

ARCHETYPE OF THE ORGANIZATIONAL STRUCTURE

Marian HOPEJ

Wrocław University of Science and Technology, Faculty of Computer Science and Management, Wrocław;
marian.hopej@pwr.edu.pl, ORCID: 0000-0002-6120-6024

Purpose: The main purpose of the paper is to prove that every organizational structure of a medium and large organization has its basic construction (archetype). An attempt was also made to develop its measurement tool.

Design/methodology/approach: The purpose execution is based on a critical literature review, as well as the use of a fractal calculus in measuring the simplicity (complexity) of the archetype.

Findings: The concept of archetype is defined, i.e. the solution of the dual organizational problem of differentiation and organizational integration adopted on the second “top” hierarchy level. The archetype, understood in this way, shapes the organizational order, in spite of small changes in the structure, made on a small scale, and contributing to the organization’s identity. A method for measuring the complexity (simplicity) of the archetype has also been proposed. and may be helpful in simplifying structural solutions.

Originality/value: An original archetype measurement tool may be helpful in simplifying structural solutions.

Keywords: organization, organizational structure, complexity of the organizational structure.

Category of the paper: Conceptual paper.

1. Introduction

The organizational structure, which is a set of rules specifying expectations regarding organizational behavior, is an element of every organization, including Higher Education Institutions (HEI). Organizational rules determine the ways, in which members of the organization act, to make them more predictable. Thus, they limit their decision-making freedom and, as emphasized by H. Steinmann and G. Schreyögg (2001), the rule is that the more rules are there, the more work is done without the hint of individuality.

Organizational rules are usually introduced on the official road, i.e. they have a formal character. Not infrequently, they also arise spontaneously and work well in everyday functioning. They have an informal character and are an additional source of patterns and

expectations, corresponding, to some extent, with formal rules (Steinmann, and Schreyögg, 2001).

The organizational structure has important regulatory functions by shaping the internal organizational order. On the one hand, it determines the place in the organization of each of its participants, on the other hand, it sets the standards for individual and collective proceedings. The first aspect of the regulatory function of the structure (Mreła, 1983) describes the structuring of elements, the second – the structuring of activities.

By defining patterns of organizational behaviors of authorized activities, explaining the diversity of decision-making powers, depending on the place occupied in the hierarchy, which is a characteristic of each structural solution, and specifying the roles of organization members, the structure creates a normative order (Mreła, 1983). It is the basis of management actions, which means that, through structural solution, the process of causing behaviors of people in accordance with the will of the managers is carried out.

Is there a structure (archetype of structure), on which other organizational rules are based? In literature reports, it is mentioned in a default or vague way (Greiner, 1972; Girad, and Karim, 2017). Therefore, it seems necessary to define the archetype of the structure, i.e. to specify what it is in essence and what is its significance in the process of managing contemporary organizations.

Even partially filling an existing research gap is the purpose of this article. In particular, it is about:

- defining the archetype of the organizational structure,
- defining its dimensions and types,
- presenting a proposal for its measurement,
- presenting the relationship between the archetype and other organizational rules.

The article is divided into three parts. The first presents the essence of the archetype of the structure and its division. The content of the second is the presentation of the archetype measurement method, while the third is its dependence on the structural solutions of the basic organizational units.

2. The concept of archetype of the organizational structure and its types

In the literature reports on the organization's life cycle, attention is drawn to the fact that its various phases are accompanied by different structural solutions, and entering a new phase of life is associated with the introduction of a completely new structure (Table 1). A good illustration of such development of structural solutions is the concept of L.E. Greiner (1972). In his opinion, the next phases of the organization's life end up as if it was a revolution in

response to emerging crises. Their overcoming is tantamount to entering new stages of development, characterized by other types of structural solutions.

Table 1.

Phases of the organization's life cycle and corresponding organizational structures according to L.E. Greiner

Phases	Growth by creativity	Growth by management	Growth by decentralization	Growth by coordination	Growth by interaction
Organizational structure	Informal (Organic)	Centralized (Integrated Divisions)	Decentralized	Divisional	Matrix

Source: based on (Greiner, 1972).

A similar concept of the structure development is proposed by S.J.G. Girod and Karim (2017, p. 78), which distinguishes restructuring from reconfiguration. Restructuring "... consists of changing the company's structural archetype, which distinguishes the way in which its authorities group resources and coordinate activities", while reconfiguration is a process of "... adding, splitting, moving or closing business units without modifying the basic organizational structure". In other words, the essence of restructuring concerns the adoption of a new structural solution, while the reconfiguration concerns the existing one.

