





“Development trends in organizational and management structures”

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DEVELOPMENT TRENDS IN ORGANIZATIONAL AND MANAGEMENT STRUCTURES

Abstract

Development trends in management and organizational structures are considered one of the limitations of the ongoing transformation of the company architecture of enterprises in the Czech Republic. This study is based on the survey data of over 450 enterprises in different sizes and sector categories conducted in 2016–2019. Statistical dependence between the type of organizational structure and size of an enterprise is confirmed with a trend of transition to a department-based organizational structure at the expense of a division-based structure. A high degree of statistical dependence is found between the number of management levels and size of a company. However, a low level of statistical dependence is found between the number of management levels and the sector type. Dependence between management structure/size of an enterprise and its profitability is not confirmed. A critical strategic task for companies is acceleration of the transformation of the company architecture, including the organizational framework, and intensification of the innovation and digitalization based on a transfer of new knowledge into corporate practice. If enterprises accomplish this strategic task, they will generate higher value and they can be more profitable and sustainable. A transfer from classical management structures to departmental structures is demonstrated, which creates preconditions for transformation in process and project management. A new finding is an independent relationship between management structure/size of an enterprise and its profitability; and an opposite trend considering the number of management levels compared to the prediction, i.e., their decrease.

Keywords

development trends, management structure, organizational structure, management of enterprises, Pearson's chi-squared test, Cramer coefficient

JEL Classification

M13, D23

INTRODUCTION

Management and organizational structures can be seen as building stones of company architecture, which fundamentally limit the course of business processes. The organizational and management framework of an enterprise is an integral part of management activities and decision-making in day-to-day management. At the current stage of development of the market economy in which the businesses are operating, management and organizational structure represents one of the decisive factors in the meeting of their objectives. A specific setup of management and organizational relations in an enterprise is affected by internal and external factors. One example of internal factors may be the technical and technological level of the company's sources, while factors of the external environment may include e.g., legislative and legal changes, economic cycle, environmental policy, prices of raw materials, international conflicts, etc. The world's economy, i.e., the national and international market environment, is characterized by many changes, both in the private and public sectors. The changes are in the form of new development objectives, technological progress, information systems, innovation processes, digitalization, and automation of business processes. Enterprises use newly created forms of

market strategies with new elements and factors to adopt new strategies and new trends that affect their management and organizational structures (Tejada et al., 2020). This trend guides the enterprises towards the innovation of their product portfolios but also to the innovation of the company architecture, including customers, suppliers, and competitors within the market environment. Organizational structures create preconditions for the definition of respective divisions, departments, and job positions that are expected to meet the company objectives (Ahmady et al., 2016). The fast development of modern production methods, technological services, and new digital and telecommunication technologies in business practice contribute to new development trends in the organization and management of enterprises. The process occurs both in Europe and worldwide and, across the continents, it leads to previously unknown international groupings, associations, and partnerships (Gulden et al., 2020). An integral part of the future development of organizational and management structures will be artificial intelligence with its ability to work with big data and thus opening new opportunities for development (Vrbka & Rowland, 2020).

1. LITERATURE REVIEW

The efficiency of organizational and management structures depends on factors such as corporate strategy, culture, leadership, and high-performance work (Al Taweel, 2019). Properties of organizational structures may influence not only the type and character of products and services offered to the end customer but also the level of meeting customer needs (De Carvalho Borela et al., 2017). A change in the organizational structure may affect the entire system, including customers, suppliers, and competitors, i.e., the entire company architecture (Jenoui & Abouabdellah, 2018; Pártlová, 2017). An innovation process consists of managerial, organizational, and interdisciplinary innovations in the organizational setup of an enterprise. From the viewpoint of the executive part of the enterprise, the innovation process includes the growth of productivity, quality of work, and satisfaction of created work teams and groups (Belas & Sopkova, 2016; Rajiani & Ismail, 2019; Fialová & Hronová, 2016). Apart from those, innovation of the organizational framework of an enterprise also includes changes in organizational structures, changes in behavior and beliefs of the employees, and new rules, roles, and procedures to be applied in the enterprise (Alves et al., 2018). New competitive advantages are currently gained through innovations of the organizational structure as they make the enterprises in the market environment more competitive (Li, 2019). Innovations in that stage support not only the quality of the enterprise structure but also the quality of its products or services (Resler et al., 2018; Belas et al., 2020a). Unlike innovations

