

# Performance and competitiveness of Slovak businesses

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**Abstract:** Nowadays business competitiveness and the ways of its quantification are frequently discussed issue. In this paper we focused on the calculation of business competitiveness with the application of selected methods. We based our analysis on the assumption that business which performance is high is also competitive. The aim of the paper was to calculate performance and subsequently competitiveness of the analysed sample of businesses. To achieve a goal the data of businesses operating in Slovak heat industry were used. In order to calculate business competitiveness we applied method for the calculation of potential sales and we compared them with real sales. We quantified business performance with the use of the EVA indicator. Then we compared the results of performance and competitiveness and we formulated the outcomes. The benefit of the contribution was the finding that we should add other more complex indicators to the sales to measure business competitiveness more precisely. This methodology could be beneficial in increasing business competitiveness.

**Keywords:** business; competitiveness; performance; sales

**JEL Classification:** C02; C05; C51; C53; M31; M21

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## 1. Introduction

The concept of competitiveness has become very common from the early 1980s. Despite the effort of many authors, there is still no uniform definition of competitiveness. This is also due to the fact that we can look at competitiveness from the different points of view. We can talk about competitiveness of the product, company, industry or country.

## 2. Literature review

In this paper we focused on business competitiveness therefore we defined competitiveness from this point of view. In order to define the concept of competitiveness, there are a number of opinions (business competitiveness is understood as a function (Whish and Sufrin 1998); as a minimization of costs (Arrow and Hahn 1991); as a competitive advantage (Hoecklin 1996)). According to Marimon et al. (1999) high quality goods are the basis for the definition of competitiveness. Pitra (2001) links competitiveness with the concept of a feature that helps the business to succeed in a competitive environment. Turner (1997) differentiates a narrow and wider definition of competitiveness. The narrow definition of competitiveness is expressed by the conventional relationship between price and costs within the business. More popular is wider understanding of competitiveness, which respects the evaluation of economic performance with the use of financial and economic indicators. Competitiveness at the corporate level is defined by Kissová (2009), as the ability to produce and sell a specific product while maintaining profitability. Competitive business has to be prepared to reduce product price if necessary and offer a higher quality than its competitor. Porter (1985) developed a detailed way of identifying sources of competitive advantage with the use of previously known tool based on cost analysis - value chain. He focuses his analyses mainly on the technical and economic dimension of strategy, competitive strengths and strategy formulation, but to a certain extent neglects the creative aspect, socio-political aspects, and problems of strategy implementation. This can be noticed in most of the papers focusing on the analysis of competition, whether statistical or methodological. Gervais et al. (1999) and Marinčík (2008) in the understanding of competitiveness of businesses refer to Porter et al. (2006). According to him macroeconomic, political and legal factors are the most important determinants of competitiveness. He also considers these factors as the basis for competitiveness at state, industry and enterprise level.

Among the parameters that create business competitiveness can be included: business performance and derived labour productivity (output/personal costs), as well as the volume of Value added and the derived productivity (Value added/personal costs), the sophisticated sectoral structure, the export dynamics and its territorial orientation, expenditures on research and development, investments in the modernization of technical and production base (Krauszová and Janeková 2008). The uniqueness of one of these factors creates a competitive advantage appreciated by customers, which motivates them to do a business with selected company.

Every business interested in increasing competitiveness should firstly evaluate its current situation in terms of performance. What stimulates entrepreneurs or managers to increase business performance? It is an effort to achieve profitability of invested funds, to strengthen the position of the business in the market and hence its competitiveness. Main factors which affect business competitiveness and performance are costs, time, quality, staff and business risks. Effective management of these factors can be an acceptable starting point in terms of increasing business performance and competitiveness. In practice, the most common indicators for measuring performance of companies (Performance Measurement System) are financial indicators – according to the opinion of a number of Slovak and foreign authors (Ittner et al. 2003; Dixon et al. 1990; Pavelková and Knápková 2009; Synek et al. 2007). In terms of claiming that the objective is not only to measure but above all to improve performance (Hammer 2007), it should be noted that these classical financial ratios have a low reporting value in analysing and assessing the financial performance of an enterprise, from the point of view of managerial tactical and strategic management decisions. The development of modern performance assessment indicators was therefore focused on the working out and design of indicators that would have the closest possible link to the value of shares, allowing for as much information as possible, and accounting data, including indicators based on accounting data, would include risk assessment and take into consideration the extent of the tied capital and, as the last one, would allow performance evaluation as well as evaluation of enterprises (Mařík and Maříková 2015).

