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How do high-performance manufacturing enterprises differ from others with respect to the essence and use of controlling?

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Abstract. Controlling is perceived differently in practice and the range of practical tools often determines its essence. The aim of this study is to identify whether the performance indicator of manufacturing enterprises is a classifying factor in that involves the practical use of controlling. A total of 357 manufacturing enterprises were interviewed through a questionnaire by means of stratified sampling in 2021/22 and a Chi-square goodness-of-fit test was used to test the representativeness. Pearson's chi-square test, interval estimates of proportions, and z-test were used to test the hypotheses. The results revealed a significant dependence between the performance level of manufacturing enterprises measured by profit and the use of a wider range of controlling tools, as well as between the capital structure and the complexity of compiling a controlling report. The findings suggest that there are considerable gaps in the potential

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application of controlling in manufacturing enterprises, both in terms of the many controlling tools and in terms of using a higher level of the control function through controlling reports. Should these gaps be eliminated, the performance potential of enterprises would undoubtedly increase and overall decision-making would improved.

Keywords: controlling tools, profit, manufacturing enterprises, reports

JEL Classification: M11, M21, M40, P41

1. INTRODUCTION

Controlling, in the comprehensive context, is considered to be a managerial approach, which the main task is to coordinate the partial areas of planning, management and control to improve the performance and competitiveness of enterprises (Eschenbach 2004; Horváth 2009; Reichmann 2012; Sytnik, 2022; Kotapski, 2022). In a strict sense, controlling is often confused in practice with the concept and essence of control. A possible cause is the derivation from the original basis of the term "to control". However, this conception is somewhat misleading. The development of controlling and its use in the European area is linked to the post-war crisis period in the 20th century, especially in Germanophone countries, which was adopted from the practice of American businesses. Over time, it was introduced in other countries and became an important management approach. Nevertheless, perceptions of controlling differ throughout the European area and diverge from the American interpretation (Guenther, 2013). This is supported by Pavlovska & Kuzmina-Merlino (2013) and their statement that the American outlook is focused on financial aspects with a typical accounting approach, or the use of financial and accounting information systems, fundamentally, through cost accounting and budgets. The German viewpoint has been enriched with different contributions which centered on costs. Thus, the essence of controlling is perceived quite differently in the many regions of Europe and on a global scale. However, since controlling can create the potential for improving the functionality and value of an enterprise as well as the appropriateness of the decision-making processes and possible future success (Tamulevičienė, 2019), the scope of the use of controlling tools is still an issue of concern.

The use of controlling in enterprises can be identified in a wide range of costs (Behúnová et al., 2022, Nowak, 2016a), finances (Kozarevic & Vehabovic, 2020), investments (Agarwal & Chaudhry, 2022), personnel (Nowak et al., 2020) and quality (Dobrovič et al., 2019). However, its essence is perceived differently with a variety of practical tools and approaches, while the literature does not identify any classification factor to differentiate them. This diversity of perceptions consequently results not only in differences in the complexity of controlling use but also in their performance. The aim of this paper is therefore to identify whether the performance indicator of manufacturing enterprises is a classifying factor in several aspects of the practical use of the essence of controlling. A research gap has been identified in this area. This research could initiate a discussion and later comparison of similar results of other authors on this issue. Statistical testing of the hypotheses identifies the dependencies between the business performance and the scale of use of controlling tools as well as the capital structure and the complexity of controlling reports. The article structure is organized as follows. After the review of relevant literature follows a formulation of the research question and hypotheses. Then, the methodology is presented and the results reported and discussed. The final section draws conclusions and suggests potential future directions of research.

