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**THE IMPACT OF CONTROLLING SYSTEM
ON THE ORGANIZATIONAL STRUCTURE
– THEORY AND PRACTICE**

Dynamics of organizational environment pushes managers to implement the new concepts and methods of management. The goal of such solutions is to support management systems. There arises a question about the relationships between contemporary approaches and the traditional elements of management systems, like planning, organizing, directing and control functions. The text concerns the influence of financial controlling system on the organizational structure of the company. Further considerations are based both on literature and empirical study, performed in 56 enterprises from Lower Silesia.

Keywords: organizational structure, controlling, contingency approach

INTRODUCTION

The environment of organizations is getting more and more unstable. Traditional management systems seem not to be good enough in the new conditions and managers more often look for new concepts and methods of management. Many different ideas, philosophies, concepts, methods and tools of management were created and developed, both in theory and practice, to build the competitive advantage of enterprises. The basic goal of applying such concepts into organizations is to support and to make management systems more efficient. There arises a question about the relationships between contemporary (or modern) approaches and the traditional elements of management systems, like planning, organizing, directing and control functions. Do the new solutions affect the traditional ones?

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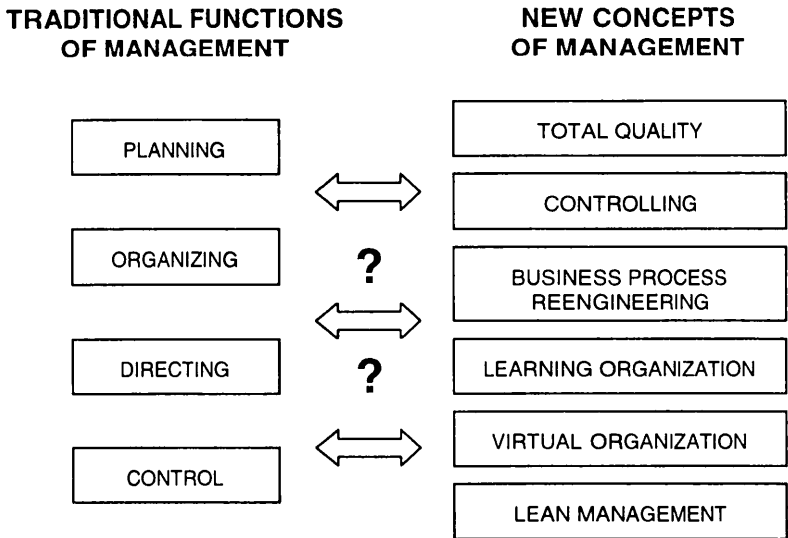


Figure 1. Relationships between contemporary concepts and the traditional functions of management

Source: author's own

One of the well-known contemporary concepts of management, spread in many American and European companies, is controlling. This has been treated in many different ways, but most authors agree that implementation of a controlling system in an organization affects the traditional functions of management: planning, organizing, directing and control. The relationships between the system of controlling and planning and control functions were analysed by many Polish and foreign researchers. The results of their studies confirmed the significant impact of implementation of controlling on the shape of planning and control systems. This arises the question about the relationship between the system of controlling an organizing function and its effect – the organizational structure. Does the system of controlling shape the organizational structure? What is the character and direction of the structural changes implicated by controlling?

The idea of this paper is to identify the relationship between organizational structure and the concept of controlling. The author sets a hypothesis consisting of three parts:

- The system of controlling influences an organizational structure.

- Structural changes implicated by using the system of controlling are evolutionary. The implementation and development of controlling causes the multistage process of structural transformation.

- Under the influence of controlling, the organizational structure is getting more organic.

The first part of the hypothesis concerns the existence of the relationship between the system of controlling and the organizational structure while the second defines the character, and the third the direction of structural changes.

This research can be placed in the contingency approach. Most works dedicated to structural determinants were performed in the 1950s – 1960s. of the XX century. In this time, concepts like controlling were not advanced enough in theory and practice to be taken into consideration as potential factors which may shape the organizational structure. The development of new management concepts and methods caused the appearance of a gap in structural findings. The presented work is an attempt to fill this gap.

