

Strategic Management of Business Performance Based on Innovations and Information Support in Specific Conditions of Slovakia

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Abstract

Business performance management and measurement is a relatively complex and difficult process, which is currently undergoing significant changes in terms of both theory and practice. Previously used indicators, methods and models, largely based on financial indicators and methods of financial management, have been gradually modified and improved to provide owners and managers with a sufficient true and fair view of business performance. Despite the efforts for continuous improvement, it appears that the traditional management of enterprise performance based primarily on financial management hits its limits and companies around the world are beginning to promote new non-traditional indicators, methods and models, based primarily on non-financial, strategic and often qualitative indicators. We recommend that enterprises apply the selected methods and models of strategic business performance management in different industries of the Slovak Republic. By applying the selected strategic methods and models such as BSC, BI, strategic planning and controlling, innovations and others, a higher performance of companies can be achieved.

Keywords: strategic management, business performance, innovation

JEL Classification: M21, O39

1. INTRODUCTION

In the current period there is a strong demand for businesses to bring new ideas, products, or services to the market. If the firms do not upgraded their products, the products would become unattractive and they would have to close down the firm, which is not the goal of any entrepreneur. Quite the contrary. If a business entity is interested in completing their business as long as possible, it is necessary to realize innovations that drive business and are regarded as a tool to maintain competitiveness. A growing number of studies and research papers show that innovation has a significant role in the social and economic development assuring economic competitiveness. Studies published in the last decade by Cassoloto, Rosenberg, Castellacci, Fagerberg, Fagerberg, Maryann Feldman, Martin Srholec, showed that innovation is the engine of the growth, being an important element of the development achievements (Szabo, Šoltés & Herman, 2013). Innovation relies on the operations core competency of a firm (Ahmed & Wang, 2007). Innovations in relation to increasing of the business processes efficiency guarantee the strategic growth of the company and orienting management decisions to the position of knowledge represented by innovative products. The current time puts high demands on managers, as well



as other employees, forcing them to think about how best to optimize business processes. Improvement and optimization of production processes impinge on the end boards, and therefore it is necessary to find the potential for increasing the efficiency of business processes in other businesses. Innovation is a perfect space, because its outputs affect the future of the company and from the perspective of the customer as well as the owners of the company (Chromjaková & Rajnoha, 2009).

2. LITERATURE REVIEW

Since the middle of last century, innovation is seen as an engine of economic development and global economic trends. In recent scholarly and managerial writings, there is considerable evidence that innovation is vital in shaping the long term success of a firm in today's competitive markets. Already in 2000, Marklund (2000) extended the perception of innovation and argues that innovation is not limited themselves only to the technical or technological innovation, but are beginning to manifest itself in all forms of production and diffusion of knowledge. Innovation by Chromjaková and Rajnoha (2009) may be a strategic, it may be focused on new product development, and innovative approach to problem solving, innovation can be identified as the process of generating and implementing ideas. Every innovation should contribute to the creation of added value for the customer, but also for the company. The ability to correctly calculate the amount of value-added innovation assumes that the company will be in a systemic approach to the management of innovation and innovation processes in areas such as product innovation, process innovation, technological innovation, organizational innovation, trade innovation, marketing innovation.

Innovation is understood as the result of interaction between various economic and social processes (Manley, 2008). Research in this context focused on innovation systems supported by interactive learning, because learning has become the central core of the new canonical thinking about the source of wealth of nations (Mothe & Paquet, 1998, Lundvall, 1992, Manley, 2002). Teece, Pisano, and Shuen (1997) and Teece (2007) defined innovation as the firm's ability to integrate, build, and reconfigure internal and external competences. Broadly speaking, innovation is the development of new values through more efficient and effective products and processes. Product innovation focuses on the creation of new products and services or improvement of existing products and services. Process innovation focuses on the implementation of new production or delivery methods, or substantially improved production or delivery methods. The development of new products and services through innovation is increasingly seen as an essential tool for sustained organizational performance (Covin & Miles, 2007, Zahra & Covin, 1995). This process of renewal through innovation is often referred to as corporate entrepreneurship (Phan, Wright, Ucbasaran & Tan, 2009) and organizations are increasing efforts to build capabilities in this area (Hayton & Kelley, 2006).