The researchers cited emphasize the need to keep the correct rhythm of both types of reorganization. In their opinion, there should be at least a 5-years gap between restructuring, and the frequency of reconfiguration requires balancing the "for" and "against" arguments. Too seldom occurrence creates a risk not only for an irrational structural solution (unadopted to its external and internal conditions) for some time, but also impedes the practice of modifying it. On the other hand, too frequent occurrence can cause surfeit with changes and, above all, contribute to a decrease in organizational efficiency, due to too short time to reveal possible positive effects of changes (Girod, and Karim, 2017).

Analysis of both, and other concepts of the organization's life cycle, e.g. of R.L. Daft (1983) or H. Steinmann and G. Schreyögg (2001), allows the following two conclusions:

- Structural solutions that fall within a given framework, as if they were a basic construction, apply to individual life cycles of the organization. S.J.G. Girod and J. Karim (2017) describe it as a structural archetype of the company, which does not seem to be appropriate, because the company's structure is more than a way for the organization to pool resources and coordinate activities (the organizational structure is one of the elements of it). The most appropriate term is the archetype of the organizational structure.
- Changing the archetype of the organizational structure is a revolutionary change made when small-scale reconfigurations turn out to be insufficient, mainly due to what is happening in the environment.

It can, therefore, be assumed that each organizational structure has its archetype, i.e. its basic structure, the change of which does not mean modification of the existing structural solution, but the adoption of a new one.

How should the archetype of the organizational structure be defined? The words S.J.G Girod and S. Karim quoted earlier suggest the following definition: it is accepted by the management at the second “from the top” level of the organizational hierarchy, and it is the solution of the dual problem, i.e. organizational differentiation on the one hand and organizational integration on the other.

The basic models of organizational differentiation are based on organizing according to functions and objects, i.e. products (companies), recipients (or suppliers) and markets. The adoption by the management of the organization of both the first and the second orientation results in the separation (with the exception of the organization of small sizes) of basic organizational units, having their own structural solutions. They are referred to as functional divisions (functional orientation), or divisions into branches (object orientation).

Orientation of basic organizational units only according to one pattern is not the only variant of structuring the organization. In business practice, we often have to deal with both patterns simultaneously, which results in functioning of both functional divisions and branches. Four basic situations are therefore possible:

- functioning of a functional system (covering only functional divisions) or its domination (there are also branches, however in a minority),
- functioning of the object system (covering only the branches separated by one object criterion of differentiation) or its domination (functional divisions also function),
- functioning of two equivalent systems, i.e. functional and object-oriented,
- functioning of three equivalent systems, separated according to three different criteria, e.g. by function, products and markets.

Organizational differentiation obviously evokes the need for organizational integration. H. Steinmann and G. Schreyögg (2001) indicate three instruments that serve it. They are: hierarchy, plans and programs, as well as self-reconciliation.

The classic instrument of integration of the basic organizational units are the commands of the top management, resulting from the hierarchy, which is a kind of system of supremacy and subordination. It can be built according to the one-line principle, in which there is an authoritative unity of command and multi-line, questioning this unity.

Plans and programs are to replace the commands of the top management, or reduce their number. They try to solve the reconciliation problems in advance, but only when “... in the same or similar form they can be reconstructed, and thus standardized” (Steinmann, and Schreyögg, 2001, p. 295).

The essence of the third instrument is direct reconciliation between the basic organizational units. In this case, the reconciliation initiative comes from those interested in implementing the cooperation process, whose course cannot be easily predicted.

Although H. Steinmann and G. Schreyögg (2001) treat the presented instruments as equivalent, the observation of the so-called organizational reality allows to state that the basic instruments of organizational integration are hierarchy and self-reconciliation, while plans and programs have a complementary meaning. The mentioned authors are not consistent, because they relativize the role of this instrument, underlining, that in large organizations they are an “additional” mechanism of organizational integration. These are implemented by the top management, either through hierarchy or self-reconciliation, supported in both cases by plans and programs. More specifically, management practice takes place with all the instruments at the same time, where the hierarchy, the process of self-reconciliation are dominating or there is a balance of both main instruments.

By “imposing” on each other the dimensions of the archetype of the organizational structure, i.e. organizational differentiation and organizational integration, we obtain its typology. Featured types of archetypes are presented in table 2.