Further considerations are based both on literature and empirical study. Performed research work was financed by the Ministry of Scientific Research and Information Technology as a research project in 2004.

1. ORGANIZATIONAL STRUCTURE OF A COMPANY

The structure of an organization can be defined in many different ways. Some authors treat it as “the manner in which its [organization’s] components – its departments, divisions, boards, committees, or any other subunits – are designed and interrelated” (Williams et al. 1995, p. 199) or “the established pattern of relationships between the component parts of an organization, outlining both communication, control and authority patterns. Structure distinguishes the parts of an organization and delineates the relationships between them” (Wilson et al. 1990, p. 215). These orientations seemed to be focused on the configuration of organizational elements. Other definitions stress the importance of division of labour, coordination of tasks, delegation of authority or level of formalization of organizational rules and procedures (Mintzberg 1979, p. 2). Structure of an organization defines how tasks are allocated, how many organizational levels exist, who reports to whom, what are the relationships between component parts of the organization, etc.

Numerous and different definitions prove that the nature of an organizational structure is complex and not easy to understand. The analysis of basic functions which serve an organizational structure can be helpful in this case. Hall noted that organizational structures are intended to produce outputs and achieve organizational goals and are designed to minimize or at least regulate the influence of individual variations on the whole (Hall 1999, p. 48). The main function of an organizational structure is to provide order by integrating and coordinating activities of particular members of the organization, thus making it more predictable.

The Aston Group (Pugh, Hickson, Hinings, Harding) typed five structural dimensions: configuration, specialization, centralization, standardization and formalization, which vary in their presence from low to high (Pugh ed. 1976, p. 3). A similar approach presented by Robbins, suggests describing an organizational structure by three, more capacious, characteristics, such as complexity (which, according to Robbins' theory, includes configuration and specialization), centralization and formalization, which includes also standardization (Robbins 1990, p. 87). The degrees of those characteristics determine organizational forms. As a compromise, the author prefers describing an organizational structure by four dimensions: configuration, specialization, centralization and formalization.

A brief review of the literature shows one of the widely used classifications of organizational structures, developed by Burns and Stalker. The authors identified two opposite organizational forms: mechanistic and organic. The mechanistic structure is close to Weber's ideal type of bureaucracy. It is characterized by the strict and rigid division of tasks, high vertical hierarchy, highly formalized rules and procedures and authority centralized on the top levels of management. The authors underline that this is not a dichotomy those forms stay on opposite ends of continuum. The degree of structural characteristics (specialization, configuration, centralization and formalization) is very high in the mechanistic structure. The organic form is the logical opposite to mechanistic one. Instead of precisely defined tasks, hierarchical authority and highly formalized procedures, it is based on the continual adjustment and redefinition of tasks, network configuration, horizontal relations, unstable authority centres, etc. The degree of structural dimensions is very low.

Table 1
 Characteristics of mechanistic and organic structures

Characteristic	Mechanistic structure	Organic structure
Definition of tasks	Strict and rigid	Flexible
Number of levels of management	High	Low
Communication control	Vertical and formal	Lateral and informal
Control	Centralized	Diverse (self-control)
Influence	Formal authority	Expertise
Managerial focus	Loyalty	Effectiveness
Number of organizational procedures	High	Low
Formalization of rules	High	Low

Source: T. Burns, G. M. Stalker: Management of Innovation, London 1961, p. 119-122

The authors see organizational forms being closely linked to the type of organizational environment. The mechanistic form is intended to be effective in stable and predictable conditions. Strictly defined rules, formalized by numerous procedures, formal and rather vertical communication, and centralized authority, assure the functioning of an institution like well-designed machinery. The organic structure is well suited to a changeable and difficult to predict environment, because of its flexibility and ability for adjustment. Such a form was called adhocracy by Mintzberg. It is able to better fit the conditions it faces.