While a significant amount of research has addressed strategies leading to effective innovation within established organizations (Covin & Miles, 2007, Hayton & Kelley, 2006), less is known about the use of management practices in motivating appropriate attitudes and behaviors from employees involved in this effort (Marvel, Griffin, Hebda & Vojak, 2007). The experience of



many companies and the results of empirical scientific studies point to the fact that small firms are significantly more innovative than large, while being much more flexible on the issue of the speed of the process of innovation. Many innovative products has its origins in a small firms. It is directly related to the entrepreneurial workers of small businesses that realize that creativity is key to successful innovation. The benefits of innovations per employee (or from one process innovation) are in small firms 2.5 times higher than in large firms. It corresponds to the fact that the degree of innovation, quantified as a percentage of revenues achieved is 40% higher for small firms (under 50 employees) compared to large firms. The average return on innovation, converted to staff of development departments and its created value added innovation in small firms is at 12.4%, while that of large firms only 1.6% (Chromjaková & Rajnoha, 2009).

In the current period marked by the economic crisis impacts, the innovations play an important role. Successful can only be those businesses that invest their funds into innovation and research. It is necessary to manage innovation activities in the business. The innovative strategy is the basic tool that determines the innovation direction of the business. Innovation strategy is based on business strategy and strategic goals (Lendel & Varmus, 2011). 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. The need to establish links between planning, decision, action and results has generated substantial interest in the measurement of organizational performance as a performance is a notion that permeates contemporary societies, as it is used to assess the quality of individual and collective efforts (Micheli & Mari, 2014). Performance measurement systems are called strategic expert systems through which organizations observe and measure their intangible elements of performance, both in form of qualitative and quantitative assessments. While using these systems organizations intend to monitor internal and external opportunities and threats resulting from, and in intangible resources in strategic processes. The performance measurement literature has considered different impacts of the assessment and measurement of intangible resources in organizations (Fried, 2010).

Strategic Performance Measurement 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 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 managers 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 & Norton, 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, A., Bento, R. & White, 2014).

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).

An interesting empirical study have Spanish authors, who analyzed SPMS and its impact on business performance in terms of strategic planning and strategic decision-making. Using a combination of archival data and survey questionnaire received from 267 medium and large enterprises in Spain they provide evidence of a positive relationship and dependence between SPMS and business performance in highly dynamic environments (Bisbe & Malagueño, 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 of and dependence of SPMS and quality of strategic plans and decisions of the company (Gimbert, Bisbe & Mendoza, 2010). Most authors in their scientific studies has indicated that SPMS can help businesses to define and achieve its strategic objectives, align the behavior and attitudes, and may ultimately 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, inhibit innovation and learning, etc. (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 highly turbulent and unstable environment. The authors highlight research that strategic planning has the potential to produce positive effects on firm performance in a highly unstable environment and planning is important value added for the company in terms of its higher performance (Brews & Purohit, 2007). Another instrument, which affects the performance of the company is its information system. Management of today's business is constantly forced to seek additional information needed primarily on future developments. Many organizations continue to increase their investment in implementing various types of information systems, such as enterprise resource planning (ERP) and customer relationship management (CRM), primarily because of the belief that these investments will lead to increased business performance (Hou, 2012). The business activities in any company, regardless of its size, involve the management of large quantities of information from business environment. All these information are extremely useful for economic and financial analysis in the company's management decisions making process. In the current practice, the companies have defined sets of technologies and processes that provide decision support using business information to analyze organizational performance. These solutions for decision support are based on integrated management information systems, including specialized business intelligence (BI) modules and which are exploited at companys' management level for supporting of business decisions. BI is a system that turns data into information and then into knowledge thereby adding substantial value to firm's decision making processes because each manager has to deal with efficiency in decision making process (Tutunea & Rus, 2012, Singh & Samalia, 2014). During making important decisions enterprises try to utilize wealth to gain competitive advantage as nowadays, information and knowledge represent the fundamental wealth of an organization. The BI sys-



tems convert and store the data in their databases, therefore, they can be used as a pool of data to support decisions and explore applicable knowledge. With the potential to gain competitive advantage when making important decisions, it is vital to integrate decision support into the environment of their enterprise and work systems. BI can be embedded in these enterprise systems to obtain this competitive advantage (Ghazanfari, Jafari & Rouhani, 2011). As is clear from the above literature review divergences exist in the world, but the most authors are consistent in that the area should be subject to further research.

3. METHODOLOGY

3.1 Statistical methods of research

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).

The Pearson's Chi-square is the most common test for significance of the relationship between categorical variables. This measure is based on the fact that we can compute the expected frequencies in a two-way table (i.e., frequencies that we would expect if there was no relationship between the variables). The Chi-square test becomes increasingly significant when the observations deviate further from expected pattern. The value of the Chi-square and its significance level depends on the overall number of observations and the number of cells in the table.

The Maximum-Likelihood Chi-square tests the same hypothesis as the Pearson Chi-square statistic; however, its computation is based on Maximum-Likelihood theory. In practice, the M-L Chi-square is usually very close in magnitude to the Pearson Chi-square statistic. A real dependence between variables is tested by 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.

