary concern of owners and senior management of the company, whose interests must determine the basic direction and future development of the organization in the medium and long term. The secure long-term prosperity and company performance should be at least equal importance with which they dealt with the operational and financial problems. In drawing up the strategy and strategic plans, it is important to respect the level of management, taking into account the particularities that the strategy of each level result, because according to Andersen (2000), strategic planning has a positive effect on firm performance regardless of the sector in which it operates. This is confirmed by several empirical studies conducted in recent years in the world that examined the relationship between strategic planning and performance achievement of business (Rudd, Greenley, Beatson, Lings, 2008). Strategic Performance Management Systems (SPMS) are being used in a wide number of organizations to support performance planning, measurement, and control. SPMS are designed to present managers with financial and nonfinancial measures, methods and models covering different perspectives which, in combination, provide a way of translating strategy into a coherent set of performance measures, methods and models (Chenhall, 2005). The achievements of our scientific research show the overall conclusion that companies from selected Slovak industries which reach above average performance are strongly focused on managing its strategic performance while applying many modern indicators, concepts, models and methods of its management. The Slovak Republic has been included among the countries that are attractive to foreign investors in the last decade, what is reflected in various sectors, most significantly in the automotive industry (Merkova, Rajnoha, Novak, 2012).

## 2. Literature review

The world of business environments in modern economies and cities has changed dramatically the way of pursuing business and depends nowadays heavily on the performance in generating and utilizing new knowledge, imagination, creativity, innovations and technologies (Kourtit, 2011). In order to stay competitive firms measure, monitor, and analyze their performance. Performance management systems are regularly implemented as balanced and dynamic solutions requiring considerable human and financial resources, and offering support to the decision-making process by gathering, elaborating, and analyzing information (Vuksic, 2013).

Strategic Performance Measurement Systems (SPMS) are being used in a wide number of organizations to support performance planning, measurement, and control. According to the management control literature, the uses for which the SMPS are designed may have a significant influence in their outcomes (Chenhall, 2005) and Mouritsen (2005) has pointed out that the ability of management control systems to support change is influenced by system design. SPMS are designed to present managers with financial and nonfinancial measures covering different perspectives which, in combination, provide a way of translating strategy into a coherent set of performance measures (Chenhall, 2005). SPMS typically provide information on financial and nonfinancial performance measures in an effort to both report on past performance and help manager's influence future performance. Financial measures assess the short-term impact of managerial decisions in areas such as revenue growth, asset utilization, and cash flows (Kaplan, 2001; Rappaport, 2005), while nonfinancial measures capture variables that are likely to influence future financial performance, such as customer service and quality products. SPMS are expected to help organizations achieve and maintain strategic alignment in their decisions, resource allocations and activities, in order to obtain results and increase shareholder value both in times of stability and during times of change in strategic direction (Bento, 2014). First proposed by Kaplan and Norton and most popular form of SPMS is the Balanced Scorecard (Kaplan, Norton, 1992). On the other hand, Kaplan and Norton (2008) provided anecdotal evidence that breakdowns in the SPMS actually lead to deteriorating company performance. More recently, Bisbe and Malagueño (2012) found evidence that the effect of SPMS on organizational performance is reduced in situations where environmental dynamism is high.

Several other empirical studies conducted in recent years in the world confirmed the relationship between strategic planning and achieved business performance (Rudd, 2008). On that basis, we can conclude that strategic