in management, organizational innovations are associated with many specialized innovations relating to redistribution of sources, organizational structure, and human resources policy (Rajiani & Ismail, 2019). Organizational design or correct organizational architecture of an organization critically influences the ability of a company to adapt to the ever-harsher market environment (Schwer & Hitz, 2018).

With the gradual introduction of process management, enterprises, and particularly big ones, tend to standardize their business outputs and processes, which requires changes in their organizational and management structures, including changes in management style (Šmite et al., 2019). Management of corporate changes depends on management and organizational structures; it allows a company to adapt successfully to the continually changing competitive environment (Setyanto et al., 2019). An appropriate organizational structure, which includes, among other things, company controls, may contribute to the innovative ability of the work teams formed within the newly formed company architecture (Wedl et al., 2018). According to the literature dealing with this topic, management of organizational structures and their changes in enterprises can be seen as an umbrella category of business processes (Klun & Trkman, 2018). At present, it is important to outline new or innovative decision-making processes and structures, which could support more flexible work performance, including utilization of new distribution of sets in installation systems. Processes set up in this way in the organizational and management structures would contribute to

new design solutions, which might address the uncertainty of the current markets (Battaia et al., 2018). Links between organizational structures, organizational processes, and strategy result in the development of the forms of organizational capabilities of the enterprise, specifically in the development of operating and dynamic capabilities. Characteristics of the organizational structure influence performance of the enterprise across all management and decision-making levels and especially in the innovation of the company portfolio. For this reason, it is necessary to set up the correct cross-functional integration, which will have a positive effect on organizational structures and the performance of the enterprise in the process of its development (Bai et al., 2017). Formalized style of enterprise management has a positive effect on cooperation between organizational structures, while a centralized style of management has a negative effect (Strese et al., 2016). It has been increasingly obvious that the application of new and improved methods of management in the conditions of modern economic dynamics does not lead to the achievement of the objectives (Andreeva & Shevchik, 2017). The main factors supporting successful business development include the standard of organizational structures and the innovativeness of the enterprise (Kramarenko & Kvitka, 2018). Current development trends in management and organizational structures include revision and reorganization of company operations so that sustainability of the enterprise and its process system become an organizational priority of the enterprise (Parida & Wincent, 2019). This can be achieved through a structured procedure within the management strategy, which will result in the management of changes in the individual organizational units (Sytanto et al., 2019). In the modern concept of economy, the creation of organizational networks and reconfiguration of systems of such networks are seen as the key point of the organizational structure (Zakrzewska-Bielawska, 2016). It was suggested to study the position and role of management and organizational structures and their behavior to ensure enterprise functioning in a crisis (Max, 2020). A crisis may lead to changes in the organizational structure; in the past, there were job cuts while a new trend is a delay and other changes in the organizational structure made to increase the efficiency of the business (Jankelová et al., 2018). An organizational struc-

ture presented as GitHub delegates selection of projects and assignment of projects to the workers and this principle corresponds with the latest trends in organizations that operate without traditional managerial positions (Burton et al., 2017). Organizational changes of organizational structures in the banking and financial sector require a high level of managerial awareness and the ability to predict the results of implemented organizational changes (Belas et al., 2015; Heorhiadi et al., 2018).