Table 2.
Types of archetypes of the organizational structure

Organizational differentiation Organizational integration	functional differentiation	object differentiation	functioning of two equivalent systems	functioning of three equivalent systems
Hierarchy	A (archetype of the functional structure)	B	C	D
Self-reconciliation	E	F (archetype of the division structure)	G	H
Balance of the hierarchy	I	J	K (archetype of the matrix structure)	L (archetype of the tensor structure)

Source: own work.

Each of the distinguished types of archetypes of the organizational structure has at least three essential functions. They are:

- shaping organizational order, despite changes in the structure (on a small scale). The archetype limits the range of such changes (reconfiguration);
- contribution to building the identity of the organization, especially when the specific archetype is in force for a long period (e.g. the archetype of the organizational structure of the Jesuits’ order has been in force for more than 400 years);
- contribution to the fact that, by combining organizational differentiation and organizational integration, corresponding to the advantages of the organization, it can be distinguished from the competition.

At the end of this part of the considerations, it should be emphasized that the archetypes of the organizational structure are not the same as its basic types. The fundamental differences are that:

- the basic types of structural solutions are usually defined on the basis of the hierarchy of organizational differentiation pattern adopted on the second “top” level, which is assigned one dominant instrument of integration. For example, a functional structure is differentiated by the functional system, whose elements are integrated mainly through the hierarchy, while the divisional structure has object-oriented units, integrated mainly by instruments other than the hierarchy,
- the basic types of organizational structure are less than the distinguished types of archetypes. For example, a research team from the Department of Strategy and Enterprise Policy Center HEC-ISA distinguished three types of basic structures (Strategor, 1995), as did H. Steinmann and G. Schreyögg (2001).

Measurement of the complexity (simplicity) of the archetype of the organizational structure is shown. One of the most important features of the organizational structure is simplicity, which is a common denominator of other features, as an element of the organization. “Its adherence leads to shaping of rational structural solution, reducing costs and making the management of the organization more flexible, as well as to make people live well with it” (Hopej-Kamińska et al., 2015, p. 274). It brings a question: which archetype of the organizational structure is the simplest? Let’s try to answer it with the idea of a fractal tree.

The classic fractal tree is made of a branch with length L , extended by the branches L_1 , from which, in turn, the next branches are extending: $L_2, L_3 \dots L_n$ (Hopej and Martan, 2009)

In the classic fractal tree, the ratio of the length of individual branches is constant and amounts to:

$$\frac{L_1}{L} = \frac{L_2}{L_1} = \dots = \frac{L_n}{L_{n-1}} = \gamma \quad (1)$$

Such a fractal tree has a fractal dimension that defines the following formula:

$$D = \frac{\ln N}{\ln\left(\frac{1}{\gamma}\right)} \quad (2)$$

where: N is the number of branches departing from the main branch (Mandelbrot, 1977).

It can be used as a tool to measure a hierarchical structural solution, as well as its archetype (Hopej and Martan, 2009).

An illustration of the fractal tree in relation to the archetype of the organizational structure is given in Figure 1, showing the top management and the management of the basic organizational units. The branch length illustrates the autonomy of these units, being the resultant of two variables:

- horizontal autonomy, resulting from the adopted organizational pattern of differentiation (organization by function results in less autonomy in the relations between individuals than organization by objects),
- vertical autonomy, resulting from the dominant organizational integration instrument (in the case of hierarchy-based integration it is less autonomous than based on self-concessions).

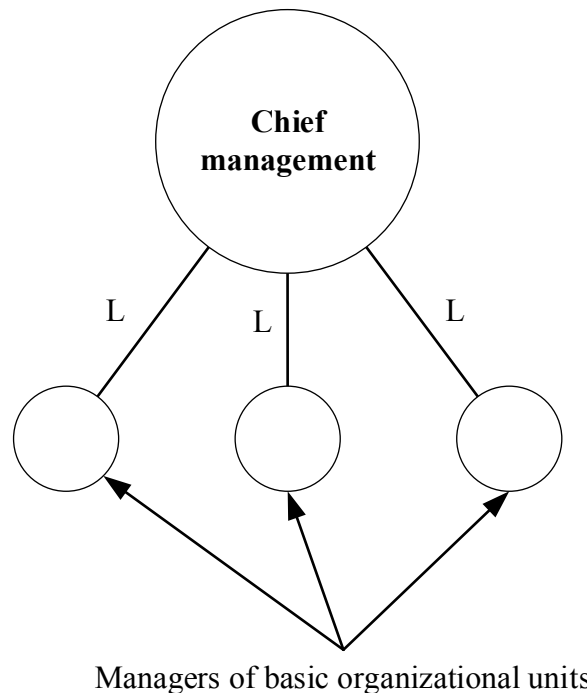


Figure 1. A schematic diagram of the archetype of the organizational structure. Source: own study.