2. LITERATURE REVIEW

Controlling has a long history with continuously progressing developments. Although there is no established definition of controlling, it can be defined in reference to the nature of the control. While control focuses on monitoring and evaluating whether the processes implemented in an organisation are being carried out in accordance with standards (reactive management process), controlling focuses on active management and planning of the future performance of the enterprise in accordance with strategy and objectives (predictive management process). A concise definition of controlling is provided by Robbins & Coulter (2018), which define controlling as a process of monitoring, comparing, and correcting work and business performance. According to Tworek & Salamacha (2019), controlling is currently often implemented as a management-support method, which, raises certain controversies associated with its practical perception and use. These controversies primarily result from the multithreaded history of controlling, which promotes differences in the perception around the world (Mocanu, 2014). In general, it is possible to distinguish between the American and German concepts of development and understanding the essence of controlling. A different understanding of the essence of controlling also causes certain inconsistencies in literature, but especially in practical use. Controlling is then understood only as control and formal reporting, or as a supporting information base for decision-making, or comprehensively as a managerial management approach linking past and future dimensions. The foundations of the modern perception of controlling were laid in the USA, where the first jobs of "controllers" were created and the term "controllershship" was established (Goto et al., 2014). In this conception, however, these activities were associated with the job competencies of the "accountant" as we know it today, and the orientation of controlling was bound up with the tasks of managerial accounting. After World War II, some European countries (especially English-speaking) adopted the concept into their practice. Since then, controlling in US countries and some European countries has been combined with management and is referred to as "managerial/management" control. Controlling in its simplest sense is understood as control or decision support in many decision-making tasks. However, control aimed at recording and basic comparison of real and planned values, or just updating real events, provides a minimal potential for the use of the controlling concept. A better direction is to link the significance of control with decision-making. According to Kaplan (1991), Munck et al. (2020) and Lill et al. (2021), it is possible the management control system defines as a support for decisions which is possible to adapt to changes in the environment, provides information about cost and profitability of products, customers and investment activities. However, the situation is different in German-speaking countries, where a different, more complex view of the issue was created. Controlling was understood as a subsystem of organisational management support (Horvath, 2006), but at the same time as a coordinating subsystem support for planning and coordinating subsystems ensuring the rationality of decisions (Eschenbach, 2004; Zeman et al., 2018; Janka & Gunther, 2020). Rolf Eschenbach (2004), a prominent German expert defined its essence as the management of the enterprise as a system directed towards the achievement of goals and at the same time maintaining control over this system through secondary coordination. This secondary coordination helps to create and interconnects several management and information subsystems (information databases, planning, control, and management activities). Thus, controlling is very closely linked to business management, but it is not fully identifiable with it, as it is often perceived without decision-making competencies and responsibilities (Baran, 2015). Thus, contemporary authors perceive controlling as highly qualified decision-making advice (Schöning & Mendel, 2023; Behúnová et al., 2022; Kotapski, 2022). A detailed description of controlling, its tasks, possible competences and importance in the management system is also provided by studies by many authors (Tworek & Salamacha, 2019; Stańczyk & Stuss, 2018; Bin-Nashwan et al., 2017; Lopez-Valeiras, 2015; Horváth, 2009; Eschenbach, 2004). In their study, Potkány et al. (2022) visually present the concept of controlling from

Anglo-American countries and German-speaking countries, drawing attention to both similarities and differences. They state that the German concept is more detailed in terms of content as the focus is on costs, which are very precisely linked to other controlling tools (costing, budgets, reports, variances, forecasts). This paper thus builds on the German concept of controlling and consequently on Slovak theory and practice in manufacturing enterprises. The aim is to identify the range of used tools and approaches of controlling in relation to business performance. There is a certain research gap in this field. Manufacturing enterprises have been chosen deliberately due to the capital structure, the application of technological progress, and the need for continuous research. The highly competitive environment creates a high potential for the application of controlling principles. Several types of research were carried out in the past, aiming to describe the applied controlling tools in logistics companies. They considered strategic controlling tools (functional and cost analysis, wide range of costing, and Balanced Scorecard systems (Reta et al., 2018) to be important. In both manufacturing and commercial enterprises, SWOT, GAP and portfolio analyses are preferred (Taran, 2013). Mazaraki & Fomina (2016) have a different view and prefer to use controlling tools based on management functions (accounting, analytical, controlling, and organizational). Štefko et al. (2019) examined the diversity of controlling tools in the tourism sphere, where they consider the basic tools of operational controlling to be mainly the break-even point analysis, calculation, calculation of short-term economic results, and the analysis of bottlenecks. In the strategic area, they prefer tools similar to Taran, based on detailed analyses. Lositska et al. (2022) solved the problem with controlling implementation in trade enterprises and found that for economic efficiency it is important to use tools such as benchmarking, ABS and XYZ-analyses, outsourcing matrix, DPS method, profitability chart "Maisigma" and also the introduction of control mechanisms. The variety of existing tools suggests that the issue in question is designed quite profoundly and many factors determine its practical status. The know-how of the investor, the experience and skills of the managers, the specialisation of the sector and possibly the size of the enterprise, and especially the philosophy of practical application and expectations from the controlling concept are seen to be decisive factors. According to Weber & Schäffer (2019), controlling has undergone a significant shift in its complexity and use in the last two decades. The popularity in controlling demonstrates that it is possible to achieve measurable benefits in an organization that are valued by both owners and managers. According to Bienkowska (2020), the main benefits of controlling are improving the efficiency and competitiveness of the company as a whole, ensuring economic profitability and financial liquidity as well as the systematic improvement in economic performance.