At present, the principal factor affecting organizational changes of organizational structures at enterprises is digitalization. This process includes the introduction of new business models, business processes, and changes in the development of products and interaction with customers, partners, and suppliers. The process opens an opportunity to revise the organizational structure and to improve the company (Kidschun et al., 2020). For this trend, it is essential to have competent managers who can effectively communicate across the individual corporate structures. This requires a high professional standard of the managers and therefore it is important to invest not only in the appropriate organizational structure but also in the improvement of professional competence and expertise of staff in managerial positions (Nosratabadi et al., 2020). An equally important factor affecting management and organizational structures is efficient interaction in the internal and external environment because it may ensure the sustainable development of the enterprise (Kasych & Vochozka, 2017). In this connection, organizations need to use appropriate generators of value that can control and reduce risks, increase profitability, and support the growth of organizations (Vochozka & Machová, 2017; Belas et al., 2020b).

Managements of organizations are responsible for their decisions, including knowledge of their financial health (Horák, 2020). The efficiency of enterprises depends primarily on how they can develop their organizational and management structures to address critical aspects, such as key tasks, communication, relations between workers, etc. (Govender & Parumasur, 2016). Managements of organizations shall consider not only the current competitive strategy of the enterprise; managers need to monitor its size category and adapt the

development intensity and organizational priorities accordingly for its future development (Váchal et al., 2017). A change in the organizational structure is associated with an obtained competitive advantage (Naveed et al., 2017). At present, a growing number of enterprises seek to make their organizational structures as simple as possible, even though the environment in which they operate is getting more complex and dynamic (Tworek et al., 2019).

2. AIMS AND HYPOTHESES

The study aims to analyze the relationship between the organizational structure and the size category of enterprises, including estimation of the number of management levels, which are further compared based on enterprise specializations. In addition, the relationship between the management structure, the size of an enterprise, and its profitability are tested.

2.1. Hypotheses

Based on the literature review and aim of the study, the following three hypotheses are devised:

- H1: The current development trend in organizational and management structures is a stronger representation of departmental structures, including those at small and medium enterprises.*
- H2: The type of the organizational structure depends on the size of an enterprise, number of management levels, and sector affiliation.*
- H3: The profitability of enterprises depends on the organizational structure and the size of an enterprise.*

3. DATA AND METHODOLOGY

The study was conducted using a survey of the corporate sector in the Czech Republic. A survey covered over 450 enterprises of different sizes and different sectors in 2016-2019 on the territory of the South Bohemian region; the test group of enterprises had been proposed and approved by the Czech Statistical Office as a representative sample

and the resulting group of enterprises was divided into size categories. The questions concerned organizational and management structures, departmental structure, and long-term development plans of the enterprises.

The activities and their outputs are focused on the evaluation of the status of organization and management in enterprises by size categories and on the prediction of their future development.

The following statistical methods were used for the evaluation of the research data: Pearson's chi-squared test (χ^2) and Cramer contingency coefficient (V).

The Pearson's chi-squared test verifies whether a certain random quantity has a predetermined probability distribution and it only indicates the existence of dependence but not its character.

Pearson's chi-squared test is as follows (Greenwood & Nikulin, 1996):

$$\chi^2 = \sum_{i=1}^k \frac{(x_i - Np_i)^2}{Np_i}, \quad (1)$$

where χ^2 is chi-square (to be compared with the critical value as stated in the tables), x_i is the empirical frequency (actual), and Np_i is the theoretical frequency (expected).

In the case dependence is proved, a calculation is performed using the Cramer contingency coefficient (V), which determines the level of dependence of individual quantities.

Cramer contingency coefficient is as follows (Budíková et al., 2010):

$$V = \sqrt{\frac{\chi^2}{n \cdot (m-1)}}, \quad (2)$$

where χ^2 is chi-square, n is the number of respondents, and m is the number of columns.

Values of the Cramer contingency coefficient indicate the following levels of dependence: the value between 0 and 0.1 indicates negligible dependence; the value between 0.1 and 0.3 indicates weak dependence; the value between 0.3 and 0.7 indicates medium dependence; and the value between 0.7 and 1 indicates strong dependence (Budíková et al., 2010).

