
The Creation of a Financial Management Map for Business Performance Improvement

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A B S T R A C T

Currently, the trend in measuring the performance of a company is to change the top indicator for measuring performance from a profitability indicator to an indicator aimed at maximizing the value for owners. This trend represents the use of value criteria to measure business performance in the form of indicators, such as Economic Value Added (EVA). The linking of the EVA indicator with the Balanced Scorecard (BSC) methodology appears to be a significant contribution in the field of measuring and increasing the performance of companies. The aim of the paper was to assess the performance of a sample of companies in Slovakia and identify financial indicators, which are performance drivers. The correlation matrix and the BSC method were applied in the selection of financial performance indicators. The study was processed on a sample of 343 companies operating in the field of heat management. The performance of companies in this sector needs to be measured and monitored despite the fact that this sector is a regulated sector within the Slovak economy. However, it is an important sector in terms of the economic results of Slovakia. The benefits presented in this paper are the evaluation of the performance of the sample of companies, determination of the ranking of companies in terms of their performance, as well as the proposal for important performance indicators in the field of financial performance of companies.

Keywords: balanced scorecard, correlation matrix, financial map, indicator, performance

1. Introduction

Business performance is a term that we have recently used quite often in the daily life of businesses. Various methods and indicators are used in practice to fulfill the value of this concept. The literature provides many opinions regarding which of the published methods is

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the most suitable for measuring the performance of a company. The choice of a suitable method is very important, especially in terms of the outcomes that the method provides, as well as their informative value. Recently, there has been uncertainty about the use of conventional indicators of measuring the performance of companies based on the calculation of indicators of financial analysis ex-post and ex-ante. The most common doubts related to the application of these measures are that they do not take into account the risks faced by owners and investors and the effects of the external environment, are not market-oriented, do not accept the specifics of industries and analyzed companies, are not flexible, and are influenced by various management decisions. Therefore, it was necessary to develop methods that accept all the requirements for exact and modern measurement of business performance.

Based on the above mentioned, new methods began to be applied in the performance measurement. New financial indicators that accept market characteristics have also been proposed; these are for example EVA (Economic Value Added), INEVA (IN Economic Value Added), MVA (Market Value Added), RONA (Return on Net Assets), as well as indicators based on FCF (Kislingerová et al., 2011). Subsequently, performance evaluation using non-financial indicators began to develop. It was based on experiments from the early 1980s when Peters and Waterman (1982) proposed 8 factors that lead to business success, and subsequently, Chung (1987), Daniel (1961), and Rockart (1981) proposed critical success factors. These studies were followed by a comprehensive concept Balanced Scorecard, which was first published in 1992 in the Harvard Business Review by Robert S. Kaplan and David P. Norton. In 1996, these authors published the book "The Balanced Scorecard: Translating Strategy into Action" in which they summarized and supplemented the concept of BSC. Kaplan and Norton evaluated performance using both financial and non-financial measures from four perspectives. The result of their effort was a strategic management map constructed from indicators of the financial perspective, the customer perspective, the perspective of potentials, and the learning and growth perspective. Their concept was the basis for processing the starting points and proposals of this study.

In relation to the above-mentioned, the aim of the paper was to create a financial management map to manage and improve businesses` performance. We focused primarily on the financial perspective, as this is the starting point for other perspectives of the strategic management map. In line with the above-mentioned, we set the following research question: Which financial indicators are the best drivers of businesses` performance?

The remainder of the paper is structured as follows: Section 1 defines the performance and states the aim of the paper and research problem. Section 2 describes performance measurement with a special focus on modern methods of business performance evaluation. Section 3 describes the data, the analyzed sample of businesses, and processing methods. We used selected financial indicators, EVA indicators, correlation matrix, and BSC to fulfill the aim of the paper. Section 4 lists the results of applied methods. Section 5 summarizes the essential conclusions and presents significant findings and the future direction of the research.