If we assume that the shorter the L branch, the lower the autonomy of the management of the basic organizational units (Figure 2), then changes in the complexity (simplicity) of such an archetype, depending on changes in autonomy, can be described by the following expression:

$$Z = N \cdot \frac{\ln(N)}{\ln(1 + L)} \tag{3}$$

where:

Z – the complexity of the archetype,

N – number of units,

L – degree of autonomy in the range 0 ÷ 1 (0 ÷ 100%).

Their (crooked) analysis leads to the conclusion that, as the autonomy decreases, the complexity of the archetype of the structure grows, so that it can be assumed that:

- in case of the same number of basic organizational units, the simplest is the F archetype, while the most complex is archetype A,
- other archetypes can be placed on their continuum, the ends of which are archetypes F and A.

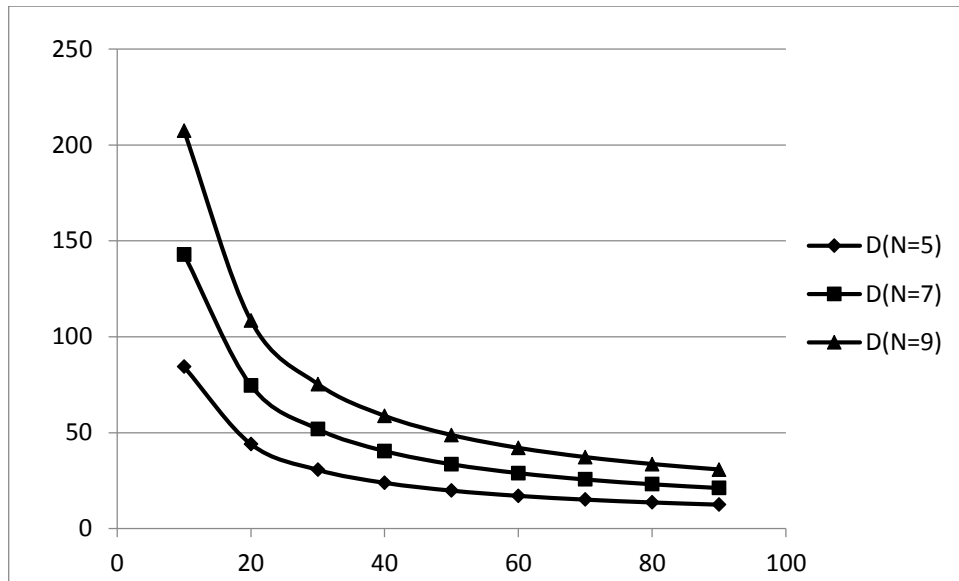


Figure 2. Complexity of the archetype of the organizational structure as a function of the autonomy of organizational units. Adapted from: “Simplicity as a feature of an organizational structure”, by M. Hopej-Kamińska, A. Zgrzywa-Ziemiak, M. Hopej, R. Kamiński, J. Martan, *Argumenta Oeconomica* 1/2015.

The calculations presented above relate to the situation, in which the autonomy of basic organizational units is identical, which is a realistic assumption abstracted from reality, although it cannot be ruled out (situation), especially when one pattern of organizational differentiation applies and there is only one integration instrument. Most often, we have different autonomy, which is illustrated in Figure 3.