4. RESULTS

4.1. Testing dependence between the management structure type and the size of an enterprise

In agreement with the first hypothesis, the trend in organizational and management structures is analyzed from the viewpoint of size categories of the enterprises. Table 1 and Figure 1 show the outputs of the performed analysis.

Table 1. Development trend in organizational and management structures based on the size

Management / organizational structure	Enterprise size				Total
	Micro	Small	Medium	Big	
0.00%	1.78%	2.89%	2.00%	6.67%	
0.00%	4.44%	2.89%	5.78%	13.11%	
24.22%	23.78%	21.56%	10.67%	80.22%	
24.22%	30%	27.33%	18.44%	100%	

When testing the first hypothesis, statistical dependence between the type of organizational structure and the size of an enterprise was tested initially. Statistical dependence between the tested values was found (P -value = 6,845E-11; α = 0,05; V -value = 0,3624), while the values suggested a medium degree of dependence. The test group of enterprises demonstrated the highest representation of departmental management structure in

all the size categories. On the contrary, the least represented structure, also in all the size categories, was the divisional management structure. Despite confirmation of the expected relationship between the management structure type and the size of an enterprise, the analysis did not confirm a strong statistical conclusiveness that was expected. Considering closer this issue using structured interviews with top managers, the results reflected the process of upcoming transformation of the company architecture, including management structures. Another fact that may have affected the results was a lower professional awareness of the managers about management structures and their classification.

4.2. Testing dependence between organizational structure type, size category, sector, and number of management levels at the enterprises

Table 2, 3, 4, and Figure 2 provide the outcomes.

The data in Table 2 make it possible to conclude that the number of management levels in an enterprise is directly dependent on the size category (P -value = 2.2E-16; α = 0.05; V -value = 0.7234, which indicates strong statistical dependence). The results also show that with the growing size of an enter-

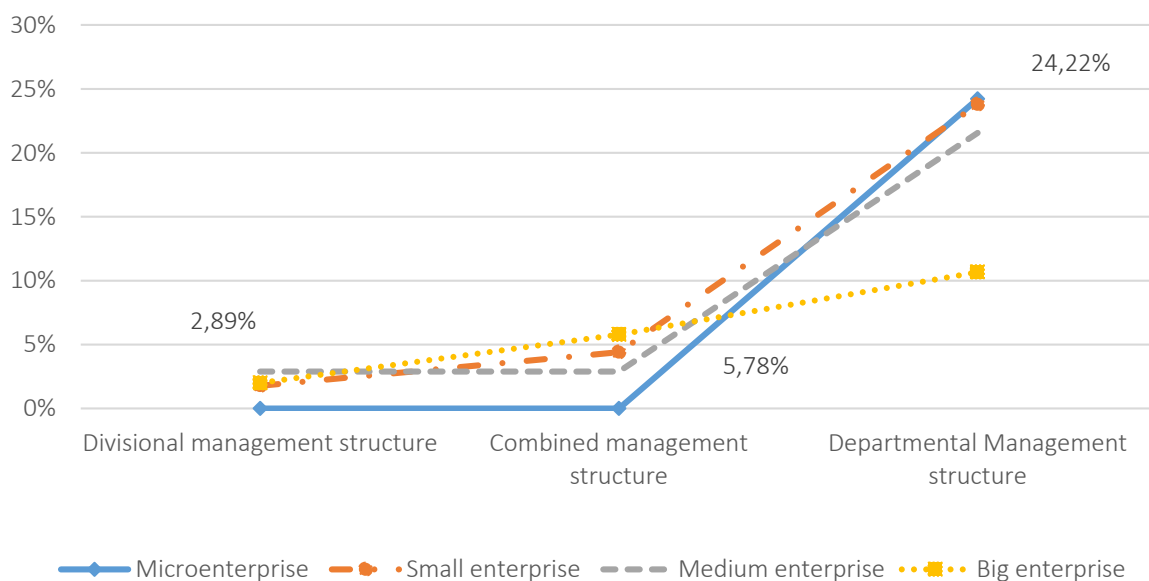


Figure 1. Percentage expression of dependence of a management organizational structure on the size of an enterprise