planning has a positive impact on business performance regardless of the sector in which it operates (Andersen, 2000). Interesting empirical studies have Spanish authors who recently analyzed SPMS and its impact on business performance in terms of strategic planning and strategic decision-making. Using a combination of archival data and the questionnaires received from 267 medium and large companies in Spain it provides evidence of a positive relationship, and dependence between SPMS and business performance in a highly dynamic environment (Bisbe, Malagueno, 2012). Similar research conducted in Spain also focused on the relation between the use of SPMS and the quality of the strategic planning process. Empirical data were obtained from surveys of 349 medium and large Spanish companies and their evaluation confirmed the positive relationship between the use and dependence SPMS and quality of strategic plans and company decisions (Gimbert, Bisbe, Mendoza, 2010). Most authors in their scientific studies states that SPMS can help businesses to define and achieve its strategic objectives, align behaviors and attitudes, and ultimately can have a positive impact on business performance. However, SPMS also can be criticized for a number of reasons, such as the promotion of inappropriate behavior of managers, suppression of innovation and learning, and so on (Micheli, Manzoni, 2010). Another important research in the world in this area has focused on exploring the strategic planning process and its links to business performance in a highly turbulent and unstable environment. The authors emphasize that strategic planning has the potential to produce positive effects on business performance in a highly unstable environment and planning is such an important value added for the company in terms of its higher performance (Brews, Purohit, 2007). For these studies it can be concluded, that regular use of the SPMS in company may favor the more comprehensive and elaborate system of strategic planning, which is further reflected in higher business performance. And also we can accept the argument, that strategic planning is an integral part of SPMS.

Company represents an open, dynamic and goal-oriented system that constantly interacts with its internal and external environment (Oblak, Lipuscek, Jelacic, Motik, 2004). Farrell, Kadous and Towry (2008) found that incentive contracts that included forward-looking performance measures effectively drive employee performance. The proposal and implementation of an effective motivation program is one of the key management tasks of a company. Improperly designed and applied motivation programs can have a negative impact on employees, who are not motivated to achieve maximum performance (Zamecnik, 2014). Specification of the quality of work life characteristics in the economic environment (Sojka, 2014) and selection of strategies of behavior in demanding managerial work situations in social contexts its also very important (Frankovsky, Istvanikova, Stefko, 2009). The presented results of the study have confirmed the assumed structure of strategies of behavior in these demanding situations. Apart from individual value system for each employee it is also necessary to respect the value system of the whole organization. Consequently, it is necessary to elaborate the concept of business value management and to utilise the system of Balanced Scorecard - BSC (Hitka, Rajnoha, 2003). Most of the above mentioned progressive methods of modern enterprise performance management shares a strong strategic orientation of management (SPMS) focused on further strategic growth and business development with parallel use of information and all highly sophisticated knowledge resulting from modern enterprise information technology such as Business Intelligence, or the latest Big Data Analytics. Constantly changing environment significantly affects the overall efficiency and so also the competitiveness of enterprises. One of the conditions to maintain the competitiveness and performance of the company is the ability to work properly and timely with information not only about past and present but especially about the future. ERP information system is a powerful tool that influences awareness, flexibility and performance of the company. Management of "today's" company is constantly forced to look for additional useful information especially about the future development. This task is currently being performed by ERP systems of II. development type (Basl, Blažicek, 2008). Their crucial role is to plan and simulate different scenarios for the future development of the enterprise based on BI - Business Intelligence information systems. 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 and performance (Frankovsky, Stefko, Baumgartner, 2006). During the ERP implementation there is necessary to focus on the most critical area of ERP systems implementation, on the identification of the information needs of the company and also on the impact of human factor on the course and results of implementation (Rajnoha, Kadarova, Sujova, Kadar, 2013). Enterprise resource planning systems appear to be a dream come true. The commercially available software packages promise seamless integration of all information flows in the company - financial and accounting information, human resource information, supply chain information, and customer information (Tucek, Tuckova, Zamecnik, 2009). Petter,

DeLone and McLean (2012) argued that information system success leads to improved company performance, while others have concluded that there is no relationship between information systems and performance measurement (Soudani, 2012). Calculation based on performed activities and processes - so called Activity -Based - Costing (ABC) is becoming an important tool for the costs performance management (Rajnoha, Chromjakova, 2009). Besides the ABC model implementation is there very important to integrate into this process of continuous improvement of enterprise efficiency the measures in the area of added value rising by single processes through process identification, which in the whole production process don't bring the added value (Rajnoha, Dobrovic, 2011).