In addition, controlling reports are a very important component in the concept of management and consulting. Therefore, this form of reporting is studied in this article. Furthermore, reporting is actually dealing with the presentation of data on the performance and economy of the enterprise based on historical data. However, controlling has a broader meaning because it uses data from reporting, but creates a presentation to provide information on future possible development and management. In this aspect, controlling reports have a special importance, thus they can be called a set of output information compiled in a certain form and with a certain content, which serves the management of the organisation. It is important that reports contain Key Performance Indicators (KPIs). This study works with the structure of the controlling report based on the comparison of time, past vs. future. The basic structure is given by the control mechanism with plan-reality-deviation. However, the higher version of the controlling report works with the items flexible plan and forecast. The most important task of controlling reports is the quantification of deviations. In general, anything that gives rise to conflict between expectation and what actually happens, as part of a certain activity, is deviation (Fazal, 2022). The term deviation includes anything that may cause obstruction in achieving business objectives. Swapnil and Asma (2019) define deviation in controlling as a state when actual results achieved by an organization are different from the standards set by an organization.

Unfortunately, the currently literature only marginally mentions the mechanism of influence created by the complexity of the use of controlling approaches and tools on the performance of the enterprise and at the same time it does not mention research on the performance and the complexity of controlling reports. However, some research presents the importance of financial controlling and its impact on the performance and efficiency of the company (Kozarevic & Vehabovic, 2020; Khudyakova et al., 2019) or, in general, the impact of the controlling function on the performance of the company (Vuko & Ojvan, 2013). Thus, it is possible to identify a research gap in management science. For this reason, the paper attempts to lay the foundations for future research and comparisons regarding this issue. Based on the literature review and analyses of previous research the subsequent research question (RQ) was formulated:

RQ: Is the indicator of manufacturing enterprises' performance a classifying factor in several aspects of the practical application of the essence of controlling?

Taking into account all the above-mentioned arguments, it is hypothesized that:

H1: manufacturing enterprises achieving higher profit levels using a wider range of controlling tools.

H2: there is a significant difference between groups of enterprises regarding the capital structure and the complexity of the controlling report.

3. METHODOLOGY

The aim of the research was to identify the current state of the use of controlling in manufacturing enterprises with the determination of the level of use of its tools and controlling reports and their relationship to the performance or capital structure of enterprises. The applied research method was primary quantitative using a questionnaire combined with personal interviews with managers. The examined causal factor of the research, which can influence use of a range of controlling tools. The dependence of the capital structure of companies and the complexity of the controlling reports in in terms of consequential factors was also investigated.

The research was carried out in 2021-2022. The analysed results were focused on the group of large, medium-sized and small manufacturing enterprises. We selected companies in the Slovak Republic with more than 10 employees. The determination of size categories of enterprises was based on the European Commission Directive No. 2003/361/EC (2003) and the determination according to NACE codes (European Industry-standard classification system, section C Manufacturing) into industries was also applied. The Statistical Office of the Slovak Republic information database was used for the purpose of identifying the of population size according to determination categories. According to published information, 2504 companies met the parameters for this survey. Precisely, manufacturing enterprises with a high degree of application of technological progress and a strong competitive environment create the potential for applying the principles of controlling. Therefore, manufacturing enterprises were chosen as the focus of the study.