Kislinger's et al. (2011) basic financial areas of enterprise performance evaluation and measurement can be complemented by some more recent and more modern indicators and methods, namely: evaluation using modern

methods with application of market characteristics such as, for example, Indicator EVA, INEVA, MVA, RONA, WACC, or indicators based on FCF, CVA and others. At present, attention to performance evaluation and measurement is devoted to the development of performance measurement methods that include not only financial indicators but also non-financial ones that support business strategy and also allow performance measurement for individual levels of management. Such methods include, for example, the Balanced Scorecard, the EFQM Excellence Model, the measurement techniques for organizational management - CMM (Capability Maturity Matrices), Performance Pyramid, EP<sup>2</sup>M (Effective Progress and Performance Measurement), Process Performance Management by Sink and Tuttle (1989).

Microeconomic competitiveness (BCI, Microeconomic or Business Competitiveness Index) can be assessed based on two sets of criteria: the quality of business environment and strategies of business performance. Since the conditions of external environment, such as the strength of competition, the structure and level of costs, the availability of resources - basic raw materials, finance and human resources, are roughly the same for each enterprise and industry, to improve competitive position it is necessary to focus on the internal functioning of the business, utilization of potential, improvement of performance and efficiency (Krauszová and Janeková 2008).

In line with the topic of this paper, we focused on business competitiveness in terms of its performance.

### 3. Measurement of competitiveness

According to the theme of the paper, when choosing ways of measuring competitiveness, it is necessary to focus on business performance measurement and consequently measurement of its competitiveness. If a competitive company wants to stay on the market for a long time, it has to be profitable. From this point of view, we can measure competitiveness through profitability measures such as Return on assets, Return on equity, Return on costs, revenues, sales and others. When assessing competitiveness we can supplement profitability ratios by indicators of solvency and ability to pay. Foltýn (2000) constructed criteria for the classification of businesses into the competitiveness groups. The method uses three indicators according to which enterprises are divided into four groups. *Indicator PP1 = Fast solvency (Current capital/Short – term liabilities); Indicator PP2 = Sales/Costs; Indicator PP3 = Gross Income/Short – term liabilities.* Rating: Group 1: businesses with  $PP1 \geq 1.5$ ,  $PP2 \geq 1$  and  $PP3 \geq 1$ ; Group 2: businesses with  $PP1 \geq 1.3$ ,  $PP2 \geq 0.85$  and  $PP3 \geq 0.9$  (except for group 1); Group 3: businesses with  $PP3 \geq 1.1$ ,  $PP2 \geq 0.7$  and  $PP3 \geq 0.5$  (except for group 1 and 2); Group 4: other businesses (except for group 1, 2 and 3).

The first group is characterized by Foltýn (2000) as profitable (PP1 and PP2 above 1) and at the same time solvent (short-term liabilities are secured by capital with a minimum reserve at the level of 50%) businesses. The second group consists of slightly non-profit (PP1 and PP2 slightly below 1) but adequately solvent (with a minimum of 30% reserve for covering short-term liabilities by capital) businesses. These may become profitable in the short term, for example with some state support. The third group is composed by businesses with limited profitability (values of PP2 and PP3 are very low) but with adequate solvency (with a 10-30% margin for covering short-term liabilities by capital). The fourth group includes businesses that, according to the selected criteria, have no prospect of profitability or solvency.

Garaldo et al. (2003) used GCI (Global Competitiveness Index) to measure business competitiveness by the ability of business to generate revenues and to cover cost of inputs necessary for production. It is a ratio of net business income to the opportunity costs of labour, land and capital. The value of GCI index should be higher than 1. Only in this case is business competitive. Further attempts to quantify competitiveness are based on business efficiency and performance measurement. According to Marišová (2001) the precondition for business competitiveness is its efficiency. Attractive and interesting view of calculating the coefficient of competitiveness is the approach of Chajdiak (2015) who uses simple or multiple linear regression models. Procedure for calculation of the coefficient of competitiveness is processed in a detail way in the chapter Data and Methodology.

In line with the topic of the paper we identified these research questions: Is business which performance is high also competitive? Are sales a suitable input for the calculation of the coefficient of competitiveness? Is it possible to apply the EVA indicator when calculating the coefficient of competitiveness?