In practice we may meet different types of structures, like the traditional ones (functional, hierarchical, with centralized authority), flat structures, divisional, matrix, network and others. We can place those types on Burns' and Stalker's continuum to analyse how organic they are.

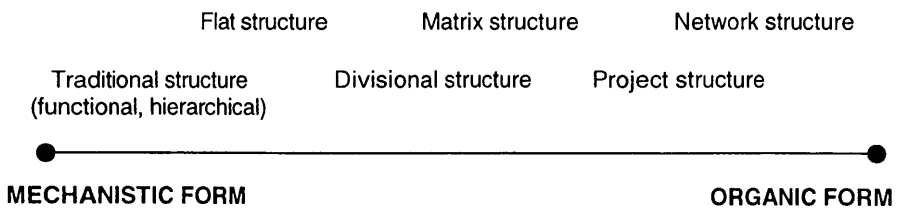


Figure 2. Types of structural forms on Burns' and Stalker's continuum

Source: author's own

2. THE ESSENCE OF CONTROLLING SYSTEM

There are many different definitions of controlling in the literature. Several researchers treat it as a philosophy or a form of management while others define it as a method or a tool of management. These two approaches do not seem to be opposite. Controlling can be understood as a philosophy and a tool simultaneously. We can specify two levels of widely treated controlling concept: the philosophical one, which contains basic principles (e.g. orientation on the future, orientation on costs, decentralization of management, etc.), and the instrumental one, which contains specific tools (e.g. cost budgeting and control, deviations analyses, activity based costing, target costing, etc.).

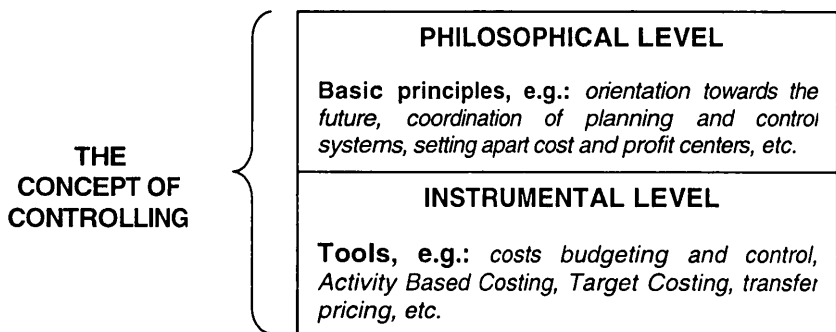


Figure 3. The scheme of concept of controlling

Source: author's own

The analysis of the idea, genesis and forms of controlling, suggests that it is a very complex phenomenon. To understand the idea and functioning of controlling better, we may mark out its four main aspects: functional, instrumental, organizational and personal.

The system of controlling should not be identified only with the function of control. As we can see in Figure 4, the cybernetic system of controlling is a wider term, which contains planning (establishing standards), control (measuring performance), analysing deviations and taking corrective actions.

There is no possibility to fully characterize the system of controlling fully in this paper. Only a few main points of this concept are stressed. The next paragraphs show the relationship between the controlling and organizational structure perceived theoretically and empirically.