### 3. Methodological framework of the issue

The objective of research was to analyze the extent of the use of traditional and modern indicators, methods and models of strategic business performance management on a sample of randomly selected companies in various industries of Slovakia, based on relevant mathematical and statistical methods to identify the cause and subsequent context and determine their influence in achieved business performance.

The achievements of our scientific research show the overall conclusion that companies from selected Slovak industries which reach above average performance are strongly focused on managing its strategic performance while applying many modern indicators, concepts, models and methods of its management. Business environment in which we live today, it is far from shows such a high degree of stability and certainty, as in the past. Although we expressed major scientific research hypothesis, according to which we believe that many non-financial, strategic or qualitative indicators, models and methods applied in their management, have an impact on the overall business performance, which can be measured despite the complexity of the issue to determine the relevant enough. Based on this assumption, we set the main objective, which we decided to verify this claim, and bring up new and hitherto insufficiently verified knowledge in the field of strategic business performance management. Statistically significant dependence of business performance, expressed through the indicator Return on Equity (ROE) for the selected parameters (indicators, methods and models) of strategic management performance was demonstrated in the application of the following methods, concepts and tools for strategic managing of business performance:

- Organizational structure,
- Outcomes of Managerial accounting,
- Strategic planning and Controlling,
- Business Information System – ERP,
- Management Information System – MIS,
- Business Intelligence Information System – BI,
- Key Performance Indicators – KPI,
- Balanced Scorecard – BSC.

To prove and relatively accurately quantify the impact of financial indicators for overall business performance is in the theory and practice of management rather well mastered problem. However, to identify and quantify the impact of the non-financial indicators and methods of their control on the overall performance appears to be an issue that deserves sufficient space for further scientific research. Therefore, for this reason, the main objective of our research was to analyze the extent of the use of traditional and modern characteristics, methods and models of performance management on a sample of randomly selected companies in different industries of the Slovak Republic. We used relevant mathematical and statistical methods to identify and determine their impact on achievable performance businesses. Data from questionnaire were processed and evaluated by chosen statistical methods, we applied *Chi*-squared test, which is commonly used for testing the independence between two categorical variables. The research consists from qualitative – nominal variables, their relationship cannot adequately describes the correlation coefficient. Association between variables we examined with contingency coefficients and contingency tables. Results of *Chi*-squared tests describe selected statistics: Pearson's ch-square and significance p-value „p“, Maximum-Likelihood *Chi*-square and p-value, Pearson's contingency coefficient (CC), Adjusted contingency coefficient (Adj. CC) and degrees of freedom (df). There was created on-line questionnaire through internet application to build data collection of companies in Slovakia. We maintain complete anonymity of

participating firms. The size of research sample was 164 counts. The relatively low frequency resulted mainly from the reluctance of companies, their negative mood and skepticism of economic development, lack of time or lack of interest. Nevertheless, the research sample of 164 firms we consider as relevant with sufficient expressive capability. The following Table 1 presents basic information about the statistical research files.

Table 1. Basic data sets analyzed

File	Sector, focus	Frequency
File 1	All examined sectors	164 companies
File 2	Wood processing industry	34 companies
File 3	Engineering industry	30 companies
File 4	Automotive industry	16 companies
File 5	Selected industries (Wood processing industry, Engineering industry, Automotive industry)	80 companies
File 6	Manufacturing companies	106 companies
File 7	Trade and service companies	58 companies

The business performance expressed through ROE was basic sorting parameter. Companies were initially analyzed on the basis of distribution according to performance achievement within 6 performance groups – categories (group from 0 to 5; group 0 – the worst performance with negative ROE, group 5 – the best performance with ROE above 10 %). In the current state of knowledge, we realize that ROE is not the best indicator, a better solution would be to use for the example indicator EVA. To determine this indicator each company need to know the cost of capital and to provide an exact value for the purposes of research, which we previously seemed unrealistic. The following disaggregated range was used in each of the researched company to determine the actual size of the ROE:

- negative value -ROE < 0,
- positive value - ROE from 0% to 2%,
- positive value - ROE from 2% to 4%,
- positive value - ROE from 4% to 7%,
- positive value - ROE from 7% to 10%,
- positive value - ROE above 10 %.