To approximate value of a population proportions with the error of 0.05 the minimum sample size had to be deduced. To find how large a sample should be sample size determination of Yamane was used. According to the study of Chanuan et al. (2021) the Taro Yamane method is suitable for survey research and finite population. The minimum sample size calculation was made on the following formula.

$$n = \frac{N}{1 + Ne^2}$$

The parameter n signifies the sample size, N signifies the *population* under study and e signifies the margin error. Research which is focused on a target population of 2504 manufacturing enterprises with a margin of error 5%, requires a minimum sample size of 345 statistical units.

$$n = \frac{2504}{1 + 2504 \cdot 0.05^2} = 345$$

The sheer size of a sample does not guarantee its ability to accurately represent a target population. Another related but different issue is a representative sample. Stratified sampling was used to ensure that the sample was representative of different subgroups within the population. To ensure that the sample is representative, stratified sampling was applied. This involved dividing the population into subgroups (strata) based on different industry and then selecting a random sample from each stratum.

Out of the total number of respondents, the return rate of the questionnaires represented 14.26%, which was 357 manufacturing enterprises. Representativeness of the research sample was subsequently tested by Chi-square goodness-of-fit test.

Due to nominal or ordinal level of all measured variables selected statistical tools are concerned with proportions. The Pearson chi-square statistic was also applied in hypotheses testing as the most common statistic to test significance of the relationship between two categorical variables (Kohler, 1988):

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

This statistic test measures the degree of disagreement between the frequencies observed (O) and theoretically expected (E) – those when the two variables are independent. The distribution of the chi-square statistic can be approximated by the chi-square distribution provided that less than 20% of expected frequencies are at least five. For estimation of population proportions 95% confidence intervals were constructed according to the formula (Box, 2005):

$$p - z_{\frac{\alpha}{2}} \cdot \sqrt{\frac{p(1-p)}{n}} < \pi < p + z_{\frac{\alpha}{2}} \cdot \sqrt{\frac{p(1-p)}{n}}$$

To test the hypotheses concerning the two population proportions, the test criterion based on the z statistics with the normal distribution was applied (Lind, 2020). The parameters p_1 and p_2 are the sample proportions, n_1 and n_2 are the sample sizes. The parameter p is defined as $p = (p_1 \cdot n_1 + p_2 \cdot n_2) / (n_1 + n_2)$.

$$|z| = \frac{\sqrt{\frac{n_1 n_2}{n_1 + n_2}} \cdot |p_1 - p_2|}{\sqrt{p(1-p)}}$$

An alpha level of 0.05, traditionally used in similar studies, was used as a decision rule in hypothesis testing. All statistical analyses were performed using statistical software STATISTICA 12. The output tables were modified in the table editor MS Excel Office 365.

4. EMPIRICAL RESULTS AND DISCUSSION

The issue of controlling in the context of the defined RQ and the objective of the research has not yet been sufficiently analysed internationally and therefore, attention was focused on the Slovak business environment of manufacturing enterprises. The final data set obtained from 357 manufacturing enterprises was used for the research and meets the condition for the minimum sample size with an error of 5%. The representativeness of the research sample was tested by Pearson chi-square goodness-of-fit test (Table 1). There is no evidence ($p=0.914$) to warrant rejection of the claim that the given percentages are correct. Regarding the various industries in the population, the research sample is representative.

Table 1

Pearson chi-square goodness-of-fit test for representativeness of the research

Industry	Population proportion	Chi-square = 8.23 df = 15 p = 0.914			
		Observed O	Expected E	O – E	(O – E) ² / E
NACE 10+11	12.03%	46	43.91	2.09	0.10
NACE 13+14	7.11%	24	25.38	-1.38	0.07
NACE 15	1.76%	8	6.27	1.73	0.48
NACE 16	4.91%	19	17.54	1.46	0.12
NACE 17	2.00%	8	7.13	0.87	0.11
NACE 20	2.08%	7	7.41	-0.41	0.02
NACE 21	0.68%	5	2.42	2.58	2.74
NACE 22	8.99%	31	32.08	-1.08	0.04
NACE 23	4.55%	15	16.25	-1.25	0.10
NACE 24+25	23.88%	81	85.26	-4.26	0.21
NACE 26	2.84%	9	10.12	-1.12	0.12
NACE 27	6.03%	21	21.53	-0.53	0.01
NACE 28	8.63%	26	30.80	-4.80	0.75
NACE 29	6.23%	21	22.24	-1.24	0.07
NACE 31	3.31%	18	11.83	6.17	3.21
NACE 32	4.71%	18	16.82	1.18	0.08
Σ	100%	357	357.00	0.00	8.23