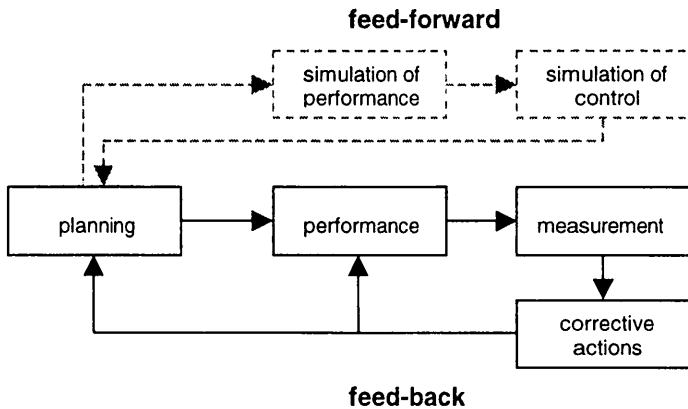


Figure 4. Controlling as a cybernetic system

Source: author's own

3. THE IMPACT OF CONTROLLING ON THE ORGANIZATIONAL STRUCTURE - THEORETICAL PERSPECTIVE

Implementation of the controlling system may cause many changes in a company. Some of them concern the organizational structure. A quick theoretical review of the concept of controlling lets us create a list of directives which refer to shaping an effective and "controlling friendly" organizational structure. Most authors stress a need of setting costs and profit centres apart and creating a controller's department (or position). Responsibility centres are an immanent element of the controlling system (Januszewski 2001).

Costs and profit centres (or wider, responsibility centres) are defined as small, relatively independent parts of an organization, responsible for the ordered goals and tasks (Stoner et al. 1997, p. 549). Such units report directly to the top management (executives), so the medium levels of management can be deleted and in consequence the structure is getting flatter. The presence of functional specialization can be lower as well, depending on the criteria used to single out the responsibility centres.

There are different kinds of responsibility centres depending on the level of their autonomy, given in a rising order: costs centres, revenue centres, profit centres and centres of investments. The independence of these centres requires the delegation of authority to lower management levels. Organization becomes less centralized. Also, the level of formalization may change, especially inside costs and profit centres.

Relationships between top management and responsibility centres, even if highly formalized, have a different nature – parametrical, not direct.

The second main field of structural changes is organizing the institution of a controller in a company. The idea and genesis of controlling proves that it needs to be institutionalized. The tasks of controlling, for instance integration and coordination of planning and control, have to be “centralized in one hand” to be done effectively. The controller’s staff may contain various number of persons. The controller may report to the top management, economic or financial manager or even an accountant. Several authors claim the first solution to be the most effective. The higher the controller is located in the hierarchy, the more successful he can be in his activities.

Should a controller have authority and take decisions? On one hand he may only participate in preparing the phase of decision making process. There is no agreement in this field among researchers. Some of them stress the supportive role (non decision) of controllers while others suggest that without authority the controller will not be treated seriously. There are no general rules, and the effectiveness of particular solutions depends on the context (situation). In some cases a line controller can be effective while in another he may cause many conflicts because of being the “second boss” in some part of an organization.

If we analyse Burns’ and Stalker’s theory, we may note that the flatter, decentralized and less specialized structure is more organic than the traditional one (hierarchical, functional). Under the influence of controlling, the organizational structure transforms into a divisional form, which is more organic (the intensiveness of its structural characteristics is lower). Generally, on the theoretical background we can say that controlling makes the structure more organic and flexible.

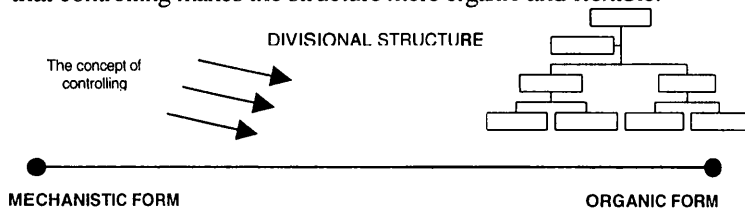


Figure 5. The direction of structural changes under the impact of controlling

Source: author’s own

4. METHODOLOGY OF EMPIRICAL RESEARCH

To reach the goals of the study and find answers to the questions asked, the author performed an empirical study in the enterprises from Lower Silesia. The research consists of two main phases: preliminary and main.

Different goals were set and different methods were used in each phase. Figure 6 shows the scheme of empirical research procedure.