**Aim:** The aim of the paper was to evaluate performance and competitiveness of businesses from Slovak heat industry. In line with the main objective we set partial aim – to calculate the coefficient of competitiveness.

#### 4. Data and Methodology

The research aimed at the calculation of competitiveness with the application of performance indicators was carried out on a sample of 30 businesses operating in Slovak heat industry. For performance and competitiveness evaluation we used the data from the Register of financial statements (RÚZ 2016) for the year 2013. Analysed businesses are local central heat supply systems, which according to the classification of economic activities SK NACE belong to Steam delivery and cold air distribution. Among them there are businesses with a monopoly position in given geographical area. Since we calculated the coefficient of competitiveness from the sales, we provide an overview of the sales of analysed sample (table 1). We can see that the sales within the sample differ significantly, while the median is at the level of 10 273 125 €.

**Table 1. Sales of the businesses from the analysed sample**

Business	Sales (€)	Business	Sales (€)
TP1	17 334 919	TP16	9 864 723
TP2	24 562 423	TP17	3 178 631
TP3	75 112 517	TP18	4 455 474
TP4	25 430 652	TP19	13 029 766
TP5	29 158 502	TP20	42 169 222
TP6	19 483 424	TP21	3 270 900
TP7	11 881 374	TP22	4 148 216
TP8	5 581 967	TP23	6 251 051
TP9	18 349 161	TP24	2 599 692
TP10	15 137 709	TP25	4 075 682
TP11	17 883 925	TP26	5 658 615
TP12	10 681 526	TP27	16 606 269
TP13	6 087 459	TP28	5 045 619
TP14	6 909 704	TP29	3 200 755
TP15	13 836 363	TP30	1 529 433

Source: Authors

As a basic method for performance and competitiveness measurement we applied profitability indicators. We used the following indicators: Return on sales (ROS), Return on equity (ROE), Return on assets (ROA). We applied these indicators because they belong to key business performance indicators. At the same time we based our analysis on the assumption that profitable business has high performance and is also competitive. Consequently, we applied the Economic Value Added (EVA) as a measure of the company's performance. The EVA indicator is the best known and most utilized modern indicator of performance measurement. This model is known from 1980s. Authors of the EVA model are representatives of Stern Stewart & Co., American researchers Joel M. Stern and G. Bennett Stewart III. The main task of the EVA model is the measurement of business economic profit. Extensive use of the EVA model dates back to 1989. We used the EVA Equity model and the EVA Entity model for performance calculation. The formula (1) indicates that the Economic Value Added is expressed in the way:

$$EVA_{Equity} = (ROE - r_e) \times E \quad (1)$$

where *EVA* stands for Economic Value Added, *ROE* is Return on Equity, *E* is Equity and *r<sub>e</sub>* represents Rate of Alternative Cost of Equity.

Formula for the calculation of EVA Entity is as follows:

$$EVA_{Entity} = NOPAT - WACC \times C \quad (2)$$

where *NOPAT* stands for Net Operating Profit after Tax, *WACC* is Weighted Average Cost of Capital and *C* represents Paid Capital.

Weighted Average Cost of Capital (WACC) is expressed by the formula:

$$WACC = r_d \times (1 - d) \times \frac{D}{C} + r_e \times \frac{E}{C} \quad (3)$$

where  $r_d$  stands for Cost of debt,  $d$  is income tax rate applicable for evaluated business and  $D$  represents market value of debt invested in the business (interest-bearing).

For the calculation of Cost of equity we used Build-up method which can be expressed by the formula:

$$E(r_i) = r_f + RP \quad (4)$$

where  $E(r_i)$  is Cost of equity,  $r_f$  is risk-free rate of return,  $RP$  is risk premium, which consists of various factors, according to basic classification it is divided into business risk factors, for example factors of market risk, factors related to size of the business and other specific factors (Štefko and Krajinák 2013) and financial risk factors, for example the risk of fluctuations in cash flow. Risk Premium according to Neumaierová and Neumaier (2002) is calculated based on the following risks:

$$r_e = r_f + r_{SL} + r_{business} + r_{instab} + r_{capstr}$$

where  $r_{SL}$  stands for Risk Premium for lower stocks liquidity in the market,  $r_{business}$  is Risk Premium for business risk,  $r_{instab}$  is Risk Premium for financial stability risk and  $r_{capstr}$  represents Risk Premium for capital structure risk.