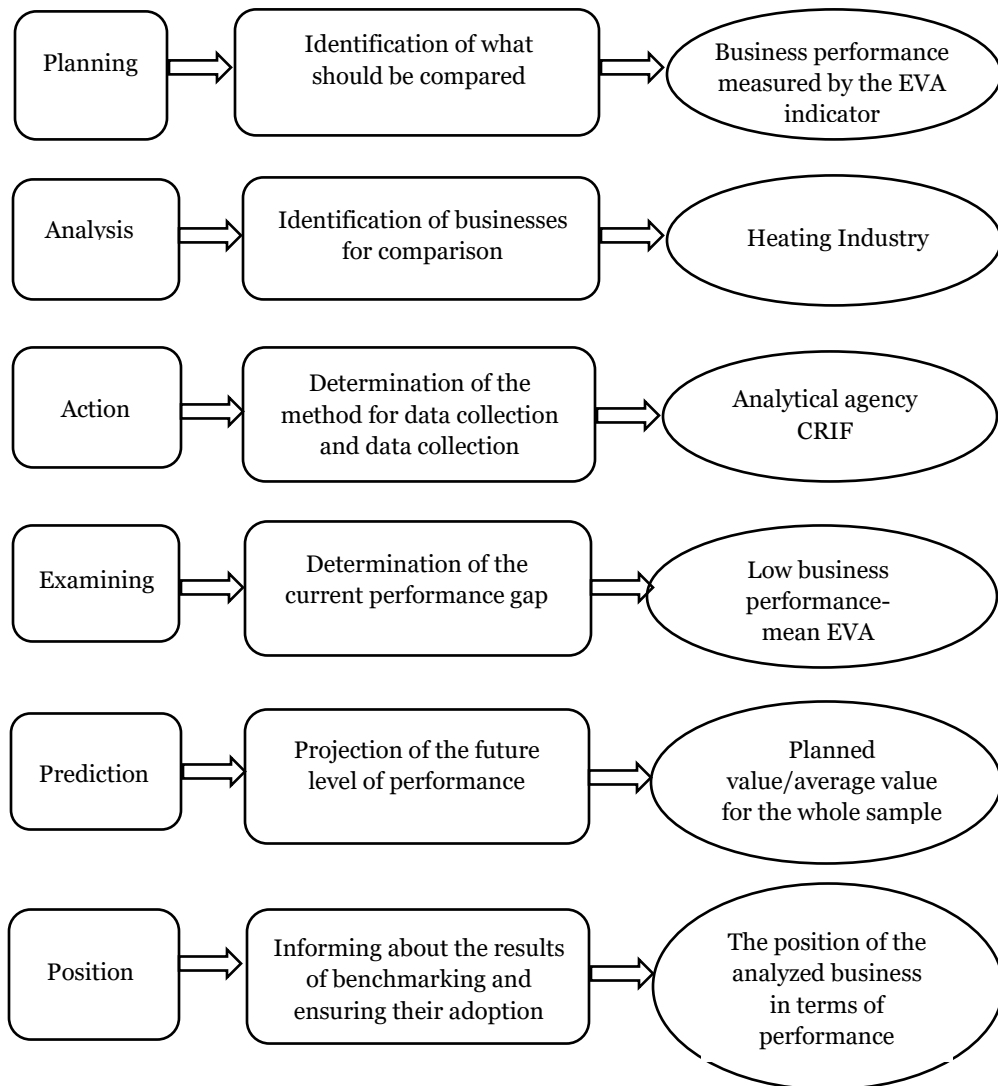
2. Review of the relevant literature

The most common methods of assessing the financial and economic performance of a company are the methods of fundamental or technical analysis, which evaluate the enterprise in economic terms based on a detailed study and analysis of financial statements (Fisher, 1992). According to various studies (Ittner et al., 2003; Dixon et al., 1990; Pavelková &

Knápková, 2009; Synek, 2009; Petřík, 2009), financial indicators are the most common measures of business performance. These conventional indicators are based mainly on profit maximization – the primary goal of business. They map the main activities of a company in the areas of its profitability, ability to pay, and investment area. These financial goals and measures represent the focus point at which the goals and measures of other areas of business are targeted.