Using of scale rather than a particular value of ROE was used because of the sensitivity of the issue. Sufficient number of scales (6) in our subsequent mathematical and statistical research will allow the variability of classifying businesses into different performance categories, as it required the application of mathematical and statistical methods. In the case of low frequencies, we narrowed the six performance categories for the following three performance categories of companies:

- **Inefficient companies** (negative value of ROE < 0, positive value of ROE - from 0% to 2%) - probably EVA will be negative,
- **Companies reaching average performance** (positive value of ROE - from 2% to 4%, positive value of ROE - from 4% to 7%) - probably Eva to +/- 0 or slightly positive value,
- **Powerful companies with high performance** (positive value of ROE - from 7% to 10%, positive value of ROE - over 10%) - probably EVA will be relatively high positive.

Strategic parameters have been studied mainly as nominal variables. For this reason, for the statistical analysis of the impact of strategic parameters on the business performance we have applied pivot tables and pivot coefficients which were recommended by scientific literature. In these tests we have divided observed companies into categories, and then we compared the observed and theoretical frequency in these categories. Viewed statistics were Pearson's chi-square and the level of statistical significance "p", M-V chi-square and value of "p", Pearson Contingency coefficient, Contingency coefficient corrected, Phi coefficient for 2 x 2 tables and Cramer's V for more members graded categories. Contingency coefficient is meaningful only if there is a real dependence between variables. This question is tested using the chi-square values. If the value of chi-square corresponds to the probability  $p > 0.05$ , the relationship between variables is not statistically significant and it is not meaningful to count

contingency coefficient or analyze the residuals in contingency tables. In the case of  $p \leq 0.05$ , we can characterize the "strength" or "tightness" of relationship between two variables by the appropriate coefficient.

We formulated the basic (null) hypothesis  $H_0$ ,  $H_1$  alternative hypothesis and the significance level  $\alpha$  for testing statistical hypotheses. The aim was to try to challenge the hypothesis  $H_0$ . Alternative hypothesis  $H_1$  amounted contrary to the basic hypothesis. Acceptation of a decision on, respectively, rejecting  $H_0$ , we conducted based on:

- $\alpha < p$   $H_0$  not rejected,
- $\alpha \geq p$   $H_0$  rejected in favor of  $H_1$ .

**Null hypothesis -  $H_0$ :** There is no relationship between strategic parameters and business performance.

**Alternative hypothesis -  $H_1$ :** There is a relationship between strategic parameters and business performance.

The significance level  $\alpha = 0.05$ .

For the actual information gathering and completing research questionnaires from businesses we used online web form. According to that, it was possible after the conclusion of collecting information automatically generate a database of all the data in MS Excel. Information obtained from the questionnaires were imported and processed through the software Statistica 10 CZ and Statistica 10 Data Mining for further mathematical and statistical analysis of the data collected through secondary research.

#### 4. Results and discussion

In presenting results we focused on statistically significant dependence ( $p$ -value  $< 0.05$ , which is the alpha level associated with a 95% confidence level). We present the results of statistics and contingency tables. Just from the results of residuals we can demonstrate relevant, scientifically based findings and to state certain logical conclusions presented below.