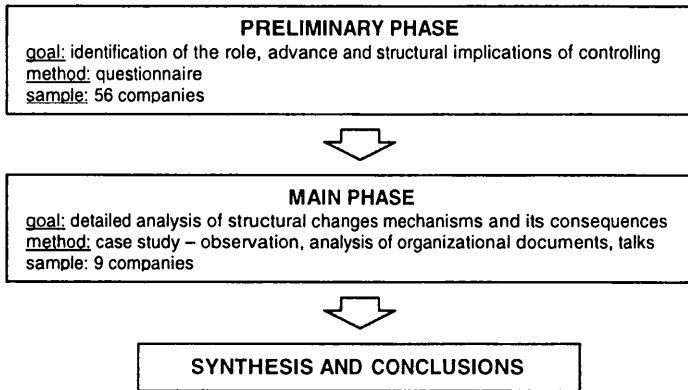


Figure 6. Procedure of empirical research

Source: author's own

The main goals of the first (preliminary) phase were:

- identification of the role and level of advancement of controlling systems in companies running in Lower Silesia
- analysis of the structural implications of using the controlling system
- finding a few companies to the second phase of research.

The questionnaire of 27 questions (opened and closed) was prepared and tested in 6 local enterprises to check its correctness. Next, the base of addresses was built and over 870 letters with questionnaires were sent by regular (traditional) post or e-mailed to randomly selected enterprises from Lower Silesia. The sample contains 56 enterprises from Lower Silesia (56 were returned). The answers were collected in the computer database and analysed with different criteria.

The goal of the second phase was to identify and describe the mechanisms of structural transformations under the influence of controlling. Nine companies were deeply investigated. The structural variables were measured by analysing organizational documentation and asking the members of the organization to respond to a series of questions. Indexes of configuration, specialization, centralization and formalizations are presented in Table 1. The methodology of measurement was based mainly on the Aston Group concept (Pugh ed. 1976). The compilation of these methods enables us to see the problem in a wide perspective (in the sample of 56 companies) and also to take a close look at interesting details in the deep case study of the nine firms.

Table 1. Indexes of structural characteristics

Dimension	Index
Configuration (K)	<p>The level of configuration shows how flat the organizational structure is:</p> $W_s = \frac{S}{R_p + S}$ <p>W_s – level of configuration, S – number of organizational levels in the deepest unit. R_p – average span of control.</p>
Specialization (S)	<p>The level of functional specialization can be described by its range and intensiveness:</p> $Z_s = \frac{f_o}{F}$ <p>Z_s – range of specialization, f_o – number of functions which are realized by specialized units, F – total number of typed functions (12).</p> $S_i = \frac{r_i}{r_{\max}}$ <p>S_i – intensiveness of specialization (of one function), r_i – rank of unit of typed function, r_{\max} – maximal rank (4). Ranks: If this function is realized by position – 1, section – 2, unit – 3, division – 4.</p> <p>Level of specialization in a whole company is an average of intensiveness of specialization of particular functions</p> $S_o = \frac{\sum_{i=1}^n S_i}{f_o}$ <p>S_o – intensiveness of specialization in the whole organization, S_i – intensiveness of specialization of one function, f_o – number of functions which are realized by specialized units.</p>

Centralization (C)	<p>The level of centralization of one function (e.g. marketing or production) can be described by the number and importance of decisions taken on particular levels of management (based on the Aston study 30 decisions were typed):</p> $C_f = \frac{\sum_{i=1}^n (w_i \times \frac{1}{S_i})}{\sum_{i=1}^n w_i}$ <p>C_f – centralization of one function, w_i – importance of particular decision, S_i – level where his decision is taken. Level of centralization in a whole company is an average of centralization of functions which were set apart:</p> $C_p = \frac{\sum_{i=1}^n C_{fi}}{f_o}$ <p>where: C_p – level of centralization in the whole organization, C_{fi} – centralization of particular function, f_o – total number of realized functions.</p>
Formalization (F)	<p>The level of formalization of the particular function can be described by the relation between the rank value of organizational documents which regulate these functions and the maximal rank value:</p> $S_{fi} = \frac{r_i}{r_{\max}}$ <p>S_{fi} – level of formalization of one function, r_i – rank value (depends on the number of organizational documents and their contents, r_{\max} – maximal rank value (4). Maximal rank value (4) means a large number of detailed organizational documents, and minimal rank (1) means that there are no written rules and procedures concerning this function. The level of formalization in a whole company is an average of the formalization of particular functions:</p> $S_f = \frac{\sum_{i=1}^n S_{fi}}{f_o}$ <p>S_f – level of formalization in a whole organization, S_{fi} – level of formalization of particular functions, f_o – total number of realized functions.</p>