Based on the presented partial results of the research (Potkány et. al, 2022), it was possible to state that the share of manufacturing enterprises in Slovakia is basically balanced ($p=0.555$) in terms of practical use and non-use of controlling principles. Mainly large and partly medium-sized enterprises with the higher added value of sectors (NACE 26, 28, 29, 32) dominate in practical use. The range of controlling tools in the research was identified at a narrower level (two approaches and less than two) and a broader level (more than two tools). With regard to this research, the following tools were identified: control of cost consumption, control of quality and quantity of production, plan vs. reality, product pricing, use of benchmarking principles, comprehensive budgeting (revenue, cost, profit, cash flow, reserve), strategic tools (BSC, SWOT, GAP), and others. In the context of the first hypothesis H1 manufacturing enterprises were divided two-dimensionally for various combinations of levels of profit and scale of controlling tools (Table 2). The traditional profit indicator was chosen as a causal factor as one of the performance indicators of companies. The observed distribution of frequencies in the contingency table presents the calculation of the chi-square statistic, which was used in the test of the dependence of two mentioned categorical variables.

Table 2

Contingency table – enterprises classified by level of profit and by scale of controlling tools

Level of profit	Narrower range of controlling tools	Broader range of controlling tools	Total by row
Loss	10.23%	5.40%	15.63%
Profit up to 100 thousand euros	39.77%	12.22%	51.99%
Profit from 100 to 500 thousand euros	3.98%	20.45%	24.43%
Profit over 500 thousand euros	0.00%	7.95%	7.95%
Total by column	53.98%	46.02%	100%

The results of the survey revealed the use of controlling tools in manufacturing enterprises, especially with the application of basic reporting of control cost consumption, the application of costing, and the compilation of a plan with simple control. According to the results of the study by Nowak (2016), it is cost control that provides a substantial improvement in operational efficiency in enterprises. Similar conclusions are presented by Pavlatos (2021), who emphasizes the importance of reporting and control in times of crisis. Nowak (2016b) indicates that the use of wider scale of controlling tools with precise cost analysis may be an important approach for business performance and results. Table 3 presents results of contingency analysis. Several studies also examines the impact of controlling on the performance of the company (Bieńkowska et al., 2019; Tworek & Salamacha, 2019; Potkany et al., 2022). Table 3 presents results of contingency analysis. Based on the corresponding p-value of 0.000, the rejection of the null hypothesis of independence between the level of profit and the extent of controlling tools is justified. At the 0.05 significance level the amount of profit and scale of controlling tool of manufacturing enterprises are statistically dependent variables.

Table 3

Results of Pearson Chi-square test of H1 hypothesis

Level of profit x Scale of controlling tools			
Analysis of contingency	Chi-square statistics	degree of freedom	p-value
		122.33	3

Table 4

Contingency table – residual frequencies for various combinations of level of profit and scale of controlling tools

Level of profit	Narrower range of controlling tools	Broader range of controlling tools
Loss	6.31	-6.31
Profit up to 100 thousand euros	41.22	-41.22
Profit from 100 to 500 thousand euros	-32.42	32.42
Profit over 500 thousand euros	-15.11	15.11

Residual frequencies (Table 4) are useful to provide information about cells that contribute to a significant chi-square, which shows the dependence between variables. With regard to H1 hypothesis, we can state that there is a significant dependence between the performance of manufacturing enterprises measured by higher profit levels and a wider range of controlling tools. A wider range of controlling tools is applied by manufacturing enterprises with a profit level of over 100 thousand euros. The results of many studies investigating the impact of controlling on financial performance (Bieńkowska, 2020; (Tworek & Salamacha, 2019; Weber & Schäffer 2019; Eschenbach 2004) show a positive dependence of performance and application in the broader essence of controlling.

From a practical point of view, an important feature of the maximum use of controlling is mainly the complexity of the controlling report. Starting from a simple basic controlling report recording the real variables of revenues and costs based on the control mechanism for determining basic deviations, it is also possible to distinguish more complex report structures usable for determining more detailed deviations. More comprehensive forms of controlling reports include elements of forecast or flexible plans within the horizontal structure. The issue has been dealt with in more detail by (Däumler & Grabe, 2002; Rajnoha 2002). In regards to this, the complexity of the controlling report has also been defined for the purposes of this research in hypothesis H2. To verify H2 hypothesis, frequency analysis of research sample was performed. Distribution of the investigated manufacturing enterprises according to the capital structure and complexity of the controlling report is presented in Table 5. Among the investigated enterprises, 193 or

55% were in the domestic capital category; 63 or 18% were of mixed capital category; and 96 or 27% of the enterprises were of foreign capital. The complexity of the controlling report is clearly different for enterprises with a domestic capital structure. Most of them, 70.98% mentioned the possibility that they do not prepare a controlling report.