According to the argument that the objective is not only to measure but also in particular to improve performance (Hammer, 2007), it must be noted that these conventional financial ratios have low predictive value in analyzing and evaluating the financial performance of the company and in making tactical and strategic decisions in management. It is, therefore, important to supplement conventional financial indicators with more dynamic and more prospective indicators, which are adjusted to specific competitive conditions. It means focusing on monitoring and comparing implementation results describing performance with the planned level of performance, monitoring the strategies' direction during their implementation, identifying the accompanying problems of fundamental importance, and performing the necessary changes and adjustments (Dudoková, 2004). Development of modern indicators of performance evaluation focused on the processing and designing of indicators most closely connected with the value of shares. These indicators should also enable the use of most of accounting information and data, including calculation of risk, consider a range of related capital, and finally, should allow performance evaluation and the enterprises' valuation (Mařík & Maříková, 2005). Therefore, basic financial areas of evaluation and measurement of business performance can be supplemented by more recent and modern indicators. The EVA model has been known since 1980. The authors of this model are representatives of Stern Stewart & Co., Joel M. Stern, and G. Bennett Stewart III. The main task of the EVA indicator is to measure the economic profit of the company. Authors who pointed out the application of modern indicators (INEVA, MVA, RONA, CVA) and their importance in measuring business performance are Popa et al., (2009), Berzakova et al., (2015).

Performance evaluation and improvement involve many techniques including benchmarking (informal benchmarking, performance benchmarking, best practice benchmarking) balanced scorecard, business excellence, knowledge management, management quality system, SWOT analysis, and other techniques (Vochozka et al., 2017). A number of studies are devoted to benchmarking, but only a few are conceptually comprehensive. The first studies addressing this issue were conducted by Camp (1989) and Codling (1995). The credit for benchmarking formalization and its future development is attributed to Xerox Corporation, which used benchmarking as a tool to improve business performance (Stapenhurst, 2009). Most research studies over the last 20 years have identified benchmarking as one of the top 5 management tools used to improve business performance. In this area, it is possible to start from the definitions of benchmarking, which are aimed at achieving excellent performance (Camp, 1989). Subsequently, Vaziri (1992) defined benchmarking as a continuous process of comparing the performance of the company with the best in the industry. While the number of benchmarking frameworks is high, according to Watson (1993) there are 69 frameworks. Each framework has its own number of phases, steps, and specific content. Figure 1 describes the framework introduced by Camp (1989) which is to be adapted in this paper.



Source: Camp (1989)

Figure 1: Benchmarking Framework for Business Performance Improvement

According to Moriarty (2008), benchmarking is not a complete tool for performance improvement and must therefore be integrated into a system through which this performance improvement can be achieved. This trend is confirmed by Ross and Droge (2002) who point out the need of pairing benchmarking techniques with other methods or management tools, for example, Balanced Scorecard (BSC), EFQM, analytic hierarchy process (AHP), spider diagrams, gap analysis, and other techniques.

The BSC method represents a significant contribution to improving the performance of companies. Using this method, companies are oriented mainly by their mission, vision, and strategy (Kaplan & Norton, 1996). These authors pointed out that classical performance measures are static and do not adapt to the changing effects of the external environment, are

cumbersome to collect and process data, and what can be considered the biggest con, are the top choice for top managers. They proposed a system of indicators, which creates a business management system focused on the use of special knowledge of people, which are needed to achieve the long-term goals of the company. The original aspects of performance measurement introduced by Kaplan and Norton (1996) were financial performance, customer knowledge, internal processes, and learning and growth. These aspects are still used today to reconcile individual, organizational and inter-departmental initiatives. The correct selection of measures (indicators) that best describe the company's strategy is especially important for the successful implementation of BSC (Vochozka et al., 2017). Despite the criticism of the excessive and one-sided use of financial indicators in evaluating the performance of companies, the financial perspective remains the most important from the point of view of BSC creators (Kaplan & Norton, 1996), because it reflects the results of other perspectives. However, even in this perspective, it is necessary to apply new indicators and methods of performance evaluation. From the financial perspective, it is mainly about monitoring the satisfaction of owners and satisfying their interests. Therefore, it is necessary to measure the fulfillment of this goal, using the EVA indicator. Recently, in terms of the requirement for sustainable development, perspectives, such as the environmental perspective or the perspective of sustainability and social responsibility, have emerged within the framework of the BSC. Figure 2 shows the perspectives of the BSC system.