Pearson's contingency coefficient we have chosen, because this characteristic can be calculated also for tables of any size and shape (square or rectangular; if any variable is subdivided several members, the number of rows or columns $q \geq 2$). In research, we analyzed the quadratic and rectangular tables; in this article we publish only the results of tables 2x2 and 6x2. In six categories was divided variable "performance" based on indicator Return on Equity (ROE) (six groups; group 0 - worst performance with a negative value of ROE, group 5 - the highest performance with ROE above 10%), all other variables have two categories. The coefficient ranges from 0 (no relationship) to 1 (perfect relationship).

Tab. 1 – Maximum values of contingency coefficient for square tables

Number of rows or columns	2	3	4	5	6	7	8
CC_{max}	0,707	0,816	0,866	0,894	0,913	0,926	0,935

Pearson's contingency coefficient may occur in different maximum values depending on the number of categories for the studied variables. From Table 1 we use CC_{max} for 2x2 tables, which is 0,707, CC_{max} for combination of 6 columns and 2 rows we calculated value CC_{max} 0,810. For clear interpretation and relevant comparisons of the contingency coefficients of several analyzes we calculated adjusted contingency coefficient (Adj. CC), which takes into account the calculated CC and the corresponding CC_{max} . That ranges from 0 to 1, values close to 1 mean a stronger dependence of two variables.

The only assumption underlying the use of the Chi-square (other than random selection of the sample) is that the expected frequencies are not very small. The 2x2 tables would be the value of the expected frequency for each cell being in a table greater than 5. When the expected cell frequencies fall below 5, those probabilities cannot be estimated with sufficient precision. For larger tables, compliance of this condition is often problematic. The result is inaccurate approximation of the test characteristics of the Chi-square probability distribution.

By e-mail, telephone conversation and direct control of the interview were randomly surveyed more than 1,500 businesses operating in selected industries of the Slovak Republic. The questionnaires completed only 164 enterprises mainly from the wood-processing, automotive and engineering industries. We have considered research sample with relevant and sufficient expressive capability, because the relatively low returns stemmed mainly from the reluctance of businesses, their negative moods and skepticism of economic development, lack of time, lack of interest, etc.

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 - from 0% to 2%,
- positive value - from 2% to 4%,
- positive value - from 4% to 7%,
- positive value - from 7% to 10%,
- positive value - 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** (positive value of ROE - from 7% to 10%, positive value of ROE - over 10%) – probably EVA will be relatively high positive.

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.

In the research, we focused on the examination of various traditional and modern indicators, methods and models used in strategic planning, knowledge management, development and growth, which could affect its performance achieved, such as: organizational structure, strategic planning and controlling, information systems, ERP, Business Intelligence, etc. Through the following questions we investigated the current status of use, satisfaction with their use and future intentions.

1. What type of organizational structure is used in your business?

- Traditional functionally oriented organizational structure
- Divisional oriented organizational structure
- Process-oriented organizational structure
- Fractal structure
- Matrix structure (combination of functional and divisional organizational structure)
- Project organizational structure

- Network organizational structure
- We do not use either of those types

2. How is in your company ensures the connection of corporate strategy with the system of measurement and management of corporate performance?

- The system of measurement and performance management is clearly based on corporate strategy and objectives and it assists in its formulation and implementation
- The system of measurement and performance management is not based on corporate strategy and objectives and so it does not help in its formulation and implementation sufficiently
- Corporate strategy and objectives are not formulated and we have not established a system of measurement and performance management yet

3. If for the support of performance management in your company is established and methodology BSC (Balanced Score Card), to which standards are used?

- We have not introduced BSC methodology in our company
- BSC methodology is used only in irregular reporting of selected indicators of business performance
- We use it in the operational management of corporate performance within one year
- BSC methodology is used primarily for the implementation of corporate strategy
- BSC methodology is used complexly, systematically and regularly for management of operational and strategic performance

4. Do you thinking in your business about the establishment of an information system type BI (Business Intelligence) in support of business performance management?

- It is already established in the company
- We are considering the introduction in the near future
- We are considering the introduction of longer term
- We do not consider this possibility yet at all

5. What non-financial strategic indicators and tools do you use in your business to measure and manage corporate performance?

- Market growth and sales
- Relative market share
- Brand and goodwill
- Number of new products
- Number of new innovation processes
- Number of new markets
- Number of customers
- Number of new product innovation



- Number of complaints and customer satisfaction
- Technological Innovation
- Focus on environment
- The concept of CRM (Customer Relationship Management)
- The concept of CSR (Corporate Social Responsibility)
- Other

The research results obtained by the application of selected methods of mathematical-statistical system are presented in the next part of the paper. Following tables contain data of our own research.