Table 2. Dependence between the number of management levels and the size of an enterprise

Enterprise size	Number of management levels				Total
	One level	Two levels	Three levels	Four and more levels	
Microenterprise	16.96%	6.47%	0.67%	0.22%	24.33%
Small enterprise	13.17%	10.27%	5.80%	0.67%	29.91%
Medium enterprise	3.79%	8.04%	11.38%	4.02%	27.23%
Big enterprise	0.22%	1.56%	8.71%	8.04%	18.53%
Total	34.15%	26.34%	26.56%	12.95%	100%

Table 3. Dependence between the number of management levels and sector affiliation

Enterprise sector	Number of management levels				Total
	One level	Two levels	Three levels	Four and more levels	
Manufacturing and industry	13.20%	9.40%	15.21%	6.04%	43.85%
Services	21.03%	17.00%	11.19%	6.94%	56.15%
Total	34.23%	26.40%	26.40%	12.98%	100%

Table 4. Dependence between management structure and the number of management levels in the enterprises

Management / organizational structure	Number of management levels				Total
	One level	Two levels	Three levels	Four and more levels	
Divisional management structure	1.12%	2.01%	2.23%	1.34%	6.70%
Combined management structure	2.01%	3.35%	2.68%	5.13%	13.17%
Departmental management structure	31.03%	20.98%	21.65%	6.47%	80.13%
Total	34.15%	26.34%	26.56%	12.95%	100%

prise the number of management levels increases. One level of management prevails in microenterprises; the biggest enterprises demonstrate an opposite trend but also the number of management levels tends to decrease because of the innovation of management structures. Medium enterprises in the tested sample had most frequently three man-

agement levels. The subsequent analysis focused on the dependence between the number of management levels and the enterprise sector (Table 3) and it has shown that the number of management levels in an enterprise depends on the sector affiliation (P -value = 0.005031; α = 0.05; V -value = 0.1694, which indicates a low degree of depen-

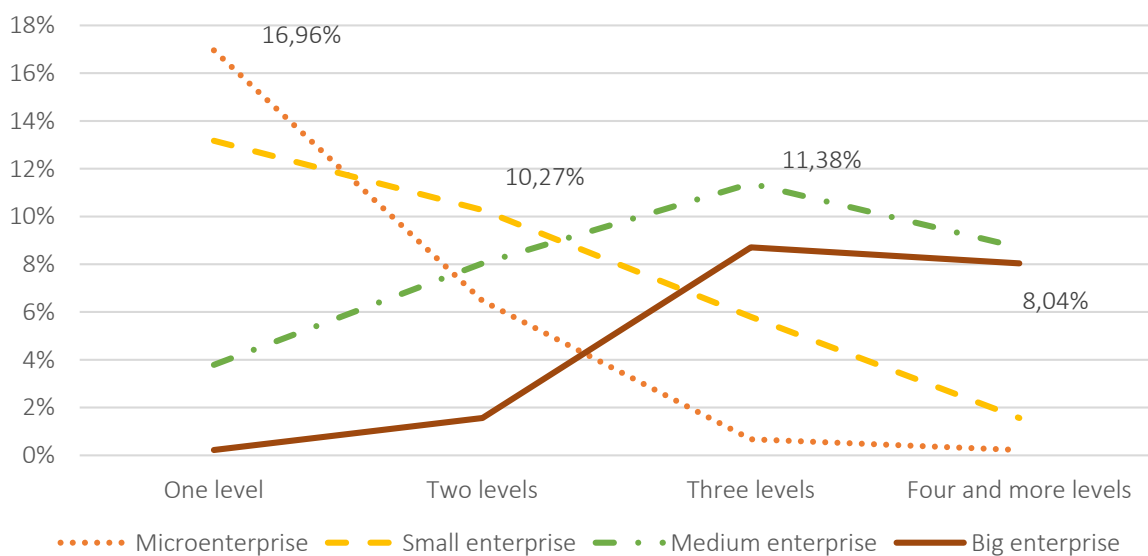


Figure 2. Percentage expression of dependence of the number of management levels on the size of an enterprise