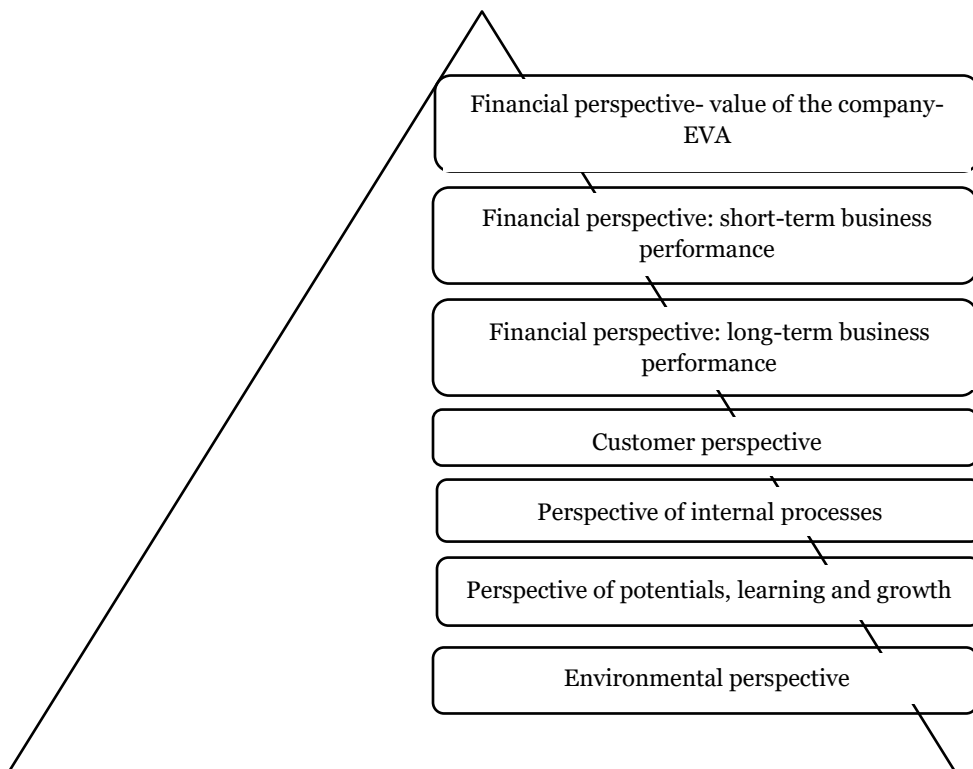


Figure 2: Perspectives of the BSC System

Several studies have been carried out to examine the relationship between the introduction of a BSC and an improvement in the company's performance or an improvement in the company's financial performance. Davis and Albright (2004) conducted a study examining the impact of BSC implementation on the values of 9 key performance indicators. Testing of the results revealed that the introduction of BSC had a positive effect on the values of these indicators. De Geuser et al., (2009) addressed the question of whether the introduction of BSC could improve business performance. The analysis was performed on a sample of 76 companies. As a result of their research, they found out that the introduction of BSC improved the performance of these companies. Among other things, they pointed out 3 significant benefits of BSC. (1) Better linking strategy with operations, (2) the fact that strategizing becomes a continuous process, and (3) greater alignment of different processes, services, competencies, and units of the organization. Empirical studies of Dutch companies suggest that the use of BSC does not automatically improve the company's performance, but depends on how it is used. If the BSC complements the company's strategy, it is assumed that it has a positive effect on the company's performance, while the use of BSC that is not related to the strategy may reduce the company's performance (Braam & Nijssen 2004).

3. Data and methodology

The heat management sector was chosen for the analysis and processing of the strategic financial management map. 590 companies operate in this sector. From this set, we analyzed 292 companies that remained in the sample after excluding outliers. The analyzed industry is significant from the economic and social point of view and plays an important role in the daily lives of society and consumers. Businesses in this sector are local district heating systems. Among them are businesses that have a monopoly position in a given geographical area (Antimonopoly Office of the Slovak Republic, 2013). The central heating supply systems are subject to considerable obligations in fulfilling the obligations of the Slovak Republic in the field of climate. These systems and their infrastructure will play a vital role in the energy recovery of municipal waste within a circular economy. For this reason, these businesses need to pay significant attention to managing their performance. The data from the financial statements of the analyzed businesses were obtained from Slovak analytical agency CRIF – Slovak Credit Bureau, s.r.o.