4. SELECTED RESULTS OF RESEARCH AND DISCUSSION

In the Slovak Republic, we were interested in the impact of non-financial, strategic and qualitative indicators and methods applied in the management of the overall business performance. We examined various traditional and particularly modern indicators, methods and models used in strategic planning, knowledge management, learning, development and growth, which could affect its performance achieved, such as: organizational structure, strategic planning and controlling, ERP information systems, Business Intelligence, innovation, etc.

We analyzed selected quantity univariate descriptive statistics – observed absolute and relative frequency of different categories of strategic parameters differentiated by performance groups. Achieved frequencies in all enterprises (N = 164) are presented in the following tables.

Tab. 2 – Frequency of answers: Question 1 Type of organizational structure

Type of organizational structure	Performance						Row totals
	(ROE) - 0	(ROE) - 1	(ROE) - 2	(ROE) - 3	(ROE) - 4	(ROE) - 5	
Any type	5	9	3	2	0	1	20
The relative share of total	3,05%	5,49%	1,83%	1,22%	0,00%	0,61%	12,20%
Traditional functional	15	28	23	12	6	14	98
The relative share of total	9,15%	17,07%	14,02%	7,32%	3,66%	8,54%	59,76%
Divisional	1	6	2	5	1	4	19
The relative share of total	0,61%	3,66%	1,22%	3,05%	0,61%	2,44%	11,59%
Process	2	3	4	1	3	0	13
The relative share of total	1,22%	1,83%	2,44%	0,61%	1,83%	0,00%	7,93%

Network	1	0	1	1	2	0	5
The relative share of total	0,61%	0,00%	0,61%	0,61%	1,22%	0,00%	3,05%
Matrix	1	1	2	4	0	0	8
The relative share of total	0,61%	0,61%	1,22%	2,44%	0,00%	0,00%	4,88%
Project	0	0	0	1	0	0	1
The relative share of total	0,00%	0,00%	0,00%	0,61%	0,00%	0,00%	0,61%
Number of total	25	47	35	26	12	19	164
The relative share	15,24%	28,66%	21,34%	15,85%	7,32%	11,59%	100,0%

Tab. 3 – Frequency of answers: Question 2 Connection of strategic planning system and corporate strategy with the system of measurement and corporate performance management

Linking corporate strategy and measurement and performance management system	Performance						Row totals
	(ROE) - 0	(ROE) - 1	(ROE) - 2	(ROE) - 3	(ROE) - 4	(ROE) - 5	
Corporate strategy and objectives are not formulated and we have not introduced a system of measurement and performance management	9	18	7	7	2	3	46
	5,49%	10,98%	4,27%	4,27%	1,22%	1,83%	28,05%
The measurement and performance management system is not based on corporate strategy and objectives and so it does not help in its formulation and implementation sufficiently	1	7	2	3	0	3	16
	0,61%	4,27%	1,22%	1,83%	0,00%	1,83%	9,76%
The measurement and performance management system is clearly based on corporate strategy and objectives and it assists in its formulation and implementation	15	22	26	16	10	13	102
	9,15%	13,41%	15,85%	9,76%	6,10%	7,93%	62,20%
Number of total	25	47	35	26	12	19	164
The relative share	15,24%	28,66%	21,34%	15,85%	7,32%	11,59%	100,0%

Tab. 4 – Frequency of answers: Question 3 The use of BSC methodology

The use of BSC methodology	Performance						Row totals
	(ROE) - 0	(ROE) - 1	(ROE) - 2	(ROE) - 3	(ROE) - 4	(ROE) - 5	
BSC methodology is not in introduced our company	24	44	33	25	8	15	149
	14,63%	26,83%	20,12%	15,24%	4,88%	9,15%	90,85%
BSC is used irregularly for reporting of selected performance indicators	0	1	1	0	1	0	3
	0,00%	0,61%	0,61%	0,00%	0,61%	0,00%	1,83%
We use it in the operational management of corporate performance within one year	0	0	1	1	2	1	5
	0,00%	0,00%	0,61%	0,61%	1,22%	0,61%	3,05%
BSC methodology is used primarily for the implementation of corporate strategy	0	1	0	0	1	2	4
	0,00%	0,61%	0,00%	0,00%	0,61%	1,22%	2,44%
BSC is used comprehensively, systematically and regularly for the management of operational and strategic performance	1	1	0	0	0	1	3
	0,61%	0,61%	0,00%	0,00%	0,00%	0,61%	1,83%
Number of total	25	47	35	26	12	19	164
The relative share	15,24%	28,66%	21,34%	15,85%	7,32%	11,59%	100,0%