Table 5

Frequency table – distribution of the investigated manufacturing enterprises according to capital structure and complexity of the controlling report.

Capital structure	* Complexity of the controlling report	Absolute frequency	Proportion
Domestic capital structure	0 - none	137	70.98%
	1 - basic	29	15.03%
	2 - extended	18	9.33%
	3 - complex	9	4.66%
	Total	193	100.00%
Mixed capital structure	0 - none	25	39.68%
	1 - basic	25	39.68%
	2 - extended	9	14.29%
	3 - complex	4	6.35%
	Total	63	100.00%
Foreign capital structure	0 - none	21	21.88%
	1 - basic	25	26.04%
	2 - extended	29	30.21%
	3 - complex	21	21.88%
	Total	96	100.00

* Complexity of the controlling report: 0 – none: controlling report is not prepared, 1 – basic: plan-reality-deviation controlling report structure, 2 – extended: plan-reality-deviation-forecast controlling report structure, 3 – complex: plan-flexible plan-reality-deviation-forecast controlling report structure

In this way, the group of manufacturing enterprises with a domestic capital structure is separated from the remaining two groups. Estimation theory was used to construct a 95% confidence interval for Slovak manufacturing enterprises with domestic capital structure which do not prepare controlling report (Table 6).

Table 6

95% Interval estimate of Slovak manufacturing enterprises with domestic capital structure which do not prepare controlling report

Enterprises with domestic structure	Controlling report is not prepared	Sample proportion	Population estimate
193	137	70.98%	(65% – 77%)

Among companies with a predominance of domestic capital, the share of those that do not compile controlling reports is estimated at a high level, ranging from 65-77%. If the controlling report is considered to be a dominant output of management coordination through the creation of information databases, planning and control, its non-use can be linked to the search for barriers to the implementation of controlling. Several authors have dealt with the identification of benefits, mostly with barriers to the implementation of controlling. An important barrier is the time to prepare the implementation, the necessary finances and changes in the software support for reporting, but especially the resolution of the

issue of the importance and orientation to the different levels of control (Sedliačiková et al., 2019; Čambalíková & Mišún, 2017; Verburg et al., 2018).

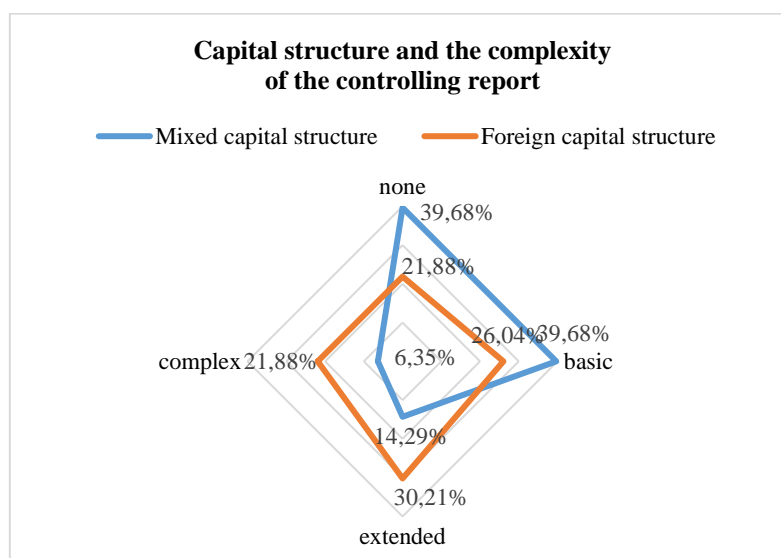


Figure 1. Distribution of manufacturing enterprises with mixed and foreign capital structure according to complexity of the controlling report

The research in question also confirmed that the reasons for the lack of interest in controlling in corporate practice are the lack of knowledge about the essence of controlling, the lack of technical equipment and skills of employees, as well as the concerns that the implementation would not bring the expected effects in the context of the investments. In the group of enterprises with mixed capital structure, almost 80% showed the same percentage at the zero and first level of controlling report complexity. Nearly 40% do not prepare the controlling report and an equal proportion indicated the existence of controlling report at the structure plan-reality-deviation (the categories highlighted in the Table 5 in bold). The group of companies with foreign capital structure was nearly evenly distributed in all four categories of controlling report complexity (figure 1).