Source: author's own

5. THE RESULTS OF THE EMPIRICAL STUDY

Before we present the research findings, a brief description of the sample of the analysed companies is needed. Some characteristics, for instance size, profile of activity or industry may determine the results. In the sample of investigated companies, 43% were big organizations which employ 250 and more persons, 27% medium firms (51-250 employees) and 30% small businesses (almost half of them were micro-businesses which employ less than 10 persons).

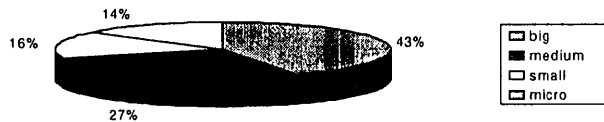


Figure 7. Size of investigated companies

Source: author's own

Most of those 56 companies declared they operate in mixed sector (manufacturing – services – trade) (36%), 32% operate in manufacturing industry and 25% – in services. Only four of them (7%) declared trade as their main profile of activity. There were companies from many different industries in the sample (building, energy, mining, machinery, informatics, food, medical, etc.), but there was no possibility to analyze them in such a perspective (the number of companies from each industry is not big enough to generalize results).

The results of the first phase of research confirmed that controlling is a well known and common method of management in companies from Lower Silesia. Almost 60% of firms declared using it in their practice. The percentage of firms which use controlling seems to be related to the size of organization. The highest percentage of firms in which controlling was implemented was in the group of big companies (over 82%), smaller in medium companies (73%) and the smallest in the group of micro and small businesses (12%).

The results showed a low level of advancement in controlling:

a. in most companies only the basic functions (finance, production, sales) were supported by the controlling system. Other areas like marketing, personnel, research and development, etc. were rarely covered,

b. the most often used instruments of controlling were costs budgeting and control, analyses of deviations, reports and financial indexes (over 80% companies). Less than half of the studied enterprises use SWOT and BEP analysis, and only a few of them declared using advanced controlling tools, like target costing (TC), activity based costing (ABC), balanced scorecard (BSC), etc.

c. over a half of companies declared using some software to support controlling tasks (budgeting, analyses, plan coordination, etc.). In 66% of them, the programs were made on their own (e.g. application in MS Excel) and only 33% firms declared using specialized (dedicated) software (e.g. SAP R-3).

Responsibility centres were set apart in the major part of companies (91%), but in most companies their responsibility was on the costs level. Profit centres were identified in 50% companies and centres of investing only in 10%. In many cases different types of responsibility centres exist simultaneously (e.g. profit and costs centres). Different criteria were used (product, function, region) to set apart responsibility centres and different relationships were established between their managers and the top management.

A deep study of the nine companies proved that controlling has a significant impact on the shape of an organizational structure (perceived by its dimensions: configuration, specialization, centralization and formalization). Many different kinds of structural changes were identified, but their directions seem to be convergent. One of the common effects of using the controlling system was that the organizational structure became more simple and clear. Duties, authority and responsibility of particular members can be established in a proper way and in good proportions thanks to budgeting and report systems, coordination and integration of activities, etc. Controlling helps to reach the right order in the whole organization.

Responsibility centres were organized in different ways but generally they were based on existing divisions. The change of configuration was small in most cases (only some little transformations appeared, like division or fusion of some departments or units). In one company configuration was radically changed. There is no more stable hierarchy on the lower organizational levels. Temporary virtual teams (profit centres) are formed to realize particular tasks. This means that the structure became more organic.

The biggest changes were observed in centralization. Delegated authorities concern organizing personnel within centres, buying materials and equipment (to a limited value), establishing prices (in revenue and profit centres), etc. New authorities follow the new tasks. This causes changes of other structural dimensions. The decrease of functional specialization was observed. New tasks,

for instance costs budgeting and control, deviation analysis, etc., need to be standardized and formalized which, in turn, means the growth of formalization.