Table 5. Dependence between management organizational structure, size, and profitability of enterprises

Management structure	Profitable (in %)				Break-even (in %)				Loss-making (in %)				Total (in %)
	Micro	Small	Medium	Big	Micro	Small	Medium	Big	Micro	Small	Medium	Big	
Divisional management structure	0.00	1.33	2.00	2.00	0.00	0.44	0.67	0.00	0.00	0.00	0.22	0.00	6.67
Combined management structure	0.00	3.56	1.33	5.11	0.00	0.44	1.11	0.44	0.00	0.44	0.44	0.22	13.11
Departmental management structure	17.11	18.00	16.22	8.00	6.00	5.11	4.00	2.22	1.11	0.67	1.33	0.44	80.22
Total	17.11	22.89	19.56	15.11	6.00	6.00	5.78	2.67	1.11	1.11	2.00	0.67	100.00

dence). The outputs also indicate that the most frequently represented number of management levels in the tested sample of enterprises was one in the case of enterprises in the services sector. The least represented were enterprises with four and more management levels in the services sector. Dependence between the management and organizational structure and the number of management levels was analyzed additionally (Table 4). The results show dependence between the management structure of an enterprise and the number of management levels (P -value = $1.742E-08$; $\alpha = 0.05$; V -value = 0.3244 , i.e., medium degree of statistical dependence). The results also indicate that the most frequently represented organizational structure in the tested sample of enterprises was the de-

partmental management structure at all management levels and, on the contrary, the least represented management structure at all management levels was the divisional management structure.

4.3. Testing dependence between profitability, size, and management structure type of an enterprise

The results are provided in Table 5 and Figure 3.

The analysis was focused on the dependence between management structure, size, and profitability of the enterprises (Table 5). The results showed