Table 1: Formula for the Indicators' Calculation

Indicator	Formula	Indicator	Formula
CL	$\frac{\text{short - term assets}}{\text{short - term liabilities}}$	ROE	$EAT/equity \times 100$
QR	$\frac{(\text{short - term receivables} + \text{financial assets})}{\text{short - term liabilities}}$	ROS	$EAT/sales \times 100$
ACP	$current\ receivables/sales \times 360$	ER	$equity/assets \times 100$
IT	$inventory/sales \times 360$	DER	$debt/equity$
CPP	$current\ liabilities/sales \times 360$	EFAR	$equity/fixed\ assets$
CTC	$ACP + IT - CPP$	CR	$costs/revenues$
TATR	$sales/assets$	MI	$material\ costs$ $/revenues$
ROA	$EBIT/assets \times 100$	LR	$labor\ costs/revenues$

Source: authors

To evaluate the performance of analyzed businesses, we used financial ratios from all areas of business financial health evaluation. We selected these indicators: Current Ratio (CL), Quick Ratio (QR), Average Collection Period (ACP), Inventory Turnover (IT), Creditors Payment Period (CPP), Cash-to-Cash (CTC), Total Assets Turnover Ratio (TATR), Return on Assets (ROA), Return on Equity (ROE), Return on Sales (ROS), Equity Ratio (ER), Debt to Equity Ratio (DER), Equity to Fixed Assets Ratio (EFAR), Cost Ratio (CR), Material Intensity (MI), and Labor-to-Revenue-Ratio (LR). Formulae used to calculate these indicators are listed in Table 1. From these indicators, performance drivers were selected.

To calculate the performance of businesses, we applied the EVA indicator where we used EVA Equity and EVA Entity formula (see Table 2). As the input to the correlation matrix, we applied the relative indicator EVA ROS. In the calculation of this indicator, we put EVA in proportion to sales. It represents operating profit margin, which has a higher informative value than conventional Return on sales.

Table 2: Formulae for EVA Indicator Calculation

Method of EVA calculation	Formula	Explanation of variables
EVA Equity	$EVA_{Equity} = (ROE - r_e) * E$	<i>ROE</i> – Return on equity <i>r_e</i> – Cost of equity <i>E</i> – Equity
EVA Entity	$EVA_{Entity} = NOPAT - WACC * NOA$	<i>NOPAT</i> – Net operating profit after tax <i>WACC</i> – Weighted average costs of capital <i>NOA</i> – Net operating assets
EVA ROS	$EVA_{ROS} = EVA/Sales$	

Source: Neumaierová and Neumaier, (2002); Harumová et al., (2008); Mařík and Maříková, (2005)

To select suitable drivers of businesses` performance, we applied a correlation matrix. It was processed with the use of the software Statistica. This software highlighted the values of the correlation coefficients, for which the p-value is lower than the selected level of significance $\alpha = 0.05$. To interpret the correlation coefficient, we used Cohen's (1998) scale. According to this scale, the absolute value of the correlation coefficient above 0.5 is interpreted as a strong correlation, the value of the correlation coefficient from 0.3 to 0.5 as a medium correlation, the value from 0.1 to 0.3 as a weak correlation, and a correlation coefficient value below 0.1 as a trivial correlation.

The significant indicators, which were confirmed by a correlation matrix, were the basis for the creation of a financial management map - an essential part of the BSC's strategic management map. It was constructed based on principles of creating a strategic management map, by defining a chain of causal links, which represents the interconnection of business goals, indicators, and drivers.

4. Results and discussion

The input analysis of the selected sample of businesses is listed in Table 3. The median of the Current Ratio indicates that half of the analyzed sample of companies achieve a liquidity

value higher than 0.9, which can be considered appropriate in relation to the given sector. The average CPP is 709 days, which can be considered a critical value. This indicator needs to be optimized in order to increase the performance of companies. Due to the value of CPP, the CTC is negative, which forces the management of companies to use an overdraft. Based on the mean and median of the Total Assets Turnover Ratio, we can say that total assets do not turn even once a year. In terms of profitability, the mean of Return on Assets is 5.6%, while its median is 4.6%. Better results were achieved for Return on Equity with a mean of 14.9% and median of 13%. The capital structure of analyzed businesses is 80% in favor of debt. The mean of the Cost Ratio is 0.96, which is confirmed by the median of this indicator. Material costs account for 27% and labor costs for 4% of the cost ratio. The results of these indicators show that corporate management should focus on reducing the high values of CPP, accelerating TATR, and optimizing the capital structure.

Table 3: Descriptive Statistics for the Analyzed Businesses

Sign	Descriptive statistics				
	Mean	Median	Min	Max	Standard deviation
CL	1.417	0.811	0.019	20.023	2.459
QR	1.49	0.732	0.019	19.954	2.443
ACP	155	58	29	7 560	519
IT	27	1	0	1 318	126
CPP	709	227	14	28 080	2 142
CTC	-527	-168	15	-19 202	1 497
TATR	0.734	0.254	0.001	9.926	1.393
ROA	0.045	0.044	-0.286	0.536	0.089
ROE	0.154	0.126	-16.176	9.098	1.401
ROS	-0.120	0.038	-41.529	4.935	2.565
ER	0.160	0.145	-2.571	0.983	0.333
DER	0.840	0.856	0.017	3.571	0.333
EFAR	4.627	0.202	-3.856	1 155.156	67.604
CR	1.005	0.955	-0.252	5.322	0.491
MI	0.265	0.093	0.000	1.257	0.283
LR	0.037	0.004	-0.001	0.425	0.057

Source: authors` Own

Table 4 shows the range of values of the EVA indicator. We can see that in the case of EVA Equity, 163 businesses are performing well and 180 businesses are not performing well. Most businesses achieved the value from the interval $<-4;0>$. In the case of EVA Entity, 217 businesses are well-performing and 126 businesses are not performing well. Most businesses achieved the value from the interval $<0;4>$.

In terms of performance evaluation of the sample of businesses, we can say that in the case of EVA Equity, there are 48% well-performing businesses. If we take into account EVA Entity, there are 63% well-performing businesses. According to this method of calculation, there are more well-performing businesses. It is due to the fact, that it takes into account the average cost of capital, which is usually lower than the cost of equity. It means that under the Slovak conditions, it is more appropriate to use EVA Entity.

To select suitable drivers of performance, which enter the BSC financial map, we used a correlation matrix (see Table 5).

Table 4: Range of Values of EVA Equity and EVA Entity

Range of values (in million)	Number of businesses according to EVA Equity	Number of businesses according to EVA Entity
-50 to -46	1	0
-46 to -42	0	1
-42 to -38	0	0
-38 to -34	0	0
-34 to -30	0	0
-30 to -26	0	0
-26 to -22	1	0
-22 to -16	1	0
-16 to -12	0	0
-12 to -8	1	1
-8 to .4	1	1
-4 to 0	175	123
0 to 4	160	213
4 to 8	0	1
8 to 12	1	2
12 to 16	2	1
Mean	-241 059	-22 135
Median	-11 465.9	48 578.9
Total	343	343

Source: authors` Own

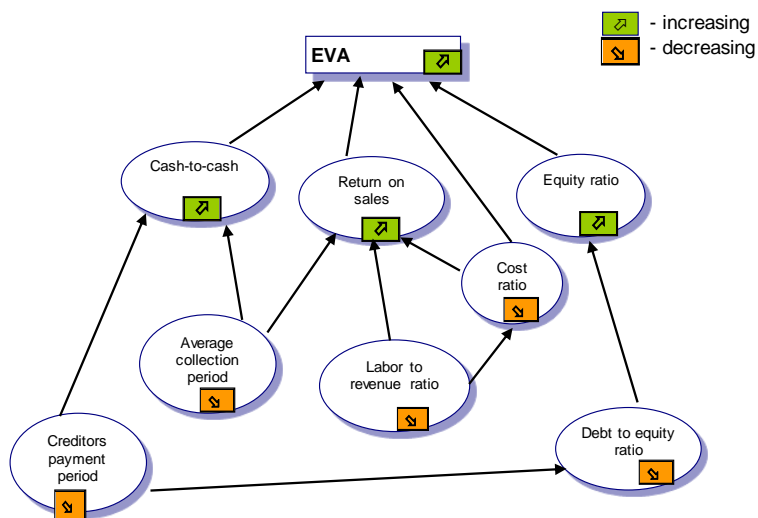
Table 5: Correlation Matrix for Selected Financial Indicators and EVA ROS

Correlations							
TL	.0166 <i>p</i> =.761	CPP	-.9989 <i>p</i> =0.00	ROE	-.0088 <i>p</i> =.871	EFAR	.0046 <i>p</i> =.932
CL	.0163 <i>p</i> =.764	CTC	.9988 <i>p</i> =0.00	ROS	1.0000 <i>p</i> =0.00	CR	-.9998 <i>p</i> =0.00
ACP	-.9867 <i>p</i> =0.00	TATR	.0310 <i>p</i> =.568	ER	.1445 <i>p</i> =.008	MI	-.0258 <i>p</i> =.635
IT	-.0132 <i>p</i> =.808	ROA	.0215 <i>p</i> =.692	DER	-.1445 <i>p</i> =.008	LR	-.1232 <i>p</i> =.023

Source: authors` Own

Note: The level of significance of correlations is indicated by the *P*-value.

The result of the correlation matrix is the confirmation of the significance of financial indicators in relation to the EVA ROS. There is a strong directly proportional relationship between the indicator ROS and EVA ROS and between the indicator CTC and EVA ROS. There is a strong indirectly proportional relationship between the indicator ACP and EVA ROS, CPP and EVA ROS, and CR and EVA ROS. Weak correlation is between ER and EVA ROS, DER and EVA ROS, and LR and EVA ROS. Based on the relationships confirmed by the correlation matrix, the strategic financial management map was created (see Figure 3).



Source: authors` Own

Figure 3: Strategic Financial Management Map

At the top of the financial management, the map is the EVA indicator, which can be optimized by increasing or decreasing the values of indicators that are significant in relation to the company's performance.

5. Conclusion

The analyzed industry significantly contributes to the total production of Slovakia. Its share in this production is 15%. Measuring and managing the performance of these companies is therefore very important. For performance measurement, it is important to choose a measure that includes all requirements of today. The performance measure should be comprehensive, which means that it should synthesize information on all areas of the company's activity, including selected market information. Such a measure is the EVA indicator. This indicator can be applied as a performance benchmarking tool, but in this case, the relative EVA ROS indicator is more appropriate.

The EVA indicator is the top indicator in the BSC strategic management map. In this map, among other perspectives, a significant role continues to be played by the financial perspective, despite many critical opinions. A perspective with financial goals and metrics represents the space into which the goals and metrics of other BSC perspectives are directed. An important condition in the selection of financial objectives is their measurability and causal relationship with the main objective or objectives of other perspectives. If a selected objective is not linked to at least one objective within the strategic management map, then this objective is inappropriate. To meet this requirement, it is necessary to use an adequate method, which would ensure the significance and continuity of individual objectives. A suitable method is the application of a correlation matrix or a regression analysis.

The results of the correlation matrix are the basis for creating a strategic financial management map. The top goal in the financial map is to increase the performance of companies, while its measure is the EVA indicator. The correlation matrix confirmed

significant indicators from the area of activity, profitability, capital structure, and cost ratios of the company. Based on the obtained results, significant measures of activity include indicators ACP, CPP, and CTC. These activity indicators are of considerable economic importance since liquidity develops depending on how fast the receivables and liabilities of the company turn around. It also affects the need for overdraft. We should emphasize the high value of CPP. The mean of this indicator reaches 709 days, which is an extremely long payment period of short-term liabilities. In order to improve the performance of companies, it is necessary to optimize the value of this indicator by reducing short-term liabilities. A significant measure of profitability is ROS – profit margin. It is one of the most important indicators, as its value directly affects ROA. The measures of capital structure include ER and DER. Monitoring these indicators in practice allows enterprises to manage the stability of the company, which is also essential to ensure their performance. The last group of indicators is operational ratios. From this group, CR and LR were confirmed as significant. All these indicators are important from an economic point of view. They are commonly used in business practice. Managers should plan the values of these indicators and then monitor their fulfillment. In case of deviations, they should take measures to eliminate them. This will ensure the assumption of performance growth. The use of the BSC method in measuring and managing the performance of businesses is beneficial, especially in the field of detecting value drivers. In addition, a significant benefit of BSC is the connection of the company's strategy with its operational management.

The future direction of our research will be to supplement the strategic management map with other BSC perspectives. Our vision is to focus on the customer perspective, the perspective of internal processes, the learning and growth perspective, as well as the new BSC perspectives that have not been sufficiently explored yet. Revealing objectives and measures in these perspectives is a challenge for the future. This vision has its limitations, which are related to the lack of information. This information is not a part of secondary information sources, but can only be obtained by collecting primary data in enterprises.

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