Tab. 5 – Frequency of answers: Question 4 The use / introduction of BI system

The use of BI system	Performance						Row totals
	(ROE) - 0	(ROE) - 1	(ROE) - 2	(ROE) - 3	(ROE) - 4	(ROE) - 5	
We are considering the introduction and in the near future	19	37	26	15	8	12	117
	11,59%	22,56%	15,85%	9,15%	4,88%	7,32%	71,34%
We are considering the introduction of longer term	3	8	4	7	1	3	26
	1,83%	4,88%	2,44%	4,27%	0,61%	1,83%	15,85%
We are considering the introduction and in the near future	3	1	4	1	0	1	10
	1,83%	0,61%	2,44%	0,61%	0,00%	0,61%	6,10%
It is already established in the company	0	1	1	3	3	3	11
	0,00%	0,61%	0,61%	1,83%	1,83%	1,83%	6,71%
Number of total	25	47	35	26	12	19	164
The relative share	15,24%	28,66%	21,34%	15,85%	7,32%	11,59%	100,0%

The results of the proliferation of different types of organizational structures (Tab. 2) shows that 98 (60%) surveyed enterprises are using traditional and relatively inefficient functionally oriented organizational structure, achieving performance are the most numerous groups recorded in inefficient firms 1 and 2 (28 or 23 enterprises) attained ROE value in the range 0-4%. Businesses that do not use either of those types of organizational structures, 20 were recorded, of which 9 is from the performance group 1 with ROE value in the range 0-2%. For higher group performance (ROE > 4%) is not typical any specific organizational structure.

In terms of connecting of the strategic planning and corporate strategy with measurement system and corporate performance management (Tab. 3) was the most common response (102 businesses, 62%), that the measurement system and performance management are clearly based on corporate strategy and objectives and it assists in its formation and implementation. Frequency in each performance group was fairly distributed at this answer. Significant (18 companies) was a performance group 1 (ROE 0-2%) in response, that corporate strategy and objectives are not formulated and businesses have not introduced performance measurement system (46 firms). That confirms the findings known in theory that the quality system of strategic planning has the long-term positive impact on business performance achieved.

Analyzing the use of strategic performance management methodology BSC (Tab. 4) showed that 91% of enterprises do not introduced BSC. In this category, was the largest group 1 performance (ROE 0-2%), accounting for 26.83% of enterprises. That confirms the findings known in theory that the quality system of strategic planning has the long-term positive impact on business performance achieved.

Introducing or using of knowledge information system type BI (Tab. 5) implements 11 (7%) enterprises, while the observed frequencies especially in higher performance groups 3-5 (ROE above 4%) it can be assumed that the system type BI will affect higher performance of enterprises. Up to 71% of businesses in general does not consider the introduction of BI, the most numerous were found for performance groups 1 and 2 (ROE 0-4%). That confirms the findings known in theory that quality management information system based on the knowledge has a long term positive impact on business performance achieved.

Statistically significant dependence of business performance, expressed through the indicator return on equity for the selected parameters (parameters, methods and models) of management strategic performance was demonstrated in the application of the following methods, concepts and tools for managing business performance:

- Organizational structure (use),
- Financials or financial indicators (actual usage, time use and satisfaction ratings),
- Outcomes of management accounting (usage, satisfaction ratings),
- Basic Information System – ERP,
- Management Information System – MIS,
- Information System The Business Intelligence – BI (use),
- Controlling (usage, time use),

- The Key Performance Indicators – KPI,
- Balanced Scorecard Methodology – BSC (use),
- Quality Management System (usage, time use),
- CRM system,
- Nonfinancial – strategic indicators – technological innovation and focus on the environment.

The achieved results of our science-based research shows the overall conclusion that companies of selected industries of Slovak Republic which have outstanding performance, are strongly focus on strategic performance management while apply many modern concepts and methods of its management. A key tool for improving overall business performance in terms of Slovak industry appears a Strategic Performance Management System. Traditional business management based only on financial performance basis must be added as soon as possible and confronted by the methods for managing of strategic performance. As it is clear from the research results, companies in Slovakia aim to manage their strategic performance. We focused on whether the firms engaged in innovation, since innovation is a process, not an event or action, and therefore must be controlled. Enterprises cannot afford to upgrade randomly. They need a system that will formulate how innovation can help them survive. From research shows that companies reaching higher performance, focus to strategic indicators as technological innovations and environment.