Finally, differences at individual levels of controlling report complexity between enterprises with a mixed capital structure and companies with a foreign capital structure were tested. For that reason, a two-sample z-test for proportions at the 0.05 significance level was applied. Testing was set up to see if the proportion of one group is higher or lower than the proportion of another group (referred to as a one-tailed test). Results are presented in Table 7. The share of Slovak manufacturing enterprises that do not use the controlling report is significantly higher ($p=0.008$) in enterprises with a mixed capital structure of domestic and foreign capital (ratio 50:50). Similar findings can be seen in the case of enterprises that form a basic structure report with plan-reality-deviation items ($p=0.035$). On the contrary, the use of more comprehensive controlling report structures is significantly higher in the group of enterprises with foreign capital structures. This is confirmed by p-levels for enterprises generating an extended controlling report ($p=0.011$) with the possibility of forecasting future developments and also enterprises generating a complex controlling report ($p=0.004$) with the quantification of a wider range of deviations for the utilization of both the operational and tactical areas of management. However, there are also significant insufficiency in this group.

Table 7

Results of Z-test about two proportions

Level of controlling report complexity	Mixed capital		Foreign capital		z-test	p-level
	p1	n1	p2	n2		
Controlling report is not prepared	39.68%	63	21.88%	96	2.42	0.008
Structure plan-reality-deviation	39.68%	63	26.04%	96	1.81	0.035
Structure plan-reality-deviation-forecast	14.29%	63	30.21%	96	2.30	0.011
Plan-flexible plan -reality-deviation	6.35%	63	21.88%	96	2.63	0.004

The results of the research (Potkány, et al., 2022) dealing with the perception of the essence of controlling and its use in the practice of manufacturing enterprises confirmed the assumption that there is a difference between enterprises with different capital structures and the perception of the essence of controlling. Of course, several other factors may influence the real perception of the essence and use of controlling. The results of the research analysis of many EU enterprises suggest that the form of ownership is a very important explanatory factor for the difference in the performance of enterprises (Fitza & Tihanyi, 2017). Enterprises with a higher share of foreign capital structure, but also know-how, tend to understand controlling as a management system, mainly aimed at obtaining important information on cost and revenue consumption with the possibility of forecasting the future and quantifying and correcting important deviations. Many examples from practice testify successful operation of foreign capital enterprises on the Slovak market, as well as on the markets of neighbouring countries. Such enterprises have introduced their know-how in the field of management. The authors (Zandi et al., 2020; Dokulil et al., 2018; Wnuk-Pel & Christauskas, 2018; Belas et al., 2020) confirmed this fact in their studies. Based on these results, it was possible to confirm hypothesis H2 stating a significant difference between groups of enterprises regarding the capital structure and the complexity of the controlling report.

Detailed analyses of the research results show that the application of the range of controlling tools, as well as more complex structures of controlling reports, is higher in enterprises with higher added value, Return on Sales and Labour Productivity per employee. This data can be found in Figure 2.