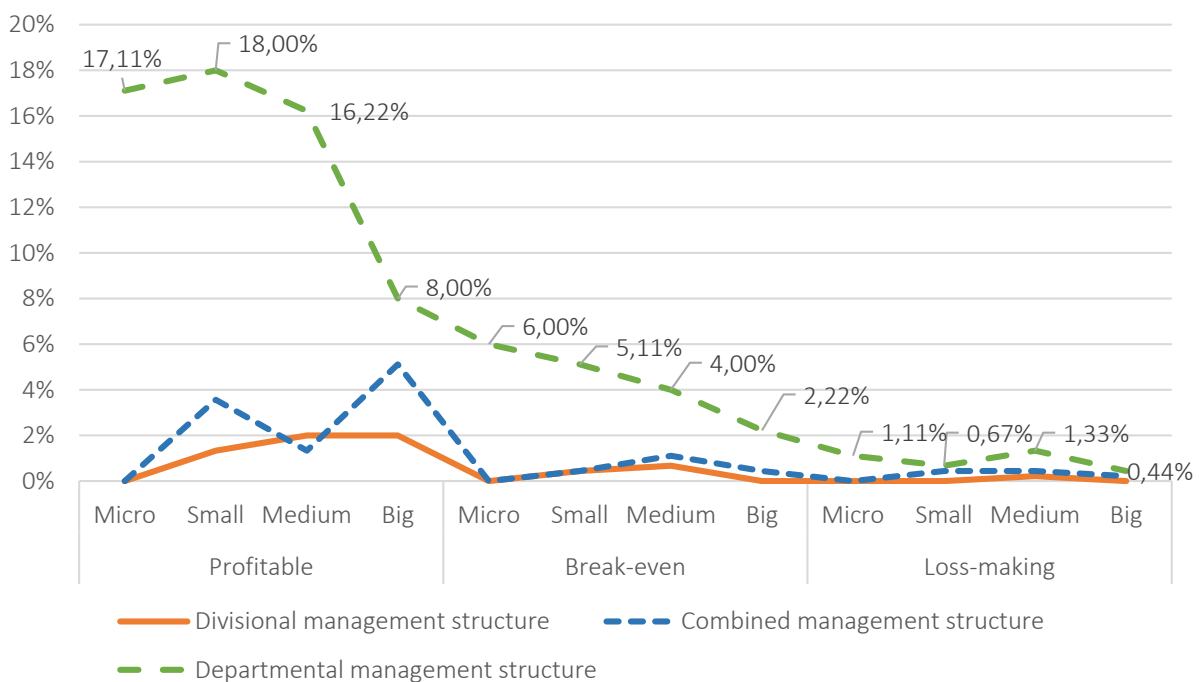


Figure 3. Percentage expression of dependence between management and organizational structure, size, and profitability of enterprises

that the organizational and management structure is not dependent on the profitability of the enterprise (P -value = 0.5188; $\alpha = 0.05$). The most represented organizational structure in the tested sample of enterprises was the departmental management structure for all types of economic results; on the contrary, the least represented structure, again for all types of economic results, was the divisional management structure. Statistical dependence of profitability on the management structure and the size of an enterprise has not been proved (P -value = 0.4584; $\alpha = 0.05$). It should be noted that the study was conducted in a period of strong economic growth and a big majority of the enterprises were highly profitable, which was naturally reflected in answers of the approached managers. For this reason, this type of study must be repeated in a period of economic decline or recession.

5. DISCUSSION

Results from testing the first hypothesis, which focused on development trends in organizational and management structures, have shown growing representation of the departmental structure, including that in small and medium enterprises. This is a particularly surprising and new phenomenon in microenterprises, and it proves the general character of the observed trend. Tworek et al. (2019) stated that a continually growing number of enterprises seek innovation of their organizational structure concerning their size and sector affiliation. Similar conclusions have been published by Šmite et al. (2019) who additionally associated this topic with a change in the management style. Ahmady et al. (2016) associated the role of the size of the enterprise with the fulfillment of enterprise objectives and the building of company units. At the same time, it is believed that size categories of enterprises are not the key factor in the innovation of company architecture. For example, Kramarenko and Kvitka (2018) stressed the importance of the innovation process for changes in the organizational structure. Kidschun et al. (2020) mentioned the critical role of relationship of enterprises with customers, partners, and suppliers. There is no uniform view of this topic in the scientific community. However, one can expect a principal significance of the size for the creation

and innovation of the enterprise structure. In addition, other factors should be considered that are present in the business sphere, such as the innovation process, digitalization process, transition to process-based management, and, most recently, project management of business processes. Future studies should also focus on the transformation of company architecture.

The second hypothesis addressed dependence between the organizational structure type, the size of an enterprise, number of management levels, and sector affiliation. The outputs from the performed analyses make it possible to conclude that the number of management levels in an enterprise directly depends on the size category – with a strong degree of statistical dependence. The outputs have shown that with the growing size of the enterprise the number of management levels increases. On the contrary, for big enterprises the trend is opposite – the number of management levels is reduced as a result of the innovation of the management structure. Medium enterprises in the tested sample had mostly three management levels. Further, the relationship between the number of management levels and the sector affiliation was analyzed. The level of dependence has been determined as low. The most frequently represented number of management levels in the tested sample of enterprises was one level of management in the enterprises in the services sector. On the contrary, the highest number of management levels is found in the big size category of enterprises in the manufacturing and industry sector.