Tab. 6 – Pivot: file 1; Non-financial indicator Technological Innovation x Performance – statistics

Statistics	Chi-square	sv	p
Pearson's chi-square	7,736977	df=2	p=,02089
The M-V chi-square	6,699093	df=2	p=,03510
The contingency coefficient (CC)	,2122530		
Cramer's V	,2172020		

Tab. 7 – Pivot: file 1; Non-financial indicator Technological Innovation x Performance – frequency

Non-financial indicator Technological Innovations	Group 1 Low performance (ROE<0, 0-2%)	Group 2 Medium performance (ROE 2-4%, 4-7%)	Group 3 High performance (ROE 7-10%, above 10%)	Row total
The observed frequency				
Do not use	63	54	21	138
Use of Technological Innovation	9	7	10	26
Total	72	61	31	164

The expected frequency				
Do not use	60,58537	51,32927	26,08537	138,0000
Use of Technological Innovation	11,41463	9,67073	4,91463	26,0000
Total	72,00000	61,00000	31,00000	164,0000
The observed minus expected frequency (Residues)				
Do not use	2,41463	2,67073	-5,08537	0,00
Use of Technological Innovation	-2,41463	-2,67073	5,08537	0,00
Total	0,00000	0,00000	0,00000	0,00

Tab. 8 – Pivot: file 1; Non-financial indicator Focus on 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 2 x 2 tables	,1758916		
The contingency coefficient (CC)	,1732323		

Tab. 9 – Pivot: file 1; Non-financial indicator Focus on environment x Performance – frequency

Non-financial indicator Focus on environment	Group 1 (ROE<0, 0-2%, 2-4%)	Group 2 (ROE 4-7%, 7-10%, above 10%)	Row total
The observed frequency			
Do not focus	99	46	145
Focus on environment	8	11	19
Total	107	57	164
The expected frequency			
Do not focus	94,6037	50,39634	145,0000
Focus on environment	12,3963	6,60366	19,0000
Total	107,0000	57,00000	164,0000
The observed minus expected frequency (Residues)			
Do not focus	4,39634	-4,39634	0,00
Focus on environment	-4,39634	4,39634	0,00
Total	0,00000	0,00000	0,00



The strategic non-financial indicator of technological innovation reflects significantly (Tab. 6), where the comparison of measured and theoretical frequencies (Tab. 7) we can say that in the pursuit and use of the indicator businesses are above average ROE value above 7%. ROE on differentiated into 2 groups showed two strategic non-financial indicators. Besides technological innovation, the second statistically significant indicator is the environmental orientation (Tab. 8), in which the typical achieve better business performance with ROE of 4% (Tab. 9).

As ROE is above average in the field of technological innovation, we wanted to analyse further innovation. We conducted research on a sample of small and medium-sized enterprises in order to determine what is the state of innovation in the Slovak Republic if the businesses innovate and how the funds are used for this purpose.

From the results of research, as well as the available data from the Ministry of Education, Science, Research and Sport of the Slovak Republic shows that Slovak businesses innovate. This is evidenced by the fact that in 2009, 849 were implemented innovative projects. Enterprises spent on innovation total of 1,938,400 thousand euros. Most fundings for innovation are invested by enterprises in the Bratislava region. For an amount of more than 800 million EUR. The second region, which has invested in innovation most fund was Nitra region, but realized only 23 innovations, which was the lowest number of innovations among all regions of the Slovak Republic. They were enterprises in the Bratislava region, which implemented most innovations (307).

If we focus on exploring innovative activities undertaken by company size, we can point to the fact that in industry and selected services most innovate large firms with 250 or more employees. In the segment of small and medium-sized enterprises, which employing up to 49, they are dealing with innovation activity.

Tab. 9 – The share of enterprises with innovation activity of the total number of enterprises in industry and selected services

Indicator	2003	2004	2006	2008	2010
Small businesses (10 – 49 employees)	19,4 %	23,2 %	25,1 %	36,1 %	35,6 %
Medium-sized enterprises (50 – 249 employees)	14,6 %	16,3 %	19,2 %	31,5 %	29,3 %
Large companies (250 and more employees)	24,2 %	34,8 %	34,4 %	48,7 %	43,6 %
All businesses	47,5 %	58,0 %	56,0 %	67,6 %	65,1 %

Based on the research we can conclude that the companies are seeking to innovate. From the previous table it is clear that the interest in innovation activities will increase, as many enterprises understand the need to innovate in connection with the survival of the undertaking. In addition, there is an increasing awareness also increases the need constantly to innovate.

Given the fact that businesses spend a considerable amount of funds for innovation (1,938,400 thousand euros), we are interested in their opinion, if the promotion of innovation enterprises

in Slovakia is sufficient. Using statistical methods, we can generalize opinions surveyed enterprises, which require the support of innovation in enterprises in Slovakia is insufficient (92.61%) (binomial test, $p = 0.000$). As a company think that the promotion of innovation in Slovakia is insufficient, we interested in the greatest shortcomings. Based on the statistical verification through the Cochran test, we can considered three major shortcomings. It is a lack of funds, lack of entrepreneurs and lack of competence on the part of governments.