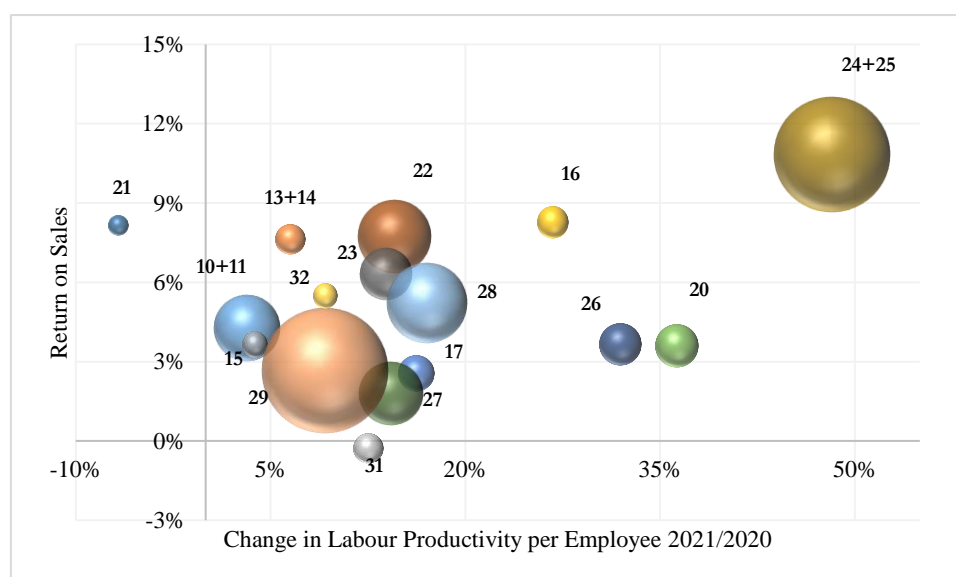


Figure 2. Change in labour productivity per employee according to value added and return on sales in Slovak manufacturing enterprises in 2021

This interesting 3D figure visually presents information on the percentage change in labour productivity per employee indicators in 2021 compared to the year 2020. Manufacturing enterprises are also classified according to the NACE classification, while the size of the circle characterizes the share of Value Added of the industry within the whole industry. Individual industries are also classified with respect to the increasing value of their performance measured by the Return on Sales indicator. Based on the data from the Industry Yearbook 2021, it can be seen the highest level of value added as well as the average level of Return on Sales was recorded in the manufacture of fabricated metal products (NACE 24+25), rubber products (NACE 22), machinery and equipment (NACE 28), and motor vehicles (NACE 29). All of these industries have above-average labour productivity per employee indicators as well as growth, but this is logically due to the impact of the global pandemic in 2020. The analysis of the results of the current survey also refers to enterprises that show positive results in several aspects of controlling, namely the wider range of applied tools, the complexity of controlling reports and also the overall understanding of its essence and possibilities. Thus it is possible to conclude that the indicator of manufacturing enterprises' performance is a certain classifying factor in several aspects of the practical application of the essence of controlling. In this case, the profit indicator was applied, but similar data could be verified by the Return on Sales or Return on Cost indicators. These results could be relevant to other sectors of the national economy. Mainly in the broad area of trade and also services (e.g. healthcare, transport, tourism and public administration). In more complex organisational structures, the need for research and development, informatization and technical progress can also pressure managers regarding the need for controlling management using secondary coordination e.g., possible analysis of deviations with future forecasting or providing decision making information. The possibilities of controlling provide managers the opportunity for faster and better orientation with more information. At the same time, they impact their decisions and consequently the business performance.

5. CONCLUSION

This paper aimed to identify whether the performance indicator of manufacturing enterprises is a classifying factor in several aspects of the practical use of the essence of controlling. It was assumed that a wider range of use of controlling tools would have a positive impact on the performance of enterprises as measured by the indicator of achieved profit. The assumption that foreign management know-how, represented by foreign capital structure, would have an impact on the complexity of the structure of controlling reports used for decision-making, forecasting and especially management was also examined. The given assumptions were confirmed by statistical tests on the sample of 357 Slovak manufacturing enterprises. The results revealed a space for the implementation of other controlling tools in the practice of manufacturing enterprises. Across the range of all industries, there is a certain group of small and medium-sized enterprises, especially those with domestic capital structure, where the possibility of using benchmarking principles, summary budgeting for all organizational units, including the evaluation of deviations, and complex controlling report structures is still absent. The results have also shown that the controlling tools in the environment of Slovak manufacturing enterprises are perceived rather at the level of information and advisory function for decision-making. Significant reserves are in the higher level of the controlling function through controlling reports for the fulfilment of the potential of secondary management coordination.

A certain limiting factor of the research is that the results are analysed only in the business environment of one country and also oriented only to partial areas of Controlling (Controlling tools and reports). Other authors have studied controlling from a wider context whereas this paper was more narrowly focused (available research on the subject by other authors is minimal or even non-existent). Therefore, this paper

has laid the foundations for comparing the results of other authors on this specific issue and thereby negate certain biases about the focus of controlling that is related particularly to control, or formal past reporting. Future research oriented on similar issues with a larger sample size and a wider geographical scope could help to achieve this goal, including the identification of barriers to the implementation of controlling principles.

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