A medium degree of dependence is found between the number of management levels and sector affiliation, similarly as between the management structure of the enterprise and the number of management levels. Based on the results it is concluded that the most frequently represented organizational structure in the tested sample is the departmental management structure across all management levels. On the contrary, the least represented management structure across all management levels is the divisional management structure. These results confirmed also the second hypothesis. The literature review has shown that there are principal differences in how this topic is viewed. On one hand, this topic is considered secondary and the focus is put on the increasingly competitive

environment and related changes. For example, Andreeva and Shevchik (2017) stressed dynamics of the economic development, Battaia et al. (2018) pointed uncertainly of the current markets, and Gulden et al. (2020) observed the formation of previously unknown international groupings, associations, and partnerships. However, De Carvalho Borela et al. (2017) emphasized the importance of the enterprise portfolio and services offered to the end customer, as well as the level of customer satisfaction. Similarly, Naveed et al. (2017) mentioned that a change in the organizational structure is associated with an obtained competitive advantage. It is impossible to decide objectively whose ideas are dominant as the economies of individual countries are affected by geographical and political differences. In the conditions of the Czech national economy, an inclination towards the views of Burton et al. (2017) is observed: the organizational structure is described as GitHub using the principle of delegating selection and assignment of projects to its workers, while this principle corresponds to the latest trends in organizations that operate without traditional managerial positions.

The third hypothesis focused on the dependence between the management structure, size, and profitability of enterprises. The results showed that the management structure of enterprises does not

depend on their profitability. The data also indicate that there is no dependence between the size of an enterprise and its profitability. The third hypothesis has not been confirmed. However, there is a need for further studies in a different stage of the economic cycle, i.e. during economic decline or recession due to the effects of company architecture on the profitability of enterprises. For example, Kasych and Vochozka (2017) concluded that an equally important factor in management and organizational structures is effective interaction in the internal and external environment of an enterprise because the interactions may ensure sustainable development of the enterprise. Similarly, Kljucnikov et al. (2016), and Vochozka and Machová (2017) stated that it is important to use value generators in the organizations that can control and reduce risks, to increase profitability and support the growth of the organization. Valaei et al. (2017) expressed similar opinions declaring the importance of restructuring organizational structures based on the size category, as this leads to higher profitability. The selection of an appropriate organizational structure must support high efficiency of production and optimization of production capacities. Considering this study, there are fundamental effects of innovations of the company architecture on a generation of value in an enterprise, its profitability, and sustainability.

CONCLUSION

The topic of development trends in management and organizational structures can be seen as one of the limitations of the ongoing transformation of company architecture. Identification of the current trends in business practice is a fundamental precondition for the general setup of procedures in the individual size categories and respective sectors or industries. The formulated hypotheses were based on widely discussed questions in the business sphere. They focused on the significance of size and sector (industry) affiliation for enterprise profitability, suitability of individual organizational structures in this context, and on effects of changes in the business environment on the growing intensity of transformation of company architecture as a whole because of the digitalization process. Outputs with a good explanatory power have been obtained for all hypotheses and they can serve as a basis for further studies, particularly in the current period of economic decline or recession.

From this viewpoint, the set of objectives has been achieved while the results need to be further specified, validated, and, in some cases, extended to include new facts resulting from this solution. The topic has been addressed at the industry level, which is the basic level of formation of value-creating streams. Another field to be addressed is the networking of organizational structures, including rules for the implementation of matrix structures. In the course of the study, managers of the enterprises also opened the issue of the so-called circulation work teams within the company architecture as a response to the introduction of new information technologies in the process-based management of

enterprises. According to the literature review, it can be concluded that changes in the organizational and management structures have a common basis, which is linked to a transition to the process and project management. Therefore, it is logical that managers of enterprises prefer departmental structures that are currently the most convenient for process-based management. The transformation of organizational and management structures is further intensified by the ongoing processes of automation and digitalization and by the application of the virtual environment in many decision-making processes in enterprises. All those issues must be addressed in the next stage of the research, which was launched at the beginning of 2020.

AUTHOR CONTRIBUTIONS

Conceptualization: Jarmila Straková, Jan Váchal.

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Formal analysis: Jarmila Straková, Jaroslav Kollmann, Milan Talíř.

Funding acquisition: Jan Váchal.

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Validation: Jarmila Straková, Jan Váchal.

Visualization: Jaroslav Kollmann, Milan Talíř.

Writing – original draft: Jan Váchal, Milan Talíř.

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