Enterprises generally preferred state, as an institution, which should provide greater resources to support innovation in enterprises. Cochran test showed that it is important that in the promotion of innovation in enterprises participate regional governments and banks providing favorable loans. Financial relief should provide cities and important is improving communication and mutual information, along with advice for the development of enterprise innovation.

Based on the research results, we can conclude that the subjected area of research in terms of businesses Slovak industry is extremely important for enhancing companies' performance. By application of selected strategic parameters such as BSC, BI, strategic planning and controlling, innovations and others, it can be achieved a higher performance of companies. We realize that the statistical group ($N = 164$) may not be relevant enough, therefore we plan to apply this methodology of research on a larger statistical sample.

5. CONCLUSION

In recent years, the most frequently used methods in the world in the area of enterprise performance management can be classified mainly Benchmarking, Strategic Planning, Vision and Mission Statement, CRM (Customer Relationship Management), Outsourcing or Balanced Scorecard. In addition to these methods and concepts in recent years there are often used other tools such as Change Management Programs, strategic acquisitions and mergers (Strategic M & A), Core Competencies, Strategic Alliances, and the strategic segmentation of customers (Customer segmentation). Most of these tools are an integral part of a coherent concept of strategic management of business performance. The above methods and concepts are in companies in the world right up to date extended for a further three major management tools of business performance like Zero Based Budgeting, Employee Engagement Surveys and Big Data Analytics (Business Intelligence).

Most of the above progressive methods of modern enterprise performance management shares a strong strategic orientation of management (Strategic Performance Management System) 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.

From presented studies it can be concluded that regular use of Strategic Performance Management System in the company may favour the comprehensive and elaborate system of strategic planning, which further subsequently reflected in higher business performance. And also one can accept the argument that strategic planning is an integral part of the Strategic Business Performance Management System.

To maintain competitiveness and improving the performance of the business entity it is essential



that companies have to challenge of Strategic Performance Management System and innovation. As we presented, businesses operating in Slovakia deal with both areas and understand their necessity, since this will contribute to the development not only of his undertaking, but also the region in which they operate. The efficient functioning of enterprises is then reflected in the gross domestic product, exports and imports, but also in the efficiency of the economy as a whole.

The achieved results of our science-based research shows the overall conclusion that companies of selected industries of Slovak Republic which have outstanding performance, are strongly focus on strategic performance management while apply many modern concepts and methods of its management.

References

1. Ahmed, P. K., & Wang, C. L. (2007). Dynamic Capabilities: A Review and Research Agenda. *International Journal of Management Reviews*, 9 (1), 31–51. doi: 10.1111/j.1468-2370.2007.00201.x
2. Andersen, T. (2000). Strategic planning, autonomous actions and corporate performance. *Long Range Planning*, 33, 184 – 200. doi:10.1016/S0024-6301(00)00028-5
3. Bento, A., Bento, R., & White, L. F. (2014). Strategic performance management systems: Impact on business results. *Journal of Computer Information Systems*, 24, 25–33.
4. Bisbe, J., & Malagueño, R. (2012). Using strategic performance measurement systems for strategy formulation: Does it work in dynamic environments? *Management Accounting Research*, 23, 296 – 311. doi: 10.1016/j.mar.2012.05.002
5. Brews, P., & Purohit, D. (2007). Strategic Planning in Unstable Environments. *Long Range Planning*, 40, 64 – 83. doi: 10.1016/j.lrp.2006.12.001
6. Chenhall, R. (2005). Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study. *Accounting, Organizations and Society*, 30. doi: 10.1016/j.aos.2004.08.001
7. Chromjaková, F., & Rajnoha, R. (2009). Ekonomika inovácie ako súčasť zvyšovania výkonnosti firmy. *Journal of Competitiveness*, 1. Retrieved from: <http://www.cjournal.cz/files/7.pdf>.
8. Clauss, G., & Ebner, H. (1988). *Základy štatistiky pre psychológov, pedagógov a sociológov*. Bratislava: Slovenské pedagogické nakladateľstvo.
9. Covin, J.G., & Miles, M.P. (2007). Strategic use of corporate venturing. *Entrepreneurship: Theory & Practice*, 31, (2), 183–207. doi: 10.1111/j.1540-6520.2007.00169.x
10. Fried, A. (2010). Performance measurement systems and their relation to strategic learning: A case study in a software-developing organization. *Critical Perspectives on Accounting*, 21, (2), 118–133. doi: 10.1016/j.cpa.2009.08.007
11. Ghazanfari, M., Jafari, M., & Rouhani, S. (2011). A tool to evaluate the business intelligence of enterprise systems. *Scientia Iranica*. 18(6), 1579-1590. doi: 10.1016/j.scient.2011.11.011
12. Gimbert, X., Bisbe, J., & Mendoza, X. (2010). The Role of Performance Measurement Systems in Strategy Formulation Processes. *Long Range Planning*, 43(4), 477 – 497. doi:

10.1016/j.lrp.2010.01.001

13. Hayton, J.C., & Kelley, D.J. (2006). A competency-based framework for promoting corporate entrepreneurship. *Human Resource Management*, 45 (7), 407–427. doi: 10.1002/hrm.20118
14. Hou, Ch. (2012). Examining the effect of user satisfaction on system usage and individual performance with business intelligence systems: An empirical study of Taiwan's electronics industry. *International Journal of Information Management*. 32(6), 560-573. doi: 10.1016/j.ijinfomgt.2012.03.001
15. Inovácie. (2012). Retrieved from: <http://portal.statistics.sk/showdoc.do?docid=1800>
16. Kaplan, R. S., & Norton, D. P. (2001). *The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment*. Harvard Business School Press.
17. Lendel, V., & Varmus, M. (2011). Identification of the main problems of implementing the innovation strategy in Slovak businesses. *Acta universitatis agriculturae et silviculturae mendelianae brunensis*, 4, 221 – 234. <http://dx.doi.org/10.11118/actaun201260040221>.
18. Lundvall, B. A. (1992). *National Systems of innovation. Towards a theory of innovation and interactive learning*. London: Pinter Publishers. doi: 10.1080/08109029308629360
19. Manley, K. (2002). The Systems approach to innovation systems. *Australasian Journal of Information Systems*, 9 (2), 19–33.
20. Manley, K. (2008). *Frameworks for Understanding Interactive Innovation Processes*. Queensland University of Technology. <http://dx.doi.org/10.5367/000000003101299375>
21. Marklund, G. (2000). *Indicators of Innovation Activities in Services*. London: Continuum.
22. Marvel, M. R., Griffin, A., Hebda, J., & Vojak, B. (2007). Examining the technical corporate entrepreneurs' motivation: Voices from the field. *Entrepreneurship: Theory & Practice*, 31 (5), 753–768. <http://dx.doi.org/10.1111/j.1540-6520.2007.00198.x>
23. Micheli, P., & Manzoni, J. (2010). Strategic Performance Measurement: Benefits, Limitations and Paradoxes. *Long Range Planning*, 43(4), 465 – 476. <http://dx.doi.org/10.1016/j.lrp.2009.12.004>
24. Micheli, P., & Mari, L. (2014). The theory and practice of performance measurement. *Management Accounting Research*, 25, (2), 147–156. doi: 10.1016/j.mar.2013.07.005
25. Mothe, J. D., & Paquet, G. (1998). *Local and regional systems of innovation as learning socio-economics*. Boston: Kluwer Academic Publishers.
26. Phan, P. H., Wright, M., Ucbasaran, D., & Tan, W. L. (2009). Corporate entrepreneurship: Current research and future directions. *Journal of Business Venturing*, 24 (3), 197–205. <http://dx.doi.org/10.1016/j.jbusvent.2009.01.007>
27. Rappaport, A. (2005). Shareholder scoreboard: the best and worst performers of the WSJ 1000. *Wall Street Journal*.
28. Rudd, J., Greenley, G., Beatson, A., & Lings, I. (2008). Strategic planning and performance: Extending the debate. *Journal of Business Research*, 61(2), 99 – 108. doi: 10.1016/



29. Singh, H., & Samalia, H. (2014). A Business Intelligence Perspective for Churn Management. *Procedia – Social and Behavioral Sciences*, 109, 51–56. doi: 10.1016/j.sbspro.2013.12.420
30. Szabo, Z. K., Šoltés, M., & Herman, E. (2013). Innovative Capacity & Performance of Transition Economies: Comparative Study at the Level of Enterprises. *Ekonomika a manažment*, 1, 52 – 68.
31. Teece, D. J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance. *Strategic Management Journal*, 28 (13), 1319–1350. doi: 10.1002/smj.640
32. Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18 (7), 509–533. doi: 10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z
33. Tutunea, M., & Rus, R. (2012). Business intelligence solutions for SME's. *Procedia Economics and Finance*, 3, 865-870. doi:10.1016/S2212-5671(12)00242-0
34. Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship–performance relationship: A longitudinal. *Journal of Business Venturing*, 10 (1), 43. [http://dx.doi.org/10.1016/0883-9026\(94\)00004-E](http://dx.doi.org/10.1016/0883-9026(94)00004-E)

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