The verbal description of structural changes supplement the results of measurement of the structural dimensions performed in the five investigated companies. The level of structural dimensions before and after implementation of controlling system is presented in Table 2.

Table 2

Indexes of structural dimensions before and after implementation of controlling

Company	Level of structural dimensions			
	before implementation of controlling		after implementation of controlling	
A	configuration: 0,38 centralization: 0,64	specializ. : 0,92/0,79* formalization: 0,70	configuration: 0,35 centralization: 0,56	specializ.: 0,75/0,83 formalization: 0,77
B	configuration: 0,52 centralization: 0,69	specializ.: 0,75/0,77 formalization: 0,72	configuration: 0,52 centralization: 0,64	specializ.: 0,75/0,77 formalization: 0,75
C	configuration: 0,68 centralization: 0,58	specializ.: 0,75/0,63 formalization: 0,67	configuration: 0,66 centralization: 0,52	specializ.: 0,75/0,63 formalization: 0,72
D	configuration: 0,42 centralization: 0,59	specializ.: 0,91/0,66 formalization: 0,60	configuration: 0,40 centralization: 0,59	specializ.: 0,91/0,63 formalization: 0,63
E	configuration: - centralization: 0,74	specializ.: 0,58/0,61 formalization: 0,47	configuration: - centralization: 0,65	specializ.: 0,66/0,65 formalization: 0,47

*range/intensiveness

Source: author's own

The indexes of configuration, specialization and centralization decreased after the implementation of the controlling system. Another situation we may observe in connection with formalization. As a result of using the controlling system, we notice a higher level of this dimension. Many activities like planning, budgeting, deviation analysis, etc. were added and strictly formalized. Interesting is that the growth of formalization did not cause a higher rigidity of the organization, as we may have supposed based on the theory presented by Burns and Stalker. Moreover, some organizations got more flexible, thanks to implementing the formal budgeting system (which is related to the delegation of authority) and standardized procedures of planning, control, costs and revenues simulations, etc. Decision makers have strong informational support and are able to be more precise and do their work faster. Also the

organizational documentation may have an electronic form, which allows making many quick changes. Nowadays, thanks to IT, formalization may have another face and shows us lots of its advantages.

Generally, the measurement of structural dimensions performed in the investigated companies showed the relationships between the organizational structure and the controlling system. Also, it confirmed a structural transformation into more organic forms. The empirical findings proved the presented theoretical principles, in spite of the fact that the range of structural changes in practice seem to be smaller.

CONCLUSIONS

The dynamism of an organizational environment pushes owners and managers of companies to implement new concepts of management. The goal of such solutions is to support management systems. One of these concepts is controlling. This has been seen in many different ways, but most authors agree that the main goal of using the controlling system in a company is to support the traditional functions of management.

Both theoretical and empirical studies proved that the implementation of the controlling system in a company influences the shape of an organizational structure. The first part of the hypothesis was confirmed. Empirical findings did not prove the second part of the hypothesis, which concerns the character of structural transformations. There were no middle stages of implementation of the controlling system in the analysed companies and no middle stages of structural transformation. Some relationships were observed – the more advanced controlling was, the more structural changes it caused. In spite of huge differences among the analysed companies a similar direction of structural changes was observed. The intensiveness of the four typed structural dimensions was changing (generally getting low) and the structure was getting closer to the organic model. This confirms the last part of the hypothesis.

We may consider the role of structural changes in creating organizational effectiveness. The present environment of companies is complex and changeable. Due to Burns' and Stalker's study, the organic structure is more effective in an unstable environment. Based on this concept, we can suppose that the changes implicated by controlling may increase the efficiency of organizations which exist in turbulent conditions.

The performed study lets us see the controlling system as one of the factors which shape the organizational structure, besides the size of an organization, its strategy, technology or type of environment. The presented findings seem to fill the gap in contingency approach studies on structural determinants.

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