Table 2. Contingency: File 1; Managerial Information System x Performance – Statistics

Statistics	Chi-square	df	p
Pearson's Chi-square	11,15239	df=5	p=,04844
M-L Chi-square	12,69181	df=5	p=,02644
Contingency coefficient (CC)	,2523341		
Adjusted contingency coefficient (Adj. CC)	,2607726		

Table 3. Contingency: File 1; Managerial Information System x Performance – Frequencies

Managerial Information System	Performance (ROE) - 0	Performance (ROE) - 1	Performance (ROE) - 2	Performance (ROE) - 3	Performance (ROE) - 4	Performance (ROE) - 5	Row totals
<b>Monitored Frequencies</b>							
MIS is not used	20	44	25	17	8	14	128
MIS is used	5	3	10	9	4	5	36
Totals	25	47	35	26	12	19	164
<b>Expected Frequencies</b>							
MIS is not used	19,51220	36,68293	27,31707	20,29268	9,36585	14,82927	128,0000
MIS is used	5,48780	10,31707	7,68293	5,70732	2,63415	4,17073	36,0000
Totals	25,00000	47,00000	35,00000	26,00000	12,00000	19,00000	164,0000
<b>Residual Frequencies</b>							
MIS is not used	<b>0,487805</b>	<b>7,31707</b>	-2,31707	-3,29268	-1,36585	-0,829268	0,00
MIS is used	-0,487805	-7,31707	<b>2,31707</b>	<b>3,29268</b>	<b>1,36585</b>	<b>0,829268</b>	0,00
Totals	0,000000	0,00000	0,00000	0,00000	0,00000	0,000000	0,00



The results of our research showed that business performance significantly affects the use of MIS (Table 2). The results of the statistical residues (Table 3), we can conclude that the use of this concept significantly affects on average to above-average business performance in performance groups ROE from 2 to 5.

Table 4. Contingency: File 1; Controlling x Performance – Statistics

Statistics	Chi-square	df	p
Pearson's Chi-square	11,73376	df=5	p=,03862
M-L Chi-square	11,89648	df=5	p=,03623
Contingency coefficient (CC)	,2583992		
Adjusted contingency coefficient (Adj. CC)	,2674834		

Table 5. Contingency: File 1; Controlling x Performance – Frequencies

<b>Managerial Information System</b>	Performance (ROE) - 0	Performance (ROE) - 1	Performance (ROE) - 2	Performance (ROE) - 3	Performance (ROE) - 4	Performance (ROE) - 5	<b>Row totals</b>
<b>Monitored Frequencies</b>							
Controlling is not used	15	36	23	13	6	7	100
Controlling is used	10	11	12	13	6	12	64
Totals	25	47	35	26	12	19	164
<b>Expected Frequencies</b>							
Controlling is not used	15,24390	28,65854	21,34146	15,85366	7,31707	11,58537	100,0000
Controlling is used	9,75610	18,34146	13,65854	10,14634	4,68293	7,41463	64,0000
Totals	25,00000	47,00000	35,00000	26,00000	12,00000	19,00000	164,0000
<b>Residual Frequencies</b>							
Controlling is not used	-0,243902	<b>7,34146</b>	<b>1,65854</b>	-2,85366	-1,31707	-4,58537	0,00
Controlling is used	0,243902	-7,34146	-1,65854	<b>2,85366</b>	<b>1,31707</b>	<b>4,58537</b>	0,00
Totals	0,000000	0,00000	0,00000	0,00000	0,00000	0,00000	0,00

The results of our research also showed that between the use of the concept of Controlling and Business Performance is strong statistically significant dependence (Table 4). Statistical residues level (Table 5) shows that by the use of the Controlling concept, companies make higher performance in groups ROE from 3 to 5.

## 5. Conclusion

Based on our research, we have shown that an important tool to improve the overall business performance also in conditions of Slovak industry seems to be a system of strategic business performance management. We believe that traditional business performance management based only on the basis of financial performance must be supplemented and confronted with the methods and models for strategic business performance management. Based on our research we can conclude that the use of Managerial Information System and Controlling has significant impact on better business performance. The achievements of our scientific research show the overall conclusion that companies from selected Slovak industries which reach above average performance are strongly focused on managing its strategic performance while applying many modern concepts and methods of its management.

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