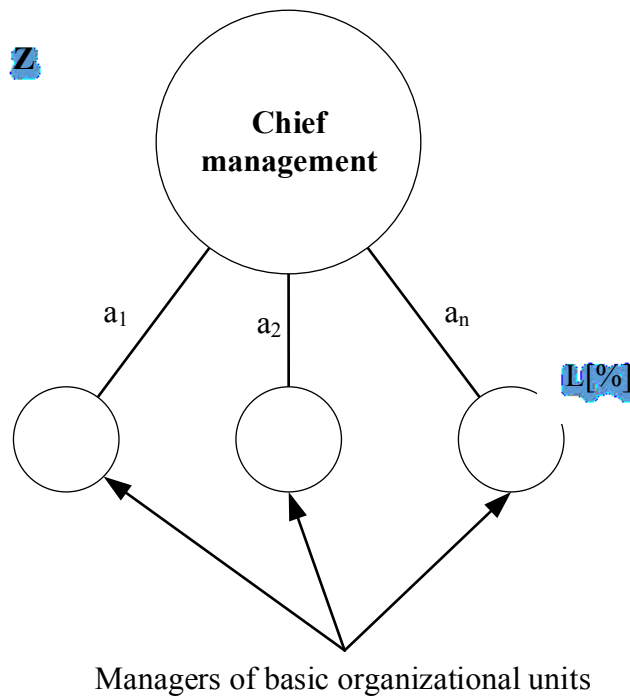


Figure 3. Archetype of the organizational structure with diversified autonomy of basic management of organizational units. Source: own study.

In connection with the above, it is assumed that the values of a_i are in the range of $0 \div 1$, where “0” means that the management of the unit has no autonomy, while the “1” means it is full. The complexity of such archetype can be determined using the following empirical formula:

$$A_a = \sum_{i=1}^N \frac{\ln(N)}{\ln(1 + a_i)} \quad (4)$$

where:

N – number of basic organizational units,

a_i – autonomy of the i -th organizational unit.

It shows that, as the autonomy of the managers of basic organizational units increases, the complexity of the archetype decreases (simplicity increases) and vice versa, the smaller the autonomy, the greater the complexity (the smaller the simplicity). We encounter extreme cases of the complexity of the archetype when:

- one of the managers is completely deprived of autonomy, therefore, the complexity of the archetype grows to infinity,
- every manager has full autonomy, then the complexity reaches a mini-value and amounts to:

$$A_{amin} = N \cdot \frac{\ln(N)}{\ln(2)} \quad (5)$$

It is also not difficult to notice, that the increase in the number of basic organizational units results in an increase in the complexity of the archetype.

The calculation example below is an illustration of the above findings. Let us assume that the archetype consists of four basic organizational units, whose managers have the following autonomy: $a_1 = 0.1$; $a_2 = 0.3$; $a_3 = 0.5$; $a_4 = 0.6$.

It is easy to calculate that the complexity of the archetype is $A_a = 26.18$.

If, however, the archetype consists of two units of autonomy $a_1 = 0.5$ and $a_2 = 0.6$, its complexity is smaller and amounts to $A_a = 3.18$.

3. Archetypes of the organizational structure and structural solutions of basic organizational units

Do basic organizational units contain structural characteristics of an archetype? It is possible, especially when the organizational structure is shaped according to the principle of simplicity. This requires not only providing every member of the organization with a big freedom in decision-making, but also limiting the diversity of internal structural solutions of

basic organizational units, because the smaller diversity means the simpler structure and vice versa – the greater the variety of solutions, the greater complexity of the structure.

It seems that the above conditions are met by the fractal structure. It is characterized by:

- very poorly developed hierarchy,
- high degree of decentralization. The basic organizational units are so independent, that their members can decide whether they should continue to operate within the organization:
- a low degree of specialization, because the work performed is multidimensional,
- a small formalization and standardization of activities, giving people a wide field to present and use their own initiative (Hopej, 2004).

A scheme of the fractal structure is illustrated in Figure 4, in which rectangles illustrate the basic organizational units that are fractals.