For the calculation of the coefficient of competitiveness we applied methodology according to Chajdiak (2015). Basic calculation method was based on the final number of businesses (30) and on the value of the sales – S achieved by these businesses in the year 2013. With the use of appropriate regression model, in which the dependent variable was the sales and independent variables were  $x$ ,  $x^2$ ,  $x^3$  were calculated values of "That" according to formula:  $That = a + b \times x + c \times x^2 + d \times x^3$ . We chose cubic equation because this model had a higher value of R-square ( $R^2$ ) as for example when applying quadratic equation. With the use of expected value of the sales it is possible to calculate the coefficient of competitiveness according to formula:  $K_T = (T - That)/T$ . This coefficient reflects the share of increase in real sales compared to expected sales per unit of actual sales.

## 5. Results and discussion

To evaluate competitiveness of the analysed sample we chose profitability indicators. From the analysed businesses operating in Slovak heat industry only 3 businesses achieved negative value of ROS and ROE and two of them achieved negative value of ROA. The average value of profitability indicators was as follows: ROS 4.51%, ROE 18.31% and ROA 8.01%. Based on these values it can be stated that 3 businesses from the analysed sample (TP2, TP3, TP8) may have problem with performance and competitiveness, but generally the analysed sample of businesses has high performance and therefore it can be assumed that it is also competitive. The profitability results are shown in table 2.

**Table 2. Values of profitability indicators of analysed businesses**

Business TP	ROS	ROE	ROA	Business TP	ROS	ROE	ROA
TP1	3.90%	10.72%	10.37%	TP16	3.27%	2.90%	3.27%
TP2	-0.16%	-0.16%	1.05%	TP17	3.97%	5.26%	3.04%
TP3	-0.01%	-0.01%	1.29%	TP18	18.26%	39.27%	25.91%
TP4	0.31%	0.23%	1.45%	TP19	3.36%	12.00%	6.52%
TP5	5.73%	5.25%	4.10%	TP20	8.35%	13.60%	8.29%
TP6	1.57%	1.67%	1.50%	TP21	6.15%	36.73%	25.26%
TP7	0.59%	0.30%	0.70%	TP22	3.40%	3.30%	4.40%
TP8	-4.57%	-15.23%	-6.43%	TP23	9.87%	80.27%	11.80%
TP9	9.01%	17.98%	12.10%	TP24	1.22%	44.37%	2.61%
TP10	6.38%	8.11%	4.49%	TP25	1.16%	6.34%	4.05%
TP11	5.26%	19.15%	7.79%	TP26	9.13%	77.57%	11.77%
TP12	4.51%	29.90%	27.03%	TP27	7.66%	72.19%	29.90%
TP13	2.64%	8.53%	5.74%	TP28	6.57%	8.47%	5.96%
TP14	0.89%	9.63%	7.40%	TP29	5.54%	34.39%	8.14%
TP15	8.27%	9.07%	8.56%	TP30	3.03%	7.58%	2.31%

Source: Authors

If we assess business competitiveness with the use of performance indicator (EVA), we can say that only 14 businesses from the analysed sample have adequate performance and therefore they are competitive. The deterioration of the results was caused by Cost of equity used by the enterprises in their business activities. The Cost of equity increased due to the risk of capital structure and insolvency risk. The average performance value of analysed businesses was approximately at the level of 900 000 €. Table 3 shows values of the EVA indicator in € calculated by the method of Equity and Entity. From these values, the average performance was calculated. Based on the values of the EVA indicator we can conclude that Business TP27 reached the highest performance value and business TP3 achieved the lowest performance value. Businesses TP2, TP3 and TP8, which reached negative values of profitability indicators, achieved also negative value of performance (table 3).

**Table 3. Ranking according to achieved values of the EVA indicator (€)**

Business	EVA Equity	EVA Entity	Average	Business	EVA Equity	EVA Entity	Average
TP27	1 036 979	1 023 940	1 030 459	TP30	-61 740	-62 968	-62 354
TP18	654 216	706 389	680 303	TP25	-64 732	-66 135	-65 433
TP23	556 759	600 570	578 664	TP13	-172 458	-169 623	-171 041
TP26	398 896	411 237	405 067	TP28	-379 508	-383 981	-381 744
TP1	210 113	226 639	218 376	TP16	-446 964	-442 580	-444 772
TP12	196 537	217 763	207 150	TP20	-521 766	-564 858	-543 312
TP21	159 143	165 913	162 528	TP22	-611 595	-590 417	-601 006
TP19	158 564	154 163	156 364	TP8	-886 852	-850 575	-868 714
TP10	151 012	127 543	139 278	TP15	-971 848	-951 801	-961 825
TP9	81 454	130 796	106 125	TP7	-1 655 464	-1 637 673	-1 646 569
TP11	80 044	105 275	92 659	TP2	-2 622 734	-2 428 221	-2 525 478
TP29	86 088	84 536	85 312	TP6	-2 684 476	-2 594 321	-2 639 398
TP24	16 677	23 626	20 151	TP5	-3 156 352	-3 086 274	-3 121 313
TP14	12 340	18 433	15 387	TP4	-6 738 880	-6 580 559	-6 659 720
TP17	-58 278	-49 625	-53 951	TP3	-10 834 049	-10 700 662	-10 767 356

Source: Authors

After the calculation of performance indicators, we focused on calculating the coefficient of competitiveness. Our aim was to compare the results obtained by calculating the performance of businesses with the results of the coefficient of competitiveness. For the calculation of the coefficient of competitiveness we applied regression model. We used cubic equation, results of which were more appropriate than results of quadratic equation. Outcomes of regression model are stated in Table 4.

**Table 4. Results of regression model for That****SUMMARY OUTPUT**

<i>Regression Statistics</i>	
Multiple R	0.9301
R Square	0.8651
Adjusted R Square	0.8495
Standard Error	6E+06
Observations	30

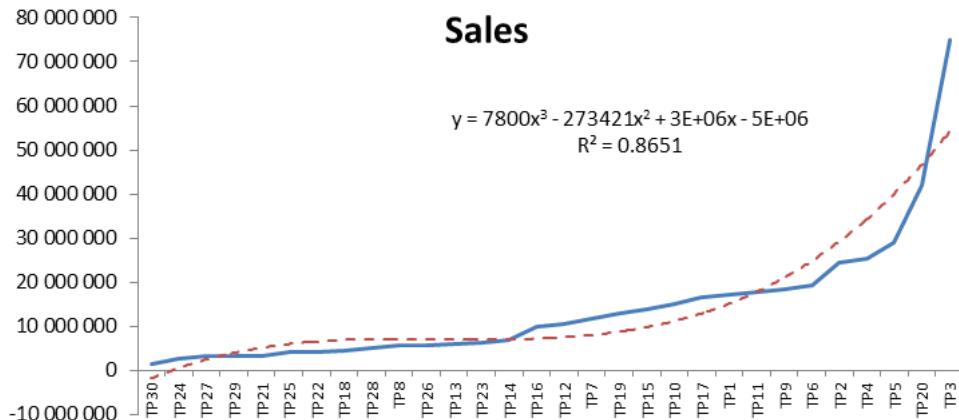
**ANOVA**

	Df	SS	MS	F	Significance F
Regression	3	5.5637E+15	1.9E+15	55.571	1.92E-11
Residual	26	8.67702E+14	3.3E+13		
Total	29	6.4314E+15			

Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%	
Intercept	-5E+06	4806497.859	-0.9711	0.3405	-14547294	5212501	-1E+07	5212501.35
X Variable 1	3E+06	1320827.51	2.37907	0.025	427338.6	5857338	427339	5857338.23
X Variable 2	-273421	98146.45099	-2.7859	0.0098	-475164.4	-71678.6	-475164	-71678.559
X Variable 3	7800	2083.263621	3.74411	0.0009	3517.769	12082.2	3517.77	12082.1879

Source: Authors

Results of the model are shown in Figure 1. As part of the analysis of real and potential sales it can be stated that businesses TP27, TP29, TP23, TP14, TP11 and TP9 achieve real sales approximately at the level of potential sales.



**Figure 1. Real and potential sales of businesses from the analysed sample**

Source: Authors

Table 5 shows the ranking of businesses according to the coefficient of competitiveness from the best one to the worst. The best one was the business TP 24, which achieved the coefficient of competitiveness at the level of 0.77 while its sales were at the level of 2.6 million €. This business achieved high Return on equity (44.37%) and also had high performance. The worst one was the business TP22. This company was less competitive, its performance was low and its Return on equity was at the level of 3.3%. Businesses TP8, TP3 and TP2, which were not profitable and their performance was low, were not competitive too. The exception was the business TP3, which achieved the highest sales of all analysed businesses. It is necessary to consider the exclusion of the business TP3 from the analysed sample due to the high deviation of its sales from the sales of other analysed businesses. We should also consider the exclusion of the business TP30 which reached the negative value of That. It means that this business is not competitive and we could not calculate the coefficient of competitiveness.

**Table 5. Ranking according to achieved values of the coefficient of competitiveness - K<sub>T</sub>**

Business	Sales	That	K <sub>T</sub>	Business	Sales	That	K <sub>T</sub>
TP24	2 599 692	585 994	0.77	TP9	18 349 161	21 084 852	-0.15
TP19	13 029 766	8 795 609	0.32	TP13	6 087 459	7 146 334	-0.17
TP7	11 881 374	8 054 842	0.32	TP2	24 562 423	29 292 900	-0.19
TP12	10 681 526	7 562 830	0.29	TP29	3 200 755	4 026 412	-0.26
TP15	13 836 363	9 831 930	0.29	TP26	5 658 615	7 196 098	-0.27
TP3	75 112 517	54 122 837	0.28	TP6	19 483 424	24 877 299	-0.28
TP16	9 864 723	7 272 773	0.26	TP8	5 581 967	7 213 818	-0.29
TP10	15 137 709	11 210 606	0.26	TP4	25 430 652	34 378 454	-0.35
TP17	16 606 269	12 978 436	0.22	TP5	29 158 502	40 180 761	-0.38
TP27	3 178 631	2 509 425	0.21	TP28	5 045 619	7 152 693	-0.42
TP1	17 334 919	15 182 221	0.12	TP25	4 075 682	6 028 256	-0.48
TP11	17 883 925	17 868 760	0.00	TP18	4 455 474	6 965 925	-0.56
TP14	6 909 704	7 137 872	-0.03	TP21	3 270 900	5 183 756	-0.58
TP20	42 169 222	46 746 622	-0.11	TP22	4 148 216	6 606 712	-0.59
TP23	6 251 051	7 111 325	-0.14	TP30	1 529 433	-1 790 680	

Source: Authors

From the calculation of the coefficient of competitiveness it is obvious that 12 businesses from the analysed sample are competitive. Remaining businesses are less competitive. The business TP11 achieved remarkable position because its sales are approximately at the same level as potential sales. The business TP27 which achieved the first position in terms of performance evaluation, placed in the 10<sup>th</sup> position when assessing competitiveness. The deterioration of its position was due to the fact that this business achieved the sales at the level of 20<sup>th</sup> business from 30 evaluated businesses.

## 6. Conclusions

When calculating the competitiveness, it is necessary to consider whether sales are an appropriate measure of business competitiveness. Measurement of sales-based competitiveness does not take into account cost. Therefore we can consider the assessment of competitiveness based on sales as insufficient. If we calculate the coefficient of competitiveness based on performance, we have to face a problem of negative values of the EVA indicator. Businesses with negative performance value should be excluded from the sample for measurement of competitiveness. The same problem arises in assessing competitiveness with the application of economic profit. When we used performance for measurement of competitiveness, we identified 16 businesses as less competitive. When calculating the coefficient of competitiveness, we marked 18 businesses as less competitive. Based on the above-mentioned we can conclude that when assessing performance and competitiveness of businesses in the analysed sample we achieved approximately the same results, but in several cases businesses did not reach the same position in both rankings. Therefore it would be appropriate to determine the ranking of businesses not only with the use of sales but also based on costs and then to calculate matching score. It is also necessary to use the sample of businesses with comparable sales. When calculating the coefficient of competitiveness we recommend applying the EVA indicator, which is more comprehensive measure than sales. However, when using this calculation method, a large number of businesses fall out of the analysed sample due to a negative value of the EVA indicator. We were not able to confirm that business which performance is high is also competitive, which was caused by the application of sales when calculating the coefficient of competitiveness. This issue as well as verification of the obtained results will be the subject to further research. However, this calculation is an appropriate tool for forecasting business sales and costs in order to ensure business competitiveness in a given industry and market.

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