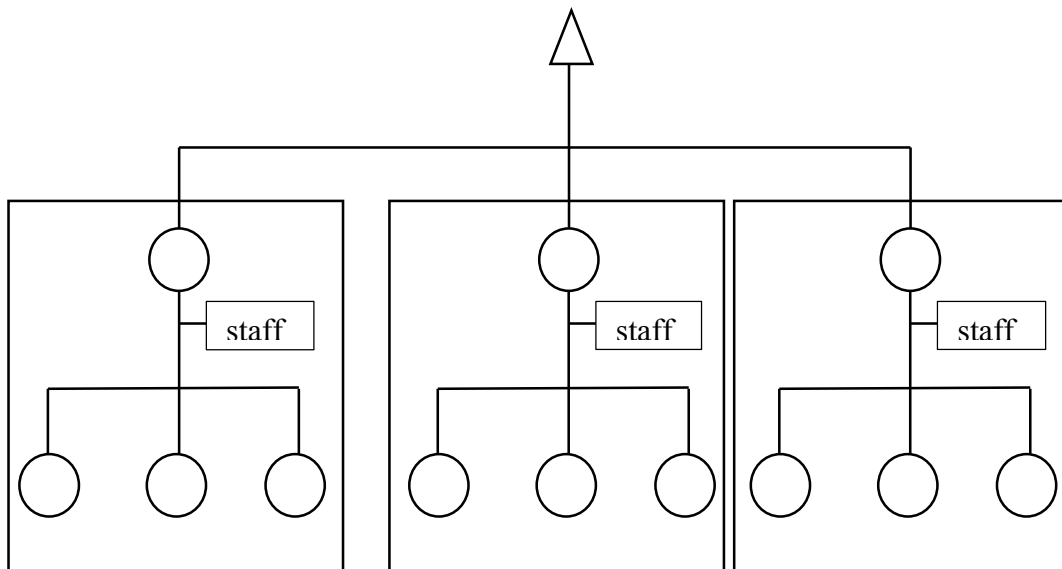


Figure 4. A scheme of a fractal structure. Source: own study.

It is hard not to notice that the structural solutions of the basic organizational units are a mirror image of the archetype of the structure, therefore the dependence is very strong. This means that the more the organizational structure resembles a fractal solution, the more archetype is resembled in the structural solutions of the basic organizational units. To some extent, this dependence is confirmed by the thesis formulated by C.J. Mc Millan about the effect of a miniature reflection (Horvath et al., 1976). Generally speaking, according to them, each organization that is part of a larger whole contains in itself the structural characteristics of a larger one. This means that, for example, a division (branch), that is an independent entity, may have structural solution, which is more or less reminiscent of the structure of the entire enterprise, including the rules that constitute its archetype.

4. Summary

In the light of the considerations presented in this article, the following observations and conclusions appear:

1. Each organizational structure of a medium and large organization has its basic structure (archetype), i.e. the solution of the dual organizational problem of differentiation and integration, adopted on the second level of the hierarchy.
2. The archetype of the organizational structure shapes the organizational order, despite the reconfigurations, i.e. small changes in the structure. Above all, it contributes to building the identity of the organization, when a specific type of order exists for a long period of time.
3. Changing the archetype is a revolutionary change in the organizational structure. Organizations need a deep reconstruction of a structural solution from time to time. However, it is necessary to also change the strategic course of organization. Such a change should not be the first choice, because people, in order to achieve goals, need some stabilization, which is often forgotten by supporters of frequent restructuring.
4. The archetype of the organizational structure can be measured. More accurately, its complexity (simplicity) can be measured. As it seems, the tool presented in the article may be helpful in simplifying structural solutions, because it facilitates the evaluation of the simplicity of various archetypes, which affect the internal structural solutions of basic organizational units.

References

1. Daft, R.L. (1995). *Organization, Theory and Design, Strategor. Zarządzanie Firmą. Strategie, struktury, decyzja, tożsamość*, Warszawa: PWE.
2. Girod, S.J.G., Karim, S. (2017). Restrukturyzacja czy rekonfiguracja. *Harvard Business Review Polska*, May.
3. Greiner, L.E. (1972). Evolution and Revolution as Organizations Grow. *Harvard Business Review*, July/August.
4. Hopej, M. (2004). *Struktury Organizacyjne. Podstawowe, współczesne i przyszłe rozwiązania strukturalne*. Warszawa: Ossolineum.
5. Hopej, M., Martan, J. (2009). Pomiar hierarchii organizacyjnej. *Przegląd Organizacji*, 12, pp. 15-17.

6. Hopej-Kamińska, M., Zgrzywa-Ziemiak, A., Hopej, M., Kamiński, R., Martan J. (2015). Simplicity as a feature of an organizational structure. *Argumenta Oeconomica*, 1, 34, pp. 259-276. <https://dbc.wroc.pl/publication/32362>.
7. Horvath, D., Mc Millan, C.J, Azumi, K., Hickson, D.J. (1976). The Cultural Context of Organizational Control. International Comparison. *International Studies of Management and Organization*, 6, 3, pp. 60-86. doi: <https://doi.org/10.1080/00208825.1976.11656206>.
8. Mreła, K. (1983). *Struktury Organizacyjne. Analiza wielowymiarowa*. Warszawa: PWE.
9. Steinmann, H., Schreyögg, G. (2001). *Zarządzanie. Podstawy kierowania przedsiębiorstwem koncepcje, funkcje, przykłady*. Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej.