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SPIS TREŚCI

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We are giving you the next 23rd (3/2016) issue of the Quarterly of the Faculty of Management of the Rzeszow University of Technology entitled "Modern Management Review".

The primary objective of the Quarterly is to promote publishing of the results of scientific research within economic and social issues in economics, law, finance, management, marketing, logistics, as well as politics, corporate history and social sciences.

Our aim is also to raise the merits and the international position of the Quarterly published by our Faculty. That is why we provided foreign Scientific Council, as well as an international team of Reviewers to increase the value of the scientific publications.

The works placed in this issue include many assumptions and decisions, theoretical solutions as well as research results, analyses, comparisons and reflections of the Authors.

We would like to thank all those who contributed to the issue of the Quarterly and we hope that you will enjoy reading this issue.

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With compliments
Editorial Committee

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SIMULATIONS OF PRODUCTION-DELIVERY MODELS USING CONVENTIONAL METHODS OF DYNAMIC SYSTEMS: ZELGRAF COMPANY AS A CASE STUDY

The article presents the subsequent steps in developing a simulation model of the production-delivery system in a manufacturing company. Initially, the essence of the production-delivery process, namely all key processes that constitute the core business of a manufacturing company was explained. The most important decision principles directly related to these processes were identified and briefly characterized. This was followed by a presentation of the business profile of Zelgraf manufacturing company, where tests aimed at a practical understanding of the processes were carried out. This knowledge was useful in selecting variables of the mental model related to production-delivery processes, which are presented in tabular forms. The variables of the mental model, linked in a cause-effect diagram formed the basis for designing the simulation model. A target simulation model was developed relying on the cause-effect relationship diagram. This involved the application of the method of dynamic systems. The Vensim® DSS software was made use of both in designing the model and simulation. The different definitions of variables and the constant values for the model were provided using the programming language. These values were the direct outcome of empirical studies conducted in a given company. This was followed by the validation of the simulation model based on three methods. The last stage involved conducting a simulation of the model for an adopted stage, the presentation of the path of the accumulatory variables, including chosen variables of the system and finally an analysis of the results obtained was conducted. Possible practical applications of the designed model were mentioned in the conclusion.

Keywords: production, delivery, simulation modeling, system dynamics

1. INTRODUCTION

Modelling ought to be understood as an experimental or mathematical methodology for studying complex systems, phenomena and processes be they technical, physical, chemical, economic or social, relying on the construction of models. The main purpose of modelling using the methods of dynamic systems is to graphically illustrate the structure of a given system, its complexity and interdependence, and also seek possible solutions to difficulties that therein exist. Experiments conducted using models developed in the virtual world are useful in designing a real (perceived) world, while experience gained in the real world do provide information about the virtual world.

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The objective of the paper is to present a simulation model of the production – delivery system developed by Zelgraf company. The model was developed using the conventional methods of dynamic systems[3]. Thus the company is able to conduct series of tests and strategies associated with processes of production and sales. The model embodies key physical and information flows, along with the decision patterns that govern it. The necessary empirical data for the model, namely the various variables and constants as well as the constant values were obtained from the company in study. The research was in the form of in-depth interviews with the company's management, observation of production and delivery processes as well as the analysis of resource materials.

2. PRODUCTION AND DELIVERY AS KEY PROCESSES OF A COMPANY'S CORE BUSINESS ACTIVITY

One of the most important activities, amongst others, that is evident in every company is its core business activity. The primary activity of a production company can be defined as a series of steps necessary for the production of goods, which are the items of sales and constitutes sources of incomes to finance costs of operations and development of the given company.

A basic element determining the core business is choice of what to produce, how and for whom, which often involves a definite determination of the inventory profile and size of operations. Having agreed on these, then comes the conceptional design of the intended activity (also known as preparation of production), the assurance of appropriate processing materials for future production, production equipment as well as manpower. The next stage is the organization of production along with ensuring the economic rationality of production processes being implemented, including the assurance of its proper execution[4].

Production can, thus, be defined as a set of interrelated and mutually conditioned work processes that constitute a whole in course of which people, using the goods and forces of nature produce material objects, which serve as utilitarian goods to meet man's social needs. The fact that production processes occur in variety of forms hinders its typology.

The next core process in an industry that is directly associated with production is the delivery of manufactured products. The most important task of the delivery unit in a company is the timely supply of finished goods to the customers. Besides, the delivery employees are engaged in the following tasks[5].

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[3] J. Forrester, *Industrial Dynamics,* MIT Press, Cambridge 1961; E. Kasperska, *Dynamika systemowa. Symulacja i optymalizacja,* Wydawnictwo Politechniki Śląskiej, Gliwice 2005; R. Łukaszewicz, *Dynamika systemów zarządzania,* PWN, Warszawa 1975; A. Piekarczyk, K. Zimniewicz, *Myślenie sieciowe w teorii i praktyce*, PWE, Warszawa 2010; P.M. Senge, *Piąta dyscyplina. Teoria i praktyka organizacji uczących się,* Oficyna Ekonomiczna Wolters Kluwer Polska, Kraków 2006; K.R. Śliwa, *O Organizacjach Inteligentnych i rozwiązywaniu złożonych problemów zarządzania nimi,* Oficyna Wydawnicza WSM SIG, Warszawa 2001; Z. Souček, *Modelowanie i Projektowanie Systemów Gospodarczych,* PWE, Warszawa 1979; J. Tarajkowski (Ed.), *Elementy dynamiki systemów,* Wydawnictwo Akademii Ekonomicznej, Poznań 2008.

[4] B. Liwowski, *Działalność podstawowa przedsiębiorstwa i jej wyspecjalizowane zakresy* [in:] J. Kortan (Ed.), *Podstawy ekonomiki i zarządzania przedsiębiorstwem*, C.H. Beck, Warszawa 1997, p. 247.

[5] K. Kucińska, *Rynkowe uwarunkowania funkcjonowania przedsiębiorstwa* [in:] J. Kortan (Ed.), *Podstawy ekonomiki...*, p. 326.

Market analysis;
–   Deciding on sales channels;
–   Signing sales agreements with customers;
–   Sales implementation;
–   Organization of after-sales services;
–   Conducting advertising;
–   Managing the finished products warehous.

The current market orientation in which the consumer and market play dominant roles, resulting in all activities in the spheres of production and delivery being geerd towards meeting (and stimulating) customers' needs. The enterprise, therefore, needs to conduct marketing activitie if it is to fulfil market demands.

3. BUSINESS PROFILE OF ZELGRAF COMPANY

Zelgraf is a company in the small-scaled sector (www.zelgraf.com.pl) that has existed since 1996. It produces, amongst others, professional silicone matrices as well as steel matrices for pad printing, used for decorative labelling of glass and plastics. It specializes in matrices for labelling products in the automotive, cosmetics, fancy and house-hold appliances sectors. It has working agreements with companies such as Zelmer S.A., Rosti Sp. z o.o., OKT Polska oraz Joko Cosmetics.

The studies conducted in Zelgraf company focussed on the production of silicon stamps (otherwise known as silicon matices), which make it possible for products to be labelled whereever possible, even on curvatures. They are mainly suitable for labelling plastic products. They come in various sizes and shapes: flat, concave, convex, oval, square, round, spherical and triangular. Labelling takes place in the process of hot pressing of foils on any given location of the product.

Zelgraf produces stamps only for specific orders. Production is unitary, including eventual doublets, which are stored entirely in the producer's warehouse to be released to the customer only after the destruction of the first copy. The following sequence of steps is performed during production:
–   Designing stamps, including the labelling locations on the product, namely graphics, shape and colour;
–   The production process:producing the shaped matrices, control, preparing for production, preparing the stamp for production, the final product;
–   Stamp checking and performance testing;
–   Testing the labelled site for abrasion, adhesion and reaction with material from which the labelled material is made.

4. PRODUCTION-DELIVERY SIMULATION MODEL FOR ZELGRAF

The basis for the design was the model introduced by Sterman[6]. The model was modified by the authors of the foregoing paper and adapted to the profile of the company under study.

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[6] J. Sterman, *Business Dynamics: Systems Thinking and Modeling for a Complex World*, Irwin McGraw-Hill, Boston 2000.

4.1. Definitions of variables for the mental model of the production-delivery system

The first step of the study was the observation of activities that formed part of the production-delivery process of the company covered by the study. Next, working in partnership with management and persons selected by the management the variables (parameters) for developing the mental model of the processes were set. The list of the parameters, including their definitions are contained in table 1.

Table 1. Mental model variables of the production and distribution

Variable	Description
Production start rate	Pace of directing individual factors to production
Production capacity	Real volume of production per specified unit of time, relative to the availability of objects of work (raw materials) and labour force
Possible production due to the availability of raw materials	Possible volume of production of finished products due to the availability of raw materials taken from the company's raw materials warehouse
Possible production due to the availability of labour force	Possible volume of production due to the availability of employed man power, that is characterized by a specific level of efficiency
Work in process inventory	Cumulative variable of the number of products currently in various stages of production
Completed production rate	The stream of finished production sent to the finished goods warehouse
Manufacturing cycle time	Time duration from the start to end of the production process
Desired production start rate	The desired volume of production per unit time, being the sum of the „Desired production", „Adjustment for work in process inventory" and „Correction of the desired production start rate of unaccomplished production"
Adjustment for work in process inventory	Responsible for adjusting the volume of production in process to the desired level
Desired work in process inventory	The desired volume of production in process proportionate to the „Desired production"
Work in process inventory adjustment time	Desired time duration for adjusting production volume in process to the desired level
Correction of the desired production start rate of unaccomplished production	Responsible for extending the „Desired production start rate" by the volume of outstanding production
Correction time	Time needed to correct the „Desired production start rate" with the volume of the outstanding production

Table 1 (contd). Mental model variables of the production and distribution

Variable	Description
Desired production	Desired volume of production per specified unit of time, being directly linked with the „Production orders"
Production orders	Number of orders sent for production
Customer orders	Number of orders received directly from customers
Finished products	Number of finished products, remaining in the finished products warehouse
Delivery rate	The pace of shipping finished products to the customers
Possible delivery rate	Possible number of finished products for a specified unit of time, that can be delivered to the client in direct proportion to the number of „Finished products" and inversley proportionate to the number of „Preparation time for delivery"
Preparation time for delivery	Time duration for activities connected with the preparation of finished products for shipment to the customer
Desired delivery rate	Desired number of finished products, that ought to be delivered to the customer at a specified time unit, resulting directly from the „Unrealized orders " and „Planned delivery delay"
Unrealized orders	Number of orders received that were not accomplished and delivered to the customers
Orders rate	The stream of orders directed into production
Orders fulfillment rate	The stream of completed orders resulting directly from the „Delivery rate"
Unaccomplished production	Refers to the volume of unaccomplished production after the „Planned delivery delay"
Delivery delay	Time duration that specifies the current delay in accomplishment of incoming orders, assuming that the pace of orders accomplishment is the same as the variable value „Orders fulfillment rate"
Planned delivery delay	Planned incompany time duration that lapses from time of order placement till the delivery of ordered products

Source: own elaboration.

The selected variables were linked in cause and effect loops. This gave yield to a diagram of dependencies (Fig. 1), that is interpreted thus:incoming orders are for the company first signals to adequately adjust the level of production while still being in the stage of unaccomplished orders, that would later be accomplished after the production of ordered products. In the first case, „Customer orders" translates into „Production orders", which directly determines the „Desired production". The „Desired production" defines the new level of „Desired work in process inventory", which is comparable to the current level of „Work in process inventory". If disparities do exist between „Desired work in process inventory" and „Work in process inventory" then, adjustments are made „Adjustment for work in process inventory". The „Desired production" together with the „Adjustment for work in process inventory" determine the „Desired production start rate", which defines the size of „Production start rate".

Having put together the relevant raw materials for production, and appointed a competent workforce production can begin. The volume of production which is determined by the size of orders awaiting accomplishment depends on the company's current production capacity, which in itself depends on the availability of appropriate volume of raw materials consumed in course of production as well as on the availability of workforce. The work items pass through successive phases of the production process, known as „Work in process inventory". The completion of the „Manufacturing cycle time" is followed by the „Completed production rate", that result in the finished products getting to the warehouse „Finished products ". They are then packaged and prepared in the warehouse for delivery to the customers.

The factual „Delivery rate" depends on both the „Possible delivery rate" and the „Desired delivery rate". The „Possible delivery rate" is determined by the availability of stock of finished products, namely produced items ordered by customers. The „Desired delivery rate", on the other hand, determines th number of „Unrealized orders" as well as the „Planned delivery delay". The „Planned delivery delay" in such cases is the time planned by the company that runs from the moment of order placement by the customer till the accomplishment of the order.

Besides the „Planned delivery delay" there also exists a „Delivery delay", being the result of the accumulation of „Unrealized orders". Whenever „Delivery delay" time surpasses the „Planned delivery delay" time, the accumulation of „Unaccomplished production " occurs. Information concerning „Unaccomplished production" via the „Correction of the desired production start rate of unaccomplished production" additionally increases the „Desired production start rate".

The diagram contains five simple negative feedbacks: B1, B2, B3, B4 i B5 and one positive feedback – R1, thus confirming the continuity of regulatory processes and dynamics that exist within the system.

Fig. 1. A diagram of dependencies within the production-delivery model
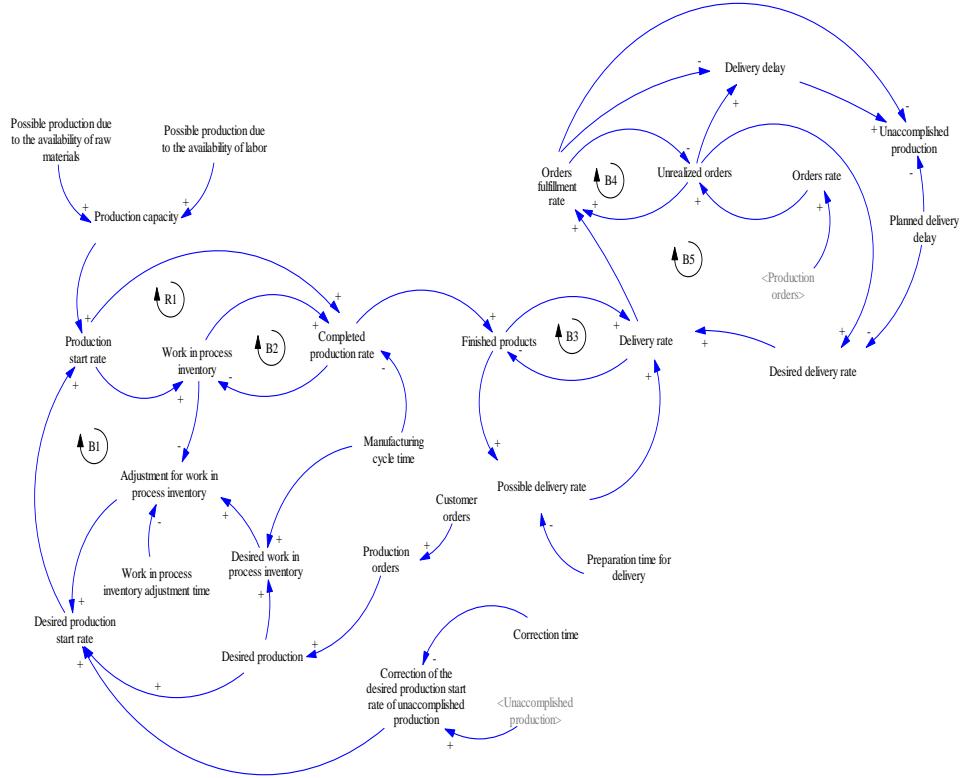
Source: own elaboration.

4.2. Simulation Model

The next stage involved the development of a simulatory production-delivery model using Vensim® DSS software (www.vensim.com) (Fig. 2). The variables adopted earlier were transformed into accumulatory, flow and information as well as stable information variables for which respective numeric data (using empirical studies) were assigned.

The simulation model was developed based on the convention of methods of dynamic systems. The method relies on three pillars, namely on traditional management, principles of cybernetics and computer simulation. Traditional management helps in identifying problems or issues related to the system that will be modeled. It assists in the proper selection of variables that impact on the behaviour of the system and indicates the flow-path of information between the variables. It formulates decision principles responsible for controlling the model. Cybernetics is responsible for linking the selected variables in the model, building positive or negative feedback loops and also helps in structuring the mathematical model of the model being developed. Resolving such a model, that often

involves non-linear dependencies requires appropriate numerical methods, which in the case of dynamic systems is a computerized simulation[7].

Fig. 2. A simulation model of the PRODUCTION-DELIVERY system
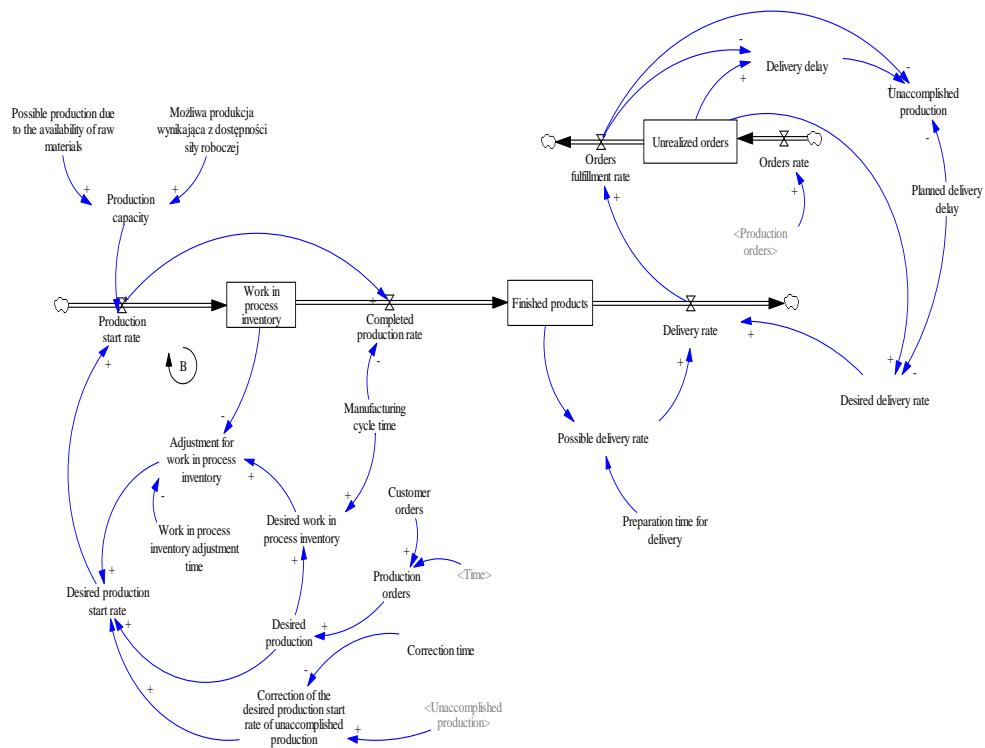
Source: own elaboration (VENSIM DSS).

The consists of three accumulative variables:
- „Work in process inventory" increased by the flow variable „Production start rate" and decreased by the next flow variable „Completed production rate";
- „Finished products" increased by „Completed production rate" and decreased by „Delivery rate";
- „Unrealized orders" increased by„Orders rate" and decreased by „Orders fulfillment rate".

The rest of the variables and constants only play subsidiary and informative roles. The mathematical relation between the variables and constants of this part together with their units are summarized in table 2.

Table 2. Definitions of variables and constants used in the simulation model

Variable	Description	Unit
Production start rate	MIN (Production capacity, Desired production start rate)	[unit/week]
Production capacity	MIN (Possible production due to the availability of labour force, Possible production due to the availability of raw materials)	[unit/week]
Possible production due to the availability of labour force	70 (averaged empirical data)	[unit/week]
Possible production due to the availability of raw materials	100 (averaged empirical data)	[unit/week]
Work in process inventory	INTEG (Production start rate-Completed production rate) Initial Value: Desired work in process inventory	[unit]
Completed production rate	DELAY3 (Production start rate, Manufacturing cycle time)	[unit/week]
Manufacturing cycle time	1 (averaged empirical data)	[week]
Desired production start rate	MAX (0, Desired production+Adjustment for work in process inventory+Correction of the desired production start rate of unaccomplished production)	[unit/week]
Adjustment for work in process inventory	(Desired work in process inventory-Work in process inventory)/Work in process inventory adjustment time	[unit/week]
Desired work in process inventory	Manufacturing cycle time*Desired production	[unit]
Work in process inventory adjustment time	0,2 (averaged empirical data)	[week]
Correction of the desired production start rate of unaccomplished production	Unaccomplished production/Correction time	[unit/week]

Table 2 (contd). Definitions of variables and constants used in the simulation model

Variable	Description	Unit
Correction time	0,05 (averaged empirical data)	[week]
Desired production	MAX (0, Production orders)	[unit/week]
Production orders	MAX (0, Customer orders (Time))	[unit/week]
Customer orders	[(0,0)-(60,600)], (0,12), (1,17), (2,10), (3,12), (4,24), (5,8), (6,5), (7,20), (8,16), (9,31), (10,7), (11,5), (12,8), (13,19), (14,6), (15,27), (16,12), (17,5), (18,5), (19,13), (20,5), (21,21), (22,23), (23,5), (24,0), (25,0), (26,0), (27,4), (28,11), (29,3), (30,9), (31,12), (32,7), (33,17), (34,24), (35,21), (36,4), (37,5), (38,10), (39,35), (40,14), (41,8), (42,14), (43,42), (44,0), (45,23), (46,13), (47,5), (48,9), (49,6), (50,2), (51,38), (52,15), (53,10), (54,0), (55,14), (56,10), (57,16), (58,26), (59,51), (60,13)	[unit/week]
Finished products	INTEG (Completed production rate-Delivery rate) Initial Value: 0	[unit]
Delivery rate	MIN (Possible delivery rate, Desired delivery rate)	[unit/week]
Possible delivery rate	Finished products/Preparation time for delivery	[unit/week]
Preparation time for delivery	0,2 (averaged empirical data)	[week]
Desired delivery rate	Unrealized orders/Planned delivery delay	[unit/week]
Unrealized orders	INTEG (Orders rate-Orders fulfillment rate) Initial Value: 0	[unit]
Orders rate	Production orders	[unit/week]
Orders fulfillment rate	Delivery rate	[unit/week]
Unaccomplished production	IF THEN ELSE (Delivery delay/Planned delivery delay>1, (Delivery delay*Orders fulfillment rate-Planned delivery delay*Orders fulfillment rate), 0)	[unit/week]
Delivery delay	Unrealized orders/MAX (1,Orders fulfillment rate)	[week]
Planned delivery delay	1 (averaged empirical data)	[week]

Source: own elaboration.

The time unit adopted for the model was a 5-day working week. The constant values were hence converted into the adopted unit, making 1 day to equal 0.2 week. The mean average for the data collected for each constant was calculated. In describing the variables the functions (MIN, MAX, DELAY3, IF THEN ELSE) available in the library of the VENSIM DSS software were applied.

4.3. Validation of the simulation model

The validation of the propriety of the model was undertaken in subsequent studies using the following methods:

- Assessment of the propriety of choice of modelling limits (boundaries), propriety of the model, structure and the consistency of the adopted parameters (for fixed models) in comparison with available knowledge concerning the modelled system;
- Testing the propriety and consistency of the variable units adopted for the model;
- Testing the functioning of the model under imposed stress conditions.

The main purpose of developing the model was to map, in general, the production and delivery system in a manufacturing company along with its key decisive principles for controling the system. Hence such variables that were quantitatively contained in the tested system were chosen. The management of the respective company and other experts participated in both the choice of variables for the model and in the creation of its structure. Scientific literature was also made use of. The parameter values adopted for the needs of the model were provided by persons authorized by management. The mean average for all the parameter values (fixed models) were calculated by the same persons. All this is to prove the proprietness of the choice of modelling limits and the structure of the tested system, including the propriety of the value parameters for the model adopted.

One of the basic measures for difining the correctness of links between variables in the model and also responsible for the overall proprietness of the model is the test of consistency of the variable units adopted for the model. The test was conducted directly in the program, in which the model was developed, using the commands *Units Check* in the tab *Model*. The correctness of the unit was confirmed.

Testing the model by using stressful conditions was meant to check its performance when the fixed values amounted to 0 or very large values. The program, in the course of this testing, signaled several times the surpassing of the numerical range by values of some variables leading to the interruption of the simulation. These were mainly the variables, which while appearing in the descriptive equations of the model, in the denominator of the expression took on the value of 0. To eliminate such errors the MAX function was applied in defining such variables.

5.   MODEL SIMULATION

Having completed the simulation model with the data contained in table 2, the simulation was conducted. The step of simulation was assumed to be 0.03125. The course of the accumulatory variables as well as the variable „Production orders" and „Delivery rate" in the tested time period of 60 weeks is illustrated in the graphs below (Fig. 3)

Fig. 3. The course of selected variables of the PRODUCTION-DELIVERY system

Selected Variables

Finished products : symulacja
Unrealized orders : symulacja
Work in process inventory : symulacja

Selected Variables

Delivery rate : symulacja
Production orders : symulacja
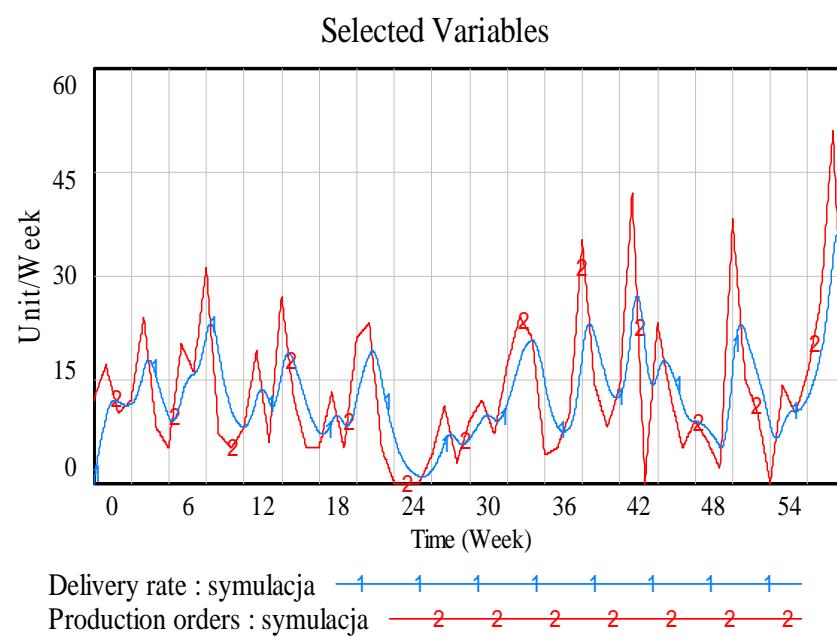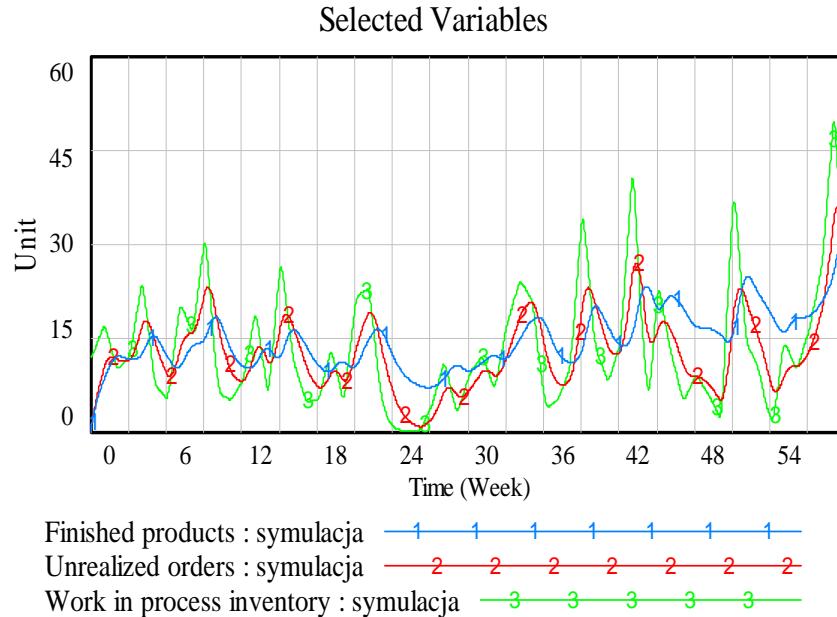
Source: own elaboration (VENSIM DSS).

The volume of the orders had direct impact on the behavioral dynamics of the accumulatory variables of the PRODUCTION-DELIVERY system. The first graph on chart 3 shows their changeability and fluctuation in each week. It should be noted that values of these variables are integral building blocks between the flow variables. The second graph depicts the course of two variables, namely „Production orders" as well as „Delivery rate". The values of the first variable were the results of empirical studies conducted. The values, on the other hand, are simulated values. Time lags between the values of the two variables, due to the size of the „Planned delivery delay" (1 week) can be observed.

The simulation of the model allows for the testing of varied scenarios related to the system being tested, type „if...then...". For example, one can check how the value of the variable „Delivery rate" chandes if „Planned delivery delay" is prolonged to 2 weeks. The path of the variable in illustrated in Fig. 4.

Fig. 4. Values of „Delivery rate" for „Planned delivery delay" for 2 weeks
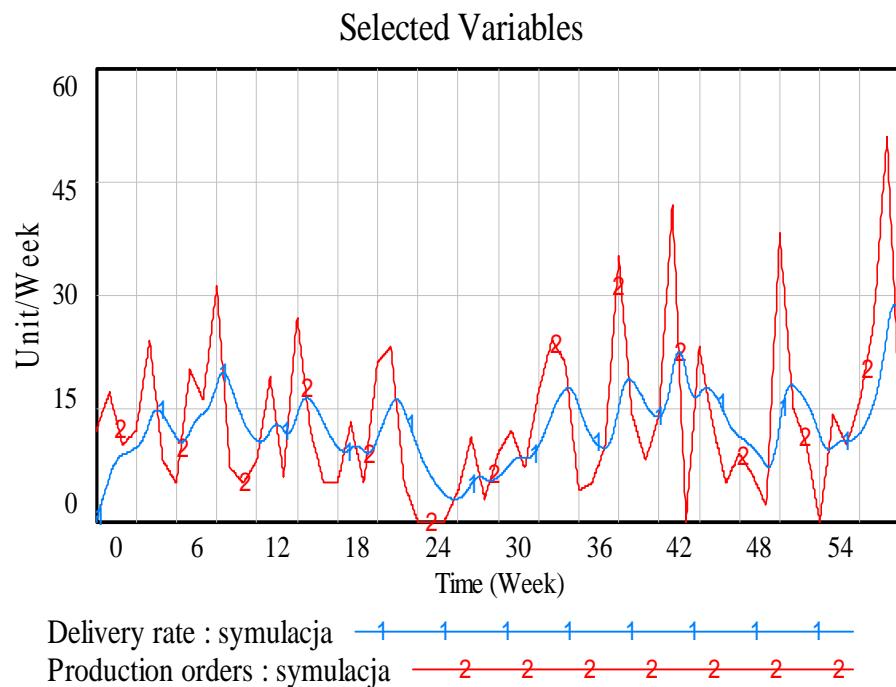
Source: own elaboration (VENSIM DSS).

6. CONCLUSIONS

The paper contained a description of the methodology for constructing a simulation model of the PRODUCTION-DELIVERY system, using Zelgraf company as a case study. The modelling of the system made it possible to identify each on-going processes in the system and has also made their graphic presentation of the order possible. This has

had a positive impact on the overall analysis of the entire system. Additionally, the simulation model developed has enabled the conduct of several testings related to the verification of set strategies for managing the system in the company under study. The current model is suitable for use in Zelgraf company in the following processes:

- – Observation of dynamic relationships between the building blocks variables of the PRODUCTION-DELIVERY system;
- – Forecasting the behaviour of the PRODUCTION-DELIVERY system in response to the changing environment (expressed by changing the values of fixed parameters of the model or by adding new fixed parameters);
- – Planning and deciding in respect to the management of the system;
- – Training for employees and young executives.

The illustrated model is suitable for use also in other companies of similar line of business, that can adapt it to their personal needs and environment.

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SYMULACYJNY MODEL PRODUKCJA-ZBYT W KONWENCJI METODY DYNAMIKI SYSTEMÓW. PRZYPADEK PRZEDSIĘBIORSTWA ZELGRAF

W artykule przedstawiono kolejne kroki budowy modelu symulacyjnego systemu produkcji i zbytu w przedsiębiorstwie produkcyjnym. Początkowo wytłumaczono istotę procesów produkcji i zbytu, czyli kluczowych procesów wchodzących w skład działalności podstawowej przedsiębiorstwa produkcyjnego. Wskazano i krótko scharakteryzowano najważniejsze reguły

decyzyjne powiązane bezpośrednio z tymi procesami. Następnie przedstawiono profil działalności przedsiębiorstwa produkcyjnego Zelgraf, w którym przeprowadzono badania mające na celu praktyczne zapoznanie się z wymienionymi procesami. Dzięki tej znajomości wyłoniono zmienne modelu myślowego związanego z procesami produkcji i zbytu, które zestawiono tabelarycznie. Zmienne modelu myślowego powiązano w diagram przyczynowo-skutkowy, będący podstawą do opracowania modelu symulacyjnego. W diagramie zaznaczono charakterystyczne rodzaje sprzężeń zwrotnych działających w badanym systemie świadczących o ciągłych procesach regulacji. Na podstawie diagramu przyczynowo – skutkowego opracowano docelowy model symulacyjny. Wykorzystano tu metodę dynamiki systemów. Zarówno do budowy modelu, jak i symulacji wykorzystano oprogramowanie Vensim® DSS. Posługując się językiem oprogramowania podano poszczególne definicje zmiennych oraz wartości stałych dla modelu. Wartości te wynikały bezpośrednio z przeprowadzonych badań empirycznych w wybranym przedsiębiorstwie. W kolejnym kroku dokonano walidacji modelu symulacyjnego w oparciu o trzy metody: oceny poprawności wyboru granic modelowania, poprawności struktury modelu oraz spójności przyjętych wartości parametrów (stałych modelu) w porównaniu z dostępną wiedzą na temat modelowanego systemu; testu poprawności i spójności jednostek zmiennych przyjętych w modelu oraz testu działania modelu przy narzuconych warunkach skrajnych. Metody potwierdziły poprawność modelu. W ostatnim etapie przeprowadzono symulację modelu dla przyjętego kroku, przedstawiono przebiegi zmiennych akumulacyjnych oraz wybranych zmiennych systemu i dokonano analizy otrzymanych wyników. Przedstawiono także jeden scenariusz testów związanych z badanym systemem. W podsumowaniu wskazano praktyczne możliwości wykorzystania opracowanego modelu.

Słowa kluczowe: produkcja, zbyt, modelowanie symulacyjne, dynamika systemów

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CORPORATE CAPITAL STRUCTURE DETERMINANTS OVER THE LATEST GLOBAL CRISIS: THE CASE OF POLAND

Capital structure decisions in firms and factors determining them still belong to the most challenging research issues that deserve more empirical studies. The recent global crisis has put the subject into a new perspective as it was clearly related to debt issues. Using panel data and multi factor regression procedure we investigated the diversified sample of almost 4000 public and non-public firms operating in Poland over 2006–2011 period to verify the degree to which the most significant traditional firm-specific factors explain their capital structures. Specifically, our study was aimed at examining the potential differences in the investigated relationships in the pre-crisis years as compared to the crisis ones. We confirmed the previous findings of other researchers concerning the impact profitability and size have on leverage. We showed also that the latest global crisis did not influence significantly capital structure selection patterns observed in our sample despite visible changes in the financial performance of the investigated firms. However, our evidence is inconclusive in terms of the verification of two classic capital structure theories: trade-off and pecking order. Some of our empirical findings may be of a practical importance as they can indicate some desired rearrangements in the institutional environment of firms, including financial markets, and suggest the appropriate directions for the potential policy programs.
Keywords: capital structure, leverage, financing, crisis, *JEL classification***:** G32

1. INTRODUCTION

In modern theory of the firm, long-term financial decisions consist of investing and financing choices. After roughly 60 years of gathering the empirical evidence, the impact of the way investment projects are financed on firm value is undeniable. However, the issue of capital structure modeling still belongs to crucial facets of financial management, both in theory and in practice.

We investigated 3784 firms operating in Poland during the period 2006–2011 to check the explanatory power of selected firm-specific quantitative variables implied by classic theories as key factors influencing capital structure choices. Our work contributes to the

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existing body of evidence in this area in three ways. First, capital structure studies conducted in Poland so far were using mainly listed companies or aggregate data. Little is known about leverage determinants in non-public firms. Secondly, the data utilized in our work comes from different database and reflects financial record of another set of businesses in comparison with those used in previous studies (their authors were acquiring data mostly from Amadeus database in case of large samples of listed and non-listed firms, or from publicly available sources offering data for companies quoted on the stock exchange). Hence, our work can shed additional light on the factors determining financing behavior of Central and Eastern European firms in post-transition period. Finally, our work contains a discussion on leverage determinants patterns in Poland including the potential shifts in the patterns resulting from the latest global crisis which was not studied by other authors.

To summarize, the aim of the article is to examine the robustness of the traditional capital structure theories through testing the extent to which firm-specific quantitative variables promoted by them explain capital structures of the investigated firms, especially during the crisis period.

Our research showed that leverage is positively dependent on size and negatively dependent on profitability, which is in line with majority of the results obtained in other empirical studies carried out in Poland so far. We found also negative relationship between leverage and tangibility. Furthermore, we noticed only slight differences in the results of the capital structure determinant regression models estimated for two sub-periods associated with the crisis (2006–2008 and 2009–2011) which would suggest limited impact of the crisis on the way traditional firm-specific variables influence leverage.

The remainder of the paper is organized as follows. In the next section we refer to the theoretical literature on the capital structure choice and practical predictions stemming from it. Then we analyze the empirical findings received by other researchers, mostly in Central and Eastern European countries with special attention paid to Poland. Further, we describe the variables and data used in our empirical investigation and demonstrate the model specification. Finally, we present the empirical findings and discussion around them. The last section concludes the article.

2. LITERATURE REVIEW

Capital structure theories

The existing literature on capital structure attempts to offer some overall typologies of the rich array of theoretical concepts aimed at explaining the equity-debt choice in firms[5]. Nevertheless, two broad schools of reasoning have gained dominant position in regard to this field of study[6]: trade-off theory and pecking order theory. They differ importantly in

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[5] See for example J. Gajdka, *Teorie struktury kapitału i ich aplikacja w warunkach polskich*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2002; E. Chojnacka, *Struktura kapitału spółek akcyjnych w Polsce w świetle teorii hierarchii źródeł finansowania*, CeDeWu, Warszawa 2012; M. Barowicz, *Determinanty struktury kapitałowej przedsiębiorstwa. Podejście empiryczne*, edu_Libri, Kraków 2015.

[6] R. De Haas & M. Peeters, *The Dynamic Adjustment Towards Target Capital Structures of Firms in Transition Economies,* "Economics of Transition" 2006, Vol. 14, No. 1; P. Hernádi & M. Ormos, *Capital Structure and Its Choice in Central and Eastern Europe,* "Acta Oeconomica" 2012, Vol. 62, No. 2; P. Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act: Evidence from Central and Eastern Europe,* "Baltic Journal of Economics" 2012, Vol. 12, No. 2; M. Mateev, P. Poutziouris & K. Ivanov, *On the Deter-*

many regards which resulted in considering them as competing approaches by some authors.

Trade-off theory, which grew on the basis of Modigliani-Miller theorem, assumes that firms are driven by benefits and costs of equity versus debt when making their capital structure decisions. In their seminal paper Modigliani & Miller[7] concluded that in perfectly competitive market firm capital structure is irrelevant in the sense that it doesn't affect the firm value. Yet, real-life imperfections (fiscal, informational, agency, risk-related etc.) result in some advantages and disadvantages of equity and debt, respectively. Trade-off theory utilizes the imperfections to explain the way firms behave when selecting the capital mix.

Pecking order hypothesis emerged as the theoretical response to the empirical findings of Donaldson[8] who observed a specific order in which investigated firms were satisfying their financing needs. Internal funds were at the top of the hierarchy. They were followed by debt issuances when internal funds were not sufficient or not available. Raising additional equity was evidenced to be the last resort in financing. The theory, developed by Myers & Majluf[9], is based on the information asymmetry between firms' stakeholders and predicts that the order documented by Donaldson can be explained by the costs implied by the asymmetry.

These two theoretical approaches differ in at least two key points. Firstly, trade-off theory in its pure form is static (debt-equity choice is analyzed within the framework assuming fixed amount of total capital) while pecking order theory is dynamic (debt-equity choice is analyzed within the framework assuming changes in total capital). Secondly, the financing behavior in which firms trade off the benefits of debt against its costs naturally leads to the expectation of the existence of the optimal capital structure (at which the marginal benefit of debt is the same as the marginal cost). In contrast to trade-off theory, pecking order theory doesn't maintain that firms are driven towards the optimal capital structure while choosing between equity and debt. Instead, it assumes that the driving forces are mainly represented by the firms' past profitability and current needs for investment funds.

The latest papers on capital structure decisions argue that these two clearly distinct theoretical lines of thinking need not to be mutually exclusive[10]. They may be complementary parts of more holistic approach in which trade-off motives may be of greater importance in long-run while pecking order implications may be observable rather in short-run. Such reconciling approach may mean that neither trade-off theory need to be static nor pecking order theory need to neglect the optimal capital structure.

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minants of SME Capital Structure in Central and Eastern Europe: A Dynamic Panel Analysis, "Research in International Business and Finance" 2013, Vol. 27, No. 1.

[7] F. Modigliani & M.H. Miller, *The Cost of Capital, Corporation Finance, and the Theory of Investment,* "American Economic Review" 1958, Vol. 48, No. 3.

[8] G. Donaldson, *Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity*, Harvard School of Business Administration, Boston 1961.

[9] S. Myers & N. Majluf, *Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have*, "Journal of Financial Economics" 1984, Vol. 13, No. 2.

[10] R. De Haas & M. Peeters, *The Dynamic Adjustment...*

Theoretical predictions

Firm-specific attributes theoretically affecting the debt-equity choice

The capital structure theories suggest some firm-specific attributes critically important for benefits and costs associated with selecting equity or debt. Many articles discuss the theoretical expectations concerning the way such firm-specific characteristics (and their observable proxies) influence capital structure choices made in firms[11] to mention only some papers on capital structure choices made in Central and Eastern European firms). Many times their interpretations are different. Because of more multidimensional character of trade-off theory in which "asymmetry information costs are one of many factors that influence firms' capital structure decisions, whereas in a 'pecking order world' these costs are basically the only determinant"[12], the set of attributes associated with the trade-off theory is more abundant in the literature. In this section we follow the set of attributes discussed by Titman & Wessels[13] in their classic paper to make a brief review of the way the firm-specific characteristics may influence the capital structure decisions according to different theoretical frameworks. The following section also provides the theoretical justification for the independent variables chosen for the empirical study presented in the paper.

Asset structure (tangibility vs. intangibility)

In accordance with both trade-off theory and pecking order theory the collateral value of assets (in majority of empirical studies referred to as "tangibility" or "asset structure") belongs to the firm-specific attributes having arguably the greatest importance in corporate funds selection. However, the relationship between firm asset structure and leverage is ambiguous. Generally, in the light of trade-off theory one can expect the positive link between these two characteristics since collateralizable assets reduce the bankruptcy costs because they can be easily liquidated in case of the default. On the other hand under the asymmetric information circumstances, emphasized by pecking order theory, firms with many collaterizable assets may be inclined to issue more debt because such assets exhibit values known not only to the managers but also to the investors and thus reducing the informational costs. Yet, from the point of view of the owner-manager agency setting more collateral assets may lead to less debt in the capital structure[14]. Despite those controversies, it seems that even within pecking order setting positive relation seems to be more reasonable. From the creditors' point of view tangible assets alleviate the risk they face and thus reduce the likelihood of adverse selection and moral hazard.

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[11] A. Białek-Jaworska, N. Nehrebecka, *Struktura kapitałowa przedsiębiorstw w świetle wyników badań*, "Zeszyty Teoretyczne Rachunkowości" 2015, Vol. 81, No. 137; M. Kędzior, *Capital Structure in EU Selected Countries – Micro and Macro Determinants*, "Argumenta Oeconomica" 2012, Vol. 1, No. 28; L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium-Size Enterprise Financing in Eastern Europe* (World Bank Policy Research Working Paper 2001, No 2933), http://www1.worldbank.org/finance/assets/images/2933.pdf; P. Bauer, *Capital Structure of Listed Companies in Visegrad Countries,* "Prague Economic Papers" 2004, Vol. 13, No. 2; N. Mokhova & M. Zinecker, *The Determinants of Capital Structure: The Evidence from the European Union*, "Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis" 2013, Vol. 282, No. 7; E. Mostarac & S. Petrovic, *Determinants of Capital Structure of Croatian Enterprises Before and During the Financial Crisis*, "UTMS Journal of Economics" 2013, Vol. 4, No. 2.

[12] R. De Haas & M. Peeters, *The Dynamic Adjustment...*, p. 145.

[13] S. Titman & R. Wessels, *The Determinants of Capital Structure Choice*, "The Journal of Finance" 1988, Vol. 43, No. 1, pp. 1–19.

[14] *Ibidem*, p. 3.

Non-debt tax shield

Non-debt tax shield is considered an important attribute influencing the choice of debt ratio in trade-off theory as it serves as the substitute for debt tax shield. Firms that record the same kind of tax savings as those given by debt but coming from other sources (e.g. depreciation and investment tax credits) are less inclined to borrow funds. Thus, trade-off theory predicts negative relation between non-debt tax shields and the share of debt in capital structure. It is reasonable to assume that one should expect negative link between non-debt tax shield and leverage also on the pecking order ground. Depreciation is considered a part of self-financing and hence the greater it is in relation to total assets, the smaller external financing needs, including borrowings.

Growth

Opinions on the direction in which growth affects capital structure expressed in the theoretical debates are mixed. The attribute doesn't have an apparent status even in trade-off theory. Majority of authors consider growth to be inversely related to debt ratios of firms. They argue that it can pose a threat of instability resulting in higher uncertainty and thus risk – a significant factor in the trade-off framework. Those expectations are reinforced by the rationale which is behind the agency concerns. Additionally, firms with significant growth potential can have incentives to refrain from borrowing to preserve a financial reserve (the need for such reserve is positive function of growth opportunities – Bancel & Mittoo[15]). However, from the point of view of pecking order setting more rapid growth leads to bigger financing needs, including external funds. This means that rapidly growing firms can be forced to borrow more and – as the result – exhibit positive relationship between growth and debt ratios[16]. On the other hand, high growth rates intensify problems and increase costs resulting from asymmetric information since outsiders may not be able to value growth options plausibly[17]. This suggests that growth may have negative impact on leverage even in pecking order regime because firms may be motivated to avoid those costs or at least to reduce them. Some authors argue that the sign of the relationship depends on which debt component (short-term versus long-term) is considered and how it is valued.

Size

It seems that trade-off and pecking order theories lead to different expectations concerning the sign of the relation between leverage and firm size. Larger firms are less vulnerable to negative factors highlighted in trade-off framework such as forces leading to financial distress and bankruptcy. This can be explained, at least partly, by the diversification of larger firms. Additionally, Titman & Wessels[18] point out that in smaller firms direct bankruptcy costs constitute bigger fraction of their value. Also, size determines the access to funds – larger firms face smaller barriers when they strive for external financing, including funds from commercial banks. All of those reasons justify the expectation of

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[15] F. Bancel & U.R. Mittoo, *The Determinants of Capital Structure Choice: A Survey of European Firms* 2002, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=299172.

[16] N. Mokhova & M. Zinecker, *The Determinants of Capital Structure…*, p. 2533; R. De Haas & M. Peeters, *The Dynamic Adjustment…*, p. 145.

[17] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants…*, p. 6–7.

[18] S. Titman & R. Wessels, *The Determinants of Capital…*

positive relationship between size and share of debt in capital structure. On the other hand some authors reasonably argue that since larger firms are more transparent and their communication with investors is more intensive, they should experience lower costs of asymmetric information which is essential in pecking order theory[19]. This kind of association was noticed since the influential work of Rajan & Zingales[20]. Moreover, Mokhova & Zinecker[21] claim that larger firms have "more opportunities to achieve greater sales and consequently retain earnings". All of those theoretical findings lead to the expectation of inverse link between leverage and size. Some authors reasonably argue that specificity of some economies make positive relation between size and leverage more probable than negative one. For example De Haas & Peeters[22] notice that because of the underdeveloped status of stock market and corporate bond market in transition economies larger firms may have easier access to bank credit, which reinforces the prediction of positive correlation between size and leverage.

Volatility

In financial management the volatility of operating performance, reflected is such variables as cash flow from operations or any measure of operating income (e.g. EBITDA or EBIT), is considered to be the key determinant of the firm ability to cover the obligations imposed by debt. Hence, the connection of volatility with critical variables of trade-off theory – such as default risk and bankruptcy costs – is straightforward. From the perspective of this particular theory leverage should be decreasing function of volatility. Mateev, Poutziouris & Ivanov[23] notice that in the case of operating performance volatility the expectations concerning its relation to leverage are consensual in both theories – trade-off and pecking order. They state that "For the pecking order theory, firms with more volatile cash flows are less likely to have debt in order to lower the possibility that they will have to issue new risky securities or forego future profitable investments when cash flows are low"[24]. In contrast to those predictions De Haas & Peters[25] say that positive association of volatility with debt ratio is also likely and justify this assertion by referring to the classic work of Myers (1997) and maintaining that higher volatility can lead to the reduction of the underinvestment problem and – ultimately – agency costs of debt.

Profitability

According to trade-off theory the extent to which firms use leverage is the resultant of the benefits of debt as compared to its costs. In this particular setting the benefit given by the interest tax shield is of prime importance. However, only firms profitable on the operating level can benefit from it. Additionally, more profitable firms may need more debt to strengthen managerial discipline and relieve agency problems resulting from abundant cash flows. Hence, one can conclude that there should be positive relationship between

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[19] E. Mostarac & S. Petrovic, *Determinants of Capital Structure of Croatian...,* pp. 156.

[20] R.G. Rajan & L. Zingales, *What Do We Know about Capital Structure? Some Evidence from International Data,* "The Journal of Finance" 1995, Vol. 50, No. 5, pp. 1421–1460.

[21] N. Mokhova & M. Zinecker, *The Determinants of Capital Structure...,* p. 2535.

[22] R. De Haas & M. Peeters, *The Dynamic Adjustment...*

[23] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants...*

[24] *Ibidem*, p. 9

[25] R. De Haas & M. Peeters, *The Dynamic Adjustment...*

profitability and leverage under trade-off theoretical regime. The properties of pecking order theory lead to opposite predictions. In the light of the theory past profitability determines the amount of earnings that can be retained. In the 'pecking order world', the availability of such internally generated funds decreases the willingness of firms to borrow. De Haas & Peters[26] add that in the context of severe information asymmetries between firms and banks and higher interest rates resulting from them (in such environment it is harder for banks to distinguish between good and poor firms) one should expect that more profitable firm with the access to the internal financing will prefer it over debt while less profitable businesses without such opportunity will be forced to use debt or external equity in case of financing needs. This allows to assert that leverage can also be negative function of profitability, at least assuming that pecking order is valid.

Financial slack

Some authors use additional firm-specific attributes to test their explanatory potential in explaining financing behavior predicted by pecking order theory[27]. In our work we follow the selection of Hernádi & Ormos[28] who included the availability of internal funds (financial slack) in their regressions. To check the validity of pecking order theory we hypothesized that leverage is a negative function of the financial slack.

Empirical findings of other authors

In 1988 Titman & Wessels[29] pointed out that "Empirical work in this area has lagged behind the theoretical research". Yet, current stock of the empirical findings concerning factors determining capital structures is vast. It seems that the gap was substantially reduced since then. The key reference work in discussion on the empirical evidence as to the capital structure determinants is the extensive survey made by Harris & Raviv[30] in which they observed that „leverage increases with fixed assets, non-debt tax shields, investment opportunities, and firm size and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product"[31]. However, many other valuable studies were carried out since the publication of the groundbreaking work of Harris & Raviv. Additionally, their review doesn't include the results of research conducted in Central and Eastern European states, including Poland.

More recent international surveys, yet incomplete, were published not only in the Western countries, but also in Poland[32]. They include such crucial work as Korajczyk & Levy[33], Frank & Goyal[34], Bevan & Danbolt[35], Demirgüç-Kunt & Maksimovic[36], Booth,

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[26] *Ibidem.*

[27] See for example E. Chojnacka, *Struktura kapitału spółek...*

[28] P. Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act...*

[29] S. Titman & R. Wessels, *The Determinants of Capital...*, p. 1.

[30] M. Harris & A. Raviv, *The Theory of Capital Structure*, "The Journal of Finance" 1991, Vol. 46, No. 1.

[31] *Ibidem*, p. 334.

[32] See for example A. Białek-Jaworska, N. Nehrebecka, *Struktura kapitałowa...*; M. Barowicz, *Determinanty struktury...*; M. Kędzior, *Capital Structure in EU...*

[33] R.A. Korajczyk & A. Levy, *Capital Structure Choice: Macroeconomic Conditions and Financial Constraints*, "Journal of Financial Economics" 2003, Vol. 68, No. 1.

Aivazian, Demirgüç-Kunt & Maksimovic[37], De Jong, Kabir & Nguyen[38] to mention only a few. To supplement them by Polish cases we searched through the respective literature and recorded more than thirty studies conducted in Poland (published in Polish or in English).

Both Polish and foreign research is diversified. Quantitative research in which regression procedures of various types were used dominates. Nevertheless, some authors (see for instance Graham & Harvey[39] or Bancel & Mittoo[40] abroad, and Prędkiewicz & Prędkiewicz[41] or Łuczka[42]) utilized qualitative methods (gathering opinions through questionnaires). Further, some authors focused on firm-specific variables while others scrutinized the way leverage is determined by industry-specific or country-specific factors. Moreover, dependent variables (i.e. leverage measures) were selected differently by different authors. Finally, various sets of data and businesses were utilized by them to meet assumed research goals (individual versus aggregate, listed versus non-listed, SME versus large-sized firms etc.).

Polish research we were able to refer to is represented by approximately 30 scientific articles. Interestingly, large part of it was provided by foreign researchers (especially the early studies). In this paper we refer only to the studies aimed at testing the explanatory power of the firm-specific quantitative factors in the context of capital structure decisions. The papers considering qualitative factors and industry-specific as well as country-specific factors were left undiscussed. However, even the articles dealing with the influence of the firm characteristics on leverage differed in their objectives. In that respect some of them were close to our own study in which we supposed the examination of the dominant capital structure theories in Polish environment. Mateev, Poutziouris & Ivanov[43], Hernádi & Ormos[44], Mokhova & Zinecker[45] represent this sort of papers. Another important category of the empirical work is represented by the papers in which the authors were comparing financing patterns and capital structure behavior in CEE states

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[34] M.Z. Frank, & V.K. Goyal, *Trade-off and Pecking Order Theories of Debt* (Working paper) 2005, http://www.tc.umn.edu/~murra280/WorkingPapers/Survey.pdf.

[35] A.A. Bevan & J. Danbolt, *Dynamins in the Determinants of Capital Structure in the UK* (Working paper 2000/9), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=233551.

[36] A. Demirgüç-Kunt & V. Maksimovic, *Institutions, Financial Markets, and Firm Debt Maturity,* "Journal of Financial Economics" 1999, Vol. 54, No. 3; A. Demirgüç-Kunt & V. Maksimovic, *Stock Market Development and Firm Financing Choices*, "World Bank Economic Review" 1996, Vol. 10, No. 2.

[37] L. Booth, V. Aivazian, A. Demirgüç-Kunt & V. Maksimovic, *Capital Structures in Developing Countries,* "The Journal of Finance" 2001, Vol. 56, No. 1.

[38] A. De Jong, R. Kabir & T.T. Nguyen, *Capital Structure Around the World: The Roles of Firm- and Country-Specific Determinants*, "Journal of Banking and Finance" 2008, Vol. 32, No. 9.

[39] J.R. Graham & C.R. Harvey, *How Do CFOs Make Capital Budgeting and Capital Structure Decisions?* "Journal of Applied Corporate Finance" 2002 , Vol. 15, No. 1.

[40] F. Bancel & U.R. Mittoo, *The Determinants of Capital...*

[41] K. Prędkiewicz & P. Prędkiewicz, *Wybrane determinanty struktury kapitału mikro, małych i średnich przedsiębiorstw w Polsce,* Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia 2014, Vol. 802, No. 65

[42] T. Łuczka, *Struktura kapitału w mikro- i małych przedsiębiorstwach*, „*Ekonomika i Organizacja Przedsiębiorstwa*" 2006, special issue,

[43] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[44] P. Hernádi & M. Ormos, *What Managers Think...; P. Hernádi & Ormos, Capital Structure...*

[45] N. Mokhova & M. Zinecker, *The Determinants of Capital...*

(including Poland) with those observed in the Western countries. Such oriented papers come mainly from nineties of XXth. century and first decade of this century as the researchers were curious about the way economic transition process affects the equity-choice model (see for example Cornelli, Portes & Schaffer[46]; Weill[47]; Hall, Hutchinson & Michaelas[48]). Finally, a number of researchers calibrated the objectives of their studies in significantly distinct way, yet still examining the link between selected firm-specific factors and debt ratios (see for instance Mateus & Terra[49] or Shamshur[50]).

Making conclusions on the basis of the empirical studies carried out in Poland must take into account the fact that only some of them were examining businesses operating in Poland separately. Large part of the empirical work (especially provided by foreign authors) is based on joined data composed of Polish and other CEE countries' cases. This may impede cross-country comparisons. Additionally, the researchers we refer to, utilized differentiated proxies of the same firm-specific attributes as well as leverage measures in their analyses. This also may impose some difficulties in the overall summative assessments since the empirical evidence proved the significance of the dependent and explanatory variables choice for the final results many times (see for example Bevan & Danbolt[51]; Kirch, Mateus & Terra[52]; different results for ROA and ROS as the explanatory variables in Jędrzejczak-Gas[53]). The most noticeable differences apply to the proxies of growth / growth opportunities. Some authors (e.g. Klapper, Sarria-Allende & Sulla[54]) adapted the growth in sales revenues as the estimate of the growth while other chosen assets change (Weill[55]), the share of the intangible assets in total assets (Mateus & Terra[56]; Kirch, Ma-

[46] F. Cornelli, R. Portes & M. Schaffer, *Financial Structure of Firms in the CEECs* [in:] O. Bouin, F. Coricelli, & F. Lemoine (Eds.), *Different Paths to a Market Economy. China and European Economies in Transition* (pp. 171–197), OECD 1998, http://www.keepeek.com/Digital-Asset-Management/oecd/development/different -paths-to-a-market-economy-china-and-european-economies-in-transition_9789264163010-en#page183.

[47] L. Weill, *Determinants of Leverage and Access to Credit: Evidence on Western and Eastern Europe Countries 2002*, http://www.researchgate.net/publication/253293146_ Determinants_of_Leverage_and_Access_to _Credit_Evidence_on_Western_and_Eastern_Europe_countries; L. Weill, *What Determines Leverage in Transition Countries?* "Czech Journal of Economics and Finance" 2004, Vol. 54, No. 5–6.

[48] G. Hall, P. Hutchinson & N. Michaelas, *East and West: Differences in SME Capital Structure Between Former Soviet-Bloc and Non Soviet-Bloc European Countries 2006*, http://www.gregoriae.com/ dmdocuments/m56.pdf.

[49] C. Mateus, P.R.S. Terra, L*everage and Maturity Structure of Debt in Emerging Markets,* "Journal of Mathematical Finance" 2013, Vol. 3, No. 3A, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2353638.

[50] A. Shamshur, *Access to Capital and Capital Structure of the Firm* (CERGE-EI Working Paper 2010, No. 429), https://www.cerge-ei.cz/pdf/wp/Wp429.pdf.

[51] A.A. Bevan, J. Danbolt, *Dynaminis in the...*

[52] G. Kirch, C. Mateus & P.R.S. Terra, *Country Governance Structure and Financial Development as Determinants of Firms' Capital Structure,* "Journal of Money, Investment and Banking" 2012, No. 26, pp. 6–24, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2353663&download=yes.

[53] J. Jędrzejczak-Gas, *Struktura kapitału w małych i średnich przedsiębiorstwach,* „Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia" 2013, Vol. 766, No. 62,

[54] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

[55] L. Weill, *Determinants of Leverage and Access to Credit: Evidence on Western and Eastern Europe Countries 2002*, http://www.researchgate.net/publication/253293146_ Determinants_of_Leverage_and_Access_ to_Credit_Evidence_on_Western_and_Eastern_Europe_countriess

[56] C. Mateus, P.R.S. Terra, L*everage and Maturity Structure of Debt in Emerging Markets,* "Journal of Mathematical Finance" 2013, Vol. 3, No. 3A, pp. 46–59, http://papers.ssrn.com/sol3/papers.cfm?abstract _id=2353638.

teus & Terra[57]; Mateev, Poutziouris & Ivanov[58]) or market to book ratio (Chojnacka[59]; Szudejko[60]). Is some studies only one dependent variable was tested (Weill[61]; De Haas & Peeters[62]; Shamshur[63]) while other applied until four (Dević & Krstić[64]; Klapper, Sarria-Allende & Sulla[65]; Frąckowiak, Gryglewicz, Stobiecki, Stradomski & Szyszka[66]).

The surveyed studies show that generally, despite an obvious specificity, the financing patterns in Poland are not only similar to those in other CEE countries, but also to the capital structure selection models known from the empirical investigations made in Western countries. This is evident from the latest empirical inquiries which unequivocally confirm the convergence (Hernádi & Ormos[67]) as compared to the studies based on the data describing the early stage of the economic transformation (Cornelli, Portes & Schaffer[68]; Hussain & Nivorozhkin[69]; Hall, Hutchinson & Michaelas[70]).

In general, the survey also indicates that the most significant capital structure explanatory variables are size and profitability (although some exceptions exist; for example size was found to be statistically insignificant in Hernádi & Ormos[71] while profitability – in Jõeveer[72]. Size was verified as factor significantly and positively related with leverage in almost all surveyed studies which strongly supports trade-off theory. However, almost all studies in which profitability was statistically significant showed its inverse relation with debt ratios which is in line with pecking order theory.

Moreover, Ciołek & Koralun-Bereźnicka[73] as well as Mateev, Poutziouris & Ivanov[74] showed that size can differentiate companies as to the way other firm-specific factors

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[57] G. Kirch, C. Mateus & P.R.S. Terra, *Country Governance Structure...*

[58] Mateev M., Poutziouris P. & Ivanov K., *On the Determinants of SME Capital Structure in Central and Eastern Europe: A Dynamic Panel Analysis*, "Research in International Business and Finance" 2013, Vol. 27, No. 1.

[59] E. Chojnacka, *Struktura kapitału spółek akcyjnych w Polsce...*

[60] M. Szudejko, *Analiza zależności pomiędzy branżą a strukturą kapitału przedsiębiorstwa na podstawie wyników finansowych polskich spółek giełdowych*, "Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia" 2013, Vol. 766, No. 62, pp. 701–711.

[61] L. Weill, *What Determines Leverage in Transition Countries?* "Czech Journal of Economics and Finance" 2004, Vol. 54, No. 5–6.

[62] R. De Haas & M. Peeters, *The Dynamic Adjustment Towards Target Capital...*

[63] A. Shamshur, *Access to Capital and Capital...*

[64] A. Dević & B. Krstić, *Comparatible Analysis of the Capital Structure Determinants in Polish and Hungarian Enterprises – Empirical Study*, Facta Universitatis (Series: Economics and Organization), 2001, Vol. 1, No. 9.

[65] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

[66] W. Frąckowiak, S. Gryglewicz, P. Stobiecki, M. Stradomski & A. Szyszka, *Polityka kształtowania struktury kapitału w polskich przedsiębiorstwach na tle wybranych krajów Unii Europejskiej* [in:] J. Ostaszewski (Ed.), *Finanse przedsiębiorstwa* (pp. 153–172), Oficyna Wydawnicza SGH, Warszawa 2005.

[67] P. Hernádi & M. Ormos, *Capital Structure and...*; P. Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act...*

[68] F. Cornelli, R. Portes & M. Schaffer, *Financial Structure of Firms...*

[69] Q. Hussain & E. Nivorozhkin, *The Capital Structure of Listed Companies in Poland 1997* (IMF Working Paper No WP/97/1975), http://www.imf.org/external/pubs/ft/wp/wp97175.pdf.

[70] G. Hall, P. Hutchinson, & N. Michaelas, *East and West: Differences in SME...*

[71] P. Hernádi & M. Ormos, *What Managers Think of Capital Structure...*

[72] K. Jõeveer, *Sources of Capital Structure: Evidence from Transition Countries* (Bank of Estonia Working Paper No 2/2006), 2006, https://www.eestipank.ee/sites/.../files/.../_wp_206.pdf.

[73] D. Ciołek & J. Koralun-Bereźnicka, *Czy wielkość przedsiębiorstwa różnicuje siłę oddziaływania czynników krajowych i branżowych na strukturę kapitału?* "Bank i Kredyt" 2014, Vol. 45, No. 3.

influence leverage. For example, Ciołek & Koralun-Bereźnicka[75] proved that both investigated independent variables – profitability and asset structure – were insignificant as the predictors of capital structure choices in the entire population, yet they turned out to be significant after dividing the population into three size classes. Mateev, Poutziouris & Ivanov[76] add that the same phenomenon is valid for firm age.

The surveyed studies indicate that growth belongs to the most significant capital structure determinants with positive impact on leverage, in contrast to the prediction of most theoretical interpretations (both trade-off and pecking order theory suggests that corporate debt ratios are inversely related to the attribute). On the contrary, non-debt tax shield, recognized as one of the most relevant capital structure determinants in the trade-off theory, was generally found to be insignificant in majority of surveyed studies.

The most interesting findings concern volatility and tangibility. Volatility is considered an important factor affecting capital structure choice in both theoretical settings – trade-off as well as pecking order, as we commented in previous section. Surprisingly, it was proved to be insignificant in relatively large portion of the entire set of studies conducted so far (see for example Delcoure[77]; Kirch, Mateus & Terra[78]; De Haas & Peeters[79]; Hernádi & Ormos[80]. Kirch, Mateus & Terra[81] try to explain the phenomenon by the deficiencies of the selected proxies used to estimate volatility. In the research in which volatility was statistically significant, the researchers noticed rather inverse than direct relationship between the factor and leverage (e.g. Bauer[82]; Hall, Hutchinson & Michaelas[83]) for short-term leverage) which is in accordance with trade-off theory. The findings regarding the asset structure (in the sense of their tangibility) were particularly inconclusive. Those studies which exploited not only total leverage but also short- and long-term debt ratios as the dependent variable explicitly showed that the sign of the relation between tangibility and leverage depends on the selected measure of debt, thus confirming the observations made earlier in more developed countries. They revealed that long-term debt ratio is positive function of tangibility, while short-term debt ratio depends negatively on the factor (see for example Hall, Hutchinson & Michaelas[84]; Kirch, Mateus & Terra[85]; Shamshur[86]; Mateev, Poutziouris & Ivanov[87]; Mokhova & Zinecker[88] 2013; Kędzior[89]).

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[74] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[75], D. Ciołek & J. Koralun-Bereźnicka, *Czy wielkość przedsiębiorstwa...*

[76] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[77] N. Delcoure, *The Determinants of Capital Structure in Transitional Economies,* "International Review of Economics and Finance" 2007, Vol. 16, No. 3.

[78] G. Kirch, C. Mateus & P.R.S. Terra, *Country Governance Structure and Financial Development...*

[79] R. De Haas & M. Peeters, *The Dynamic Adjustment Towards Target...*

[80] P. Hernádi & M. Ormos, *Capital Structure and...; P.* Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act...*

[81] G. Kirch, C. Mateus & P.R.S. Terra, *Country Governance Structure and Financial Development...*

[82] P. Bauer, *Capital Structure of Listed Companies...*

[83] G. Hall, P. Hutchinson, & N. Michaelas, *East and West: Differences in SME Capital...*

[84] *Ibidem.*

[85] G. Kirch, C. Mateus & P.R.S. , *Country Governance Structure and Financial Development...*

[86] A. Shamshur, *Access to Capital and Capital...*

[87] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[88] N. Mokhova & M. Zinecker, *The Determinants of Capital Structure...*

Rarely financial slack has been the subject of the empirical analyses. Those researchers who included the factor in their tests found leverage to be negative function of it (Hernádi & Ormos[90]; Mateev, Poutziouris & Ivanov[91]).

3. DATA, VARIABLES AND RESEARCH METHODS

Data

We utilized the annual panel data of the firms which were obliged to submit their financial statements to Polish Monitor B database over the period 2006–2011. The data was acquired from Splentum database. The selection of the period resulted from both the objectives of the study (the importance of the crisis interval) and the availability of data. The database includes income statements and balance sheets of both public and non-public firms. We removed the following firms from the sample: (1) those without the continuity of financial statements during 2006–2011 period, (2) financial institutions of all kinds, (3) businesses which exhibited negative equity for at least one year within 2006–2011 period. After those removals the final sample consisted of 3784 firms representing 18 sectors (according to the code list of classification of business activities in Poland in 2007). The distribution of the sample firms among the sectors is presented in the appendix.

Dependent variables

The survey of the empirical research dedicated to the capital structure choice and conducted so far shows that their authors applied various measures of leverage as the dependent variables. The most commonly used estimates were those discussed by Rajan & Zingales[92] in their prominent work, i.e. total liabilities to total assets ratio and total debt to total capital (sum of total debt and equity) ratio. Most authors agree with the assertion of Rajan & Zingales according to which the share of total debt in total capital seems to be the most appropriate measure of leverage for capital structure exploration purposes (see for example Duliniec[93], Białek-Jaworska & Nehrebecka[94] in Polish literature), though the exclusion of trade credit and similar items from the leverage definition may not be sufficiently justified in some cases.

As later empirical evidence showed, the choice of the leverage ratio can significantly affect the study results. Bevan & Danbolt[95], who utilized several individual components of debt as the dependent variables instead of traditional aggregate leverage measures, pioneered this line of examination and proved that the 'broadness' of leverage definition matters in the capital structure decisions. Thus, more recent studies have often used long-term and short-term debt, scaled by more of less broadly defined capital or total assets, as the measures of leverage (e.g. Klapper, Sarria-Allende & Sulla[96]; Weill[97]; Hall,

[89] M. Kędzior, *Capital Structure in EU Selected Countries...*

[90] P. Hernádi & M. Ormos, *Capital Structure and...*; P. Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act...*

[91] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[92] R.G. Rajan & L. Zingales, *What Do We Know about Capital Structure? Some Evidence from International Data,* "The Journal of Finance" 1995, Vol. 50, No. 5.

[93] A. Duliniec, *Struktura i koszt kapitału w przedsiębiorstwie*, PWN, Warszawa 1998.

[94] A. Białek-Jaworska, N. Nehrebecka, S*truktura kapitałowa przedsiębiorstw...*

[95] A.A. Bevan & J. Danbolt, *Dynamins in the Determinants of Capital...*

[96] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

Hutchinson & Michaelas[98]; Delcoure[99]; Mateev, Poutziouris & Ivanov[100]; Mokhova & Zinecker[101] in CEE studies). Kędzior[102] points out that the respective literature reveals two 'schools of thinking' – one which claims that the capital structure studies should be based solely on long-term debt and the other one promoting the 'aggregate approach', i.e. the view that the capital structure consideration must include not only long-term component of debt but also the short-term one. Yet, as we mentioned earlier, the split of the entire debt into short- and long-term parts proved to matter in many empirical analyses.

Another important issue in the discussion on the proper leverage measure is the choice between book and market values of the capital. Despite the belief of some authors that "the ratios using market values provide better specification"[103], majority of researchers used book values in their studies. They defended such choice by pointing out that most CFOs make their decisions on the basis of book values of the capital[104] or by referring to the high volatility of market values which have severe repercussions in the measurement process. Other weren't able to get them as they decided to explore non-traded firms for which market values are unobservable. Finally, a body of evidence exists which shows that the utilization of book values instead of market values doesn't influence research results substantially[105].

In our study we adopted the broadest measure of leverage – the ratio of total liabilities to total assets, based on book values. This corresponds to the ratio of non-equity liabilities to total assets utilized by Rajan & Zingales[106].

Independent variables

We followed Titman & Wessels[107] in selecting the independent variables to our model. Thus, we adapted six firm-specific attributes studied by them: (1) asset structure (following more recent studies we referred to them as intangibility and tangibility), (2) non-debt tax shield, (3) growth, (4) size, (5) volatility, and (6) profitability. The details concerning the respective proxies of the attributes are given in the appendix. In two cases – asset structure and profitability – we decided to use more than one proxy of the selected attribute. Further, we included additional attribute in our investigation, i.e. cash as the measure of the financial slack (or availability of the internal funds), which could allow us for more

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[97] L. Weill, *Determinants of Leverage and Access to Credit: Evidence on Western and Eastern Europe Countries 2002*, http://www.researchgate.net/publication/253293146_ Determinants_of_Leverage_and_Access_to_Credit_Evidence_on_Western_and_Eastern_Europe_countries.

[98] G. Hall, P. Hutchinson & N. Michaelas, *East and West: Differences in SME Capital...*

[99] N. Delcoure, *The Determinants of Capital Structure in Transitional Economies,* "International Review of Economics and Finance" 2007, Vol. 16, No. 3.

[100] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[101] N. Mokhova & M. Zinecker, *The Determinants of Capital...*

[102] M. Kędzior, *Capital Structure in EU Selected Countries...*

[103] K. Campbell & M. Jerzemowska, *Capital Structure Decisions Made by Companies in a Transitional Economy: the Case of Poland* [in:] D. Zarzecki (Ed.), *Financial Management. Objectives – Organization – Tools* (pp. 51-76), Fundacja Rozwoju Rachunkowości w Polsce, Warszawa 2001.

[104] See for example M. Hamrol & J. Sieczko, *Czynniki kształtujące strukturę kapitału polskich spółek giełdowych,* „Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego" 2006, No. 1.

[105] See R. De Haas & M. Peeters, *The Dynamic Adjustment...,* p. 141.

[106] R.G. Rajan & L. Zingales, *What Do We Know about Capital...*

[107] S. Titman & R. Wessels, *The Determinants of Capital...*

scrutinized examination of pecking order theory which refers to significantly less number of the firm-specific characteristics in comparison to trade-off theory. In doing so we can confront our results with work of Hernádi & Ormos[108] as well as Mateev, Poutziouris & Ivanov[109] who also included the feature in the empirical research. Moreover, for the same reason we used additional proxy for profitability (return on equity) in comparison with Titman & Wessels[110]. The motivation to do that stems from the empirical observations of other authors which show that, in contrast to the predictions of trade-off theory, profitability is inversely related to leverage in most studies. We were curious if the alternation of the profitability proxy will hold the validity of the observation. Moreover, because our sample is mixed (it includes both, manufacturing and service firms), ROE may be a more adequate capital structure predictor as compared to other metrics of profitability[111]. Finally, we excluded Titman & Wessels's uniqueness from our study because we were not able to gather data necessary to estimate the respective proxy. Furthermore, for the same reason (missing data) we had to reject some proxies of non-debt tax shield and growth utilized by Titman & Wessles.

Model specification

The empirical analysis of the factors determining leverage ratio was conducted in two steps. Initially, we utilized single factor analysis based on OLS regression procedure. It was aimed at selecting and rejecting some explanatory variables, if necessary, because of the collinearity, or as the result of low correlation with the dependent variable along with p-value exceeding assumed level. Another step was the utilization of the multiple linear regression in order to estimate the explanatory power of the qualified independent variables. To do that we followed Hellwig[112] method to select the explanatory variables to the following model:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + ... + \alpha_n X_n + \varepsilon ,$$

where:

Y – dependent variable (leverage measure),

α_0 – the intercept,

$\alpha_{1 ... n}$ – the slope coefficients for independent variables,

$X_{1 ... n}$ – independent variables (firm-specific financial attributes),

ε – random error term.

Hellwig method allows for the selection of the independent variables combination having the greatest information content (i.e. independent variables strongly correlated with the dependent variable and at the same time weakly correlated each other).

Such regression procedure was used separately for three periods of time: entire 2006–2011 period, and two sub-periods – 2006–2008 (labelled as "pre-crisis") and 2009–2011 (labelled as "crisis"). The time frames of the latest global crisis are disputable and other

[108] Hernádi P. & Ormos M., *Capital Structure and...;* Hernádi P. & Ormos M., *What Managers Think of Capital Structure and How They Act...*

[109] M. Mateev, P. Poutziouris & K. Ivanov, O*n the Determinants of SME Capital...*

[110] S. Titman & R. Wessels, *The Determinants of Capital Structure Choice...*

[111] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

[112] Z. Hellwig, *On the optimal choice of predictors* [in:] Z. Gostkowski (Ed.), *Toward a system of quantitative indicators of components of human resources development* (pp. 171–197), UNESCO, Paris 1968, http://unesdoc.unesco.org/images/0015/001585/158559eb.pdf.

authors adapt various dates to mark them. Poland belongs to the countries which were affected by the crisis to a lesser degree and somewhat later than other economies which is reflected in the main macroeconomic indicators[113]. Hence, we assumed that the division of the entire research period into two equal sub-periods seems to be credible approximation of the pre-crisis and crisis timespans.

While conducting multiple regression linear models have been fitted for the appropriate datasets (Constant effect model for panel data).
Ordinary Least Squares (OLS) estimator is optimal, when it is BLUE (Best Linear Unbiased Estimator) with minimum variance. In order for OLS to be BLUE with minimum variance, the model must satisfy a set of conditions known as Gauss-Markov theorem assumptions[114].

To attest if the model fitted using OLS method is valid, the following conditions regarding error term should be verified:

1) no serial correlation (if the errors are autocorrelated, OLS is still unbiased however it is not effective),
2) homoscedasticity (if errors are heteroscedastic, OLS is still unbiased, but it has not got the smallest variance, therefore it is no longer BLUE).
3) normality (non-normality of residuals implies we cannot produce reliable confidence intervals in model forecasting process),

Panel data models exhibit various types of serial correlation: individual and group effects as well as heteroscedasticity.

In case the model data exhibits some form of autocorrelation and/or heteroscedasticity, model parameters can typically still be estimated consistently using the usual estimating functions, but for valid inference in such models a consistent covariance matrix estimate is essential.

Several procedures for heteroscedasticity consistent (HC) and for heteroscedasticity and autocorrelation consistent (HAC) covariance estimation have been suggested in the econometrics literature[115] Driscoll & Kraay[116], among others) and are now routinely used in econometric analyses.

They allow to produce valid significance tests, for the estimates obtained via standard OLS estimation process as well as testing the model stability. In our study HAC covariance estimates have been applied as described in Zeileis[117] with zero weights and HC0 type.

The details concerning the results of our models utilization are given in the appendix.

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[113] See for example M. Wypych, *Równowaga finansowa przedsiębiorstw przemysłowych w okresie spowolnienia finansowego,* Zeszyty Naukowe Politechniki Śląskiej (seria Organizacja i Zarządzanie), 2014, Vol. 73, No. 1919.

[114] J.M. Wooldridge, *Introductory Econometrics: A Modern Approach*, South-Western College Pub, Mason 2013.

[115] A. Zeileis, *Econometric Computing with HC and HAC Covariance Matrix Estimators*, "Journal of Statistical Software" 2004, Vol. 11, No. 10.

[116] J. Driscoll & A. Kraay, *Consistent Covariance Matrix Estimation With Spatially Dependent Panel Data,* "The Review of Economics and Statistics" 1998, Vol. 80, No. 4.

[117] A. Zeileis, *Econometric Computing with HC...*

4. RESULTS AND DISCUSSION

Entire period (2006–2011)

The descriptive statistics estimated in our study reveal some important and interesting phenomena. Firstly, the variability of the leverage ratio does not seem to be significant in the observation period. The difference between 2006 median maximum and 2009 median minimum is 4 p.p. The ratio was consistently decreasing between 2006 and 2009 and then – after reaching the periodical minimum (in 2009) – increase in the ratio was noticed. Such observations do not allow for unambiguous conclusions concerning the impact crisis had on leverage. Knowing that the influence of the crisis on Polish economy was moderate and delayed, it seems that one should not consider the decline in median leverage ratio in years 2006–2009 a crisis effect. Rather, assuming the presumable time lags, the increase in the ratio between 2009–2011 is more likely result of the crisis. Secondly, the deterioration in the economic situation manifested itself mainly in the fall of both profitability and asset growth rate. All three applied measures show that profitability dropped dramatically in 2008 as compared to 2007 when they reached its periodical maximum, and was still falling in the subsequent years until the end of the observed period. For ROE the decline achieved 50% (37% for both ROA and ROS, for comparison). This may mean that 2008 could be considered crisis year. Yet, we assumed after all that the shifts in capital structure decisions resulting from the weaker economy would be somewhat deferred. Our data also shows serious decline in the asset growth ratio, by almost 87% between 2006 and 2009. As distinct from profitability, which was consistently falling through the end of the observation period, the growth rate was found increasing in two last years of the period. Other variables remained relatively constant during the entire research period (the share of tangible assets – 60-63%, the share of depreciation in total assets – 3,5–4,1%, the share of cash in total assets – 6,5–7,5%).

We found that leverage is negatively dependent on tangibility which was of a surprise to us. The inverse relationship between tangibility and leverage is against both trade-off and pecking order theoretical predictions, yet it was empirically validated many times in CEE countries, in Poland as well. However, the track record of the empirical studies conducted in Poland since the beginning of the economic transformation seems to suggest that the relationship is gradually reversing into positive which would manifest the maturation of Polish economy (most of the western studies found positive dependence of leverage on tangibility which is in line with the predictions of both theoretical schools – see Cwynar, Cwynar & Dankiewicz[118] for discussion). There are at least three possible explanations of such findings. Firstly, even though Poland formally completed the transition process, it may still have some properties of the transitional economy. Secondly, a fraction of total liabilities does not need the collateral. This is very likely in Poland since the debt structure is dominated by short-term borrowings[119]. This line of reasoning seems to be empirically confirmed by some researchers. For example Mokhova & Zinecker[120] found for Poland that even though long-term debt ratio is positively dependent on tangibility,

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[118] A. Cwynar, W. Cwynar & R. Dankiewicz, *Studies of Firm Capital Structure Determinants in Poland: An Integrative Review,* e-Finanse 2015, Vol. 11, No. 4.

[119] See A. Białek-Jaworska, A. Dzik & N. Nehrebecka, *Wpływ polityki monetarnej na źródła finansowania przedsiębiorstw w Polsce w latach 1995–2012* (Materiały i Studia nr 304), Narodowy Bank Polski, Warszawa 2014.

[120] N. Mokhova & M. Zinecker, *The Determinants of Capital...*

there is negative relationship between tangibility and short-term debt ratio. To test the hypothesis in our sample, we built two additional regression models with short-term debt (STD) and long-term debt (LTD) as dependent variables, respectively. As the result, tangibility turned out to be statistically significant only in LTD model, and negatively associated with the dependent variable (the results can be obtained upon the request). Finally, some authors suggest that "where leverage behavior does not have a strategic long-term target, assets tangibility will exert a negative impact on external financing needs"[121]. This may be compelling explanation since the empirical studies show limited role of the optimal capital structure concept in Poland[122].

Our results concerning the sign of the relationship between profitability and leverage are consistent with the findings of other authors, not only in Poland and other CEE countries, but also those who examined the capital structure choices in the developed economies. The same can be said about the link between size and leverage. We found our measure of leverage inversely dependent on profitability which confirms theoretical predictions of pecking order theory. Almost all studies conducted in Poland so far confirmed this direction of profitability influence on debt ratios[123]. Yet, despite the statistical significance of the factor, its explanatory power was relatively low in our study. Furthermore, we ascertained that profitability was insignificant in the pre-crisis model (we refer to this observation later in the article). Finally, in our study we used three measures of profitability (ROA, ROS and ROE), yet the empirical evidence showed that only ROE can be considered statistically significant factor in explaining leverage. This seems to confirm the supposition of Klapper, Sarria-Allende & Sulla[124] that ROE – as compared to other measures of profitability – may be more useful explanatory variable in considerably diversified samples of firms.

Similarly, we showed that size influences leverage in the positive way (bigger firms being more levered). Such observation is consistent with trade-off theory and was confirmed in almost all studies carried out in Poland. Finally, it must be noted that the observation is not only Polish or CEE phenomenon – it was also found in majority of foreign studies conducted in economies on various stages of the economic development (see Białek-Jaworska, Dzik & Nehrebecka[125] for comprehensive review of their results and Cwynar, Cwynar & Dankiewicz[126] for discussion on them).

Even though growth occurred to be insignificant in the model utilizing data from the entire period (2006–2011), it was found significant and positively related to leverage in the crisis period.

Other examined attributes were not included in the final models because of the collinearity (financial slack) or because they were estimated to be insignificant in explaining leverage (intangibility, non-debt tax shield and volatility). Such findings are in line with other studies (both conducted in Poland and abroad).

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[121] M. Kouki & H. Ben Said, *Capital Structure Determinants: New Evidence from French Panel Data,* "International Journal of Business and Management" 2012, Vol. 7, No. 1.

[122] See for example P. Hernádi & M. Ormos, *What Managers Think of Capital Structure and How They Act...*; M. Szudejko, *Analiza zależności pomiędzy branżą...*

[123] Further discussion on the issue can be found A. Cwynar, W. Cwynar & R. Dankiewicz, *Studies of Firm...*

[124] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

[125] A. Białek-Jaworska, A. Dzik, & N. Nehrebecka, *Wpływ polityki monetarnej...*

[126] A. Cwynar, W. Cwynar & R. Dankiewicz, *Studies of Firm Capital....*

Pre-crisis period (2006–2008) versus crisis period (2009–2011)

The subprime crisis and its secondary waves put the examination of the capital structure determinants in a new, interesting light. It is so because the origins as well as the consequences of the crisis are related to the financial market in general and the market for debt in particular. The nature and the properties of the crisis induce to formulate many curious research questions concerning the debt to equity ratio selection. In some countries the crisis led to credit rationing problems which potentially could shift the "normal" patterns regarding the way traditional firm-specific variables influence leverage.

The split of the entire period into two sub-periods in our study did not bring an evident change in the examined relationships. Tangibility preserved the status of the variable inversely related to leverage (in both sub-periods). We obtained also positive and almost the same coefficients before size in both models (pre-crisis and crisis, respectively). Interestingly, we noticed that profitability is statistically significant in explaining leverage only in the crisis period (yet, with low explanatory power). Moreover, growth joined the set of the significant factors in the crisis period with negative impact on leverage and low explanatory power.

It is intriguing that the set of statistically significant factors was found broader for crisis than for pre-crisis period. As mentioned before, profitability exhibited negative impact on leverage in our study, yet only in the crisis period. Knowing that the existing body of evidence concerning profitability confirms rather pecking order theory than trade-off theory predictions – not only in Poland, but also internationally – such findings can suggest that firms more readily turn to retained earnings as the financing option in worse times brought by the crisis. Another potential explanation can be the increase in the information asymmetry resulting from the crisis.

Positive dependence of leverage on growth only in the crisis period may be expounded in at least three ways. Firstly, the explanation can refer to short-term debt prevalence effect. The aggregate data for firms operating in Poland shows that short-term debt dominates in their liabilities structure[127] and some authors hypothesize that even though leverage is negatively dependent on growth – since more severe information asymmetry imposed by rapid growth may lead to the increase in cost of long-term debt – it can be still positively related to short-term debt[128]. However, the justification is at most moderately convincing in the light of our findings since we found growth positively affecting leverage only in the crisis period. Secondly, it can be explained by "supply side phenomenon": the situation in which faster growing firms can get external financing easier[129]. Thirdly, it was noted that the crisis eventuated in evident decline in firms' profitability which – along with still positive growth rate – could force them to borrow more since the internal funds were not that available as before.

In search for the additional insight into the drives of leverage in the confronted sub-periods, we exchanged the best sets of explanatory variables between both models. Hence, in pre-crisis model we regressed the leverage on tangibility, growth, profitability and size, while tangibility and size were use as independent variables in the crisis period. Unfortunately, the models with exchanged explanatory variables did not add to what we knew before introducing them.

[127] J. Famielec, *Struktura finansowania sektora przedsiębiorstw w Polsce w warunkach kryzysu,* „Zeszyty Naukowe Polskiego Towarzystwa Ekonomicznego" 2012, No. 12; A. Białek-Jaworska, A. Dzik & N. Nehrebecka, *Wpływ polityki monetarnej...*

[128] M. Mateev, P. Poutziouris & K. Ivanov, *On the Determinants of SME Capital...*

[129] L. Klapper, V. Sarria-Allende & V. Sulla, *Small- and Medium...*

5. CONCLUSIONS

Our findings confirm key relationships known from previous studies of other authors. We showed that profitability has got negative impact on leverage and size influences it positively, as in majority of other samples of firms examined in various countries, including Poland. However, some observations concerning profitability are novel and deserve further investigation. Firstly, we found ROE the only statistically significant metric of profitability out of three measures adopted in our models. Majority of the empirical capital structure studies utilized ROA as the proxy for profitability. Secondly, after splitting the entire period into pre-crisis and crisis intervals, we found that profitability is significant in explaining leverage only in the crisis sub-period.

We documented also negative relationship of tangibility with leverage. Previous studies showed that the sign of the relationship turns gradually from negative to positive along with the process of converging Polish economy to the developed ones, thus we expected rather positive link between tangibility and leverage than negative. We checked that it can't be explained by the hypothesis referring to the dominant share of short-term debt in the capital structures of firms operating in Poland.

Other key firm-specific factors known from the respective literature – such as non-debt tax shields, volatility and growth – were found irrelevant in explaining the equity-debt choice (except growth in crisis period). Additionally, even those variables which proved their significance in explaining leverage showed rather low explanatory power with few exceptions.

All of those findings mean that our study is inconclusive concerning the empirical verification of the predictions formulated on the ground of trade-off and pecking order theory, respectively. Positive link between size and leverage supports trade-off theory while negative relationship between profitability and leverage validates pecking order theory. Moreover, inverse dependence of leverage on tangibility is contrary to both theoretical schools.

Also, our models show that the latest global crisis did not result in a material shift in the way investigated firm-specific factors explain leverage despite that descriptive statistics report some changes in the financial performance of the sample firms (e.g. decline in profitability and asset growth rate).

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DETERMINANTY STRUKTURY KAPITAŁU PRZEDSIĘBIORSTWA W CZASIE OSTATNIEGO GLOBALNEGO KRYZYSU: PRZYPADEK POLSKI

Kształtowanie struktur kapitałowych w przedsiębiorstwach, a zwłaszcza identyfikacja czynników decydujących o wyborach struktur kapitałowych, to wciąż zagadnienie będące wyzwaniem badawczym, domagające się dalszych studiów empirycznych. Niedawny globalny kryzys postawił to zagadnienie w nowym świetle, ponieważ zadłużenie stało się jednym z najbardziej palących problemów kryzysowego okresu. Wykorzystując dane panelowe i analizę regresji wielorakiej zbadaliśmy zróżnicowaną próbę ponad 4000 publicznych i niepublicznych firm działających w Polsce w okresie 2006–2011 w celu poznania stopnia, w jakim kluczowe, znane z teorii czynniki specyficzne dla badanych przedsiębiorstw wyjaśniają ich struktury kapitałowe. W szczególności badanie miało na celu zbadanie, czy kryzysowe warunki gospodarowania miały wpływ na analizowane w modelach zależności. Otrzymane wyniki potwierdziły ustalenia wcześniejszych badaczy dotyczące wpływu rentowności i wielkości przedsiębiorstwa na udział długu w strukturze kapitałowej. Wyniki te nie potwierdziły jednak jednoznacznie żadnej z klasycznych teorii struktury kapitału przedsiębiorstwa – ani teorii substytucji, ani teorii hierarchii źródeł finansowania. Pokazały one natomiast, że niedawny globalny kryzys nie doprowadził do istotnych zmian w strukturach kapitałowych badanych przedsiębiorstw. Niektóre z wyników prezentowanego badania mogą mieć znaczenie dla praktyki biznesowej, nakreślając kierunki zmian w instytucjonalnym otoczeniu przedsiębiorstw a także sugerując kształt polityki kreującej to otoczenie.

APPENDIX

Table 1. The representation of the sectors in the sample

Sector	Number of firms
Agriculture, forestry, hunting and fishing	70
Mining and quarrying	36
Manufacturing	1199
Electricity, gas, warm water, steam and air for A/C manufacturing and supply	121
Water supply and recycling	192
Construction	316
Wholesale and retail trade; repair of motor vehicles and motorcycles	781
Transport and storage	176
Hotels and restaurants	42
Information and communication	110
Real estate services	225
Profesional, scientific and technical activities	181
Administration services and supporting activities	68
Public administration and defense; compulsory social security	7
Education	83
Health and social work	127
Recreational, cultural and sporting activities	39
Other services	11
Total	**3784**

Source: own work.

Table 2. Dependent and independent variables used in the models

DEPENDENT VARIABLE	INDEPENDENT VARIABLES (firm-specific quantitative attributes)						
Leverage	Asset structure	Non-debt tax shield	Growth	Profitability	Financial slack	Size	Volatility
Y – total liabilities / total asets	X1 (intangibility) – intangible assets / total assets X2 (tangibility) – (gross plant & equipment + inventory) / total assets	X3 – depreciation / total assets	X4 – % change in total assets	X5 (ROA) – EBIT / total assets X6 (ROS) – net profit / sales revenue X7 (ROE) – net profit / equity	X8 – (cash + equivalents) / total assets	X9 – natural logarithm of sales revenue	X10 – standard deviation of EBIT

Source: own work.

Table 3. Descriptive statistics of the variables selected to the final multiple factor regression models

	Y	*X2*	*X4*	*X7*	*X9*
2006					
Mean	0,4488	0,5662	0,6935	0,1019	17,41
Median	0,4463	0,6099	0,0856	0,0968	17,38
SD	0,2486	0,2557	19,7120	2,0029	1,32
2007					
Mean	0,4379	0,5727	0,7168	0,1335	17,52
Median	0,4324	0,6180	0,0832	0,1089	17,48
SD	0,2427	0,2575	26,9510	0,8413	1,33
2008					
Mean	0,4401	0,5751	0,8817	-0,0086	17,58
Median	0,4304	0,6284	0,0504	0,0698	17,55
SD	0,2451	0,2594	27,2841	3,2139	1,30
2009					
Mean	0,4221	0,5689	0,0663	0,0487	17,57
Median	0,4068	0,6154	0,0115	0,0669	17,55
SD	0,2392	0,2605	1,3899	1,4472	1,29
2010					
Mean	0,4275	0,5621	0,0915	0,0362	17,60
Median	0,4146	0,6096	0,0368	0,0656	17,56
SD	0,2375	0,2601	0,5713	1,4335	1,34
2011					
Mean	0,4399	0,5544	0,0956	0,0281	17,66
Median	0,4315	0,5989	0,0478	0,0542	17,64
SD	0,2426	0,2637	0,2833	0,7253	1,38
2006–2011					
Mean	**0,4360**	**0,5666**	**0,4242**	**0,0566**	**17,56**
Median	**0,4267**	**0,6132**	**0,0501**	**0,0757**	**17,52**
SD	**0,2428**	**0,2596**	**17,6162**	**1,8135**	**1,33**

Source: own work.

Table 4. 2006–2011 model: correlation matrix

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
X_1	1									
X_2	-0,137	1								
X_3	0,011	0,037	1							
X_4	0,027	-0,001	-0,002	1						
X_5	-0,008	-0,217	-0,004	0,002	1					
X_6	-0,001	0,015	0,001	0,000	0,009	1				
X_7	-0,005	-0,032	-0,004	0,001	0,178	0,000	1			
X_8	-0,037	-0,496	-0,007	-0,005	0,148	0,009	0,035	1		
X_9	0,053	-0,092	0,000	0,029	0,207	-0,047	0,024	-0,118	1	
X_{10}	0,004	-0,010	-0,002	0,234	0,006	0,001	0,002	0,004	0,072	1

Source: own work.

Table 5. 2006–2011 model: single factor regression results

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Correlation coefficient r	0,0237	-0,1465	-0,0001	0,0000	-0,0270	0,0040	-0,0543	-0,2220	0,2859	-0,0020
Determination coefficient R^2	0,0006	0,0215	0	0	0,0007	0	0,0029	0,0493	0,0817	0
Standard error s	0,2427	0,2401	0,2428	0,2428	0,2427	0,2428	0,2424	0,2367	0,2326	0,2428
α_0	0,4348	0,5137	0,436	0,436	0,44	0,436	0,4364	0,4813	-0,4815	0,4361
α_1	0,1369	-0,137	-0,0001	0	-0,0537	0	-0,0073	-0,3480	0,0523	0
p-value	0,0004	0	0,9936	0,9993	0	0,5449	0	0	0	0,7594

work

Table 6. 2006–2011 model: multiple factor regression model results, pooled OLS model applied

$Y = -0,3844 - 0,1154 \cdot X_2 - 0,0087 \cdot X_7 + 0,0505 \cdot X_9$					
Multiple factor regression model		α_0	α_2	α_7	α_9
Determination coefficient R^2	**0,1005**				
α		-0,3844	-0,1154	-0,0087	0,0505
Standard errors	**0,2302**	0,0209	0,0059	0,0008	0,0012
p-value	**0**	0	0	0	0
HAC standard errors*		0,0284	0,0081	0,0024	0,0016
HAC p-value z-test**		0	0	0	0
HAC p-value t-test***		0	0	0	0

*, **, *** – to tackle errors serial correlation and heteroscedasticity HAC covariance matrix was estimated.
Source: own work.

Table 7. Pre-crisis model: correlation matrix

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
X_1	1									
X_2	-0,133	1								
X_3	0,078	0,208	1							
X_4	0,037	-0,001	-0,014	1						
X_5	-0,020	-0,243	-0,054	-0,002	1					
X_6	-0,001	0,023	0,012	0,001	0,011	1				
X_7	-0,012	-0,028	-0,016	0,001	0,148	0,000	1			
X_8	-0,040	-0,499	-0,075	-0,008	0,164	0,012	0,028	1		
X_9	0,057	-0,111	-0,016	0,041	0,183	-0,016	0,015	-0,113	1	
X_{10}	0,005	-0,004	-0,011	0,332	0,012	0,001	0,003	0,004	0,083	1

Source: own work.

Table 8. Pre-crisis model: single factor regression results

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Correlation coefficient r	0,0313	-0,1845	-0,0072	-0,0024	-0,0180	0,0068	-0,0425	-0,2022	0,2894	0,0018
Determination coefficient R^2	0,001	0,0341	0,0001	0	0,0003	0	0,0018	0,0409	0,0409	0,0838
Standard error s	0,2454	0,2413	0,2455	0,2455	0,2455	0,2455	0,2453	0,2404	0,2404	0,235
α_0	0,4406	0,5427	0,4443	0,4423	0,4452	0,4423	0,4426	0,4838	0,4838	-0,5025
α_1	0,1909	-0,1759	-0,0444	0	-0,0347	0	-0,0047	-0,3251	-0,3251	0,054
p-value	0,0008	0	0,443	0,7999	0,0548	0,4658	0	0	0	0

Source: own work.

Table 9. Pre-crisis model: multiple factor regression model results, pooled OLS model applied

$Y = -0,3626 - 0,1417 \cdot X_2 + 0,0508 \cdot X_9$				
Multiple factor regression model		α_0	α_2	α_9
Determination coefficient R^2	0,1073			
α		-0,3626	-0,1471	0,0508
Standard errors	0,232	0,0301	0,0085	0,0017
p-value	0	0	0	0
HAC standard errors*		0,0437	0,0115	0,0024
HAC p-value z-test**		0	0	0
HAC p-value t-test***		0	0	0

*, **, *** – to tackle errors serial correlation and heteroscedasticity HAC covariance matrix was estimated.
Source: own work.

Table 10. Crisis model: correlation matrix

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
X_1	1									
X_2	-0,141	1								
X_3	0,006	0,028	1							
X_4	0,067	-0,045	-0,005	1						
X_5	0,004	-0,196	0,002	0,054	1					
X_6	-0,002	-0,009	0,000	0,004	0,021	1				
X_7	0,005	-0,043	-0,004	0,020	0,251	0,007	1			
X_8	-0,034	-0,492	-0,002	0,016	0,135	0,005	0,050	1		
X_9	0,048	-0,071	0,002	0,012	0,241	-0,005	0,043	-0,120	1	
X_{10}	0,003	-0,016	-0,002	0,001	-0,002	0,003	0,000	0,003	0,060	1

Source: own work.

Table 11. Crisis model: single factor regression results

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}
Correlation coefficient r	0,0166	-0,1092	0,0009	0,0485	-0,0429	-0,0090	-0,0823	-0,2414	0,2852	-0,0060
Determination coefficient R^2	0,0003	0,0119	0,0000	0,0024	0,0018	0,0001	0,0068	0,0583	0,0813	0,0000
Standard error s	0,2398	0,2384	0,2398	0,2396	0,2396	0,2398	0,2390	0,2328	0,2299	0,2398
α_0	0,4290	0,4861	0,4298	0,4287	0,4353	0,4298	0,4304	0,4786	-0,4707	0,4299
α_1	0,0914	-0,1002	0,0007	0,0132	-0,0899	-0,0004	-0,0158	-0,3687	0,0511	0,0000
p-value	0,0765	0,0000	0,9205	0,0000	0,0000	0,3358	0,0000	0,0000	0,0000	0,5232

Source: own work.

Table 12. Crisis model: multiple factor regression model results, pooled OLS model applied

$Y = -0,4152 - 0,0841 \cdot X_2 + 0,0117 \cdot X_4 - 0,0191 \cdot X_7 + 0,0507 \cdot X_9$						
Multiple factor regression model		α_0	α_2	α_4	α_7	α_9
Determination coefficient R^2	0,1008					
A		-0,4152	-0,0841	0,0117	-0,0191	0,0507
Standard errors	0,2275	0,029	0,0082	0,0024	0,0017	0,0016
p-value	0	0	0	0	0	0
HAC standard errors*		0,0355	0,0106	0,007	0,005	0,002
HAC p-value z-test**		0	0	0	0	0
HAC p-value t-test***		0	0	0,09	0	0

*, **, *** – to tackle errors serial correlation and heteroscedasticity HAC covariance matrix was estimated.
Source: own work.

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CORPORATE DISPUTES IN A PARTNERSHIP − CAPACITY TO SUE AND BE SUED

This paper presents the procedure for depriving a partner in a personal partnership the right to represent and the right to conduct partnership business. The authors define the concept of conducting the partnership business and representing it, as well as their significance in strengthening their position as a partner. Then we point at two possibilities stipulated by the law, which allow depriving a partner of their right to represent the company and the right to conduct company business. The first one is a relevant provision in the company articles of association, whereas the other one is a valid judgment of a court justified by the existence of significant reasons. Furthermore, we characterize the nature of personal partnerships, especially the fact that such entities do not have the status of a legal person, but only legal capacity. Then we demonstrate the dispute going on in the contemporary debate related to establishing that is entitled to sue and which party is the claiming party in the suit. Finally, the last section of the article presents and compares legal norms concerning the deprivation of a partner of their right to conduct company business and compares legal norms concerning the above used in Polish and German legislature.

Keywords: the right to represent a company, the right to conduct company business, title to appear in court.

1. INTRODUCTION

According to Article 3 of the Commercial Companies Code (CCC), a commercial partnership is established to enable its partners to achieve their common goal. This especially is to take place by contributing their shares to the company and, if the articles of association specify it, by cooperating within the company in a determined way. A personal partnership emphasizes the personal element, namely its partners who have been authorized to conduct its business. When conducting the partnership business, partners should cooperate in order to achieve company goals. As the company enjoys the status of an entity in civil law relations, this generates theoretical and practical discrepancies as to how to interpret the mechanisms of its operations in external relations. The article 30 of the CCC provides a possibility of depriving a partner of the right to represent the company in two different ways: in the articles of association or on the basis of a valid court judgment[3].

The aim of this article is to present the possibilities of depriving a partner of a personal commercial partnership of the right to represent and the right to conduct partnership business in Polish and German legislature as well as the views of the doctrine and judica-

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[3] K. Połowiak-Baran, *Nieograniczone i nieograniczalne prawo reprezentacji wspólnika w spółce jawnej*, „Zeszyty Naukowe Prawa Gospodarczego i Handlowego" No 1, Katowice 2011, p. 5.

ture representatives and to point at the ways of determining the jurisdiction of the court and the title to appear before the court in such court trial.

2. THE RIGHT AND THE OBLIGATION TO CONDUCT THE BUSINESS AND THE RIGHT TO REPRESENT AS INSTRUMENTS/MECHANISMS OF MANAGING PERSONAL COMMERCIAL PARETNERSHIPS

The right to represent the partnership and the right and obligation to conduct partnership business constitute specific competencies, typical for a legal position of a partner in a personal partnership and expressing its active aspect. At the same time, the fact that they are granted directly to a partner differentiates the status of such partner from the status of a member of a corporate entity, in which conducting the business (managing) and the representation are granted to its organs. The law allows partners to create the activity and operations of a partnership both in internal relations (conducting the business) as well as in external relations (representing the company)[4].

Affected by the legal structure of a capital company, the rights and obligations of personal partnership partners related to conducting the business and representing the company are also defined as "corporate" rights and obligations in the doctrine[5].

The right of a partner to represent the partnership to third persons is statutory. Its content allows to classify it as the organizational right. Representing a partnership in business relations allows a partner to exert direct influence on its functioning and to organize the activity in external business relations as well as to achieve a goal for which it was established.

According to Article 29 § 1 CCC each partner has the right to represent the partnership. This right concerns all activities of a company in court and outside it[6]. Court activities entail all activities performed before all types of courts, including a court of conciliation (for example filing a suit, making unilateral declarations on behalf of a company). The out-of-court activities include concluding and terminating contracts, making declarations before state organs, such as Tax Chambers, Office of Competition and Consumer Protection, Financial Supervision Authority. Out-of-court activities entail all kinds of material law activities which turn out to be necessary in the course of the company operations and in which it may be a party.

In accordance with the provisions of the Commercial Companies Code representing a partnership means acting in external relations of a partnership as a legal entity, separate from partners, with its own, autonomous, legal sphere. A partner, while representing a partnership, acts on its behalf as an independent legal entity, bringing legal effects in

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[4] K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej*, nb. Chapter II, § 4, Lex 2013.

[5] A. Szajkowski, *System Prawa Prywatnego,* t. 16: *Prawo spółek osobowych,* Warszawa 2008, p. 930.

[6] Contrary to a civil partnership (Article 866 of Civil Code) the right of a partner in a general partnership to individual representation is not limited to the same scope as the right to conduct the business of the company. It is also much broader than in a civil partnership, as it covers all court and out-of-court activities. For safety reasons CCC dropped the requirement that the right to represent concern only activities related to running a trade company. A general partnership may also deal with services and production. In a civil partnership the right to represent practically covers only the activities of an ordinary board ("common activities of a company" Article 866 of Civil Code in connection with Article 865 § 2 of Civil Code; S. Sołtysiński, A. Szajkowski, A. Szumański, J. Szwaja, A. Herbet, R Gawałkiewicz, I. Mika, M. Tarska, *Kodeks spółek handlowych. Komentarz do art. 29 KSH*, nb. II/2, Wydawnictwo C.H. Beck, Warszawa 2012.

relations with third parties[7]. The representation of a commercial personal company by partners meets basic features mentioned in the doctrine as *differentia specifica* of an organ activity, that is partners are incorporated into an organizational structure of a partnership as a corporation, whereas the possession of the power of representation by at least one of them is necessary for a partnership to operate in legal system[8].

The right and obligation to conduct the partnership business was defined in Article 39 of the CCC. As a rule, every partner has the right and obligation to conduct the partnership business. The right to conduct the partnership business results from the fact that in a general partnership there are no organs dealing with management and taking decisions, which is the consequence of the lack of corporate personality in a general partnership. The lawmakers divide partnership business into maters belonging to ordinary company activities and those going beyond that scope.

Conducting partnership business in case of a general partnership is a manifestation of cooperation in order to achieve the goal for which the partnership was established. The lawmakers shaped this scope of activities in a specific way. Making it both the right and responsibility of a partner. The right means that the law grants the possibility of partner's action, while the responsibility manifests the obligation of a partner to conduct the business.

The right and obligation to conduct the partnership business, due to its content, must be classified as organizational rights and obligations. Their essence is to ensure a partner has direct influence on partnership activities and accomplishment of a goal for which it was established. The essence of this right and obligation consists in guaranteeing personal bond between a partnership and its partners by ensuring they will personally conduct its business and involve in its operations. This proves that a partnership is not fully legally separated from partners, since they, as independent legal entities, not covered by the structure, create the partnership activity[9].

The right and obligation to conduct partnership business are exercises independently by each partner only as far as ordinary activities of a partnership are concerned. Independent competence to execute this right is granted to a partner if at least one other partner doe not object to dealing with a specific issue or issues by a partner.

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[7] Due to the fact that a general partnership operates under its own name, has its own assets and legal capacity, thus being an organization equipped with corporate personality, there are not sufficient jurisdictional premises for assuming that a partner representing a partnership does not act on behalf of the partnership, but on behalf of other partners and himself. This is claimed by: S. Sołtysiński, A. Szajkowski, A. Szumański, J. Szwaja, A. Herbet, R Gawałkiewicz, I. Mika, M. Tarska, *Kodeks spółek handlowych. Komentarz do art. 29 KSH, nb. I/6*, Wydawnictwo C.H. Beck, Warszawa 2012.

[8] A. Herbet, *Spółka komandytowa według kodeksu spółek handlowych,* Lublin 2004, p 156; K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej,* nb. Chapter II, § 1/3, Lex 2013 indicates that a partner representing a partnership acts as its statutory representative of specific nature. Above all, a partner is a member of a partnership organizational structure (an entity separate from a partnership, but included in it, "internal"), moreover certain essential modifications of his position are due to proper application of provisions on organs (Article 33 § 1 of the Civil Code). This leads to the origin, out of various cases of statutory representation, of its specific structure, assuming, by the virtue of the law, proper application of provisions on organs (especially Article 38 or Article 42 of the Civil Code), which must be seen as a specific type of statutory representation and should be defined as systemic (structural) statutory representation. At the same time, due to the lack of common provisions on statutory representation, it is justifiable to use here, by way of analogy, provisions on power of attorney (especially Article 108 of the Civil Code). Taking into consideration the content of Article 96 of the Civil Code, there are no legal foundations for constructing a third type of representation.

[9] K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej,* nb. Chapter II, § 2/2, Lex 2013.

3. FREEDOM OF WILL OF PARTIES TO ARTICLES OF ASSOCIATION

One of the factors that may determine the legal status of a partner is the deprivation of the right to represent a partnership, which may be done in partnership articles of association or by means of a valid court judgment. Articles of association may stipulate that a partner is deprived of the right to represent the partnership or that he is authorized to represent it only jointly with another partner or a proxy. The exclusion of the right to represent the company by a partner is then done following his consent. The decision in this matter may be stipulated not only in the original articles of association, but also in an amendment to it.

The principles of excluding the partner from conducting the partnership business have been defined in Article 40 § 1 of CCC, which says that conducting the partnership business may be granted to one or a few partners either in articles of association or on the basis of a subsequent resolution of partners. Other partners are then excluded from conducting partnership business.

With reference to the nature of resolution passed by partners on granting company business to one or a few partners, the leading view in the doctrine is that such a resolution is an amendment to the articles of association. However, the differentiation made in Article 40 § 1 of CCC between articles of association and a subsequent resolution made by partners implies that although a resolution does constitute the change to articles of association understood as a legal relationship originating on its base, it is not treated as a change of articles of association in the mode of Article 9 of CCC. This is a specific type of a resolution made on the basis of an expressed authorization resulting directly from the legal act, whose subject is to define the rules of managing a partnership. Due to its content, which shapes the foundations of a partnership and the principles of its functioning it cannot be classified as belonging to conducting business, but to "ownership" matters. Partners make such a resolution as partners, not as those conducting the partnership business[10].

Contractual modifications of a legal status of a partner as far as the right and obligation to conduct company business are concerned, may also consist in introducing a division of competencies between particular partners in articles of association, that is in granting directly particular scopes of matters, such as tax, accounting, personnel, to particular partners in articles of association. The articles of association may also stipulate that it will be possible to introduce such division in a subsequent resolution of partners.

4. STATUTORY POSSIBILITIES OF DEMANDING CORRECTION OF PROVISIONS GOVERNING CONDUCTING THE BUSINESS AND THE RIGHT TO REPRESENT A PERSONAL PARTNERSHIP IN THE COURT PROCEEDINGS – GENERAL ASSUMPTIONS AND FUNCTIONS

The right to demand that a partner be deprived of the right to conduct the business and release him from this obligation and the right to demand that a partner be deprived of the right to represent a partnership belong to a specific category of shaping rights, whose essence is manifested in the fact that the norm of material right gives rise to the right to make a claim for determining the legal relation or right, while its determination is shaped on the basis of a valid court judgment.

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[10] *Ibidem.*

The deprivation of the right to represent may take place at the moment of establishing a company, that is only in articles of association, which is reflected in the content of the application to enter the partnership into the register of companies. It may also take place while the partnership is operating, which can be done either via amendment to articles of association or on the basis of a valid court judgment. The right to represent the partnership by a partner is characterized by the fact that a partner may be deprived of this right as a result of a court judgment[11].

As we can see from Article 30 § 2 of CCC, a partner may be deprived of the right to represent the partnership only due to vital reasons by virtue of a valid court judgment. Vital reasons mentioned in this provision are an example of an expression calling for specification on the basis of a particular factual state in order to determine whether they exist. They relate to a particular partner or are evoked by a partnership relation. It seems that the doctrine views, especially the judgments of the Supreme Court made on the basis of other provisions of the CCC or previous Commercial Code, which take advantage of the concept of vital reasons, may be applied to specify vital reasons here. Therefore, a valid reason may be a chronic disease which prevents a person from performing a representation function[12]. According to the judgment issued by the Court of Appeal in Kraków on 23rd January 2013[13] both Article 30 § 2 and Article 47 of CCC mention vital reasons, though they do not define them. It is assumed, however, that these vital reasons are the violation of the obligation to be loyal to a partnership, participation in competitive activities and entities, unfair conduct or unreliable performance of duties by a partner, embezzlement, etc. The ban on competitive activity consists in forbidding any activities which might be considered detrimental to the interests of a partnership, but also those that are associated with competitive participation in the market. Vital reasons mentioned here must be considered in the context of relations prevailing in a given partnership.

5. THE PROCEDURE AND JURISDICTION OF THE COURT

According to Article 27 of the Civil Procedure Code[14] the court action is brought before the first instance court in the district where the defendant has its residence. However, the court action related to belonging to a cooperative, partnership or association is brought only in the place of their residence (Article 40 of the CPC). In the suit for depriving a partner in a personal commercial partnership of the right to represent or the right to conduct the business of the partnership, the venue is determined by the registered seat of the partnership whose partner the defendant is.

The proceedings conducted in this scope will be a commercial case as understood in the act of 24th May 1989 on hearing commercial cases by courts. Commercial cases, ac-

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[11] A legal effect of depriving a partner of the right to represent by means of a valid court judgment and excluding a partner from representing the partnership is the cessation (termination) of the statutory right to represent the partnership on their part. A partner loses the right to act on behalf of a partnership as its statutory representative. Both the judgment and the amendment to the articles of association evoke *ex nunc* effects and do not affect the validity or effectiveness of legal activities performed by a partner on behalf of a partnership before the judgment becomes valid or before the amendment becomes effective.

[12] A. Szajkowski, *System Prawa Prywatnego,* t. 16, *Prawo...,* pp 936–937.

[13] Judgment of the Court of Appeal in Kraków from 23rd January 2013, case file number I ACA 1300/12, LEX nr 1344068.

[14] The Act of 17th November 1964 Civil Procedure Code, Journal of Laws 2014, item 101.

cording to Article 2, are the cases concerning partnership relations[15]. The concept of partnership relations cases is tantamount to the concept of partnership relations cases defined in Article 2 section 2of the act on hearing commercial cases by courts. The concept of partnership relations means both the legal relation between the partnership and its partners and the legal relation between partners connected with their partnership. The partnership relations cases are commercial cases heard by commercial courts. Before 03.05.2012 they were heard in a separate proceeding by commercial courts. Such cases include cases of depriving a partner in a general partnership of the right to conduct partnership business, cases of adjudging invalidity of a resolution passed by partners in a limited partnership or a resolution of a general meeting of shareholders which is in conflict with the law[16].

It remains disputable how to acknowledge the non-material nature of the case, though such position should be supported. Therefore a relevant court to hear the case will be a regional court[17], whose competences include, among others, non-material rights and material claims pursued jointly with them, apart from the cases related to establishing or denying paternity and for dissolution of adoption.

In jurisdiction, non-material cases (non-material rights cases) include cases concerning cooperative membership, especially cases concerning accepting and e3xcluding from a cooperative or striking a person off the register of cooperative members, assuming that all legal relations related to cooperative law are derivatives from the basic cooperative membership relation, whose non-material nature is beyond any doubts[18].

J.P. Naworski[19] points out that the case of depriving a partner in a general partnership of the right to represent the partnership should be considered a non-material case, though the same author admits that the opposite view is possible. In literature[20] another view was also presented, which sees the case of depriving the partner of the right to represent the partnership as material one.

Assuming that the case of depriving a partner in a personal partnership of the right to represent/conduct the business of a partnership is of non-material nature, due to the fact that provisions of law do not stipulate a fixed fee for this kind of cases, it must be stated that in such a case a fee of PLN 30 must be paid (as defined in Article 14 of the act on court fees in civil matters[21]).

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[15] K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej,* nb. Chapter II, § 1/5, Lex 2013, indicates that the court judgment depriving the partner the right to represent the partnership has constitutive nature. Such case belongs to partnership relations cases, is a commercial case, and the relevant court to hear it is the commercial court. It must be considered a case for non-material rights, therefore a relevant court to hear it is the regional court (Article 17 point 1 of the CPC).

[16] A. Góra-Błaszczykowska, *Kodeks postępowania cywilnego,* t. I: *Komentarz do art. 40 KPC,* nb. 7, Wydawnictwo C.H. Beck, Warszawa 2013.

[17] A.J. Witosz, *Prowadzenie spraw i reprezentacja spółek osobowych,* Warszawa 2013, p. 347.

[18] A. Góra-Błaszczykowska, *Kodeks postępowania cywilnego,* t. I: *Komentarz do art. 40 KPC,* nb. 3, Wydawnictwo C.H. Beck, Warszawa 2013.

[19] R. Potrzeszcz, T. Siemiątkowski, *Kodeks spółek handlowych, Komentarz,* Warszawa 2001, p. 121.

[20] R. Pabis, *Przepisy ogólne. Spółka jawna, spółka partnerska,* t. I, Warszawa 2003, p. 286.

[21] The act of 28th July 2005 on Court fees in civil cases, "Journal of Laws" 2014, 1025.

6. GENERAL ISSUES – THE ESENCE OF A PERSONAL PARTNERSHIP

Personal partnerships do not possess corporate personality in Polish law. They only possess legal capacity, therefore they are subjects of rights and obligations. The above results from Article 8 of CCC, which states that a personal partnership may acquire rights on its own behalf, including the ownership of real estate and other material rights, contract obligations, sue and be sued. A personal partnership may then be treated as an organizational unit which is not a legal person, which is granted legal capacity on the basis of Article 33 of the Civil Code[1], while the statutory provision creating legal capacity of such partnership is Article 8 § 1 of CCC. Article 8 needs to be treated as a source of statutory capacity separate from capacity of partners creating it. The articles of association of a personal partnership (possibly with the entry to the register) creates a new, previously unknown, entity, which may acquire rights and contract obligations on its own[22].

Legal capacity of personal partnerships is also emphasized by an expression used in Article 8 § 2 of CCC and then repeated in statutory definitions of particular types of personal partnerships, stating that a personal partnership conducts the business under its own company[23]. Due to the fact that the provision of Article 8 of CCC was placed in the general part of the Commercial Companies Code concerning all kinds of personal partnerships, a commercial personal partnership obtains legal capacity not only in relations with third persons, but also in internal relations[24]. The assumption of legal capacity of personal partnerships leads to a conclusion that the elements of legal capacity mentioned in the provision, that is acquiring rights and contracting obligations, suing and being sued, conducting the business under the joint company should be referred equally to all personal partnerships. Article 8 of CCC does not differentiate these elements depending on the type of a partnership[25].

The second attribute of being a carrier of rights except for the already mentioned legal capacity is the capacity to enter into legal transactions. A partnership also has a capacity to be a party in civil cases. The above capacities determine the fact that according to Article 8 of CCC a general partnership was shaped as an independent and separate from partners subject of rights and obligations, a party of legal relations in civil law and a party or participant of a civil procedure, especially a trial, an extra-judicial procedure or an enforcement procedure[26].

The granting of court and legal capacity to a personal partnership by CCC allows it to appear independently as an independent party in a court trial. A partnership may be a claimant or a defendant. There are no obstacles to file a suit and to defend itself as a party against the suit was filed. The possibility of appearing in a trial as a claimant or

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[22] D. Bucior, *Konstrukcja odpowiedzialności wspólników za zobowiązania handlowej spółki osobowej,* "Prawo Spółek" 2002, No 6, p. 12, the same is also stated by Z. Radwański, *Podmioty prawa cywilnego w świetle zmian kodeksu cywilnego przeprowadzonego ustawą z dnia 14 lutego 2003 r.,* "Przegląd Sądowy", No 7–8, p. 6.

[23] A. Herbet, *Odpowiedzialność wspólników za zobowiązania handlowych spółek osobowych – zagadnienia materialnoprawne,* Rejent 2003, p. 44.

[24] M. Tyrakowska, *Podmiotowość cywilnoprawna osób ustawowych na przykładzie spółki jawnej,* "Przegląd Prawa Handlowego" 2010, No. 5, p. 34.

[25] A. Kidyba, *Przepisy dodane jako normy kreujące nowe instytucje k.s.h.*, "Przegląd Prawa Handlowego" 2004, No 3, p. 14.

[26] K. Kopaczyńska-Pieczniak, *Ukształtowanie podmiotowości prawnej spółki jawnej* [in:] *Kodeks spółek handlowych po dziesięciu latach,* ed. by J. Frąckowiak, Wrocław 2013, p. 501.

defendant results from the fact that according to CCC provisions the partnership is the subject of trial rights and obligations, not its partners. Also when a suit is filed by the partnership, the claimant party refers to the personal partnership, not its partners.

It is commonly accepted nowadays that the trial of a personal partnership is not automatically a trial of its partner. A similar opinion has long been held by the doctrine and judicial decisions in Germany. Such view is consistent with the emphasized capacity of a general partnership and its court capacity. It is also directly derived from Article 31 § 2 of CCC, which clearly leaves it at the claimant's disposal to sue a partnership or one or more partners with it, or maybe restrict the suit to only partners. The provision determines clearly that there is no necessary joint participation in civil law proceedings between the sued partnership and its partners[27].

A commercial personal partnership should have a status of a party in a trial (participant of the proceedings in extra-judicial proceedings). Marking it as a claimant, defendant or participant should cover the company under which it operates. The consequence of accepting a partnership as a party should be an assumption that partners should be questioned in partnership matters as witnesses and they may report a secondary intervention[28].

As a result, the proceeding initiated by the partnership (under the company) or against it is a proceeding in which the partnership, not its partners, is the party. A third person suing the partnership may also sue its partners, though not necessarily all of them, as they are jointly and severally responsible for the obligations contracted by the partnership. However, there is only ordinary material joint participation, not the necessary joint participation or identity of parties[29].

7. THE DOCTRINE VIEWS ON TITLE TO APPEAR BEFORE COURT AND OWN POSITION IN THE CASE

An issue raising doubts in the doctrine is the issue of who has the title to file a suit for depriving of the right to represent and who should be the defending party in such a trial. The first view states that such demands should be put forward by the partnership, subject to proviso of prior resolution passed by all partners (save for the "excluded one")[30]. An opposite position grants the title to file a suit to each partner (also to a limited partner), regardless of the method of representation adopted in the partnership[31]. Within it there are also different positions as to qualification of the possible participation in a dispute. Some authors assume that if the suit is filed by a few partners, there is a uniform, voluntary,

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[27] G. Gorczyński, *Status spółki jawnej i jej wspólników w postępowaniu cywilnym*, „Przegląd Prawa Handlowego" 2010, No 1, p. 28 and next.

[28] Szerzej M. Litwińska-Werner, *Kodeks spółek handlowych. Komentarz do art. 8,* nb. 8, Wydawnictwo C.H. Beck, Warszawa 2007.

[29] J.A. Strzępka, *Kodeks spółek handlowych. Komentarz do art. 8*, nb. 6, Wydawnictwo C.H. Beck, Warszawa 2013.

[30] According to Z. Fenichel such a suit is filed by a partnership against its partner – Z. Fenichel [in:] T. Dziurzyński, Z. Fenichel, M. Honzatko, *Kodeks spółek handlowych,* Kraków 1936, p. 92, the same also by Z. Jara, *Kodeks spółek handlowych, Komentarz do art. 30,* nb. 26, Wydawnictwo C.H. Beck, Warszawa 2014.

[31] J. Szczotka indicates that the suit can be filed jointly by all partners, J. Szczotka, *Spółka jawna,* Bydgoszcz–Lublin 2003, p. 80, a suit on the basis of Article 30 § 2 of CCC may be filed by any partner, who does not have to have the right to represent the partnership, since he does not act on behalf of the partnership, but on his own behalf. Similarly: J. Bieniak, M. Bieniak, G, Nita-Jagielski, K. Oplustil, R. Pabis, A. Rachwał, M. Spyra, G. Suliński, M. Tofel, R. Zawłocki, *Kodeks spółek handlowych. Komentarz do art. 30,* nb. 5, Wydawnictwo C.H. Beck, Warszawa 2014.

material joint participation among them. Others claim that joint participation of all part-
ners in the trial is necessary; partners who do not appear of the claimant side must be sued
together with a person to whom a suit refers. Another opinion has it that active title to
appear before court is granted to all other partners jointly, which is to stem from the fact
that it is an essential case where, as a rule, all partners decide unanimously[32].

A. Szumański indicates that a suit for depriving one marked active partner of the right
to represent the partnership may be lodged by other active partners and all limited part-
ners. We should rule out the view that active title is granted to the partnership itself. The
commercial court in the trial mode will issue a judgment depriving an active partner of the
right to represent the partnership. This judgment is of constitutive nature[33].

Ł. Błaszczak further argues that all other partners have to participate in the pending
proceeding, basing on a construct of necessary joint participation[34], which does seem to be
a too restrictive solution[35]. There is no doubt that they may enter the proceedings as out-
side interveners[36]. In his opinion, based on Article 30 § 2 of CCC, an impractical, though
safe solution for a general partnership would be to grant the possibility of lodging a suit
only to other partners (jointly). This concept is supported by the fact that depriving a part-
ner of the right to represent should be a well-thought decision, preventing its excessive
use.

According to A. Herbet, a view granting active title in the trial for depriving of the
right to represent the partnership does not seem convincing. It is not about questioning the
separate legal capacity of a partnership, but about determining the subject of the proceed-
ings, namely defining the content of the partnership relations. A partnership cannot by any
means be treated as a party to this legal relation, it cannot be treated as sort of "abbrevia-
tion", which actually means all (remaining) partners. Since the provisions of CCC do not
impose an obligation of active group title, the right to file a suit for depriving of the right
to represent is granted to every partner[37].

Granting the title to file a suit to each partner is justified, most of all, by the nature of a
general partnership, in which joint cooperation of all partners is a principle. The partner-
ship articles of association oblige each partner to perform activities aimed at ensuring
such joint cooperation. The legal relation of a partnership covers an obligation of each
partner to cooperate with others when performing one's organizational competencies.
Each partner is at the same time obliged and entitled to take up activities aimed at accom-
plishing the goal for which the partnership was established. Moreover, since each partner
may demand dissolution of a partnership by the court for some vital reasons (Article 63 §
1 of CCC), reasoning *a maiori ad minus* it seems even more justified to grant them the
right to demand that another partner be deprived of the right to represent the partnership[38].

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[32] A.J. Witosz, *Prowadzenie spraw...*, p. 302.

[33] A. Szajkowski, *System Prawa Prywatnego,* t. 16: *Prawo...,* p. 938.

[34] Ł. Błaszczak, *Współuczestnictwo procesowe na przykładzie osobowych spółek handlowych – istota, rodzaje i przypadki jego występowania,* "Prawo Spółek" 2004, No 10, p. 25.

[35] Tak również A. J. Witosz, *Prowadzenie spraw...*, pp. 347–348.

[36] A. Szajkowski, *System Prawa Prywatnego,* t. 16: *Prawo...,* p. 818.

[37] A. Herbet, *Spółka komandytowa...,* p. 158–159; J.A.Strzępka, *Kodeks spółek handlowych, Komentarz,* War-
szawa 2013, p. 106 emphasizes that the suit for depriving a partner of the right to represent may be filed by
eacxh partner, other partners may join the trial as outside interveners.

[38] K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej,* nb. Chapter II, § 1/5, Lex 2013.

M. Rodzynkiewicz[39] points out that active title is granted to all other partners independently as a party to the partnership articles of association. However, a judgment shaping law depriving a sued partner the right to represent should have an effect towards the partnership itself, which cannot be achieved if the partnership does not participate in the trial as a party, which results from Article 365 of the CPC (a valid judgment is binding for the parties but also for other persons only when it results from the act of law; Article 30 of CCC on the other hand, does not allow us to conclude that a judgment described in it has the so-called extended scope of binding, including a general partnership in which the sued partner participates). It is justified then for a general partnership to participate in a trial either as a claimant or at least on the claimant's side as outside intervener.

Summarizing, the suit based on Article 30 § 2 of CCC can be filed by each partner, a partner filing it does not have to have the right to represent the partnership since he does not act on behalf of it, but on his own behalf. Granting the title to file a suit to each partner is justified mostly by the nature of the general partnership, which is governed by the principle of cooperation of all partners. Since the provisions of CCC do not introduce the requirement of active group title, the right to file a suit for depriving the partner of the right to represent should be granted to each partner.

Passive title is granted to a partner whom the demand for deprivation of the right to represent concerns[40]. Provisions of law in such a case do not require suing other partners, who do not appear on the claimant's side.

One can find an opposite view in the doctrine, namely that in such a situation it seems justified that all partners participate in the trial. We may obviously assume that they may enter the case as outside interveners. The dispute in this scope should be perceived as a dispute between them as parties to this relation. So, if some partners file a suit, it is justified to sue, apart from the partner whom one wishes to deprive of the right to represent the partnership, other partners who do not appear on the claimant's side[41].

The above opinion raises some doubts. Taking into account, for example, the nature of a limited joint-stock partnership, in which the partnership would issue bearer's shares. In this situation it would be impossible to sue all other partners. As R. Lewandowski points out, in case of a limited joint-stock partnership the doctrine assumes that in disputes with active partners, all shareholders do not have passive title. The limited joint-stock partnership represented by the supervisory board organ participates in the suit for the benefit of the shareholders. Since neither autonomous provisions on limited joint-stock partnerships not provisions on a general partnership (Article 126 § 1 point 1 of CCC) regulate the issue of active title of active partners, general provisions of the procedure law shall apply. Each active partner as a natural person has active title to lodge a claim on the basis of Articles

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[39] M. Rodzynkiewicz, *Kodeks spółek handlowych. Komentarz,* Warszawa 2012, p. 82.

[40] This is claimed, among others, by. A.J. Witosz, *Prowadzenie spraw...,* p. 303.

[41] The partnership and the partners are jointly and severally responsible for obligations contracted by the partnership. Even if during the court trial the partnership loses its legal being, the proceeding is not discontinued, since it is participated by people who had the status of partners in a personal partnership. Due to joint and several responsibility of the partnership and partners, the title to appear before court is granted both to the partnership and to the partners. This is not joint passive title. Each of these entities enjoys independent title to appear before court. Therefore the loss of a legal being does not necessitate discontinuation of the proceedings, since the trial may be continued with participation of persons who were partners in a personal partnership Ł. Błaszczak, *Handlowa spółka osobowa jako strona procesu cywilnego – analiza wybranych zagadnień procesowych,* "Prawo Spółek" 2005, No 9, item 41, Lex No. 49060/4.

64-65 of CPC on their own behalf. Due to the fact that in the analyzed dispute, there will usually be claims made by a few active partners, Article 72 § 1 point 1 of CPC on material joint participation shall apply, since this concerns the joint right of active partners to conduct the business of a partnership[42].

There are also some doubts raised in the doctrine, concerning the effectiveness of the pronounced judgment which deprives the partner the right to represent the partnership to third persons (outside the partnership) and in relations between the partnership and all partners. The Commercial Companies Code, in case of personal partnerships does not contain a separate regulation, as it does with limited liability companies. According to Article 254 of CCC a valid judgment declaring a resolution invalid is valid in relations between the partnership and all partners as well as in relations between the partnership and members of partnership organs.

Following a general principle expressed in Article 366 of CPC, a valid judgment is *res judicata* only as far as the subject of the judgment was (following the subject of the dispute) and also only between the same parties. The provision of Article 254 of CCC introduces the effects of a valid judgment different from the general rule. This difference is also based on Article 365 § 1 of CPC which states that a valid judgment is binding not only to the parties and the court which issued it, but also to other courts and other state and public administration organs, and in cases stipulated by the act of law, also to other persons. A case stipulated in the act, when a judgment binds other persons than parties, is the regulation of Article 254 of CCC, which introduces an extended effectiveness of the judgment revoking or stating the invalidity of a resolution passed in a limited liability company.

The lack of the above regulation in case of personal partnerships should not determine the fact that a judgment depriving a partner the right to represent the partnership does not have an effect between the partnership and all partners and to third persons. As far as effectiveness towards third persons is concerned, it should be pointed out that the statutory authority of a partner in a general partnership cannot be limited towards third persons, which is defined in Article 29 § 3 of CCC. The Act allows though to limit the way the right to represent is executed (Article 30 § 1 of CCC). The provision of Article 29 § 3 of CCC concerns the object scope of representation, while Article 30 of CCC deals with subject issues, competencies granted to a partner and the way of executing them. The way of shaping the principles of representation may vary, though as long as the ban placed in Article 29 § 3 is violated, the effectiveness of adopted solutions will be limited to relations between partners[43]. All kinds of limitations to the object scope of this competence will only have internal effect[44]. The absolute rule of the ban on limiting the object scope of the right to represent and the possibilities of changes the subject scope by depriving some partners of this right are not interrelated institutions. Admittedly, Article 29 § 3 of CCC

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[42] R. Lewandowski, *Spory w spółce komandytowo-akcyjnej*, "Państwo i Prawo" 2006, No. 7, Lex No. 51749/1.

[43] According to A.J. Witosz, the provision of Article 29 § 1 of CCC defines the statutory model of the object scope (each partner has the right to represent), while Article 29 § 2 defines the statutory model of the object scope (the right to all court and out-of-court activities of a partnership), while Article 29 § 3 places a statutory ban on violating the model adopted for the object scope, Article 30 § 1 defines legally allowable method of limitation in form of a joint representation (allowable, since it is of subject nature, which was emphasized by defining this issue in a separate provision, thus separated from the object scope in Article 29 § 2 and 3 of CCC, A.J.Witosz, *Prowadzenie spraw...,* p. 129.

[44] *Ibidem*, p. 120.

determines the direction in which the following provision should be construed, but Article 30 § 1 of CCC defines the freedom to shape principles of representation, which affects third persons, and only in case of violating provisions of Article 29 § 3 of CCC – internal effect[45].

We cannot draw a conclusion that the provision of Article 29 § 3 of CCC concerning the ban on contractual limitation to the scope of representation also refers to Article 30 of CCC. A question would then rise, what to do in a situation when a partner is deprived of the right to represent on the basis of a valid court judgment. It is hard to assume that this court deprivation of the right to represent does not bring any effects towards third persons. It is equally hard to assume that the contractual deprivation of the right to represent is not effective towards third persons, while the court deprivation of this right brings such effects towards third persons[46].

It is hard to agree with the opinion of M. Rodzynkiewicz[47], who states that due to the express wording of Article 29 § 3 of CCC, we should assume that depriving a partner of the right to represent the partnership on the basis of a valid court judgment does not bring any effect to third persons. It is hard to accept the admissibility of a judgment which does not bring effects towards third persons. Other partners, when deciding to file a suit, would only be able to achieve a situation in which the deprivation would be effective in relations between partners and the defendant and the defendant and the partnership. De facto the partner would not be deprived of competencies, but would only be obliged to restrain from using them, since the right to represent itself, understood as the right to make statements of will on behalf of the partnership and directly affecting it, would still be in force[48].

In case of conducting the partnership business, the law, just as in the issue of the right to represent, does not determine who may file a suit for depriving a partner the right to conduct the partnership business. Doctrinal views are varied in this scope and an authorized entity might be each partner, all partners acting jointly, some partners or the partnership itself[49]. Another concept was proposed by A. Kidyba, who claims that the suit for depriving a partner the right to conduct the partnership business may be filed by partners in the case when a resolution was adopted, expressing consent to such suit. If there is no resolution, according to this author, an independent suit against partners and partnership may be filed by a partner who was denied consent[50].

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[45] *Ibidem*, p. 317. The limitation of the scope of representation may only be made in an agreement (for example division of competencies, forbidding to perform certain activities), however, such limitations have no effect on third persons, but this may make a partner liable to a partnership. A partner violating limitations resulting from an agreement may be held liable on the basis of Article 471 of the Civil Code. Each partner may perform activities independently (individual representation). The articles of association may offer another form of representing the partnership. The articles may also introduce the principle of joint representation, that is an obligation of cooperation imposed on two partners or cooperation of a partner and a proxy. The method of representation must be reported to the National Court Register.

[46] J.A. Strzępka, *Kodeks spółek handlowych. Komentarz do art. 29,* nb. III/2, Wydawnictwo C.H. Beck, Warszawa 2013.

[47] M. Rodzynkiewicz, *Kodeks spółek...,* p. 79.

[48] A.J. Witosz, *Prowadzenie spraw...,* p. 348.

[49] M. Litwińska-Werner, *Kodeks spółek handlowych. Komentarz do art. 47,* nb. 3, Wydawnictwo C.H. Beck, Warszawa 2007, the author indicates that it is not excluded that claimants – apart from the partnership, include other partners.

[50] A. Kidyba, *Komentarz do art. 47 KSH,* nb. 3, Wydawnictwo Wolters Kluwer 2009.

The lack of other regulations could indicate that a suit may be filed by each partner. However, the doctrine points out that it would be difficult to marry with the principle governing the general partnership, stating that the most important decisions exceeding the usual scope of partnership activities require consent of all partners. As a result, the doctrine presents the opinion that a suit should be filed by all other partners[51]. If we assume that a suit may be filed by particular partners, the defendant should be not only the partner who is to be deprived of the right to conduct the partnership business, but also other partners[52]. According to M. Allerhand, partners who do not agree for filing a suit should also be covered with the suit. A contrary opinion states that depriving a partner of the right to conduct the partnership business is a decision exceeding the usual scope of partnership activities, as understood in Article 43 of CCC. It is necessary then to obtain consent of all partners, excluding the partner who is to be deprived of the right. M. Allerhand's view would lead to the possibility of filing a suit for depriving the right to conduct the partnership business of one or more partners by a partner who is in minority and who acts contrary to the opinion of the majority[53].

K. Kopaczyńska- Pieczniak[54] indicates that the dispute concerning the shaping of the partner status, whose essence is deprivation of a particular right, does not exist in the partner-partnership sphere, but in relation between partners as parties in company relation, obliged to cooperate in order to accomplish an intended goal. The law does not indicate who has the active title in this scope. Since the issue of defining a circle of persons authorized to conduct the business, as "ownership" competence, does not belong to its scope, the decision to make such a demand is not governed by the rules of conducting the business. It should be assumed that the suit may be filed by each partner, regardless of whether he has the right to conduct the business. He does not have to have the right to represent the partnership. A partner acts on his own behalf, though in fact, in the interest of a partnership, in order to ensure it is run efficiently.

The above view is also supported by A. J. Witosz[55], who points out that the structure in which an organizational unit files a suit against its member, demanding that he is deprived of the right to manage the claimant, does not seem proper. It also seems that the demand to deprive such a person of the right to conduct the partnership matters is not a sign of managing it. It is members of the organizational unit who determine which partner is to conduct the business of the partnership. It is the object, not the subject of the issues defined in Article 47 of CCC. The internal organizational structure of a partnership is an object of dispute between the partners.

In S. Włodyka's opinion, if we assume that the suit includes *implicite* a demand to shape the relations inside the company, as it in fact is a suit to change the articles of association, then a more adequate solution demands that all other participants should participate in it. This view could be supported by a statement that a partnership relation is based on special trust between partners and depriving one of them of the right to conduct the partnership business required joint action of all other partners. A different view, giving

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[51] S. Sołtysiński, A. Szajkowski, A. Szumański, J. Szwaja, *Kodeks spółek handlowych*, t. 1, Warszawa 2006, p. 439.

[52] J. Szczotka, *Spółka...*, p. 106.

[53] S. Sołtysiński, A. Szajkowski, A. Szumański, J. Szwaja, A. Herbet, R Gawałkiewicz, I. Mika, M. Tarska, *Kodeks spółek handlowych. Komentarz do art. 47 KSH, nb. 4,* Wydawnictwo C.H. Beck, Warszawa 2012.

[54] K. Kopaczyńska-Pieczniak, *Pozycja prawna wspólnika spółki jawnej*, nb. Chapter II, § 2/6, Lex 2013.

[55] A.J. Witosz, *Prowadzenie spraw...*, p. 301.

each partner the right to file a suit would be justified in a thesis that a partnership relation is an obligatory relation within which the rights and obligations are granted to particular partners. Filing a suit by a partner is an execution of the corporate rights that may be executed individually. Of some significance here is also an argument that it might turn out to be impossible to require joint cooperation of all partners, if, for example, other partners sabotaged initiating the court proceedings or denied their consent for passing a resolution or filing a suit without any justified reason, while the partner intending to initiate the court proceeding acted for the benefit of the partnership. This concerns a situation when a partner conducting the partnership business acts to the detriment of the partnership or shows incompetence in accomplishing the partnership goals, while other partners, for example also those appointed to run the partnership business, do not react. In essence, there is a problem of *ratio* which is at the base of the possibility of filing a suit. Especially as there is no requirement for partners authorized to run the partnership business to file a suit. The Commercial Companies Code does not say anything about it, while the doctrine has been occupied with the issue of collective or individual suit, while the problem of possessing the right to conduct the partnership business by others has not been raised. Thus we cannot defend the thesis that the right to file a suit is granted to each partner because it is a means of exercising the individual right of every partner to conduct the partnership business or the right to represent the partnership. Undoubtedly, assuming that each partner ma in this case act individually is a safer solution, taking into account the protection of the analyzed regulation. Finally, the partner has the right, of undoubtedly individual nature, to file a suit for dissolving the partnership for vital reasons[56].

Referring to the existing discrepancies, one should first of all argue that there is no content-based justification for differentiating the issue of title in case of a suit for depriving a partner of the right to represent the partnership and to conduct the partnership business[57]. Both rights belong to the category of corporate (organizational) rights which are generally granted to each partner. A partner may be deprived of both of them on the basis of the provisions found in the articles of association. The suit for depriving a partner of any of these rights should be treated uniformly, especially as regulations of Article 30 § 2 and Article 47 of CCC are twin regulations[58].

The passive title is granted to a partner whom the demand for depriving of the right to conduct the partnership business concerns.

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[56] S. Włodyka, *Prawo spółek handlowych,* t. 2: *System Prawa Handlowego...*, pp. 407–408.

[57] A. Herbet, *Spółka komandytowa...,* p. 187 indicates that in spite of small terminology differences, the suit for depriving a partner of the right to conduct the partnership business should be considered as a parallel means to the suit for depriving of the right to represent. Analogies are found in the issues of title to appear in court, procedure mode and nature of the concluding judgment.

[58] Z. Jara, *Kodeks spółek handlowych, Komentarz do art. 47,* nb. 18, Wydawnictwo C.H. Beck, Warszawa 2014, the author is of an opinion that since the judgment depriving a partner of the right to conduct the partnership business should bind all partners in a general partnership, it should be assumed that a title to appear in court in the proceedings aimed at depriving a partner of the right to conduct the partnership business is granted in case of a general partnership, but just as in the case of a suit for depriving a partner of the right to represent the partnership, we cannot agree with it.

8. THE LEGAL AND COMPARATIVE ASPECT

According to § 117 HGB[59] [Commercial Code from 10.5.1897, which contains regulations on a general partnership, that is Offene Handelsgesellschaft OHG (§ 105 - § 160), limited joint-stock partnership, that is Kommanditgesellschaft KG (§ 161 - § 177a) and the sleeping partnership, that is stille Gesellschaft (§§ 230 – 237)] the right to conduct the partnership business may be taken away from a given partner at the request of other partners by means of a court decision if there is a sufficient reason for this. Such reason is especially serious violation of an obligation or inability to conduct the partnership business properly.

Differently than in § 712 BGB for a civil partnership, § 117 for security reasons offers for a general partnership (OHG) a possibility of depriving of the right only via constitutive suit. When the judgment becomes valid, it has the shaping (constitutive) effect, and the partnership articles of association are changed for and against all partners, however, only inasmuch as the full or partial deprivation of the right to conduct the partnership business is concerned.

Filing a suit is not limited by any date. However, a significant delay in the court claim speaks against the existence of vital reasons. Taking away the right to conduct the partnership business is possible only when relations in a partnership cannot be settled in a less radical way. Taking away the right to conduct the partnership business is usually associated with radical changes in professional perspective (employment) of the managing partner. On the other hand, partnership interests must be taken into account so that the purpose of its existence could be continued without any disturbances (quoted doctrine).

A vital reason for filing a suit exists when the way of conducting the partnership business by a partner has disturbed in the long run the trust relations between partners, whereas other partners, having considered the whole problem and having taken into account the interests of all interested parties, do not find it purposeful for such a partner to perform management rights over the partnership..

The doctrine emphasizes, however, that within considering the essence of the suit, the principle of proportionality should be observed. If a solution can be reached with less radical means, proposals of such solutions are made and implemented first of all. As examples one could quote: change of a single-person management of partnership business into a multi-person management, and limiting the right to conduct the partnership business in material, time and place aspects. It is also possible to deprive partially of the right to conduct the business, but also if a proper motion is included in the suit. Less painful means may be adjudged by the court only on motions included in the suit.

Partners who file the suit for taking away the right to conduct the partnership business from another partner are responsible for justifying their claim and providing evidence to prove the existence of reasons for accepting a vital reason. According to Article 117, deprivation of the right to conduct the partnership business is done via a constitutive judgment at the motion of other partners. The judgment changes the articles of association, therefore the decision must be taken by all other partners, both those managing the partnership and those excluded from the representation. An exception is made for public partnerships. In order to protect an investor, it is necessary to pass a resolution by an ordinary majority of votes to file a claim.

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[59] Deutsches Handelsgesetzbuch 10.5.1897; http://dejure.org/gesetze/HGB.

The suit for taking away the right to conduct the partnership business may take place in one proceeding against a few partners conducting the partnership business. One reason for such accumulation of claims is to allow all other partners to file a suit. This possibility is not limited only to a case in which the same vital reason is given against a few partners conducting the partnership business. The reasons for which partners are deprived of their rights do not have to be identical or have any objective connection. However, if in case of even one partner managing the company business, one important reason does not apply, the suit will be dismissed, since there would formally be no consent of all partners on the claimant side. According to the doctrine, a partner who does wish to actively participate in the proceedings, has an option to express a binding consent for the participation of partners in it. They, then file a suit within the power of attorney granted to them.

The loyalty obligation resulting from the nature of the partnership allowed the judicial practice and theory to derive an obligation to cooperate within a suit for depriving of the rights, if this is beneficial for the partnership. A partner who restrains from that may be sued for expressing his consent, and the cooperation of other partners is not needed for that. The judgment reflecting the suit for expressing the consent replaces, according to § 894 ZPO (German Civil Procedure Code), the obligation to cooperate within the suit for depriving of the rights. Due to proceeding economy, the judicial practice and theory allow combining the suit for expressing consent and the suit for depriving of the rights.

The Commercial Code does not offer any specific provisions concerning court jurisdiction in case of a suit for depriving of the right to conduct the partnership business. The jurisdiction of the court is determined on the basis of general provisions (§ 12, 22 ZPO).

Other partners are authorized to file a suit only jointly. The right of a partner to conduct the partnership business may only be determined uniformly in relation to a suing partner. Therefore the necessary joint participation in law proceedings originates between them (§ 62 section 1 alt. 1 ZPO). If one partner does not participate in the proceeding, the suit has to be dismissed due to lack of active title of other members.

The German Commercial Code also offers a possibility of temporary protection of rights. Temporary protection of rights is expressed, unless there are specific provisions in HGB, in § 935 and next of ZPO. The right to conduct the partnership business may be taken away at the motion of all other partners by means of a temporary regulation (regulated in - § 940 ZPO) fully or partly. Within the judgment issued in summary proceedings, the court may determine all necessary demands. It is also possible to commission the business of the partnership to a third person, if the only partner managing the partnership was sued. Also the partner managing the partnership, who is at risk of losing the right, may defend himself with a motion for issuing a temporary regulation.

The valid judgment issued against the defendant and accepting the claim for depriving them of the rights, leads to the fact that such a person is fully or partially deprived of the right to conduct the partnership business. From the moment the judgment becomes effective such a partner has a status of a partner excluded from conducting the partnership business, and he does not have the right to make his objection according to § 115 sect. 1.

The judgment taking away the rights is limited to taking away the right to conduct the partnership business and concerns directly exclusively the sued partner. An automatic change of the future method of conducting business by the partnership does not take place via court judgment. Due to limited shaping effects, the rights to conduct the partnership business by other partners remain unchanged. If the sued partner was the only person

managing the business of the partnership, if the articles of association stipulated the possibility of two managing partners, some restructuring will be necessary.

The suit for taking away the right and the suit for expressing consent for restructuring may be combined if the sued partner does not want to participate in the restructuring. However, the court cannot order restructuring, since this would mean interference into the foundations of the partnership operations and it would infringe upon the autonomy of partners' will. If there is no agreement of the partners on restructuring, the final option is to exclude the partner who does not agree for restructuring in a partnership (§ 140) or to dissolve the partnership (§ 133).

§ 117 HGB is relatively valid. By regulations in the articles of association, we can simplify or hinder the issues related to taking away the right to conduct the partnership business. These regulations may concern both the reasons for such deprivation or the court proceeding in this respect.

The facilitations in the articles of association may mean that instead of the suit for taking away the right it will be possible for partners to pass a resolution, with the mentioned partner being excluded from voting on such solution. If there is a valid reason, other partners are obliged to express their consent for depriving a partner of the rights. When the resolution becomes effective, the right to conduct the partnership business is terminated. A partner who was deprived of the management has the right to demand court control by means of a suit for determining the existence (non-existence) of a legal relation (right). This possibility cannot be taken away from such a partner. Also other partners may file a suit for determining the existence/non-existence of the right in order to check the effectiveness of the resolution they passed. In the articles of association partners may also hinder the deprivation of the right to conduct the partnership business, for example by limiting (narrowing down) the possible reasons leading to such deprivation. The prevailing opinion rejects the possibility of total exclusion of the right to deprive someone of the right to manage the business of the partnership in its articles of association for vital reasons. For the proceedings concerning the deprivation of the right the articles of association may stipulate some obstacles in form of additional resolutions of partners or in form of preliminary examination (check) conducted by a relevant team (board) or an arbitrator.

The doctrine also assumes that a partner conducting the partnership business may resign from managing the partnership if other partners express their consent for this or if such possibility is stipulated in the articles of association. Moreover, a partner conducting the partnership business has an option of termination using § 105 section 3 of HGB in connection with § 712 section 2 of BGB, but only if there is a serious reason.

9. CONCLUSIONS

Due to the lack of precise legal regulations on the proceedings leading to depriving a partner of the right to represent and conduct the partnership business, the dispute concerning who is entitled to file a suit and who should be considered the defending party is still far from being solved. Two opposing views presented in this paper give this right to the partnership and to particular partners. Differences of opinions on active and passive title to appear in court in cases concerning the deprivation of a partner of their right to represent and conduct the partnership business demonstrate that this is undoubtedly a hot issue for practitioners and theorists of law. It is the lack of clear legal norms in legislature that accounts for the appearance of such diverse positions on this issue. In this problematic

case the authors referred to the German example, on the basis of which they presented the way it is regulated in German legislature. German regulations may constitute some indications to Polish lawmakers and doctrine, as they emphasize that during the proceedings for depriving a partner of his right to conduct the partnership business, the principle of proportionality should be observed, that is we should use the least radical means in order to solve the problem.

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SPORY KORPORACYJNE W SPÓŁCE OSOBOWEJ
– LEGITYMACJA PROCESOWA

W opracowaniu przedstawiono procedurę pozbawienia wspólnika handlowej spółki osobowej prawa do reprezentowania i prawa do prowadzenia spraw spółki. Scharakteryzowano pojęcia prowadzenia spraw spółki i reprezentowania spółki oraz ich kształtujące i wzmacniające znaczenie dla pozycji wspólnika. Następnie wskazano na dwie możliwości przewidziane przez prawo, które pozwalają na pozbawienie wspólnika prawa do reprezentowania spółki oraz prawa do prowadzenia spraw spółki. Pierwszą z nich jest odpowiedni zapis w umowie spółki a drugą prawomocny wyrok sądu uzasadniony istnieniem ważnych powodów. W dalszej kolejności dokonano charakterystyki istoty spółek osobowych. Podkreślone zostało, że podmioty te nie posiadają osobowości prawnej a jedynie zdolność prawną. Kolejno wskazano na obecny w doktrynie spór o to, kto ma legitymację do występowania z powództwem oraz o to, kto jest stroną pozwaną w procesie. W ostatniej części artykułu skupiono się na przedstawieniu i porównaniu norm prawnych dotyczących pozbawienia wspólnika prawa do prowadzenia spraw spółki obowiązujących w niemieckim prawodawstwie z polskimi normami prawnymi.

Słowa kluczowe: prawo reprezentowania spółki, prawo prowadzenia spraw spółki, legitymacja procesowa.

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STATYSTYCZNA OCENA POZIOMU ROZWOJU JEDNOSTEK TERYTORIALNYCH SZCZEBLA LOKALNEGO WOJEWÓDZTWA PODKARPACKIEGO W LATACH 2005–2013

Jednym z głównych celów każdej jednostki terytorialnej jest dążenie do rozwoju. Rozwój jest zjawiskiem złożonym, trudno definiowalnym. Składają się na niego różne czynniki o różnym charakterze i sile oddziaływania. Często rozwój lokalny jest definiowany jako proces zmian ilościowych i jakościowych zachodzących w społecznym i gospodarczym funkcjonowaniu jednostek samorządowych.

Artykuł prezentuje rezultaty badań dotyczące oceny poziomu rozwoju lokalnego 155 gmin województwa podkarpackiego w latach 2005–2013. W analizie wykorzystano zmodyfikowany Wskaźnik Rozwoju Wspólnot Terytorialnych R. Czyszkiewicza w wersji dynamicznej. Dane statystyczne wykorzystane w analizie pochodzą z Banku Danych Lokalnych, publikowanych przez Główny Urząd Statystyczny Na podstawie wartości obliczonego wskaźnika dokonano grupowania gmin, wyróżniając gminy o wysokim, średniowysokim, średnioniskim i niskim poziomie tego rozwoju. Otrzymane wyniki wskazują na znaczne zróżnicowanie poziomu rozwoju gmin. Wyższy poziom rozwoju lokalnego posiadają gminy miejskie i miejsko-wiejskie, w grupie gmin o niskim poziomie rozwoju przeważają gminy typowo wiejskie. Podsumowując stwierdzić należy, że w latach 2005–2013, w przypadku większości gmin województwa podkarpackiego nastąpiły pozytywne zmiany wskazujące na dokonujący się w nich proces rozwojowy. Należy jednak zauważyć, że rozwój lokalny jest procesem długotrwałym, a jego widoczne efekty można zaobserwować dopiero w dłuższej perspektywie czasowej. Wyniki badań mogą zostać wykorzystane przez władze lokalne i instytucje odpowiedzialne za rozwój do usprawniania prowadzonej polityki lokalnej, wprowadzania odpowiednich działań organizacyjnych, czy mogą mieć przełożenie na przygotowanie programów o charakterze strategicznym.

Słowa kluczowe: rozwój, poziom rozwoju lokalnego, determinanty rozwoju, wskaźnik syntetyczny

1. WPROWADZENIE

Celem działania każdej jednostki samorządowej jest dążenie do rozwoju podległego im obszaru.

Rozwój jest procesem o charakterze przyczynowo-skutkowym, który można porównać do nieskończonego łańcucha następujących po sobie kolejno zdarzeń – przyczyn i skutków. Są one powiązane między sobą na zasadzie sprzężenia zwrotnego. Mogą być czyn-

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nikami rozwoju – jeżeli ten rozwój inicjują, umożliwiają czy ułatwiają lub barierami, gdy rozwój utrudniają albo wręcz uniemożliwiają[3].

Ze względu na złożoność rozwoju, jego zbadanie i wyrażenie poziomu tego rozwoju w postaci jednego wskaźnika[4] nastręcza badaczom wiele trudności.

Uważa się, że wskaźniki pełnią trzy główne funkcje. Po pierwsze, zmniejsza się liczba pomiarów niezbędnych do uzyskania ogólnego opisu sytuacji[5]. Jako takie są one niezbędne do pomiaru postępu w realizacji określonych celów[6] oraz do dokonania oceny ich skuteczności. Po drugie, wskaźniki upraszczają komunikację między różnymi „aktorami", przykładowo politykami, administratorami czy opinią publiczną[7]. Obie te funkcje pozwalają na zebranie w jednym wskaźniku dużej liczby istotnych informacji, który można łatwo zrozumieć i interpretować. Wskaźniki mogą, po trzecie, stanowić istotne wskazówki dla tworzenia odpowiedniej polityki[8] przez władze samorządowe.

Wydaje się, że współcześnie w dobie rosnącej konkurencji także na poziomie gmin, zasadne jest prowadzenie i pogłębianie badań dotyczących rozwoju lokalnego.

Celem artykułu jest próba statystycznej oceny poziomu rozwoju lokalnego gmin województwa podkarpackiego[9] oraz wydzielenie grup gmin o podobnym poziomie tego rozwoju (bez ustalania przyczyn tego stanu rzeczy). W pracy zastosowano zmodyfikowany Wskaźnik Rozwoju Wspólnot Terytorialnych[10]. Zakres analizy obejmuje lata 2005-2013. Dane statystyczne wykorzystane w analizie pochodzą z Banku Danych Lokalnych, publikowanych przez Główny Urząd Statystyczny.

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[3] A. Wojewódzka, *Infrastruktura jako czynnik rozwoju lokalnego i regionalnego*, dokument elektroniczny, „Logistyka" nr 3/2010, s.6.

[4] Wskaźnik w metodologicznym znaczeniu to pewna cecha, zdarzenie lub zjawisko na podstawie którego wnioskujemy z pewnością, bądź z określonym prawdopodobieństwem, iż zachodzi zjawisko, jakie nas interesuje – E. Nowak, *Metody taksonomiczne w klasyfikacji obiektów społeczno-gospodarczych*, PWE, Warszawa 1990, s. 102–106.

[5] OECD. 2003. OECD Environment Indicators. Development, Measurement and Use, OECD, Paris.

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[8] H. Bossel, I*ndicators for Sustainable Development: Theory, Method, Applications,* Manitoba: IISD: Winnipe.

[9] Badaniami objęto wszystkie gminy województwa podkarpackiego (czyli ogółem 155 jednostek) z wyjątkiem miast na prawach powiatu, czyli Rzeszowa, Krosna, Przemyśla i Tarnobrzega. Miasta te posiadają bowiem znacznie wyższy poziom rozwoju społeczno-gospodarczego niż gminy badanego województwa, stąd nie uwzględniono ich w badaniach.

[10] Nazwa wskaźnika oraz metodyka jego liczenia została zaczerpnięta z artykułu R. Czyszkiewicz, *Wskaźnik Rozwoju Wspólnot Terytorialnych – koncepcja o praktycznym zastosowaniu,* „Studia Regionalne i Lokalne" nr 12, 2003, s. 80.

2. ROZWÓJ LOKALNY I CZYNNIKI GO KSZTAŁTUJĄCE

Rozwój lokalny, jako pojęcie wielowymiarowe i złożone, jest różnie interpretowany w literaturze przedmiotu. Wynika to z tego, że rozwój ten jest uwarunkowany wieloma czynnikami, o różnym kierunku i sile oddziaływania.

Jak zauważa Adam Szewczuk[11], „rozpoznanie i wyjaśnienie rozwoju lokalnego staje się szczególnie skomplikowane, ponieważ gmina funkcjonuje i rozwija się jako integralna część większej całości, tj. regionu, korzysta z dóbr i usług pochodzących z innych terenów i jednocześnie produkuje i dostarcza swoje produkty na rzecz szeroko rozumianego otoczenia. Gmina korzysta z zewnętrznych zasileń finansowych, a jednocześnie część własnych dochodów przekazuje do publicznej dyspozycji".

Często rozwój lokalny jest definiowany jako „proces zmian ilościowych i jakościowych zachodzących w społecznym i gospodarczym funkcjonowaniu jednostek samorządowych"[12].

Inni autorzy określają go także jako „proces kierunkowych zmian, w którym można wyróżnić prawidłowo po sobie następujące etapy przemian danego obiektu. Dochodzi w nim do przejścia od form lub stanów prostszych i mniej doskonałych do stanów bardziej złożonych i doskonalszych pod określonymi względami"[13]. Janusz L. Siemiński[14] dodaje, że zmiany te mają zaspokajać potrzeby społeczności lokalnej i prowadzić do ogólnego postępu.

Niezależnie od przyjętej definicji rozwoju lokalnego należy pamiętać, że proces ten będzie dotyczył ważnych dla danej społeczności lokalnej spraw związanych chociażby z poprawą warunków bytowych, racjonalnego wykorzystania dostępnych zasobów lokalnych oraz tworzeniem na szczeblu gminy odpowiednich warunków dla lokalnej gospodarki i przedsiębiorczości.

Rozwój na poziomie gminy przebiega z różną intensywnością, jest uzależniony od czynników go kształtujących.

W literaturze przedmiotu można znaleźć różne klasyfikacje czynników rozwoju lokalnego.

Czynnik definiowany jest jako jedna z przyczyn danego zjawiska, albo jeden ze składników warunkujących coś, o czymś rozstrzygający[15].

Podkreśla się, że niektóre z czynników rozwoju lokalnego mogą mieć charakter uniwersalny, a inne mogą występować w danym, konkretnym miejscu i w pewnych momentach czasowych. Można je także podzielić na te o charakterze wewnętrznym i zewnętrznym.

Przykładowo do czynników rozwoju lokalnego zalicza się[16]:

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[11] A. Szewczuk, M. Kogut-Jaworska, M. Zioło, *Rozwój lokalny i regionalny. Teoria i praktyka,* wyd. C.H. Beck, Warszawa 2011, s. 21.

[12] T. Markowski, *Teoretyczne podstawy rozwoju lokalnego i regionalnego* [w:] *Gospodarka regionalna i lokalna*, red. Z. Strzelecki, PWN, Warszawa 2008, s. 9.

[13] M. Kiczek, M. Pompa-Roborzyński, *Ocena rozwoju gmin powiatu rzeszowskiego (z wykorzystaniem metody Hellwiga*, „Humanities and Social Sciences" 2013, vol. XVIII, 20(2), s. 65–76.

[14] J.L. Siemiński, *Koncepcje rozwoju lokalnego*, Zeszyty Biura Planowania Regionalnego CUP, Warszawa 1994, s. 7.

[15] E. Sobol (red.), *Podręczny słownik języka polskiego*, PWN, Warszawa 1996, s.36

[16] S.L. Bagdziński, *Lokalna polityka gospodarcza w okresie transformacji systemowej,* wyd. UMK, Toruń 1994, s. 18; J. Chądzyński, A. Nowakowska, Z. Przygodzki, *Region i jego rozwój w warunkach globalizacji*, CeDeWu, Warszawa 2007, s. 85; A. Wojewódzka, *Infrastruktura jako czynnik rozwoju lokalnego i regionalnego*, dokument elektroniczny, „Logistyka" 2010, nr 3, s. 6.

– czynniki polityczno-ustrojowe:

a) wewnętrzne: sposób sprawowania władzy (relacje między władzą lokalną a społeczeństwem), stopień akceptacji władz lokalnych przez społeczeństwo;

b) zewnętrzne: charakter władzy (ustrój państwa), zakres kompetencji (uprawnienia władzy różnych szczebli), zakres samorządności i samodzielności gmin,

– czynniki społeczne:

a) wewnętrzne: potrzeby, wartości i aspiracje mieszkańców, aktorów lokalnych, stosunek do reform, innowacji i postępu technicznego, kreatywność i przedsiębiorczość;

b) zewnętrzne: ponadlokalne cechy społeczności (np. związane z Polską porozbiorową), kultura, tradycje szerszego układu terytorialnego,

– czynniki ekonomiczne:

a) wewnętrzne: infrastruktura techniczna, ekonomiczna i społeczna, potencjał gospodarczy, lokalny kapitał i inwestycje;

b) zewnętrzne: kondycja ekonomiczna kraju, stopa inflacji, stopa bezrobocia, zewnętrzny kapitał i inwestycje,

– czynniki środowiskowe i przestrzenne:

a) wewnętrzne: zasoby naturalne, walory środowiska przyrodniczego, krajobraz miasta;

b) zewnętrzne: ponadlokalne uwarunkowania środowiskowe, ekosystemy wykraczające poza obszar gminy.

3. METODYKA BADAŃ

Badanie poziomu rozwoju lokalnego gmin nastręcza dużo trudności i wymaga przyjęcia określonych założeń[17]. Jest to bowiem zjawisko złożone, na które wpływa wiele różnych czynników, stąd trudno je jednoznacznie i obiektywnie ocenić. Problemem też jest zgromadzenie odpowiednich danych statystycznych określających poziom rozwoju lokalnego. Wiele bowiem zmiennych, które mogłyby okazać się przydatnymi w badaniach nie jest dostępnych w przekroju gmin.

Do oceny poziomu rozwoju lokalnego gmin województwa podkarpackiego został wybrany Wskaźnik Rozwoju Wspólnot Terytorialnych (WRWT) R. Czyszkiewicza. Jak podkreśla autor, miernik ten „jest stosunkowo prostym sposobem zmierzenia wartości rozwoju. Jego zaletami są łatwość i powszechność dostępu do danych źródłowych, łatwość obliczania oraz dokonywania porównań pomiędzy poszczególnymi gminami. Może też być traktowany jako pierwszy element oceny stopnia rozwoju gminy i zagrożeń dla tego rozwoju i stanowić wstęp do pogłębionej analizy czynników określających szanse stojące przed tymi jednostkami samorządowymi i sposobach ich wykorzystania"[18].

Podstawą określenia stopnia rozwoju gminy są następujące wskaźniki:

A.   Udział dochodów własnych gminy w danym okresie w stosunku do całkowitego dochodu gminy uzyskanego w tym samym okresie (stosunek wyrażony w %).

B.   Udział wydatków inwestycyjnych w ogólnych wydatkach poniesionych przez gminę w danym okresie (wyrażony w %).

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[17] Autorki dokonały przeglądu bazy czasopism BazEkon (stan na 18.07.2016 r.) szukając konfiguracji słów „poziom rozwoju lokalnego" i odnalazły 145 artykułów naukowych w których te słowa się pojawiły. Okazało się, że autorzy tych artykułów wykorzystywali różne wskaźniki poziomu rozwoju lokalnego, biorąc pod uwagę także różne determinanty tego rozwoju.

[18] R. Czyszkiewicz, *Wskaźnik Rozwoju Wspólnot Terytorialnych – koncepcja o praktycznym zastosowaniu*, „Studia Regionalne i Lokalne" nr 12, 2003, s. 90.

C.   Stopa ubóstwa (wyrażona w %). Miarą tego czynnika jest liczba mieszkańców gminy otrzymujących pomoc za pośrednictwem gminnych służb pomocy społecznej.

D.   Stopa bezrobocia (wyrażona w %). Miarą tego czynnika jest liczba bezrobotnych mieszkańców danej gminy zarejestrowanych w odpowiednim powiatowym urzędzie pracy.

Dwa pierwsze wskaźniki świadczą o rozwoju gminy, dwa następne o obciążeniu tego rozwoju zjawiskami i działaniami dowodzącymi istnienia problemów społecznych spowalnianych lub uniemożliwiających rozwój.

Wskaźnik Rozwoju Wspólnot Terytorialnych opiera się na założeniu, że pożądane są jak największe wielkości dwóch pierwszych czynników oraz jak najmniejsze wielkości pozostałych dwóch.

Sposób obliczania Wskaźnika Rozwoju Wspólnot Terytorialnych (WRWT) jest następujący. Dwa pierwsze wskaźniki (A i B) są znormalizowane według wzoru:

$$z_{ij} = \frac{x_{ij} - \min_{i}\{x_{ij}\}}{R_j} \tag{1}$$

dwa następne (C i D) zaś według wzoru:

$$z_{ij} = \frac{\max_{i}\{x_{ij}\} - x_{ij}}{R_j} \tag{2}$$

gdzie:

z_{ij} – znormalizowana wartość j-tej cechy w i-tej gminie

X_{ij} oznacza konkretną wielkość danego wskaźnika osiągniętą przez konkretną gminę w danym roku.

$min\ x_{ij}$ oznacza minimalną wartość danego wskaźnika osiągniętą przez gminy w danym roku. Jest to wartość charakteryzująca konkretną gminę;

$max\ x_{ij}$ oznacza maksymalną wartość danego wskaźnika osiągniętą przez wspólnoty w danym roku. Jest to również wartość charakteryzująca konkretną gminę.

R_j – rozstęp

$R_j = max\ x_{ij} - min\ x_{ij}$

Cząstkowe wskaźniki roczne z pierwszej grupy czynników A i B przybierają wartości w przedziale (0, +1), natomiast wskaźniki z grupy C i D przybierają wartości ujemne w przedziale (0, -1). Sumaryczny wskaźnik rozwoju konkretnej gminy w danym roku ustalany jest w drodze zwykłego sumowania czterech wskaźników cząstkowych, a wyniki zawierają się w przedziale (-2, +2). Interpretując te wskaźniki nie należy ich traktować jako te, które pokazują, ile razy dana wspólnota jest np. bardziej czy mniej rozwinięta niż inne. Należy je traktować jako te pokazujące, jaka jest sytuacja danej gminy w porównaniu z innymi.

Tak skonstruowany Wskaźnik Rozwoju Wspólnot Terytorialnych został nieco zmodyfikowany przez autorki, bowiem obliczenia wykonano w sposób dynamiczny, ustalając wartość *max* i *min* zmiennych z całego badanego okresu 2005–2013, czyli dla tzw. obiektookresów. Ostateczną wartość Wskaźnika Rozwoju Wspólnot Terytorialnych w latach 2005–2013 dla każdej gminy obliczono jako średnią arytmetyczną znormalizowanych

wskaźników cząstkowych. Dzięki zastosowaniu podejścia dynamicznego możliwe staje się nie tylko uporządkowanie liniowe obiektów pod względem poziomu rozwoju, ale i ocena wielkości i kierunków zmian w hierarchii obiektów w badanym okresie.

Interesujące też wydaje się dokonanie podziału gmin województwa podkarpackiego na grupy o podobnym poziomie rozwoju lokalnego mierzonego wartością Wskaźnika Rozwoju Wspólnot Terytorialnych. W artykule zastosowano schemat podziału oparty o średnią arytmetyczną i odchylenie standardowe miary syntetycznej (WRWT)[19]:

grupa I: $MS_i \geq \acute{s}rMS_i + S_{MS}$ poziom wysoki

grupa II: $\acute{s}rMS_i + S_{MS} > MS_i \geq \acute{s}rMS_i$ poziom średniowysoki (3)

grupa III: $\acute{s}rMS_i > MS_i \geq \acute{s}rMS_i - S_{MS}$ poziom średnioniski

grupa IV: $MS_i < \acute{s}rMS_i - S_{MS}$ poziom niski

gdzie:

$\acute{s}rMS_i$ – wartość średnia miary syntetycznej (WRWT)

S_{MS} – odchylenie standardowe miary syntetycznej (WRWT)

Po wyznaczeniu wartości Wskaźnika Rozwoju Wspólnot Terytorialnych dla poszczególnych gmin województwa podkarpackiego w latach 2005–2013, interesujące może być dokonanie oceny podobieństwa wyników porządkowania liniowego zbioru obiektów w czasie. Do tego celu można wykorzystać miernik opracowany przez M. Walesiaka[20] o postaci:

$$P^2(MS_r, MS_s) = P_{rs}^2 = \frac{1}{n}\sum_{i=1}^{n}(p_{ir} - p_{is})^2 \qquad (4)$$

gdzie:

p_{ir}, p_{is} – wartość miary syntetycznej MS_r, MS_s, dla i-tego obiektu w porównywanych okresach r i s.

Wartości cech syntetycznych MS_r, MS_s wyznaczone na podstawie tego samego zespołu cech, za pomocą tak samo skonstruowanego syntetycznego miernika rozwoju, są więc bezpośrednio porównywalne. Miernik przyjmuje wartość 0 w przypadku, gdy nie ma żadnych różnic w wartościach cech syntetycznych MS_r, MS_s.

Miernik P_{rs}^2 można przedstawić jako sumę trzech składników:

$$P_{rs}^2 = P_1^2 + P_2^2 + P_3^2 \qquad (5)$$

pozwalających określić bliżej „rząd" i „charakter" różnic w wartościach cech syntetycznych MS_r, MS_s.

Mierniki cząstkowe niosą informacje o:
– różnicy między średnimi wartościami cech syntetycznych MS_r, MS_s:

[19] E. Nowak, *Metody taksonomiczne w klasyfikacji obiektów społeczno-gospodarczych*, PWE, Warszawa 1990.

[20] M. Walesiak, *Uogólniona miara odległości GDM w statystycznej analizie wielowymiarowej z wykorzystaniem programu R*, wyd. UE we Wrocławiu, Wrocław 2011, s. 9–80.

$$P_1^2 = (\bar{p}_{.r} - \bar{p}_{.s})^2 \tag{6}$$

– różnicy w dyspersji wartości cech syntetycznych MS_r, MS_s:

$$P_2^2 = (S_r - S_s)^2 \tag{7}$$

– niezgodności kierunku zmian wartości cech syntetycznych MS_r, MS_s:

$$P_3^2 = 2S_r S_s (1 - \rho) \tag{8}$$

gdzie:

$\bar{p}_{.r}$, S_r ($\bar{p}_{.s}$, S_s), odpowiednio: średnia arytmetyczna i odchylenie standardowe wartości r-tej (s-tej) cechy syntetycznej,

ρ – współczynnik korelacji liniowej Pearsona między wektorami $p_{.r}=(p_{1r},...p_{nr})$, i $p_{.s}=(p_{1s},...p_{ns})$.

4. BADANIA EMPIRYCZNE POZIOMU ROZWOJU LOKALNEGO GMIN WO-JEWÓDZTWA PODKARPACKIEGO PRZY ZASTOSOWANIU MODYFIKO-WANEGO WSKAŹNIKA ROZWOJU WSPÓLNOT TERYTORIALNYCH

Podstawą określenia poziomu rozwoju lokalnego gmin województwa podkarpackiego w latach 2005–2013 były cztery wskaźniki (A, B, C, D) zaproponowane przez R. Czysz-kiewicza, których wartości zebrano dla 155 gmin korzystając z bazy danych statystycz-nych Banku Danych Lokalnych GUS.

Podstawowe charakterystyki statystyczne tych wskaźników przedstawiają tabele 1–4.

Tabela 1. Podstawowe miary statystyczne dla wskaźnika A w gminach województwa podkarpackie-go w latach 2005–2013

Lata	Minimum	Maksimum	Średnia	Odchylenie standardowe	Współczynnik zmienności
2005	12,71	63,35	29,30	11,85	0,40
2006	12,89	63,33	28,45	11,77	0,41
2007	12,09	64,41	29,37	12,77	0,43
2008	15,21	67,20	32,37	12,61	0,39
2009	11,50	72,54	29,86	13,35	0,45
2010	10,20	72,09	29,17	13,75	0,47
2011	9,52	75,05	31,36	13,25	0,42
2012	11,26	72,70	31,89	12,41	0,39
2013	14,53	65,04	33,00	11,45	0,35

Źródło: obliczenia własne.

Średni udział dochodów własnych gmin województwa podkarpackiego w całkowitych dochodach gmin kształtował się na poziomie około 30,0% i wynosił od 29,3% w 2005 roku do 33,0% w 2013 roku. Wartości minimalne i maksymalne wskaźnika A w kolej-nych latach wskazują na duże różnice w poziomach tego wskaźnika pomiędzy gminami. Wyrazem tego jest wartość współczynnika zmienności wskazująca na umiarkowane zróż-nicowanie gmin badanego województwa pod względem udziału dochodów własnych gmin województwa podkarpackiego w całkowitych dochodach gmin.

Tabela 2. Podstawowe miary statystyczne dla wskaźnika B w gminach województwa podkarpackiego w latach 2005–2013

Lata	Minimum	Maksimum	Średnia	Odchylenie standardowe	Współczynnik zmienności
2005	1,23	44,22	14,71	7,93	0,54
2006	1,45	36,86	16,46	7,50	0,46
2007	0,67	46,03	14,01	8,49	0,61
2008	2,20	43,40	15,67	7,48	0,48
2009	0,93	53,12	20,56	10,38	0,51
2010	3,10	49,79	24,89	10,91	0,44
2011	2,70	55,40	20,86	9,49	0,45
2012	0,27	42,63	14,61	7,32	0,50
2013	1,18	39,60	15,88	7,57	0,48

Źródło: obliczenia własne.

Ważną zmienną mającą istotny wpływ na poziom rozwoju lokalnego jest udział wydatków inwestycyjnych w ogólnych wydatkach poniesionych przez gminę w danym okresie. Średni poziom tej zmiennej kształtował się od 14,71% w roku 2005 do 15,88% w roku 2013. Należy zauważyć jednak, że wielkość ta zmieniała się w poszczególnych latach, osiągając najwyższą wartość w roku 2010 (prawie 25%). Różnice pomiędzy maksymalną a minimalną wartością udziału wydatków inwestycyjnych w ogólnych wydatkach gmin są ogromne. Są przykładowo gminy, w których udział ten kształtował się nawet na poziomie 55,4% w roku 2011 (np. gmina wiejska Krzeszów), ale są i takie, w których udział wydatków inwestycyjnych w ogólnych wydatkach gminy jest znikomy np. 0,27% w roku 2012 (np. w gminie miejsko-wiejskiej Rudnik nad Sanem).

Tabela 3. Podstawowe miary statystyczne dla wskaźnika C w gminach województwa podkarpackiego w latach 2005–2013

Lata	Minimum	Maksimum	Średnia	Odchylenie standardowe	Współczynnik zmienności
2005	2,85	33,56	9,66	4,00	0,41
2006	2,56	31,43	9,21	3,76	0,41
2007	2,28	29,30	8,76	3,84	0,44
2008	3,10	53,30	17,02	8,99	0,53
2009	3,20	51,00	16,14	8,10	0,50
2010	2,83	43,10	14,83	6,92	0,47
2011	2,91	35,04	13,68	5,70	0,42
2012	3,15	43,31	13,87	6,07	0,44
2013	3,10	43,30	13,82	6,08	0,44

Źródło: obliczenia własne.

Niepokojącym zjawiskiem w podkarpackich gminach są znaczne rozpiętości wskaźnika stopy ubóstwa w %. Istnieją gminy, w których wskaźnik ten utrzymuje się na niewielkim poziomie (około 3%), ale są i gminy, w których liczba mieszkańców otrzymujących pomoc za pośrednictwem gminnych służb pomocy społecznej stanowi nawet od 30 do ponad 50%.

Średnia wartość stopy ubóstwa w podkarpackich gminach wynosiła w badanym okresie od 9,66% do 13,82%. Najwyższy poziom średni tego wskaźnika osiągnęły badane

gminy w roku 2008 (17,02%). Począwszy od roku następnego średni poziom wskaźnika spadał, osiągając w ostatnich trzech badanych latach wielkość około 14%. Wyrazem dość znacznych dysproporcji pomiędzy gminami pod względem wartości wskaźnika liczby mieszkańców otrzymujących pomoc za pośrednictwem gminnych służb pomocy społecznej są wartości otrzymanego współczynnika zmienności, świadczącego o umiarkowanej zmienności gmin pod względem wskaźnika C.

Tabela 4. Podstawowe miary statystyczne dla wskaźnika D w gminach województwa podkarpackiego w latach 2005–2013

Lata	Minimum	Maksimum	Średnia	Odchylenie standardowe	Współczynnik zmienności
2005	7,64	23,89	13,97	3,13	0,22
2006	6,50	22,10	12,33	2,91	0,24
2007	5,30	18,90	10,65	2,80	0,26
2008	4,80	19,20	9,66	2,83	0,29
2009	2,41	29,54	11,72	3,33	0,28
2010	6,90	19,50	11,47	2,75	0,24
2011	7,30	20,50	11,76	2,76	0,23
2012	7,80	19,90	12,33	2,80	0,23
2013	7,68	20,05	12,34	2,88	0,23

Źródło: obliczenia własne.

Jednym z czynników wpływających na poziom ubóstwa w gminach województwa podkarpackiego jest stopa bezrobocia w %. Średnia wartość tego wskaźnika w gminach województwa podkarpackiego w latach 2005–2008 spadała z 13,97% do 9,66%, a od 2009 do 2013 roku kształtowała się na poziomie około 12%. Gminy są zróżnicowane pod względem wartości stopy bezrobocia w kolejnych badanych latach, jednak nie jest ono duże (w granicach od 22 do 29%).

W następnym etapie badań dokonano normalizacji wyjściowych wartości wskaźników A i B, według wzoru (1) oraz C i D według wzoru (2). Normalizacji dokonano w sposób dynamiczny, przyjmując wartości maksimum, minimum i rozstępu zastosowanych wskaźników dla okresu 2005–2013 zawarte w tabeli 5.

Tabela 5. Wartości przyjęte do normalizacji zmiennych wyjściowych

Wartość	A	B	C	D
maksimum	75,05	55,40	53,30	29,54
minimum	9,52	0,27	2,28	2,41
rozstęp	65,53	55,13	51,02	27,12

Źródło: obliczenia własne.

Wyznaczając średnią arytmetyczną znormalizowanych wskaźników cząstkowych obliczono w latach 2005–2013 wartości WRWT dla każdej gminy[21], a następnie dokonano podziału gmin na klasy o wysokim, średniowysokim, średnioniskim i niskim poziomie rozwoju lokalnego według schematu (3). Otrzymane wyniki zaprezentowano dla 2005 roku w tabeli 6.

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[21] Obliczenia wykonano dla wszystkich 9 lat okresu 2005–2013, jednak z uwagi na znaczne rozmiary tabel wyniki zaprezentowano dla skrajnych lat, tj. dla 2005 i 2013 roku.

Tabela 6. Ranking gmin województwa podkarpackiego pod względem wartości WRWT w 2005 roku w podziale na grupy rozwojowe

Poziom rozwoju lokalnego	Gminy	Liczba gmin
Grupa I (wysoki)	Mielec(1) 0,228; Sanok(1) 0,221; Stalowa Wola(1) 0,198; Stary Dzików(2) 0,197; Leżajsk(1) 0,177; Łańcut(1) 0,159 ; Solina(2) 0,156; Dębica(1) 0,152; Jarosław(1) 0,148; Krościenko Wyżne(2) 0,140; Medyka(2) 0,135; Rymanów(3) 0,127; Ropczyce(3) 0,126; Jedlicze(3) 0,123; Cisna(2) 0,118; Boguchwała(3) 0,118; Orły(2) 0,106; Jasło(1) 0,106; Krasne(2) 0,105; Tyczyn(3) 0,104; Przeworsk(1) 0,101; Białobrzegi(2) 0,098; Rokietnica(2) 0,094; Głogów Małopolski(3) 0,093; Żurawica(2) 0,089; Żyraków(2) 0,088; Nowa Sarzyna(3) 0,087; Trzebownisko(2) 0,087.	28
Grupa II (średnio-wysoki)	Lubaczów(1) 0,078; Markowa(2) 0,073; Tryńcza(2) 0,072; Wojaszówka(2) 0,070; Kolbuszowa(3) 0,067; Nowa Dęba(3) 0,067; Majdan Królewski(2) 0,065; Lesko(3) 0,063; Nisko(3) 0,063; Zagórz(3) 0,062; Grębów(2) 0,059; Gorzyce(2) 0,057; Wadowice Górne(2) 0,050; Dębica(2) 0,047; Zaleszany(2) 0,043; Tuszów Narodowy(2) 0,042; Leżajsk(2) 0,042; Iwonicz-Zdrój(3) 0,039; Łańcut(2) 0,039; Krasiczyn(2) 0,038; Komańcza(2) 0,038; Radymno(1) 0,035; Gawłuszowice(2) 0,034; Czermin(2) 0,030; Iwierzyce(2) 0,029; Pilzno(3) 0,029; Bojanów(2) 0,028; Mielec(2) 0,027; Pawłosiów(2) 0,025; Świlcza(2) 0,024; Sanok(2) 0,022; Radomyśl nad Sanem(2) 0,021; Grodzisko Dolne(2) 0,020; Przemyśl(2) 0,019; Krzeszów(2) 0,018; Padew Narodowa(2) 0,016; Korczyna(2) 0,016; Nowy Żmigród(2) 0,012; Miejsce Piastowe(2) 0,012; Lubenia(2) 0,010; Pysznica(2) 0,010; Kuryłówka(2) 0,001.	42
Grupa III (średnio-niski)	Raniżów(2) -0,003; Bukowsko(2) -0,005; Besko(2) -0,006; Gać(2) -0,006; Błażowa(3) -0,008; Strzyżów(3) -0,008; Narol(3) -0,008; Horyniec-Zdrój(2)-0,008; Pruchnik(2) -0,008; Chłopice(2) -0,010; Chorkówka(2) -0,011; Ulanów(3) -0,012; Kańczuga(3) -0,012; Jodłowa(2) -0,013; Dynów(1) -0,014; Zarzecze(2) -0,016; Ustrzyki Dolne(3) -0,017; Baranów Sandomierski(3) 0,021; Niwiska(2) -0,022; Wiązownica(2) -0,023; Adamówka(2) -0,024; Sędziszów Małopolski(3)-0,024; Hyżne(2) -0,024; Krzywcza(2) -0,026; Rudnik nad Sanem(3) -0,028; Sieniawa(3) -0,029; Brzozów(3) -0,029; Zaklików(2) -0,029; Ostrów(2) -0,032; Przeworsk(2) -0,033; Borowa(2) -0,033; Zarszyn(2) -0,036; Dukla(3)-0,037; Tarnowiec(2)-0,039; Lubaczów(2) -0,044; Baligród(2) -0,046; Frysztak(2)-0,046; Cmolas(2) -0,047; Haczów(2) -0,047; Czarna(2) -0,048; Czarna(2) -0,048; Czarna(2) -0,048; Kamień(2) -0,050; Sokołów Małopolski(3) -0,052; Żołynia(2)-0,055; Jeżowe(2) -0,056; Roźwienica(2) -0,059; Niebylec(2) -0,060; Wielkie Oczy(2) -0,068; Radymno(2) -0,068; Jarosław(2) -0,071; Dzikowiec(2) -0,071; Cieszanów(3) -0,073; Dębowiec(2) -0,073; Chmielnik(2) -0,075; Dubiecko(2) -0,075; Dynów(2) -0,079; Jasło(2) -0,084.	58
Grupa IV (niski)	Radomyśl Wielki(3)-0,090; Jarocin(2) -0,093; Osiek Jasielski(2) -0,093; Czudec(2) -0,102; Rakszawa(2) -0,102; Przecław(2) -0,103; Oleszyce(3) -0,104; Jawornik Polski(2) -0,109; Bircza(2) -0,109; Wiśniowa(2) -0,112; Dydnia(2)-0,113; Wielopole Skrzyńskie(2) -0,114; Stubno(2) -0,114; Harasiuki(2) -0,118; Skołyszyn(2) -0,120; Laszki(2) -0,140; Olszanica(2) -0,140; Brzyska(2) -0,144; Brzostek(3) -0,148; Jasienica Rosielna(2) -0,148; Tyrawa Wołoska(2) -0,152; Lutowiska(2) -0,152; Fredropol(2) -0,153; Kołaczyce(2) -0,160; Krempna(2)-0,162; Nozdrzec(2) -0,164; Domaradz(2) -0,199.	27

(1) – gmina miejska; (2) – gmina wiejska; (3) – gmina miejsko-wiejska. W nawiasach obok nazwy gminy podano wartość wskaźnika WRWT.

Źródło: opracowanie własne.

Na podstawie informacji zawartych w tabeli 6 można zauważyć, że w 2005 roku do grupy gmin o wysokim poziomie rozwoju lokalnego (grupa I) zakwalifikowano 28 jednostek terytorialnych, w tym 9 gmin miejskich, 12 gmin wiejskich i 7 gmin miejsko-wiejskich.

Grupę II o średniowysokim poziomie rozwoju lokalnego utworzyły 42 gminy, w tym 2 gminy miejskie, 33 gminy wiejskie oraz 7 gmin miejsko-wiejskich.

Najliczniejszą grupą jest grupa III zawierająca gminy o średnioniskim poziomie rozwoju. Wśród 58 jednostek terytorialnych znalazła się tylko 1 gmina miejska, 43 gminy wiejskie oraz 14 gmin miejsko-wiejskich.

Natomiast do grupy o niskim poziomie rozwoju (grupa IV) zaliczono 24 gminy wiejskie i 3 miejsko-wiejskie.

Graficzną prezentacją otrzymanych grup gmin o podobnym poziomie rozwoju lokalnego dla 2005 roku jest rys. 1.

Rys. 1. Klasyfikacja gmin województwa podkarpackiego na grupy o podobnym poziomie rozwoju lokalnego w 2005 roku
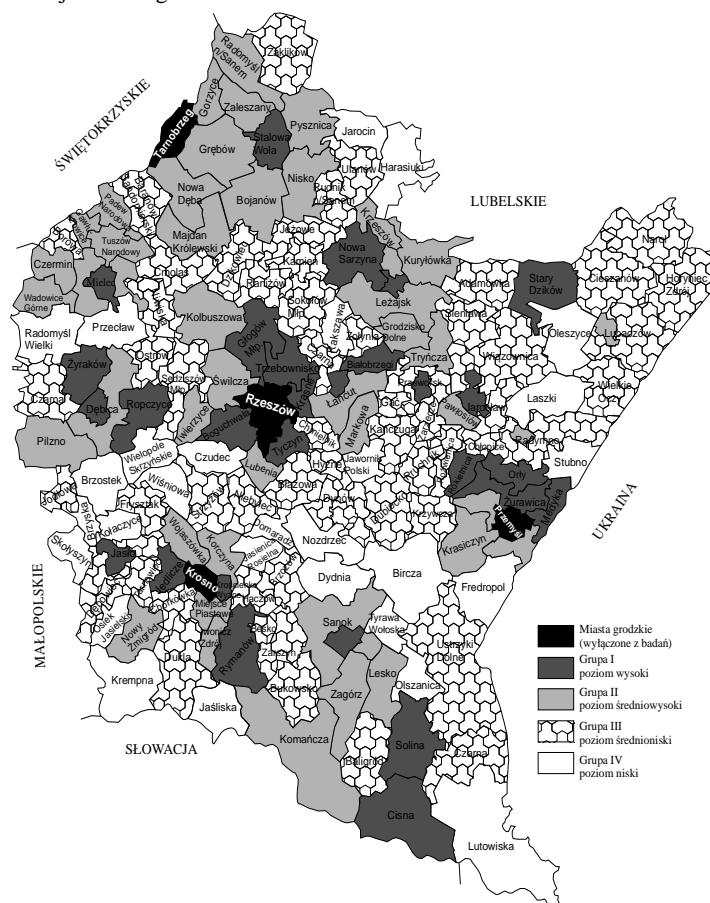
Źródło: opracowanie własne.

Cechy charakterystyczne wydzielonych grup gmin o różnym poziomie rozwoju lokalnego można określić analizując średnie wartości wyjściowe wskaźników A, B, C, D dla poszczególnych grup gmin (tabela 7).

Tabela 7. Średnie wartości wyjściowe wskaźników A, B, C, D w wydzielonych pod względem wartości WRWT grupach gmin województwa podkarpackiego w 2005 roku*

Grupy gmin	A	B	C	D
Grupa I	**46,16**	**22,99**	**7,11**	**11,91**
Grupa II	30,89	16,59	7,86	12,16
Grupa III	24,20	12,83	9,92	14,52
Grupa IV	20,34	7,26	14,53	17,71

*czcionką pogrubioną zaznaczono najkorzystniejsze wartości wskaźników w badanych grupach gmin
Źródło: obliczenia własne.

Spośród analizowanych grup gmin województwa podkarpackiego, grupa I skupiająca gminy o wysokim poziomie rozwoju lokalnego osiągnęła najkorzystniejsze wartości wszystkich czterech wskaźników: najwyższe wartości wskaźnika A – udziału dochodów własnych gmin województwa podkarpackiego w całkowitych dochodach gmin w % (46,16%) i B – udziału wydatków inwestycyjnych w ogólnych wydatkach poniesionych przez gminę w % (22,99%) oraz najniższe wskaźników: C – stopy ubóstwa w % (7,11%) i D – stopy bezrobocia w % (11,91%). Kolejne wydzielone grupy gmin charakteryzowały się coraz gorszymi wartościami średnimi wyjściowych wskaźników A, B, C, D.

W celu porównania, czy nastąpiły zmiany w poziomie rozwoju lokalnego gmin województwa podkarpackiego, w tabeli 8 zamieszczono wyniki grupowania gmin pod względem wartości WRWT dla 2013 roku.

Tabela 8. Ranking gmin województwa podkarpackiego pod względem wartości WRWT w 2013 roku w podziale na grupy rozwojowe

Poziom rozwoju lokalnego	Gminy	Liczba gmin
Grupa I (poziom wysoki)	Zagórz(3) 0,222; Stalowa Wola(1) 0,219; Mielec(1) 0,215; Łańcut(1) 0,193; Trzebownisko(2) 0,180; Solina(2) 0,173; Sanok(1) 0,172; Leżajsk(1) 0,151; Lubaczów(1) 0,148; Stary Dzików(2) 0,141; Nowa Dęba(3) 0,139; Nisko(3) 0,137; Boguchwała(3) 0,136; Przeworsk(1) 0,128; Krasne(2) 0,126; Jedlicze(3) 0,124; Radymno(1) 0,124; Głogów Małopolski(3) 0,111; Dębica(1) 0,110; Jarosław(2) 0,105; Jarosław(1) 0,104; Dębica(2) 0,101; Lubenia(2) 0,099; Jasło(1) 0,098; Ropczyce(3) 0,098.	25

Tabela 8 (cd.). Ranking gmin województwa podkarpackiego pod względem wartości WRWT w 2013 roku w podziale na grupy rozwojowe

Poziom rozwoju lokalnego	Gminy	Liczba gmin
Grupa II (poziom średnio-wysoki)	Wojaszówka(2) 0,094; Mielec(2) 0,093; Gorzyce(2) 0,081; Medyka(2) 0,080; Komańcza(2) 0,080; Ostrów(2) 0,080; Kolbuszowa(3) 0,079; Baranów Sandomierski(3) 0,076; Pysznica(2) 0,076; Świlcza(2) 0,073; Pawłosiów(2) 0,072; Czarna(2) 0,070; Krościenko Wyżne(2) 0,069; Ulanów(3) 0,066; Pilzno(3) 0,066; Rymanów(3) 0,063; Krzeszów(2) 0,062; Korczyna(2) 0,055; Zaleszany(2) 0,054; Łańcut(2) 0,054; Sędziszów Małopolski(3) 0,050; Tyczyn(3) 0,049; Chłopice(2) 0,045; Tuszów Narodowy(2) 0,042; Grębów(2) 0,042; Czermin(2) 0,040; Wielkie Oczy(2) 0,038; Miejsce Piastowe(2) 0,038; Błażowa(3) 0,034; Lesko(3) 0,034; Leżajsk(2) 0,034; Chmielnik(2) 0,034; Markowa(2) 0,033; Olszanica(2) 0,033; Hyżne(2) 0,033; Gawłuszowice(2) 0,032; Osiek Jasielski(2) 0,028; Sanok(2) 0,027; Tryńcza(2) 0,027; Sokołów Małopolski(3) 0,025; Narol(3) 0,025; Cieszanów(3) 0,024; Ustrzyki Dolne(3) 0,022; Orły(2) 0,021; Horyniec-Zdrój(2) 0,019; Sieniawa(3) 0,016; Żurawica(2) 0,016; Kańczuga(3) 0,016; Radymno(2) 0,016.	49
Grupa III (poziom średnioniski)	Zarszyn(2) 0,011; Przecław(2) 0,011; Radomyśl Wielki(3) 0,011; Radomyśl nad Sanem(2) 0,011; Żyraków(2) 0,010; Strzyżów(3) 0,009; Lubaczów(2) 0,009; Białobrzegi(2) 0,008; Grodzisko Dolne(2) 0,008; Rokietnica(2) 0,007; Stubno(2) 0,007; Borowa(2) 0,006; Majdan Królewski(2) 0,003; Dynów(1) 0,003; Haczów(2) 0,000 ; Nowa Sarzyna(3) 0,000; Cisna(2)-0,001; Wiązownica(2) -0,002; Chorkówka(2) -0,002; Bukowsko(2) -0,003; Kuryłówka(2) -0,003; Dębowiec(2) -0,005; Krasiczyn(2) -0,006; Pruchnik(2) -0,011; Zaklików(2) -0,012; Gać(2) -0,013; Niwiska(2) -0,015; Padew Narodowa(2) -0,015; Adamówka(2) -0,017; Wadowice Górne(2) -0,019; Besko(2) -0,022; Tarnowiec(2) -0,023; Brzózów(3) -0,025; Iwonicz-Zdrój(3)-0,026; Bojanów(2) -0,033; Żołynia(2) -0,033; Oleszyce(3) -0,034; Dzikowiec(2) -0,035; Niebylec(2) -0,036; Przemyśl(2) -0,039; Lutowiska(2)-0,040; Jasło(2) -0,041; Roźwienica(2) -0,042; Czarna(2) -0,043; Krzywcza(2)-0,043; Iwierzyce(2) -0,044; Czarna(2) -0,045; Cmolas(2) -0,046; Dukla(3)-0,046; Zarzecze(2) -0,046; Jasienica Rosielna(2) -0,053; Raniżów(2) -0,054; Skołyszyn(2) -0,055; Przeworsk(2) -0,059; Jodłowa(2) -0,060; Tyrawa Wołoska(2) -0,061; Krempna(2) -0,067.	57
Grupa IV (poziom niski)	Baligród(2) -0,070; Laszki(2) -0,070; Wiśniowa(2) -0,073; Nowy Żmigród(2)-0,077; Kołaczyce(2) -0,078; Frysztak(2) -0,087; Brzostek(3) -0,090; Jarocin(2) -0,093; Jawornik Polski(2) -0,093; Rudnik nad Sanem(3) -0,095; Czudec(2)-0,098; Kamień(2) -0,100; Wielopole Skrzyńskie(2) -0,102; Rakszawa(2)-0,102; Jeżowe(2) -0,109; Fredropol(2) -0,112; Dynów(2) -0,120; Domaradz(2) -0,137; Dydnia(2) -0,139; Dubiecko(2) -0,147; Brzyska(2) -0,148; Bircza(2) -0,153; Nozdrzec(2) -0,184; Harasiuki(2) -0,186.	24

(1) –gmina miejska; (2) –gmina wiejska; (3) –gmina miejsko-wiejska. W nawiasach obok nazwy gminy podano wartość wskaźnika WRWT

Źródło: opracowanie własne.

W 2013 roku, do grupy o wysokim poziomie rozwoju lokalnego zakwalifikowano 25 gmin, w tym 11 miejskich, 7 wiejskich i 7 gmin miejsko-wiejskich. Grupę II o średniowysokim poziomie rozwoju lokalnego utworzyło 49 gmin, w tym 34 wiejskie i 15 miejsko-wiejskich.

Podobnie, jak w 2005 roku, najliczniejszą grupą gmin była grupa III o średnioniskim poziomie rozwoju lokalnego zawierająca 57 gmin, w tym 1 gminę miejską, 49 wiejskich i 7 miejsko-wiejskich. Natomiast 24 gminy, w tym 22 wiejskie i 2 miejsko-wiejskie utworzyły grupę o niskim poziomie rozwoju lokalnego.

Graficzną prezentacją otrzymanych grup gmin o podobnym poziomie rozwoju lokalnego dla 2013 roku jest rys. 2.

Rys. 2. Klasyfikacja gmin województwa podkarpackiego na grupy o podobnym poziomie rozwoju lokalnego w 2013 roku
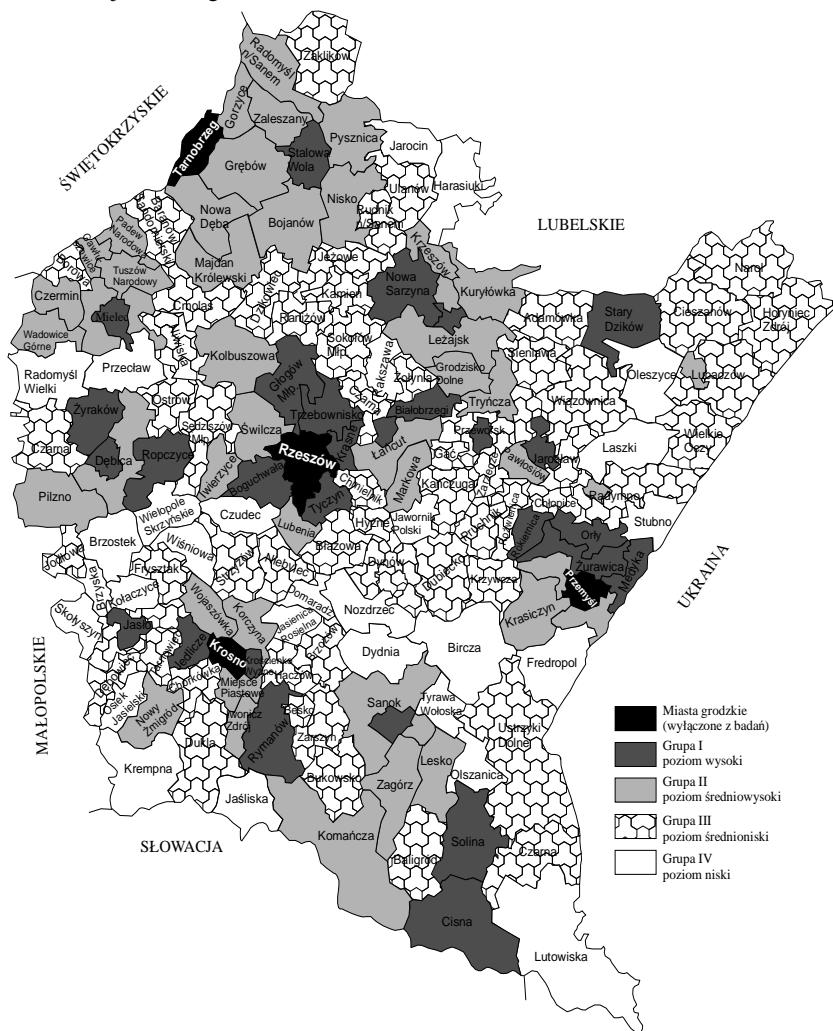
Źródło: opracowanie własne.

Średnie wartości wyjściowe wskaźników A, B, C, D w wydzielonych pod względem wartości WRWT grupach gmin województwa podkarpackiego w 2013 roku prezentuje tabela 9.

Tabela 9. Średnie wartości wyjściowe wskaźników A, B, C, D w wydzielonych pod względem wartości WRWT grupach gmin województwa podkarpackiego w 2013 roku

Grupy gmin	A	B	C	D
Grupa I	**50,68**	**20,28**	**8,20**	**10,71**
Grupa II	34,40	17,85	11,70	11,43
Grupa III	29,00	14,14	14,68	12,70
Grupa IV	23,38	11,78	21,84	15,45

Źródło: obliczenia własne.

Okazało się, że podobnie jak w 2005 roku, tak i w 2013 roku, najkorzystniejsze średnie wartości wyjściowe wskaźników A, B, C, D odnotowano dla grupy I, czyli dla gmin o wysokim poziomie rozwoju lokalnego. W pozostałych grupach obserwuje się coraz mniej korzystne średnie wartości wyjściowe badanych wskaźników.

Do oceny podobieństwa wyników porządkowania liniowego zbioru obiektów (gmin województwa podkarpackiego) w 2005 i 2013 roku zastosowano miernik opracowany przez M. Walesiaka (wzory 5–8).

Otrzymano następujące wyniki:

$$P_{rs}^2 = 0,003626 \,, \quad P_1^2 = 0,000226 \,, \quad P_2^2 = 0,000033 \,, \quad P_3^2 = 0,003367 \,, \text{ przy czym}$$

$$\overline{p}_{.r} = -0,0017, \quad \overline{p}_{.s} = 0,0133 \quad S_r = 0,0872, \quad S_s = 0,0815, \quad \rho = 0,7631 \,.$$

Uzyskane wartości miar wskazują na pewne zmiany w wartościach wskaźnika WRWT otrzymanych dla 2005 i 2013 roku. Nastąpił wzrost średniego poziomu oraz spadek zróżnicowania wartości wskaźnika. Obserwuje się także dość wysoką zgodność kierunku zmian wartości wskaźnika WRWT w porównywanych latach.

5. PODSUMOWANIE

Rozwój lokalny jest zjawiskiem złożonym i trudno definiowalnym. Ogólnie dotyczy wszelkich zmian „na lepsze" mających miejsce w danym lokalnym układzie.

W artykule dokonano statystycznej oceny poziomu rozwoju lokalnego gmin województwa podkarpackiego w latach 2005–2013 na podstawie zmiennych zaproponowanych przez R. Czyszkiewicza. Do badania gmin wykorzystano zmodyfikowany Wskaźnik Rozwoju Wspólnot Terytorialnych.

Uzyskane wyniki badań w postaci wskaźnika syntetycznego pozwoliły ukazać i ocenić miejsce danej wspólnoty na tle innych jednostek terytorialnych. Mogą stać się podstawą prowadzonej polityki lokalnej, w tym podejmowanych decyzji prorozwojowych przez władze samorządowe. Każdy bowiem samorząd gminy jest w sposób bezpośredni i pośredni odpowiedzialny za podległe sobie terytorium. Zebrane w ten sposób informacje ułatwią władzom lokalnym dokonanie realnej oceny sytuacji społeczno-gospodarczej danej gminy, co może mieć przełożenie na przygotowanie odpowiednich programów i działań o charakterze strategicznym.

Etapy postępowania badawczego obejmowały:
– W latach 2005–2013 oceniono gminy województwa podkarpackiego pod względem poszczególnych wskaźników określających ich poziom rozwoju lokalnego (wskaźniki A, B, C, D) wyznaczając dla nich podstawowe miary statystyczne.
– Obliczono wartości Wskaźnika Rozwoju Wspólnot Terytorialnych dla poszczególnych gmin województwa podkarpackiego i na jego podstawie dokonano klasyfikacji badanych gmin na grupy o wysokim, średniowysokim, średnioniskim i niskim poziomie rozwoju lokalnego. Wyniki zaprezentowano dla 2005 i 2013 roku. Mogą być one podstawą budowy odpowiednich strategii rozwojowych dla poszczególnych typów gmin.
– W przypadku 91 gmin województwa podkarpackiego (prawie 60% badanych) nastąpił wzrost wartości wskaźnika WRWT w 2013 w stosunku do 2005 roku. Pozytywne zmiany rozwojowe gmin potwierdziły także wartości miernika M. Walesiaka wskazujące na wzrost średniego poziomu, spadek zróżnicowania, a także wysoką zgodność kierunku zmian wartości wskaźnika WRWT w porównywanych latach dla badanych gmin województwa podkarpackiego.

Podsumowując stwierdzić należy, że w latach 2005–2013, w przypadku większości gmin województwa podkarpackiego nastąpiły pozytywne zmiany wskazujące na dokonujący się w nich proces rozwojowy. Należy jednak zauważyć, że rozwój lokalny jest procesem długotrwałym, a jego widoczne efekty można obserwować w dłuższej perspektywie czasowej.

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STATISTICAL EVALUATION OF LOCAL GOVERNMENTS DEVELOPMENT LEVEL OF PODKARPACKIE PROVINCE IN THE YEARS 2005–2013

One of the main aims of each territorial unit is the pursuit of development. Development is a complex phenomenon, hardly definable. It consists of various factors of a different nature as well as various strength of impact. Local development is often defined as the process of quantitative and qualitative changes that are taking place in the social and economic functioning of the local government units. The article presents results of research assessing the level of local development in 155 communities of the Podkarpackie Province in the years 2005–2013. The analysis used R.Czyszkiewicz Territorial Development Communities indicator in the dynamic version. Statistical data used in the analysis come from the Local Data Bank, published by the Central Statistical Office. Based on calculated ratio grouping of communities was made, distinguishing communities with high, medium-high, medium-low and low level of development. The results indicate considerable differences in the communities' development level. Municipalities and urban-rural communities can be characterized with higher level of local development, while typically rural communities have mainly low level of development. To sum up it can be noted that in the years 2005–2013 in majority of municipalities of the Podkarpackie Province positive changes due to development processes were observed. However, it should be emphasized that local development is a long process and its visible effects can be observed in the long time perspective. Research results may be used by local authorities and institutions responsible for development to improve local policy, implementation of appropriate organizational activities as well as can influence the programs preparation of strategic nature.

Keywords: development, level of local development, determinants of development, synthetic indicator

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RISK MANAGEMENT IN ISO 9000:2015 STANDARDS

The paper presents analyses of changes in the revised ISO 9001:2015 on quality management. Additionally a relatively new requirement emerged in the guidelines to a process approach,. It is the need for a systematic approach to risk assessment. In the three-year transitional period, most organizations will implement such an approach to risk assessment. The most difficult to interpret elements of the new standard is an orientation of activities at risk. Orientation of activities at risk is the most difficult elements of the new standard to interpret. Especially, that ISO 9001:2015 does not specify exactly how the implementation of risk management should look like. Therefore, in the article, next to the requirements analysis, the concept of the six-level methods of the approach implementation was proposed. The matrix method was used where two elements were evaluated: probability of risks and potential impact of risks. Each element can be assessed, e.g. in a 6-point scale, assigning different weights. The assessment of the risk probability consists in assigning to each of the risk types the score from 0 to 1 (every 0,2), and the impact assessment on a scale from 1 to 6 (analogous to the notes). When assessing the risk one should remember that the norm, especially in the context of the organization, requires attention not only to the so-called negative risk, but also chances (potential benefits). Both avoidance of adverse events and exploitation of opportunities is the foundation of risk management. The use of the proposed concept can contribute to the efficient and effective implementation of the requirements of ISO 9001:2015.

Keywords: ISO 9001, risk assessment, quality management system, risk management, quality management

1. INTRODUCTION

Environment and economic conditions, which are changing rapidly, make organizations take systematic measures to prevent any inconsistency of internal or external nature. Risk management is becoming an inherent element of management. This aspect of management was heavily exposed in the revised in 2015 ISO 9000 standards on quality management. Of course, previous editions of ISO 9001 also alluded indirectly to the risk of ventures, but they did not do it in such an obvious way as the edition of 2015. Therefore, organizations which have already implemented quality management system, and there are approx. 1.2 million of them in the word, and in Poland approx. 10 110[3], in a transitional period until 15 September 2018 year would have to expose stronger and apply in practice the principles of risk management. Therefore, in the article the analysis of the require-

ments of ISO 9001:2015 in risk assessment was done. The generalized way of implementing the standard was also proposed. It can be used directly or after modification resulting from the peculiarity of an organization.

2. ISO 9001 – THE REVISION

International ISO 9001 standard is reviewed regularly. The last update was in September 2015. The Technical Committee decided that it was necessary to revise the standard in order to adapt to rapidly changing conditions where organizations were functioning. Among other priorities of the revision the Committee TC 176 decided to implement were:
- supporting organizations in the area of raising customer satisfaction,
- paying more attention to customer needs,
- preparing organizations to function in a more coherent foundation of integrated management systems,
- paying closer attention to the environment in which organizations operate,
- ensuring that the new standard meets the needs of all stakeholders,
- drawing attention to the need to continuously analyze risks and opportunities[4].

The prepared draft of ISO 9001:2015 standard was distributed for an evaluation and reviews already in 2014. The Committee gathered about 3,000 comments, which were later included in the final version of the standard.

The new (from 2015) standard was drawn up in an innovative form (ISO REGULATION – ANNEX SL 2013), which is common for all new standards of management systems. This should allow an easy integration of systems in the implementation of more than one system[5]. The already mentioned annex imposes a common text, a common structure and terminology in all of the revised standards: ISO 9001, ISO 14001, OHSAS 18001 (ISO 45000) and ISO 27001[6]. The current table of contents of ISO 9001 is as follows:

1. The scope.
2. Normative reference.
3. Terms and definitions.
4. Context of the organization.
5. Leadership.
6. Planning.
7. Support.
8. Operational activities.
9. Evaluation of the effects.
10. Improvement.

Annex A (informative) Explanation of the new structure, terminology and concepts. Annex B (informative) Other International Standards on quality management and quality management systems developed by ISO / TC 176.

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[4] *Znaczenie ryzyka w zarządzaniu jakością. Jak podchodzić do zmian?, access, http://www.bsigroup.com/ISO-9001-2015,* on 8.09.2016.

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[6] A. Kleniewski, *Zarządzanie ryzykiem w systemach zarządzania jakością, środowiskiem, bezpieczeństwem i higieną pracy – praktyczne rozwiązania,* „Problemy Jakości", nr 11, 2011, R. 43, pp. 23–27.

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In line with the priorities in ISO 9001:2015 the main proposed changes are:
- requiring the use of a process approach,
- focus on leadership,
- paying attention to risk management,
- emphasis on goals, measurement and change management,
- communication and awareness,
- lower number of requirements as orders[8].

Looking more specifically looking at the changes in ISO 9001:2015 one may notice that:
- the information on the approach system was removed,
- requirements for cooperation with suppliers were replaced by "relationship management",
- the requirements concerning quality manual were removed,
- preventive actions were abandoned,
- information concerning process management, which have not constituted requirements so far, after the revision became requirements – the rank of process increased,
- thanks to procedures the system became less bureaucratic (with the exception of the required system procedures),
- requirements concerning risk management appeared.

The standard introduces a set of requirements, which, as it is planned, will remain valid for at least the next ten years or longer. The requirements are rather general, but are associated with modern management. The requirements apply to all types and sizes companies, regardless of the sector of the economy. Focusing on the effective management of processes, the standard requires at the same time to pay attention to the risk that accompanies any activity. The compliance with these requirements seems to be the key to competitive success of many organizations.

3. RISK MANAGEMENT IN ISO 9001:2015

One of the major changes in the updated ISO 9001:2015 is a systemic approach to risk. The standard makes manage risk in a systematic way, rather than treating it as a single element of the quality management system as it was before. In previous editions of ISO 900 the risk appeared in the section on preventive measures, which in current edition has been removed. Assuming the current approach based on risk assessment, the organization consciously and actively should prevent or reduce side effects by promoting a continuous improvement[9].

ISO 9001:2015 standard in its requirements did not specify the methodology or does not make adhere to specific standards in the area of risk, i.e. e.g.:
- PN-ISO 31000:2012 Risk Management – Principles and guidelines,

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[7] *PN-EN ISO 9001:2015-10 – Polish version*, PKN, Warszawa 2016.

[8] *PN-EN ISO 9000:2015-10 – Polish version*, PKN, Warszawa 2016.

[9] S. Zapłata, *Methods of Risk Assessment for the Purpose of Normalized Management Systems Implementation*, "Współczesne Zarządzanie" 1/2012, pp. 9–19.

- ISO 22301 Business continuity management system,
- ISO 19600 Compliance of management systems – Guidelines,
- Standard risk management FARM 2002 – Directives of the organization Federation of European Risk Management Associations,
- Management of corporate risk – integrated framework structure, COSO 2004.

The standard puts a great emphasis on taking into account the requirements for understanding, "the organization and its context" and "needs and expectations of stakeholders". On this basis, it is necessary to manage skilfully the specific risks which are adapted to the specific organizations. It follows that for all types of organizations there is a need to understand the risks undertaken by the pursuit of goals[10]. Above all, organizations must understand the overall level of risk in their processes and operations. Risk processes affect the measurement results and processes which in turn are correlated with the objectives of the system stored in the policy of quality. Thus, the risk of uncertainty concerns the implementation of the objectives of the scheme, which is to provide products according to customer requirements. Knowing the risks and discovering ways in which risks can be mitigated, the organization gets an opportunity to make changes for the better or could improve. The requirements for risk management are presented in Table 1.

Table 1. Generalized requirements of ISO 9001:2015 in terms of risk-based approach

In Point 4 organization is required to identify threats that may affect its ability to achieve the objectives of the system. It is recognized that the consequences of the risks are not the same for all organizations.	In Point 5 management is required to demonstrate leadership and to ensure that the risks and opportunities that may affect compliance with the requirements for the product or service, are defined and allocated.
In Point 6 the standard requires that the organization is required to identify risks and plan a way to address the identified threats and chances.	In point 7 the standard requires the establishment of risk management processes.
In Point 8 the requirements are: monitoring, evaluation, analysis and verification of risk and the possibility of a chance.	In Point 9 the organization is committed to measure and evaluate risks and opportunities.
In Point 10 the organization is committed to excellence by responding to changes in risk.	

Source: own research based upon[11].

Speaking about the risks it should be emphasized that the norm, especially in the context of the organization requires attention not only to the so-called negative risk, but also the chances (potential benefits). Both the avoidance of adverse events as well as the exploitation of opportunities is the foundation of risk management.

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[10] *PN-ISO 31000:2012, Zarządzanie ryzykiem – Zasady i wytyczne,* PKN, Warszawa 2012.

[11] *PN-EN ISO 9001:2015-10 – Polish version,* PKN, Warszawa 2016.

4. AN APPROACH DIRECTED TO RISK ASSESSMENT

Orientation of activities at risk is one of the most difficult elements of the new standard to interpret. Especially, that ISO 9001: 2015 does not specify exactly how the way of implementation of risk management should look like.

The introduction of the requirements of ISO 9001:2015 in some organizations in terms of risk management will not change or changes are very little. The vast majority of organizations will only have to implement a targeted approach to risk assessment in their organizational processes. Methodically it can be done in 6 steps as shown in Fig. 1

Fig. 1. Methodology of the approach based upon the risk

| 1. Operation analysis |
| 2. Risk identification (threats) and chances (possibilities) |
| 3. Analysis and importance of risks and sometimes chances |
| 4. Development of operation plan in response to threats and chances |
| 5. Implementation of operation plan |
| 6. Checking the operations efficiency |
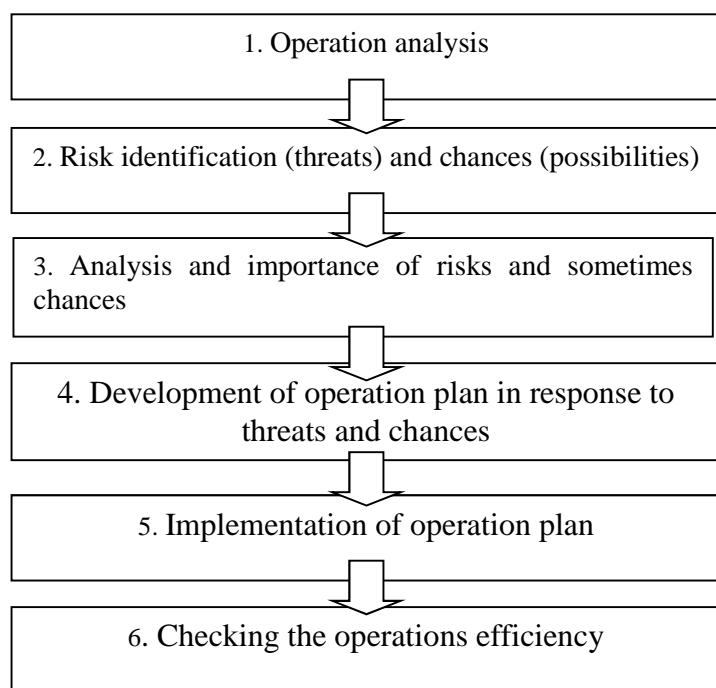
Source: own research based upon[12].

Based on the analysis of mostly current business activity and identified processes, one should adopt a method of identifying risks. Most often in organizations that have implemented environmental management systems or safety standards such activities do not cause a problem, because they are performed routinely.

Identification of risk as the most important part of risk management is not limited to the area of threats, but also to seek opportunities. It is based on a detailed analysis of the various situations that may cause a positive or negative impact on the safety of patients and the interruption or disruption of the continuity of the organization.

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[12] *PN-ISO 31000:2012 Zarządzanie ryzykiem – Zasady i wytyczne...*

In the risk identification two distinct phases can be distinguished: an initial or continuous identification. Risk should be sought within and outside the organization.

There are many tools that can be used for risk identification, e.g.: brainstorming, check lists, scenario analysis, FTA or HACCP.

Each risk should have its owner (as in process management), who is responsible for ensuring that it is managed and monitored.

An analysis and the importance of risks is a stage based on two documents: the risk register and risk map. Previously the method of assessment of previously identified risks should be adopted. For the risk assessment the matrix method should be used, within which there are evaluated two elements:

–   the likelihood of risks and
–   the potential impact of risks.

Each element can be assessed, e.g. in a 6-point scale, with assigning different weights. For instance, the assessment of the likelihood of the risk consists in assigning to each of the types of risk the score from 0 to 1 (0,2), and the impact assessment on a scale from 1 to 6 (analogous to the notes at school). The examples of such tables are presented in table 2 and 3.

Table 2. An exemplary, generalized table of probability of risk selection

Points	Name	Results description
0	Minimum	The risk does not exist / can occur in quite exceptional circumstances.
0,2	Low	The risk probably will not occur. Over the last year the area / process was not subject to organizational changes The process is governed by a small number of internal and external regulations
0,4	Medium	There is a probability of risk in the next 3 years. Over the last year the area / process was subject to small organizational changes. The process is governed by a small number of internal and external regulations.
0,6	High	There is a high probability of risk in the next 2 years. Over the last year the area / subject to the process of organizational changes.
0,8	Certain	The risk will occur within the next year. The threats are related to tasks within the strategic objectives. The process is regulated by a large number of internal and external regulations.
1,0	Critical	The risk will take place several times over the next year. Threats are related to tasks within the strategic objectives. The process is regulated by a large number of internal and external regulations.

Source: own research.

Table 3. An exemplary, generalized table of potential outcomes selection

Points	Name	Results description
1	Minimum	Possible effects are mitigated by existing control mechanisms
2	Small	Existing control mechanisms should reduce the impact of potential disturbances
3	Medium	Existing control mechanisms to some extent can reduce the impact of potential disturbances
4	Relevant	Existing control mechanisms only to a small degree can reduce the impact of potential disturbances
4	Serious	Low effectiveness of existing control mechanisms
5	Disastrous	The lack of appropriate control mechanisms or existing mechanisms are ineffective – serious disturbance in the work of the unit; threats will make the lack of continuity

Source: own research.

The accepted risk map can be in the form of a results matrix and the likelihood of occurrence. It attributes the values to individual fields (the product of the probability and effect) and with the colour or the description establishes insignificant, moderate and significant risk values. The register should be created on the basis of adopted risk maps in the organization. It describes the risks identified in the operational areas related to the functioning of the organization. The team for risk management then hierarchizes the risks.

The tools for analysis and risk assessment can be e.g.: scenario analysis, decision tree or FMEA.

The result of work related to the analysis and evaluation of risk is the ranking according to significance criteria, which directly leads to the development of action plans, their implementation and effectiveness control. These activities are highly dependent on the specifics of the organization and identified threats.

5. CONCLUSIONS

The revised ISO 900 standard introduced also the requirements related to the process approach and risk management. This fact will soon force onto many organizations the need for an approach based on risk assessment. Organizations that have not yet done it may support themselves with the methodology which allows meeting the requirements of ISO 9001:2015. An additional benefit of a successful risk management will be probably following the commands, safety, and an improvement of the decision-making process. It is worth noting that the risk-based approach is not new. Often such actions were performed, but it was not necessarily a systemic and continuous operation. Now this is required by a new standard, and this requirement is dictated by the desire to put the organization on the path of smoother and more efficient management.

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[4] *PN-EN ISO 9000:2015-10 – Polish version*, PKN, Warszawa 2016.

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ZARZĄDZANIE RYZYKIEM W STANDARDACH NORMY ISO 9000:2015

W opracowaniu zaprezentowano wyniki analizy zmian, jakie niesie znowelizowana norma ISO 9001:2015 dotycząca systemowego zarządzania jakością. Obok wymagania stosowania podejścia procesowego, pojawiło się stosunkowo nowe wymaganie. Jest nim konieczność systemowego podejścia do oceny ryzyka. W trzyletnim okresie przejściowym większość organizacji będzie musiała takie podejście do oceny ryzyka wdrożyć. Zorientowanie działalności na ryzyko stanowi jeden z trudniejszych do interpretacji elementów nowej normy, zwłaszcza że ISO 9001:2015 nie precyzuje dokładnie, jak ma wyglądać sposób wdrożenia zarządzania ryzykiem. Dlatego też w opracowaniu obok analizy wymagań zaprezentowano koncepcję sześciostopniowej metodyki wdrożenia podejścia opartego o ocenę ryzyka. Do oceny ryzyka wykorzystano metodę macierzową, w ramach, której oceniane były dwa elementy: prawdopodobieństwo wystąpienia ryzyka i potencjalne skutki wystąpienia ryzyka. Każdy z elementów zaproponowano ocenić w 6-stopniowej skali i z przypisaniem różnych wag. Ocena prawdopodobieństwa wystąpienia danego ryzyka polegać ma na przypisaniu każdemu z rodzajów ryzyka punktacji od 0 do 1 (co 0,2), a ocena skutków w skali od 1do 6 (analogicznie do ocen). Oceniając ryzyko należy pamiętać, że norma, szczególnie w kontekście organizacji, nakazuje zwrócenie uwagi nie tylko na te tzw. negatywne ryzyka, ale również na szanse (potencjalne korzyści). Zarówno unikanie niekorzystnych zdarzeń, jak również wykorzystywanie szans jest fundamentem zarządzania ryzykiem. Zastosowanie zaproponowanej koncepcji może się przyczynić do sprawniejszego i efektywniejszego wdrożenia wymagań ISO 9001:2015.

Słowa kluczowe: ISO 9001, ocena ryzyka, system zarządzania jakością, zarządzanie ryzykiem, zarządzanie jakością

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THE INFLUENCE OF THE FORM OF THE 9-POINT SCALE IN THE AHP METHOD ON THE CONSISTENCY OF JUDGMENTS

Quality of decisions depends largely on the ability to correctly define and assess the problem. In the case of complex issues, it is recommended to use decision support methods, e.g. multicriteria methods. The objective of this paper is to report the studies related to the influence of the graphic form of the 9-point, fundamental Saaty's comparison scale used in the AHP method on the consistency of judgments, that is, to measure the fraction of judgments with CR>0,10. Since the AHP is one of the most frequently used decision support methods in management, in terms of modeling decision problems, there is a need to explore one of its most frequently discussed problems – inconsistency of results. It will improve the quality of decisions made with the use of this tool. The empirical study was conducted among 540 respondents, using the AHP method. Due to errors in filling in the questionnaire, only 424 questionnaires were included in further analysis. Individual model was prepared and analyzed for each respondent. All results were then entered into a spreadsheet and subjected to statistical analysis. It examines four most commonly used graphic forms of scale (specifically: numerical, two-stage tabular verbal, tabular verbal horizontal and vertical). Chi-square test and F-test showed no significant difference between them in relation to the existence of inconsistent results (CR > 0.1). It allows suggest that the form of graphic scale does not affect the consistency of answers. However, additional analysis showed that it affects errors in questionnaires.
Keywords: analytical hierarchical process, AHP, consistency, CR.

1. INTRODUCTION

The quality of decision-making processes is a very important factor in the competitiveness of modern organizations. Decision making is in fact procedural and technological feature of the management process[5]. Modeling and optimization of decision-making processes is a frequently discussed research problem in management sciences. As a result,

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concepts, methods and related tools have been created, with potential to improve the deci-sions. Such measures are particularly important when decision problem is complex, re-quires consideration of many aspects and selection of specific priorities. In such a situa-tion, it is convenient to use the multi-criteria decision support methods, which include, inter alia, analytic hierarchy and network processes (AHP/ANP), discussed in this paper.

The analytic hierarchy and network processes (known as the AHP/ANP), were devel-oped in the 70's by the American mathematician T.L. Saaty and can be considered as the most popular multi-criteria decision support tools (MCDA – Multiple-Criteria Decision Analysis). Their attractiveness is associated with the possibility to use for solving com-plex organizational problems. This results in a huge number of references in international journal databases[6]. Due to versatility, flexibility and simplicity of these methods, they are used in various fields of science[7], as well as business practice[8]. There is also a dedicated software for calculations of very complex models – Super Decisions[9].

Both the AHP and ANP methods are based on the same mathematical assumptions, and the difference between them is due to construction and interpretation of the model. In case of the AHP it is hierarchical structure, in which each element has its precise place (decision goal, criteria, subcriteria, and variants also called „alternatives")[10]. The structure of relationships between groups of elements of the hierarchy (in the AHP method) implies dependence of the goal of the criteria, the criteria of subcriteria, and in the case of variants it is important to define the extent to which they meet each individual subcriterion. Net-work models (in the ANP method) allow to consider much more complex and multidirec-tional relationships[11]. In order to simplify the research procedure described in this paper, the study has been limited only to the AHP method, although the results and conclusions can be considered universal for both tools.

Popularity of the AHP/ANP methods is also related to the fact that they have been thoroughly studied by teams from different countries, both in terms of application and methodological aspects[12]. One of the most frequently studied and discussed areas of the AHP/ANP is consistency (compatibility, logic) of the results (judgments). Consistency in the case of these methods must be seen primarily in mathematical terms, in the context of its specific measure called *Consistency Ratio* (known as CR).

If CR>0.10, the procedure requires rejection of repeating all judgments, for which CR exceeded the acepted level. This in practice leads to the loss of lots of data, or is associat-

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[9] www.superdecisions.com

[10] This is the example of a very basic, four-level model. In fact, there can be more levels.

[11] A. Prusak, P. Stefanów, *AHP – analityczny proces hierarchiczny. Budowa i analiza modeli decyzyjnych krok po kroku,* C.H. Beck, Warszawa 2014, p. 40.

[12] A. Prusak, P. Stefanów, *Badania nad właściwościami metody AHP*, Folia Oeconomica Cracoviensia, 2011, nr LII, p. 95.

ed with high costs of repetition of surveys, which in many cases is not possible[13]. For this reason, researchers from all over the world try to develop methods for inducing the expression of more consistent judgments, or computer algorithms which allow for automatic reduction of inconsistencies in the matrix (reduction the value of CR). The latter, however, cause disruption of the original data presented in pairwise comparison matrix. Thus, Gastes & Gaul[14] formulated the following conclusion: „It may be an important topic for future research to understand, why decision makers do not state sufficiently consistent preferences and to control consistency right from the beginning of pairwise comparisons tasks. This should be done without forcing decision makers to erroneous preference statements just because they have to fulfill consistency constraints. One objective may be, to find processes of preference interrogation, which result in more consistent comparison matrices than traditional questioning".

The study reported in this paper partly fill in this research gap. The objective was to determine to what extent the graphic form of the questionnaire (based on the Saaty's 9-point scale) influence fraction of inconsistent judgments, as measured by CR. The research involved N=540 respondents, which were students participating in lectures on *Statistics* and *Multi-criteria decision-making methods*. The hierarchical model was based on mobile phone, which evaluated according to 4 criteria and presented using 4 different graphic forms of the 9-point scale. Responses (in the form of pairwise comparisons) were introduced to the Super Decisions software – the models were analyzed by each respondent individually. To determine the fraction of matrices within certain consistency levels (CR), the results obtained for each respondent in Super Decisions (weights and CR for each form of the scale) were then put to a spread sheet.

The first part of this paper is a review of the existing knowledge on the graphic form of the AHP questionnaire. The second part presents stages and discusses the sources and consequences of inconsistency of judgments. The next part contains a description of methodology, and the following one is a discussion of the results. Finally, the conclusions were formulated with reference to the areas requiring further research.

2. OVERVIEW OF THE EXISTING RESEARCH ON THE GRAPHIC FORM OF THE AHP QUESTIONNAIRE

The influence of the graphic form of the AHP questionnaire on decision makers' judgments is a rarely discussed topic in the literature. It should be emphasized that AHP is one of the most popular decision support methods, widely used both in science and in practice. Therefore, it is particularly important to look more closely at its data collection instruments. The possible errors arise mainly at the stage of data collection, and their cause is primarily the human factor: fatigue because of too many comparisons of different pairs of repeating elements, or rush in expressing judgments, leading to their randomness.

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[13] B. Apostolou, J.M. Hassell, *An empirical examination of the sensitivity of the analytic hierarchy process to departures from recommended consistency ratios*, "Mathematical and Computer Modelling" 1993, Vol. 17, No. 4–5, p. 169.

[14] D. Gastes, W. Gaul, *The Consistency Adjustment Problem of AHP Pairwise Comparison Matrices* [in:] A. Diamantopoulos, W. Fritz, L. Hildebrandt (eds.), *Quantitative Marketing and Marketing Management*, Gabler Verlag, Wiesbaden 2012, p. 61.

Meanwhile, the only guideline for this step of the AHP/ANP is to use verbal scale instead of the numeric one[15].

In the present study, it has been assumed that the graphic form of the AHP questionnaire may induce or reduce the correctness and consistency of judgments. It is commonly known that the transparency of the research questionnaire eliminates mistakes made by the respondents and increase their intrinsic motivation to answer conscientiously. The influence of various aspects of the appearance of the questionnaire on the responses provided was studied in the area of marketing, as it is not a subject specific to the AHP method. For example, Preston & Colman[16] and Weathers et al.[17] studied the influence of a number of degrees of the scale on the correctness and reliability of responses. Weijters et al.[18] found a strong correlation between the response style and the format of the presented scale.

In the case of the graphic form of the AHP questionnaire, certain arrangements of pairwise comparisons may increase readability, and thus reduce the risk of errors and inconsistencies (or induce thereof). These relationships have not been so far described in the literature, despite the fact that the Consistency Ratio CR (discussed in more detail in the next section) is one of the most frequently investigated aspects of the AHP[19].

However, other features of the AHP questionnaire have been studied. For example, Webber et al.[20] conducted an experiment on the effect of the graphical presentation of pairwise comparison scale and the order of the questions on the final results. It showed the existence of a link between the reporting format of the questionnaires and values of priorities. A weak relationship between priorities and type of the scale used (numerical, verbal, graphical) was also identified. The results for which CR>0,10 were excluded from the analysis and the problem of consistency was not considered here.

3. SOURCES AND CONSEQUENCE OF INCONSISTENCY OF JUDGMENTS

The ability to calculate a ratio measuring consistency of judgments is a consequence of the specificity of the AHP. Its stages were described in many publications[21]. They can be described as follows: 1) construction of the decision-making hierarchical model, 2) preparing the research questionnaire based on the 9-point comparison scale, 3) data gathering (expressing judgments by pairwise comparisons), 4) calculating weights (priorities), 5) calculating the consistency of judgments using CR (it should not exceed 0.10), 6) aggregating the results from different respondents. After building the hierarchical model one

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[15] A. Prusak, P. Stefanów, *AHP – analityczny...,* p. 91.

[16] C.C. Preston, A.M. Colman, *Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences*, "Acta Psychologica" 2000, Vol. 104, No. 1.

[17] D. Weathers, S. Sharma, R.W. Niedrich, *The Impact of the Number of Scale Points, Dispositional Factors, and the Status Quo Decision Heuristic on Scale Reliability and Response Accuracy*, "Journal of Business Research" 2005, Vol. 58, pp. 1516–1524.

[18] B. Weijters, E. Cabooter, N. Schillewaert, *The effect of rating scale format on response styles: The number of response categories and response category labels,* "International Journal of Research in Marketing" 2010, Vol. 27, pp. 236–247.

[19] A. Prusak, P. Stefanów, *Badania nad właściwościami...,* p. 95.

[20] S.A. Webber, B. Apostolou, J.M. Hassel, *The sensitivity of the analytic hierarchy process to alternative scale and cue presentations,* "European Journal of Operational Research" 1996, Vol. 96, No. 2.

[21] A. Prusak, P. Stefanów, *AHP – analityczny...* ; [6]   Ishizaka H., Labib A., *Analytic Hierarchy Process and Expert Choice: Benefits and Limitations*, "ORInsight" 2009, Vol. 22, No. 4, pp. 201–220.

needs to obtain the source data (judgments) necessary to determine weights (priorities). The judgments are expressed by decision makers (experts) as pairwise comparisons of the elements within the respective groups (clusters) of the hierarchical model. They reflect opinions, knowledge and feelings of the experts on the analyzed "fragment" of the decision problem. Comparisons are designed to express dominance (advantage) of one element over the other. The „dominance" can mean „importance", „significance", „probability", „preference", „relevance" and other relationships, which are defined depending on the analyzed decision problem, type of elements and their place in the hierarchical structure.

Saaty proposed a special bipolar 9-point comparison scale, known as the fundamental scale. It has in fact 17 degrees (from „1" to „9" on each side) and it is in fact the only scale used in the AHP. This scale is also built-in dedicated software. If one uses a verbal scale, the indicated degree of dominance must be transposed into numerical values as follows (A and B are the elements being compared):

1) A and B have equal importance („1", middle of the scale),
2) A is slightly more important than B or B is slightly more important A („3" on the left or the right side of the scale),
3) A is moderately more important than B, or B is moderately more important than A („5"),
4) A is much more important than B, or B is much more important than A („7"),
5) A is extremely more important than B, or B is entirely more important than A („9").

If the respondent's preferences lie somewhere between the main categories („1", „3", „5", „7", „9"), they are represented by even numbers („2", „4", „6", „8"). In case of verbal scale, the respondents are asked to express their indecision by indicating judgments on the verge of the main categories. These numbers are then introduced to a pairwise comparison *n x n* matrix A, based on which priority weight are calculated.

It has been repeatedly emphasized in the literature that the stage of data collection, or making comparisons, generates the most problems[22]. This is so for two reasons. First, the comparisons (based on which priority weights are calculated) are based on the judgments expressed by individual experts, which by their nature can be subjective. However, this is a property common to all social research. Secondly, one of the principles of obtaining the pairwise comparison is taking into account all possible combinations of pairs of elements of the model (each element must be compared with each other located in the same group of hierarchical structure). It causes their redundancy in relation to the number of comparisons necessary for calculating priorities. This redundancy is the basis for measuring the degree of consistency of judgments, using the following formula:

$$CR = \frac{CI}{RI},$$

where:
CI – Consistency Index, which is calculated as follows:

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[22] T.L. Saaty, K. Peniwati, *Group Decision Making: Drawing out and Reconciling Differences,* RWS Publications, Pittsburgh 2007.

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

where:
λ_{max} – principal eigenvalue
n – number of elements compared.
RI – Random Index, an average CI of randomly chosen matrices (Table 1).

Table 1. Random Indices for *n* elements based on simulation of 100000–500000 matrices

n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10	n=11	n=12	n=13	n=14	n=15
0,52	0,88	1,11	1,25	1,34	1,41	1,45	1,49	1,51	1,54	1,56	1,57	1,58

Source: based on J.A. Alonso, M.T. Lamata, *Consistency in the Analytic Hierarchy Process – A New Approach,* "International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems" 2006, Vol. 14, No. 4.

The number of pairs of elements (N) for each group is presented by the following formula:

$$N = \frac{k(k-1)}{2},$$

where *k* is the number of elements compared within the same group.

According to the formula, a group composed of elements k=3 requires the formation of N=3 pairs, while group consisting of 5 elements requires 10 pairs, 7 elements – 21 pairs, and 9 elements – 45 pairs. Therefore, it is recommended that the number of elements in the group should not exceed 9 elements, and preferably have 7, which is referred to as the magic number 7+/-2[23]. It indicates that the greater the number of elements in the group, the greater the risk of inconsistency when making judgments. Respondent, weary of having to make a large number of comparisons of the same elements in different configurations, can provide a completely random responses, which ultimately lead to inconsistent results[24].

Any comparison made randomly generates inconsistencies, increasing the value of CR, which cannot exceed 0,10 (10%). The AHP/ANP methods are very sensitive even to small inconsistencies, so they have many critics, who consider it the greatest disadvantage of these tools. Moreover, high value of CR is not always due to the respondent, but may result from a lack of homogeneity of the elements. An example of such a situation has been provided in: Stefanów & Prusak[25]. Criticism of CR has been expressed in the literature with respect to the use of this particular ratio as the measure of the degree of con-

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[23] G.A. Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information,* "Psychological Review" 1956, Vol. 63, No. 2; T.L. Saaty, M.S. Ozdemir, *Why the magic number seven plus or minus two,* "Mathematical and Computer Modelling" 2003, Vol. 38, No. 3–4, pp. 233–244.

[24] A. Prusak, P. Stefanów, *AHP – analityczny...,* s. 250.

[25] P. Stefanów, A. Prusak, *Badanie wiarygodności...,* p. 287.

sistency[26], as well as to the fact that the acceptable level of CR ($\leq$0,10) is too restrictive[27]. However, the possibility to calculate CR is perceived an advantage over other decision support methods, which do not provide any control over consistency of opinions. Thus, one cannot objectively say how much the respondent was involved in decision making process. In the case of AHP/ANP, it is easy to check whether comparisons are random.

Inconsistent matrices, where the value of CR exceeds 0,10 should be considered as having low informational value, and it is necessary to repeat the analysis[28]. However, experience has shown that inconsistencies significantly exceeding the level of CR=0,10 take place even for matrices with a small number of elements[29]. Moreover, the study by Apostolou & Hassel[30] revealed no significant differences between priority weights for which CR$\leq$0,10 and those with CR>0.10. Therefore, they postulated not to reject too rashly the matrices, which are inconsistent according to the Saaty's criterion. It was met with criticism questioning i.a. method of data collection for this study – remotely, via e-mail rather than individual, moderated session[31].

Minimizing CR should not be the purpose in itself, yet it is an important indicator of the quality of the results. There are various ways to reduce inconsistency (CR), for example, using mathematical algorithms. However, such procedures may lead to perturbation of original matrices[32]. The only way to avoid such problem is to take appropriate action at the stage of data collection process, which involves construction of the AHP questionnaire.

4. METHODOLOGY

The study aimed to answer the following research question: does the graphical presentation of the 9-point comparison scale affect the consistency of judgments (as measured by CR)? It involved N=540 respondents – students participating in lectures on *Statistics* and *Multi-criteria decision-making methods* at the A.F. Modrzewski Krakow University (Faculty of Management and Social Communication and the Faculty of Law, Administration and International Relations), as well as the Cracow University of Economics (Department of Commodity Sciences). The study was conducted from November to December 2013. Similar group (consisting of 340 students) was asked to participate in the research by Webber et al.[33]

The group was considered expert for this experiment because: 1) the information was universal in nature and objects used in the model can be successfully assessed by the majority of the population (mobile phone); 2) the objective was not to gather the information

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[26] J.A. Alonso, M.T. Lamata, *Consistency in the Analytic...,* pp. 445–459.

[27] B. Apostolou, J.M. Hassell, *An empirical examination of the sensitivity of the analytic hierarchy process to departures from recommended consistency ratios,* "Mathematical and Computer Modelling" 1993, Vol. 17, No. 4–5, pp. 163–170.

[28] T.L. Saaty, L.G. Vargas, *The Logic of Priorities,* Kluwer Nijhoff Publishing, Massachusetts 1982.

[29] A. Prusak, P. Stefanów, *Badania nad właściwościami....*

[30] B. Apostolou, J.M. Hassell, *An empirical...*

[31] P. Chu, J.K. Liu, *Note on consistency ratio,* "Mathematical and Computer Modelling" 2002, Vol. 35, No. 9–10, pp. 1078.

[32] J.S. Finan, W.J. Hurley, *The analytic hierarchy process: Does adjusting a pairwise comparison matrix to improve the consistency ratio help?*, "Computers & Operations Research" 1997, Vol. 24, No. 8, pp. 749.

[33] S.A. Webber, B. Apostolou, J.M. Hassel, *The sensitivity...*

about preferences of the functional characteristics of the objects, but to explore a methodological aspect of making pairwise comparisons with the use of various graphical forms of the fundamental scale. Studies were conducted within small groups (sessions), most of them consisting of several respondents (no more than 25 persons). The respondents were asked to identify which characteristics (criterion) of the object is more important and to what extent. The study was based on the AHP evaluation of the mobile phone in terms of: (1) operating time (battery), (2) weight, (3) size of the display, (4) touch screen.

Because of the risks that order of questions will affect the results, the authors decided to randomize the study. For four criteria it gives 4! (factorial), that is 24 possible versions of each questionnaire. For each of the four questionnaires we prepared 24 different versions of the sequence of questions, so the total number of different questionnaires was 96. After receiving the questionnaire and short introduction to the study, respondents were asked to read the purpose of the study. The questionnaire used both numerical and verbal form of the 9-point coparison scale, specifically:

     1) numerical scale (Fig. 1),
     2) two-step verbal scale (Fig. 2),
     3) horizontal tabular verbal scale (Fig. 3),
     4) vertical tabular verbal scale (Fig. 4).

Fig. 1. Numerical scale

Source: based on S.A. Webber, B. Apostolou, J.M. Hassel, *The sensitivity...,* p. 361.

Fig. 2. Two-step verbal scale
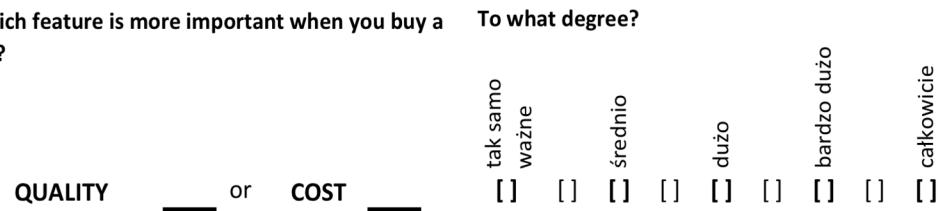
Source: based on S.A. Webber, B. Apostolou, J.M. Hassel, *The sensitivity...,* p. 361.

Fig. 3. Horizontal tabular verbal scale

criterion	degree of dominance									criterion
	extreme dominance	strong dominance	moderate dominance	weak dominance	equal importance	weak dominance	moderate dominance	strong dominance	extreme dominance	
QUALITY										**COST**

Source: own research.

Fig. 4. Vertical tabular verbal scale

QUALITY (Q)		(Q) is extremely more important than (C)
		(Q) is much more important than (C)
		(Q) is moderately more important than (C)
Which feature is more important when you buy a car, and how more important?		(Q) is slightly more important than (C)
		Both are equally important
		(C) is slightly more important than (Q)
		(C) is moderately more important than (Q)
		(C) is much more important than (Q)
COST (C)		(C) is extremely more important than (Q)

Source: own research.

Numerical scale (Fig. 1) requires the respondent to enter a specific number in the blank space. The scale in Fig. 2 was defined as verbal two-step, because the respondent indicates dominance in two steps: 1) which of the two compared elements is more important, 2) how much this dominance is. The breakdown of judgment in two parts helps to concentrate on just one aspect, which in turn may affect the consistency of answers. The horizontal tabular verbal scale (Fig. 3) is the form most commonly used due to space-saving (all comparisons at one table), and may be also in numeric version (numbers instead of verbal expressions). The advantage of vertical tabular verbal scale (Fig. 4) is its transparency, while the disadvantage is that it takes a lot of space and significantly increases the volume of the questionnaire (which can, among others, demotivate the respondents).

Data from the questionnaires was introduced to *Super Decisions* software – each questionnaire required building individual model. Pre-analysis was conducted to check the correctness of filling in questionnaires to be discarded from further studies (eg. mistakes such as lack of response to one question, responses ticked at both sides of the scale). Thus, the number of the valid questionnaires were reduced to N=424. The results (values of the

priority weights and CR for each questionnaire) were then entered into a spread sheet, along with information on the type of the graphic form of the scale. Fractions (proportions) of inconsistent questionnaires (a quotient of the inconsistent questionnaires to all the questionnaires filled in correctly) have been calculated. As a next step, statistical tests were used to verify whether the graphical form of the scale have a significant impact on the value of CR.

5. RESULTS

The analysis included only the questionnaires completed correctly. It then examines whether distributions of CR for individual graphical forms of the questionnaire are similar to each other, or are they different (Table 2).

Table 2. Distribution of CR for correctly competed questionnaires (matrices) for various forms of scale

Number of correctly completed questionnaires (N)							
Intervals CR	N=105		N=78		N=99		N=104	
	horizontal tabular verbal		numerical		vertical tabular verbal		two-step verbal	
		%		%		%		%
0,0-0,1	22	21,0%	15	19,2%	23	23,2%	18	17,6%
0,1-0,2	30	28,6%	17	21,8%	24	24,2%	32	31,0%
0,2-0,3	19	18,1%	18	23,1%	16	16,2%	24	23,2%
0,3-0,4	10	9,5%	9	11,5%	12	12,1%	15	14,1%
0,4-0,5	8	7,6%	13	16,7%	9	9,1%	4	3,5%
0,5-0,6	1	1,0%	1	1,3%	4	4,0%	1	0,7%
0,6-0,7	1	1,0%	0	0,0%	1	1,0%	2	2,1%
0,7-0,8	1	1,0%	1	1,3%	3	3,0%	0	0,0%
0,8-0,9	1	1,0%	0	0,0%	1	1,0%	1	1,4%
0,9-1,0	2	1,9%	0	0,0%	1	1,0%	1	1,4%
>1,1	10	9,5%	4	5,1%	5	5,1%	5	4,9%

Source: own research.

The results presented in Table 2 show that the distributions of CR are similar, regardless of what graphic form of the questionnaire was used in the study (Fig. 5).

Fig. 5. Distribution of CR dependent on the scale
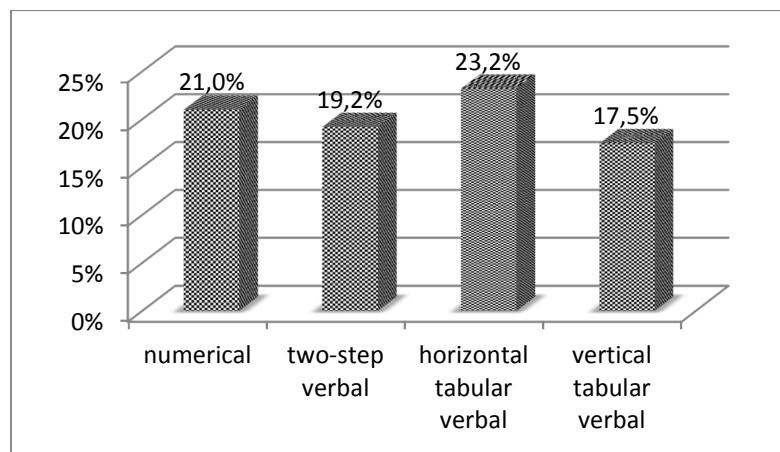
Source: own research.

In the next step, it has been verified using chi-square test and F-test[34].

Chi-square test
The following hypotheses have been formulated:
−   *H_0: all factions are the same (graphic form of scale does not affect the fraction of inconsistent matrices),*
−   *H_1: not all of the fractions are the same (graphic form of scale does not affect the fraction of inconsistent matrices).*
First, the expected value was calculated, which together with empirical values are shown in Table 3, and then χ^2 was set.

Table 3. Empirical and expected values and for chi-square test

Form of scale	Empirical values		N	Expected values		N
	CR>0,10	CR≤0,10		CR>0,10	CR≤0,10	
horizontal tabular verbal scale	83	22	**105**	83,95	21,05	**105**
numerical scale	63	15	**78**	62,36	15,64	**78**
vertical tabular ver-bal scale	76	23	**99**	79,15	19,85	**99**
two-step verbal scale	117	25	**142**	113,53	28,47	**142**
ALL	**339**	**85**	**424**	**339**	**85**	**424**

Source: own research.

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[34] J. Steczkowski, M. Woźniak, K. Zając, A. Zeliaś, *Statystyka matematyczna w zastosowaniach,* Akademia Ekonomiczna w Krakowie, Kraków 1996.

$$\chi^2 = \frac{(83-83,95)^2}{83,95} + \frac{(22-21,05)^2}{21,05} + \frac{(63-62,36)^2}{62,36} + \frac{(15-15,64)^2}{15,64} + \frac{(76-79,15)^2}{79,15} + \frac{(23-19,85)^2}{19,85} +$$

$$+ \frac{(117-113,53)^2}{113,53} + \frac{(25-28,47)^2}{28,47} = 1,25$$

For adopted level of significance $\alpha=0,05$ and for $s=k-1$ (3) degrees of freedom the critical value was read from the appropriate tables: $\chi^2_\alpha=7,81$. Because $\chi^2 < \chi^2_\alpha$ (1,25<7,81), there is no reason to reject the null hypothesis: the influence of the graphical form of the questionnaire on the consistency (CR) cannot be confirmed.

F-test

As in the case of chi-square, the null hypothesis (H_0) staten on the equality of all fractions: $H_0: p_1 = p_2 = ... = p_k$,
where:
p - i-fraction, for $k \geq 2$.

Alternative hypothesis (H_1) says that at least two fractions differ significantly:
H_1: not all fractions are equal.
Table 4 presents the summary of calculations.

Table 4. Results of calculations for F-test

Form of scale	N	CR>0,10		φ_i	$\varphi_i - \overline{\varphi}$	$\left(\varphi_i - \overline{\varphi}\right)^2$	$n_i\left(\varphi_i - \overline{\varphi}\right)^2$
			%				
horizontal tabular verbal scale	105	83	79,05%	2,19	-0,0223	0,0005	0,0525
numerical scale	78	63	80,77%	2,23	0,0206	0,0004	0,0312
vertical tabular verbal scale	99	76	76,77%	2,13	-0,0773	0,0060	0,5940
two-step verbal scale	142	117	82,39%	2,27	2,2755	0,0039	0,5538
ALL	**424**	339	**79,95%**	**2,21**			1,2315

Source: own research.

$$F = \frac{1}{4-1} \cdot 1,2315 = 0,41.$$

For the adopted level of significance $\alpha=0,05$ and $k-1$ (3) and infinity (∞) degrees of freedom F_α is: $F_{0,05} = 2,6$. Since $F > F_\alpha$, there is no reason to reject the null hypothesis. These calculations indicate that the results of chi-square test and of F-test are the same: the graphic form of the scale does not affect the occurrence of inconsistent comparisons.

Analysis of the correctness of completing the questionnaire depending on the form of scale

Due to a large number of questionnaires rejected due to errors in their completion, additional analysis was carried out. As mentioned above, the questionnaires were filled without individual supervision of moderator, and from 540 respondents only 424 ques-

tionnaires were included in the analysis. It has been observed that the largest number of wrong incorrectly completed questionnaires (53%) concerned numerical scale (Fig. 6). In other cases, these proportions were significantly lower.

Fig. 6. Fractions of the questionnaires by scale filled incorrectly
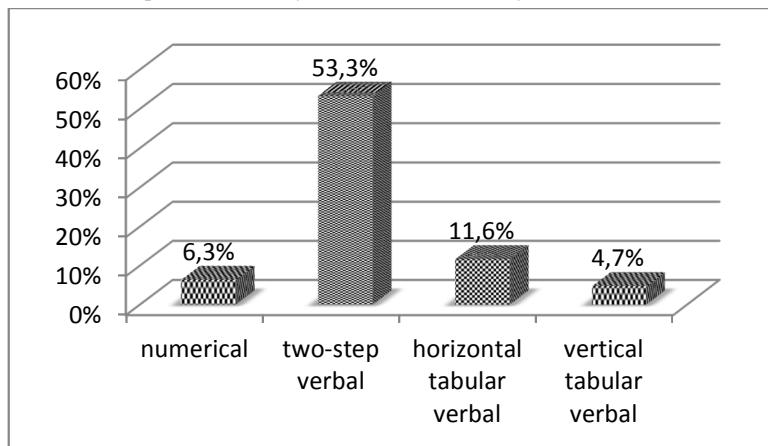
Source: own research.

As previously, the following hypothesis about the equality of fractions was set: the graphic form of scale has a significant impact on the appearance of incorrectly completed questionnaires. It was first verified using the chi-square test and F-test. The relevant calculations are presented in table 5.

Table 5. Empirical and expected values for chi-square test – erroneus questionnaires

Form of scale	Empirical values		N	Expected values		N
	Correct	Erroneus		Correct	Erroneus	
horizontal tabular verbal scale	105	7	**112**	87,94	24,06	**112**
numerical scale	78	89	**167**	131,13	35,87	**167**
vertical tabular verbal scale	99	13	**112**	87,94	24,06	**112**
two-step verbal scale	142	7	**149**	116,99	32,01	**149**
ALL	**424**	**116**	**540**	**424**	**116**	**540**

Source: own research.

As previously, the value of χ^2 was calculated, which is 147. For the adopted level of significance α=0,05 and for 3 degrees of freedom, the critical value χ^2_α=7,81. Because χ^2> χ^2_α (147>7,81), the null hypothesis should be rejected in favour of the alternative one: at least one pair of fractions significantly different from each other.

It was confirmed that the graphic form of scale affects the appearance of errors in the questionnaire (which are not, however, inconsistency). Similar result was obtained using

F-test ($F=49.52$, $F_{0,05}=2.6$, $F \geq F_\alpha$). Next, a post hoc test was conducted to determine those fractions, which are responsible for rejection of the null hypothesis. Six tests was performed for the following combinations of scales:

       1) horizontal tabular verbal vs numerical
       2) verbal tabular horizontal vs vertical tabular verbal,
       3) horizontal tabular verbal vs. two-step verbal,
       4) numerical vs vertical tabular verbal,
       5) Numerical vs. two-step verbal,
       6) vertical tabular verbal vs. two-step verbal.

Calculations are presented in Table 6.

Table 6. Results of calculations for the post-hoc test for equality of two fractions

Scale 1	Scale 2	p	$(1-p)$	u
horizontal tabular verbal scale	numerical scale	0,6559	0,3441	8,11
horizontal tabular verbal scale	vertical tabular verbal scale	0,9107	0,0893	1,41
horizontal tabular verbal scale	two-step verbal scale	0,9464	0,0536	-0,55
numerical scale	vertical tabular verbal scale	0,6344	0,3656	-7,09
numerical scale	two-step verbal scale	0,6962	0,3038	-9,38
vertical tabular verbal scale	two-step verbal scale	0,9234	0,0766	-2,08

Source: own research.

For the adopted level of significance $\alpha=0.01$ (normal distribution):
$u_{0,01/2}=u_{0,005} = 2,576$.

In any case when we compare fraction of incorrectly completed questionnaire using numerical scale the null hypothesis of equal proportions must be rejected. In other cases, there is no reason to reject the null hypothesis. As the last step, chi-square tests and F-test were conducted to verify the hypothesis that other forms of scale generate equal proportions of incorrectly completed questionnaire. Using similar calculations as those described in Table 3 and 5, $\chi^2=5$, and the critical χ^2_α is 5.99 for the assumed level of significance $\alpha=0,05$ and for 2 degrees of freedom. Hence, there is no reason to reject the null hypothesis. A similar result was obtained using the F-test ($F=2,22$, $F_{0,05}=3,0$, $F<F_\alpha$). It can be concluded that numerical scale generates the largest number of incorrect questionnaires, although with respect to the consistency, there were no statistically significant differences between the graphical forms of scales.

6. CONCLUSIONS

The consistency ratio CR is a key indicator of consistency of judgments in the AHP/ANP methods. The value of CR should not exceed 0,10 (10%), otherwise the results should be considered erroneous (illogical), and cannot constitute a basis for a decision. For this reason, this consistency measure has long attracted attention of the researchers.

They studied both the source of this problem, as well as methods for its reduction without affecting the input data. The authors came to the obvious assumption that since the primary source of inconsistent judgments are human errors taking place at the stage of data collection, it is necessary to examine the tool by which data is collected. Generally, it is a specifically constructed questionnaire, which can be presented in different graphical forms, based on a verbal or numerical scale. The literature review revealed the existence of studies on the influence of the graphical layout of the scale on the provided responses[35]. However, the relationship between the consistency of judgments and the graphic form of the 9-point scale used to gather these judgments has never been investigated.

The aim of the research presented in this paper was to investigate the influence of the graphic form of the aforementioned pairwise comparisons scale on the fraction of inconsistent results (those for which CR>0,10). The study included 540 respondents. After rejection of erroneous questionnaires, only 424 questionnaires filled in correctly were included in further analysis. This prompted authors to perform additional analysis: whether graphical form of the scale affects the fraction of correctly completed questionnaires.

It examined four commonly used forms of scale. The AHP analysis was prepared individually for each respondent, then the fraction of responses with CR>0,1 was calculated for each of these forms. There were no significant differences between them in respect to the presence of inconsistent results (CR>0,1), the fraction in each case was very high with an average of approx. 80%. The performed statistical tests chi-square and F-test gave no reason to reject the hypothesis that the graphic form of the questionnaire does not affect the consistency of results within the limits recommended by Saaty. Moreover, analysis of the distribution of CR also showed no significant differences between each type of scale. It should not matter by how much CR exceeded the permissible level since each matrix with CR>0,10 must be rejected as inconsistent, and as such useless for a decision maker.

Yet the study on the relationship between CR and type of graphical presentation of scale can bring interesting conclusions regarding the choice of the scale for which the rate of CR is the lowest, even if it exceeds the level of 0,10. One would then expect that in another study, and taking into account other factors, the fraction of inconsistent judgments will be significantly lower. In the present study, there were no significant differences in this regard.

Quite different results were obtained in the analysis of the influence of the graphical form of scale on how correctly the questionnaires were completed. In this case, it was found that the largest number of wrong, incorrectly completed questionnaires (53%) was using numerical scale, which requires the respondent to enter a specific number in the blank space. Therefore, the authors recommend avoiding this type of scale in the AHP.

The main limitation of this study was their "mass scale" (each respondent filled a questionnaire on their own and in a relatively short period of time), while the AHP survey should take the form of administered questionnaire interview. Other factors that may affect the value of CR, is eg. number of degrees of the scale used (eg. 5 instead of 9). This, however, requires further experiments. It is necessary to examine a broad range of factors affecting the consistency of judgments in order to formulate the relevant recommendations allowing reduce inconsistency. The AHP/ANP research studies are usually time consuming and costly (which results from the need to engage experts and the complexity of decision

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[35] S.A. Webber, B. Apostolou, J.M. Hassel, *The sensitivity...*

problems). Thus, the fact that up to 80% of the results is useless in the decision-making process because of inconsistency indicates that this area needs further research.

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WPŁYW FORMY 9-PUNKTOWEJ SKALI W METODZIE AHP NA SPÓJNOŚĆ OSĄDÓW

Jakość podejmowanych decyzji zależy w dużej mierze od zdolności do prawidłowego zdefiniowania i oceny problemu. W przypadku złożonych zagadnień możliwe jest i coraz częściej praktykowane stosowanie metod wspomagających decyzje, np. metod wielokryterialnych. Wymagają one jednak precyzji oraz eliminacji błędów związanych z procedurą ich wykorzystania. Celem niniejszego artykułu jest przedstawienie badań dotyczących wpływu graficznej formy dziewięciostopniowej skali porównań parami w kwestionariuszach AHP na frakcję niespójnych wyników (tzn. takich, dla których współczynnik niezgodności CR>0,10). Ponieważ metoda AHP jest jedną z najpopularniejszych metod stosowanych w zarządzaniu (w teorii i praktyce), w aspekcie modelowania problemów decyzyjnych, istnieje potrzeba zbadania jednego z jej najczęściej omawianych problemów – niespójności wyników. Pozwoli to na usprawnienie i podniesienie jakości podejmowania decyzji z zastosowaniem tego narzędzia. Badania miały charakter empiryczny z wykorzystaniem metody AHP. Wzięło w nich udział N=540 respondentów, przy czym z powodu błędów w wypełnianiu kwestionariusza do analizy włączono jedynie 424 ankiety. Dla każdego z nich został zbudowany i zanalizowany odrębny model. Wszystkie wyniki zostały następnie wprowadzone do arkusza kalkulacyjnego i poddane analizie statystycznej. Zbadano cztery najczęściej stosowane graficzne formy skali (tj. liczbową, dwustopniową werbalną, tabelaryczną werbalną w układzie poziomym i pionowym). Testy chi-kwadrat and F-Snedecora nie wykazały istotnej różnicy między nimi, jeśli chodzi o występowanie niespójnych wyników (CR>0,1), co upoważnia do stwierdzenia, że forma graficzna skali nie ma wpływu na spójność udzielanych odpowiedzi. Jednakże dodatkowa analiza wykazała, że forma graficzna skali wpływa na błędy w wypełnianiu ankiet – największą liczbę błędnych ankiet (53%) zaobserwowano w przypadku skali liczbowej.

Słowa kluczowe: analityczny proces hierarchiczny, AHP, spójność, CR.

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STRATEGIC PERSPECTIVES FOR GEORGIAN BUSINESS – AN ANALYSIS FOR MEDIUM-SIZED ENTERPRISES IN EU AND GEORGIA

Small and medium-sized enterprises (SMEs) belong to most important factors which drive the economic development. The strength of the economic system of a given country is based on the potential of SMEs as they substantially contribute to employment and national income. SMEs may be perceived as a catalyst for economic growth. If companies cooperate with larger enterprises, they contribute to the efficient use of joint resources, information and technology and knowledge. SMEs have also an impact on the growth of gross domestic product, the formation of the middle class, and the increase of economic and political stability. Well-developed and strong sector of SMEs significantly contribute to export and import increasing the level of prosperity on a national scale. It is also important to take into account that the culture of enterprises from this sector, the way people identify with the place they work, their founding purpose may raise the organizational culture and foster achieving the overall organization goals. If the employees of SME have a strong sense of their duties and values they may guide the culture of the organization and have a positive impact on other enterprises with which they cooperate.

In the first part of the article the authors present the experience of SMEs in the EU, in the second part they discuss the main directions of the development of SMEs in Georgia based on the analysis of statistical data. The article ends with conclusions taking into account strategic priorities for SME development in Georgia.

Keywords: SMEs, development, EU, Georgia, Global business, enterprise

1. INTRODUCTION

SMEs play an important role in the economy. As globalization proceeds, transition and developing countries and their enterprises face major challenges in strengthening their human and institutional capacities to take advantage of trade and investment opportunities. This has become a top priority on the global development agenda over the past few years. Small and medium-sized enterprises (SMEs) are a very heterogeneous group. SMEs are found in a wide array of business activities, ranging from the single artisan producing agricultural implements

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for the village market, the coffee shop at the corner, the internet café in a small town to a small sophisticated engineering or software firm selling in overseas markets and a medium-sized automotive parts manufacturer selling to multinational automakers in the domestic and foreign markets. The owners may or may not be poor; the firms operate in very different markets (urban, rural, local, national, regional and international); embody different levels of skills, capital, sophistication and growth orientation, and may be in the formal or the informal economy.

In developed countries (including in the EU), small and medium enterprises occupy a large contribution in the operating enterprises, create over 50% of total turnover of the entrepreneurial sector and two from in each three jobs in the private sector. Organization for Economic Cooperation and Development (OECD) countries, over 99% of companies are small and medium enterprises and create an average 2/3 of gross domestic product (GDP). In developing and transition economies over 90% of the total number of enterprises are small and medium enterprises, but their share in the GDP is generally quite low – in many cases less than 20%[3].

SME products and services "invisible" or less noticeable are characterized by high level of reliability and viability, have significant export market share, are global competitors and great contribution to the success in country.

A major factor in the formation of small businesses is current legislative environment in Georgia. After the second half of the 1990s in Georgia there were made significant efforts for the establishment of institutional basis for of SMEs.

In recent years, Georgia has made significant reforms, including economic reforms, whose main objective was creating good environment for doing business and for foreign direct investments, by liberalizing the economy, reducing the administrative barriers and tax burden, improving public services, fight corruption, and in other ways. As a result of these reforms, Georgia has high economic growth rates. In addition, significantly increased foreign direct investments in the country. Economic policy has been positively evaluated by the various of rating agencies and international financial institutions and appropriate results are were reflected in the indices and in the ratings, which are rated the economic freedom of countries[4].

The first part of the article discusses the experience in the SME-s-related in European Union, the second part the paper discusses directly main directions of development of SMEs in Georgia on the basis of statistical data analysis and it provides strategic priorities of development of SME's in Georgia.

2. SMES – EUROPEAN EXPERIENCE

Micro, small and medium-sized enterprises (SMEs) are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU and thus crucial for fostering competitiveness and employment[5].

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[3] Dialogue on «SME Policy» with regard to the multilateral framework of the Eastern Partnership 2010, p. 45.

[4] A. Rzepka, I. Masurashvili, *Current state of the Business Administration in Georgia and his role in Global Economy*, ScieConf2014, pp. 79–84.

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On November, 2015, The European Commission released an annual report on European SMEs (2014/2015). This report has been prepared in 2015 for the European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs; Directorate H: COSME Programme; Unit H1: COSME Programme, SME Envoys and Relations with EASME by the consortium composed of CARSA, PwC Luxembourg, Innova SpA, The University of Manchester, Manchester Institute of Innovation Research, London Economics, DIW Berlin, DIW Econ[6].

This report provides an overview of the past and forecasted performance of SMEs from 2008 to 2016, and reviews in greater detail the contribution of SMEs to employment creation. SMEs are ubiquitous, and in 2014 accounted for 99.8% of all enterprises in the non-financial business sector in the EU28. For every km^2 of land surface the EU has an average of 5 SMEs. Moreover, in 2014 SMEs employed almost 90 million people - 67% of total employment, and generated 58% of the sector's value added.

Almost all SMEs (93%) are micro SMEs employing less than 10 people. About three quarters of SMEs are active in the five key sectors: "wholesale and retail trade", "manufacturing", "construction", "business services" and "accommodation and food services".

In particular, SMEs in construction, and, to a somewhat lesser extent, in manufacturing, were hit hard by the economic and financial crisis. Employment in these two sectors in 2014 was still respectively 17% and 11% below 2008 levels, whereas value added in construction remained 18% below its 2008 level and in manufacturing has almost crawled back to where it stood in 2008. In contrast, SMEs in the "accommodation and food services" and the "business services" domains benefited from robust growth in these sectors.

It's known that SMEs are defined as businesses which employ less than 250 people and have an annual turnover of less than EUR 50 million, and / or their balance sheet total is less than EUR 43 million. They comprise three categories of enterprises, namely micro, small, and medium-sized enterprises (Table 1).

Table 1. EU definition of SMEs

	Employees	Turnover or	Balance sheet total
Micro SME	<10	< €2 million	< €2 million
Small SME	<50	< €10 million	< €10 million
Medium-sized SME	<250	< €50 million	< €43 million

Source: Own study was based on: Commission Recommendation of 6 May 2003 concerning the definition of micro, small, and medium-sized enterprises.(2003/361/EC),Official Journal of the European Union, L 124/36, 20 May 2003.

More than 22 million SMEs were active in the EU28 in 2014. They employed almost 90 million people. They accounted for 58 % of the value added generated by the EU28 non-financial business sector.

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[6] Annual Report on European SMEs – 2014/2015, http://ec.europa.eu/DocsRoom/documents/16341/attachments/ 2/translations

In 2014, 22.3 million SMEs were active in the non-financial business sector across the EU28 (table 2). The non-financial business sector consists of all sectors of the economies of the EU28 or Member States, except for financial services, government services, education, health, arts and culture, agriculture, forestry, and fishing. SMEs account for 99.8% of all enterprises in this sector.

Table 2. SMEs: number of enterprises, employment, and value added in the EU28 in 2014

	Micro	Small	Medium	SMEs
Enterprises (Number)	20,710,324	1,373,365	224,811	22,308,500
%	92.7%	6.1%	1.0%	99.8%
Persons Employed (Number)	39,274,088	27,452,716	23,257,412	89,984,216
%	29.2%	20.4%	17.3%	66.9%
Value added (EUR billion)	1,358	1,169	1,188	3,715
%	21.1%	18.2%	18.5%	57.8%

Source: Own study was based on:Annual Report on European SMEs – 2014 /2015.

On October 15, 2012, the European Commission released an annual report on small and medium-sized enterprises in the European Union. The report entitled "EU SMEs in 2012: at the crossroads, Annual report on small and medium-sized enterprises in the EU, 2011/12" was prepared by ECORYS Nederland BV[7]. The report confirmed that despite challenging environment created by the global economic crisis, small and medium-sized enterprises are the backbone of the EU economy. In 2012 small and medium-sized enterprises accounted for 99,8% of non-financial enterprises. Out of the total of 20.7 million SMEs the overwhelming majority (92.2%) were micro-enterprises, 6.5% were small enterprises, and 1.1% were classified as medium sized enterprises. According to this study, in 2012 large enterprises accounted for just 0.2% enterprises operating in the EU's non-financial sector. In 2012, small and medium size enterprises provided about 58.1% of the total Gross Value Added (micro-enterprises – 21.2%, small enterprises – 18.5%, and medium-sized enterprises – 18.4% all regard employment, the report shows about 67.4% of jobs in the non-financial sector of the EU economy were provided by the SME sector (ECORYS 2012). Moreover, according to a study published by the European Commission, 85% of net new jobs in the EU between 2002 and 2010 were created by small and medium sized enterprises. During this period net employment in the EU economy grew substantially, by an average of 1.1 million new jobs each year[8].

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[7] European Commission 2012. EU SMEs in 2012: at the crossroads, Annual report on small and medium-sized enterprises in the EU, 2011/12" was prepared by ECORYS Nederland BV. Rotterdam.

[8] EIM Business&Pilicy Research 2011. Do SMEs create more and better jobs? Zoetermeer, November 2011.

Almost all SMEs (93%) are micro SMEs employing less than 10 people. About three quarters of SMEs are active in the five key sectors: "wholesale and retail trade", "manu-facturing", "construction", "business services" and "accommodation and food services".

The outlook for the future performance of SMEs in the EU28 is positive, and somewhat stronger than in 2014 but remains uneven (table 3).

Table 3. 2015 and 2016 forecasts of annual growth in SME performance indicators – EU-28

Size class	Indicator	% change 2013-2014	% change 2014-2015	% change 2015-2016
Micro	Enterprises	1,2	0.5	0.7
	Value Added	3.2	2.9	3.3
	Employment	1.3	0.5	0.8
Small	Enterprises	0.8	0.7	0.8
	Value Added	3.3	3.1	3.5
	Employment	1.0	0.8	0.9
Medium	Enterprises	0.9	0.9	1.2
	Value Added	3.3	3.8	4.2
	Employment	1.3	1.2	1.3
SMEs	Enterprises	1.2	0.5	0.7
	Value Added	3.3	3.3	3.7
	Employment	1.2	0.8	0.9

Source: Own study was based on: Annual Report on European SMEs – 2014 /2015.

For the years 2015 and 2016, annual growth of 3.3% and 3.7% is expected for EU28 SME value added. In contrast, employment and number of enterprises are forecast to lag behind, with growth in 2015 and 2016 of roughly 0.8% and 0.9%, and 0.5% and 0.7% respectively. Looking at size-class differences, medium-size SMEs are forecast to slightly outperform small and micro enterprises in both 2015 and 2016 and across all three indicators. Large firms are expected to follow a similar pattern, although their expected growth is lower in the case of value added, employment and number of firms.

3. SME IN GEORGIA

The situation in Georgia is positive following progress with the Deep and Comprehensive Free Trade Agreements with the EU, with reforms that foster the economic growth. Negative consequences resulting from the regional crisis decreased the external demand for products and services and tourism and led to economic slowdown since the second half of 2014[9]. However, the positive outcome of DCFTA is being observed[10].

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[9] Z. Olesiński, A. Rzepka, A. Sabat, *Sieci powiązań we współczesnej gospodarce*, Texters, Warszawa 2016, s. 118.

[10] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830(02)&from=EN (20.11.2016).

Georgia has maintained a well-capitalized and soundly managed banking sector despite the recent slowdown in economic activity and weaker credit growth. Sector-wide capital adequacy ratio stands at 19% (in Basel standards), what is higher than the regulatory minimum of 12%. The NPL ratio, defined according to the international standards (loans in arrears over 90 days), is one of the lowest among the peer countries and it stands at 3.4%.

SMEs are the backbone of the Georgian economy.

SME definitions differ from institution to institution in Georgia. Therefore, the compilation of statistics on SMEs comparable across sectors and establishments represents a challenging task. The National Statistics Office of Georgia[11] classifies enterprises as small (or medium-sized) if the number of employees does not exceed 20 (100) and the average annual turnover is up to 0.5 (1.5) million Gel. For taxation purposes, the status of a small business may be granted to a natural person whose gross income from economic activity during a calendar year does not exceed Gel 100 000. As for the financial sector, measures for defining businesses by size are quite diverse among the several market players, some utilise total exposure to the client, turnover measures, annual sales or combination of them.

The Economics Department of the European Investment Bank has recently conducted a Bank Lending Survey among main financial institutions in the Georgian market. Information were collected on lending conditions, availability of different financial products and credit extensions to corporates, particularly to SMEs. The survey included questions related to recent credit developments, demand and supply factors that affect credit growth, availability of various financial instruments, breakdown of loan portfolio by sectors/maturity/purpose, and perception of credit conditions. The respondents provided information according to their definition of SMEs. Six respondents were chosen from the financial intermediaries in Georgia (5 commercial banks and one microfinance institution). The survey covered 75% of banking sector assets and approximately 65% of banking sector SME portfolio. Some of the key results of the survey are reported in this section and in the following sections[12].

The SME sector has a special role to play in the process of transition of the economies of the Georgia. However, although SMEs make up the large majority of firms in the Georgia many are still restricted to niche markets with little growth potential. SMEs account for 94% of enterprises in Georgia. However, with their concentration in the micro segment and subsistence activities, their contributions to employment and turnover are much lower. The employment contribution, for example, is 43% in Georgia[13].

Access to finance is one of the main obstacles to doing business as perceived by SMEs. Other factors highlighted by the Enterprise Survey[14] include political instability, corruption, and tax rates. The survey was conducted in 2012 when the country was going through political changes, therefore, they must be compared to data of today when the access to finance is much bigger.

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[11] www.geostat.ge

[12] Neighbourhood SME financing: Georgia. Report. European Investment Bank February 2016, p. 15.

[13] OECD Small Business Act.

[14] http://ebrd-beeps.com/reports/beeps_v_report/

With limited access to external funding, SMEs rely heavily on internal sources of funding and retained earnings. In Georgia over 70% of investments in fixed assets and 80% of working capital are financed with internal resources[15]. Bank lending makes a small contribution to total financing needs which for both fixed assets and working capital are predominantly met by internal finance.

The quality of the business environment is highly diverse in the East. Based on the World Bank's Doing Business 2016 report (table 4), Georgia has the ease of doing business, in places itself on 24[16]. Getting credit is not the most serious problem facing businesses in any of the countries. For Georgia, doing business indicates that closing a business and getting electricity are the most important problems. Other aspects of the business environment in Georgia are generally positive and the country scores particularly well for dealing with licenses, registering property and starting a business[17].

Table 4. Doing Business rank in Georgia out of 189 countries

Starting a business	6
Dealing with construction permits	11
Getting electricity	62
Registering property	3
Getting credit	7
Protecting minority investors	20
Paying taxes	40
Enforcing contracts	13
Trading across borders	78
Resolving insolvency	101

Source: Own study was based on: Doing Business 2016 Going Beyond Efficiency.

The index published in Economic Freedom of the World measures the degree to which the policies and institutions of countries are supportive of economic freedom. The cornerstones of economic freedom are personal choice, voluntary exchange, freedom to enter markets and compete, and security of the person and privately owned property. For two data points are used to construct a summary index and to measure the degree of economic freedom in five broad areas:

- size of government: expenditures, taxes, and enterprises;
- legal structure and security of property rights;
- access to sound money;

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[15] D. De Clercq, H. Sapienza, H. Crijns, *The internationalization of small and medium firms,* "Small business economics" 2005, No. 24, p. 409–419.

[16] Doing Business 2016 Going Beyond Efficiency, http://www.doingbusiness.org/~/media/GIAWB/ Doing%20Business/Documents/Annual-Reports/English/DB16-Full-Report.pdf (14.05.2016).

[17] http://ebrd-beeps.com/reports/beeps_v_report/.

–   freedom to trade internationally; and
–   regulation of credit, labour, and business.

This year's EFW index ranks 159 countries and territories. In 2016 year's ranking, which is based on 2014 data, Hong Kong is again number one, Georgia is tied for fifth, and the United States ranked 16th for the second year in a row[18].

By Global Entrepreneurship Index, from 131 countries in the world's, Georgia has the 81-th place – index of 28.7[19].

Small and medium sized enterprises (SMEs) dominate Georgian business sector in terms of number of registered companies, however the relative production and turnover figures are much lower. According the National Statistics Office Georgia[20] the SME segment accounted for 18% of total private sector turnover and 19% of total production in Q1 2016[21].

Figure 1. SME production by sectors
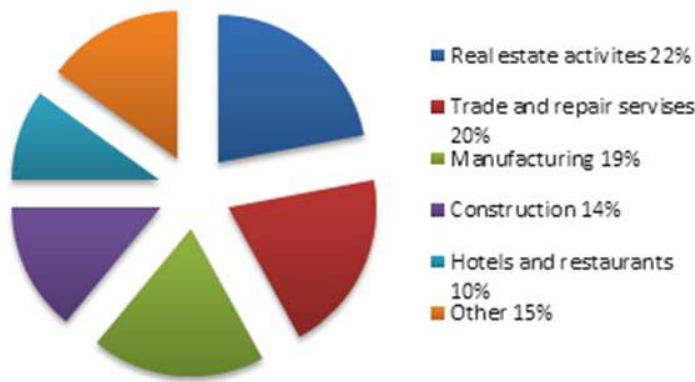
Source: Own study was based on: Economic Freedom of the World: 2016 Annual Report.
        http://cbw.ge/economy/georgia-among-top-five-economically-free-countries/
        https://www.fraserinstitute.org/studies/economic-freedom-of-the-world-2016-annual-report

To the contrary, SMEs account for 40% of total business sector employment. Average salaries for employees in SMEs are lower than average salaries of employees in large businesses. As of Q1 2016, average monthly salary in a small business entity was less than

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[18] Economic Freedom of the World: 2016 Annual Report, http://cbw.ge/economy/georgia-among-top-five-economically-free-countries/; https://www.fraserinstitute.org/studies/economic-freedom-of-the-world-2016-annual-report

[19] Global Entrepreneurship Index – 2016, https://thegedi.org/global-entrepreneurship-and-development-index/

[20] Official business sector statistics does not cover following sectors: financial intermediation; public administration; household production activities intended for own use; retail trade on markets and fairs.

[21] www.geostat.ge

half of the compensation in large enterprises, while average monthly earnings in medium enterprises amounted to 68% of large companies[22].

The services sector accounts for large part of the small and medium-sized enterprises. Looking at the sectoral breakdown, SMEs are more involved in production processes in real estate, trade and manufacturing sectors (see figure 1).

Most of the SMEs business is oriented toward the local market. A small share of SMEs is involved in direct export activities[23]. Inter alia, small volumes of production make it more costly for SMEs to explore export opportunities and expand in foreign markets. In addition, the share of firms with internationally recognized quality certification is relatively low.

The quality of the business environment to a large degree reflects the underlying institutional framework for SMEs. Assessment and recommendations for the institutional framework has been made under the OECD's initiative on the small business act.

In Georgia the legal framework has been improved, particularly with regards to private credit bureau information. Bank lending is constrained by high interest rates and collateral requirements. Microfinance institutions are widespread but lack capital, while other non-bank financial institutions are less developed. The legal framework for venture capital is in place but activity remains low. Looking forward, Georgia has formulated an SME strategy for implementation over 2016–2020[24].

Table 5. SME Policy Index Scores in Georgia

Bank Financing	3.3
Non-bank financing	3.7
Venture capital	1.7
Bankruptcy and second chance	2.9
Access to Finance	3.6
Standards and technical regulations	4.2
Legal and regulatory framework	4.3
Operational environment	4.3
Regulatory framework	3.5
Public procurement	4.0
Innovation policy for SMEs	2.9
Enterprise skills	3.0
Support measures for SME start-ups	3.7

Source: Own study was based on:OECD Small Business Act.

In Georgia the number of registered new enterprises rapidly increases. In 2007 this indicator was 227.2 thousand, in 2009 – reached 409.5 thousand, in 2011 – 506.3 thousand,

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[22] www.geostat.ge (12.09.2016).

[23] http://www.eib.org/attachments/efs/economic_report_neighbourhood_sme_financing_georgia_en.pdf

[24] *Ibidem.*

and in 2013 – increased and was 593.2 thousand. Also constantly growing specific share small and medium enterprises (SMEs) in the total number of enterprises (table 5)[25].

Despite the improvement in the general business environment, by viewpoint for development SMEs in Georgia are the same challenges, which in many developing countries. Although small and medium-sized enterprises comes the largest part existing enterprises, their contribution to GDP is still very low.

SME activity is especially noticeable in Tbilisi, Imereti, Qvemo Qartli and Achara region, than, when Racha-Lechxumi amd Qvemo Svaneti, Samcxe-Javakheti and Guria are very passive in small businesses activities. It is very important is the fact that SMEs are playing a negligible role in economic development of country. Particularly are high SMEs retardation in the transfer of innovative technology[26].

Government of Georgia attaches great importance to the process of economic development of small and medium entrepreneurs and aimed at further improvement of the business environment, which will contribute to the growth and development of small and medium enterprises. The clear example "The small and medium Entrepreneurship Development strategy for the years 2016–2020"[27] and also the Government program "A strong, democratic, United Georgia"[28] (Which periodically updated).

Development private sector and especially support development small and medium entrepreneurs one of the government's economic policy priority which is also reflected in "The social-economic development strategy – Georgia 2020 (June, 2014)"[29].

The Georgian government devotes special attention to increase competitiveness to the private sector and especially small and medium enterprises in the context of Georgia-EU Associate Agreement (which is an integral part of the Deep and Comprehensive Free Trade Agreement – DCFTA)[30].

DCFTA – requirements adaptation and their performance is especially important for Georgia, to make the businesses opportunities will be able maximize the use of the export potential. Accordingly, in addition to legal and institutional convergence, the great importance is attached of the private sector, including small and medium enterprises by DCFTA-'s requirements.

"The small and medium Entrepreneurship Development strategy for the years 2016–2020", which is based on European Small Business Act "Think Small First the"[31] principle. The main objective is to strengthen the competitiveness of small and medium enterprises sector, it makes a basis for the creation of an inclusive and sustainable for economic growth in. The strategy sets out goals that are to be achieved by 2020.

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[25] www.geostat.ge

[26] *Ibidem.*

[27] http://gov.ge/files/439_54422_706524_100-1.pdf;
     http://www.ge.undp.org/content/dam/georgia/docs/strategicdocs/UNDP_GE_CPD_2016-2020.pdf

[28] http://gov.ge/index.php?lang_id=geo&sec_id=68

[29] https://www.adb.org/sites/default/files/linked-documents/cps-geo-2014-2018-sd-01.pdf

[30] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830(02)&from=EN

[31] http://europa.eu/rapid/press-release_IP-08-1003_en.htm

Strategic directions and policy appropriate measures, which are reflected in this Strategy, developed for the analysis of the economic situation, SMEs institutional and business environment analysis, considering of existing assessments and recommendations. The effective implementation of the relevant policy measures should provide a strategy to reach their goals in 2020[32]. Specific measures are set out in the attached Action Plan. The strategy also involves the monitoring and evaluation mechanisms. "The small and medium Entrepreneurship Development strategy for the years 2016–2020" developed active cooperation for Organization Economic Cooperation and Development (OECD) and of the support the German International Cooperation Society (GIZ).

According to the Georgian National Statistics Service of the SMEs statistical results are as follows: in 2014 the number of existing enterprises was 70 760, from which 6170 were medium, and 60 640 were small enterprises. Accordingly, 94% of existing enterprises (9% – medium, 85% – small) occupied SMEs.

In 2006–2014 turnover of SMEs increased by 269% – from 2.4 billion GEL to 9 billion GEL. At the same time product output increased by 269.7% – from 1.4 billion GEL to 5.2 billion GEL. The largest share falls on Tbilisi.

In 2006–2014 the share of the value added created by SME was changed in gross value added enterprises, however it didn't exceed 20%, except in 2011 and 2014 when this indicator amounted respectively 21.8% and 21.1%. The largest share of value added (71.1%) was created in Tbilisi.

The share in GDP was low (18% - in 2014), thereby this proved that SME still cannot play an important role in the economy.

In 2006–2014 employment in SMEs increased by 53.7% – from 168.7 to 259.4 thousand. In this period number of hiring employees increased by 58% – from 148.1 thousand to 233.9 thousand. However, in SMEs the share of persons employed in enterprises was high (in 2014 – 43.8%), especially taking into account, that SMEs the share was high (94%) and 63% employed in Tbilisi.

In 2006–2014 medium-sized enterprises average monthly salaries of employees increased 3.4 times from 185 Gel to 636.9 Gel, but of small enterprises increased 2.7 times – from 141.4 Gel to 375.2 Gel.

During this period, small and medium-sized enterprises of intermediate consumption increased by 220% from 767.6 million GEL to 2.5 billion GEL, and investments in fixed assets – by 208% – from 272.4 million to 839.5 million Gel. In Tbilisi the largest share of investment was in fixed assets (62%). 2007–2014 – from 1.9 to 7.1 billion GEL[33].

In the forthcoming years the main policy priorities for small and medium-sized enterprises should include:

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[32] Y. Babych and M. Fuenfzig, *An Application of the Growth Diagnostics Framework: The Case of Georgia* (Working Paper No. 001-12). International School of Economics at TSU, Tbilisi, Republic of Georgia, 2012, http://ideas.repec.org/p/tbs/wpaper/12-001.html.

[33] www.geostat.ge

- an improved access to financing;
- an improved access to entrepreneurial trainings and EU practices accordingly;
- developing support measures to promote innovative entrepreneurship;
- developing new instruments in order to promote export.

Goals and objectives of strategy for development Georgian small and medium-sized enterprises should definitely create favourable environment for the enterprises development, raise their capacity, competitiveness and innovation. This would result in a growth of the number of workplaces, and therefore contribute to sustainable economic growth of the whole country. The objectives of "Small and Medium Enterprise Development Strategy" include (achieved up to 2020):

1. an increase in production of small and medium-sized enterprises by 10%;
2. an increase in the number of employers by 15%;
3. an increase in the size of manufacturing by 7%.

What is more, the main objectives for development strategy of small and medium-sized enterprises in Georgia include:

- an increase in competitiveness for small and medium enterprises on the local and international markets;
- the development of entrepreneurial skills and introduction of modern entrepreneurial culture;
- promotion of modernization and technological innovation.

4. CONCLUSION

In recent years the government's reforms in Georgia substantially improved the country's business environment significantly reducing administrative barriers and enhancing public services.

As for analysing the "Doing Business Ranking 2013 and 2016" indicators, and by comparing Georgia's data to other countries such as Armenia and the USA and other countries, it could be seen that some indicators have improved, some did not change. Especially "Protecting Investors" indicator hasn't been changed at all. It still remains at the same level (20). However, this means that Georgia maintains its stable economic and political situation.

Georgia, as a developing country, has been participating in many international programs. This cooperation and international involvement began to be very intense after the Rose Revolution. Since 2004, Georgia began to climb the international rankings and indices which provided interesting research ground for all kinds of social scientists. Participation in different types of projects and close cooperation with international institutions such as USAID, World Bank and many European institutions and foundations also resulted in a regular and most importantly, credible, monitoring of it situation.

The USAID Projects have been helping to reform Georgian economy for a long time. There are also SME programs, which aim to reduce poverty and boost employment. One of their goals is to strengthen the capacity of Georgia's agricultural sector. Entrepreneurs in this sector have to be able to respond to export opportunities.

Nevertheless, in order to promote the development of Georgia's small and medium-sized enterprises, and in order to strengthen the position of SMEs and their competitiveness on local and international markets a number of strategic activities are necessary to be implemented. They include, among other things:

- improvement of legislative, institutional and entrepreneurial environment;
- improvement of an access to finance sector;
- development of employees' skills and enhancement of entrepreneurial culture;
- promotion of different forms of export and SMEs internationalization;
- innovation, research and development.
- improvement of material and immaterial resources
- increase in the labour force
- improvement of information flow among the SMEs.

An important factor in the entrepreneurship environment is political stability. This may be especially important for foreign trade partners and potential investors. In this respect, recent history does not provide a very optimistic picture of Georgia. Political instability is cited as the main obstacle by representatives of small, medium and large companies in Georgia. To sum up, business potential of Georgia can be improved, however it must be done in a planned and coordinated manner.

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[14] http://www.ge.undp.org/content/dam/georgia/docs/strategicdocs/UNDP_GE_CPD_2016-2020.pdf
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PERSPEKTYWY STRATEGICZNE DLA BIZNESU W GRUZJI –ANALIZA PRZED-SIĘBIORSTW ŚREDNIEJ WIELKOŚCI W UNII EUROPEJSKIEJ ORAZ GRUZJI

Małe i średnie przedsiębiorstwa (MŚP) są jednym z najważniejszych motorów rozwoju gospodarczego. Określają one wytrzymałość systemu ekonomicznego danego kraju i stanowią główne źródło tworzenia miejsc pracy. MŚP mogą być traktowane jako katalizator dla wzrostu gospodarczego, które przyczyniają się do efektywnego wykorzystania ograniczonych zasobów we współpracy z dużymi firmami MŚP wpływają na wzrost produktu krajowego brutto, a ponadto przyczyniają się do powstawania klasy średniej, zwiększenia stabilności gospodarczej i politycznej. Ponadto małe i średnie przedsiębiorstwa odgrywają kluczową rolę w relacjach biznesowych. Silne i dobrze rozwinięty sektor małych i średnich przedsiębiorstw w znacznym stopniu przyczyniają się do eksportu, innowacji, w celu stworzenia nowoczesnej kultury przedsiębiorczości, a jednocześnie odgrywają ważną rolę w podnoszeniu poziomu dobrobytu kraju.

Skierowanie wsparcia do sektora MŚP należy uznać za trafne wobec specyficznych dla gruzińskiej gospodarki, potrzeb i wyzwań. Rozwój przedsiębiorczości stanowi konieczny warunek demokratyzacji. Jednym z głównych problemów małej przedsiębiorczości jest bardzo ograniczony dostęp do finansowania zewnętrznego, co stanowi nieprzekraczalną barierę dla inwestycji i rozwoju firm w początkowym okresie działalności. Z drugiej strony jednak, Gruzja należy do światowych liderów, jeśli chodzi o tworzenie przyjaznych warunków prawnych dla MSP. Mała i średnia przedsiębiorczość jest więc nie tylko obszarem, którego wsparcia odpowiada

na gruzińskie problemy, ale również tym, który przy sprzyjających okolicznościach, może okazać się największą gruzińską siłą.

W pierwszej części artykułu autorzy przedstawili doświadczenia MŚP w Unii Europejskiej, w drugiej części zaś omówili główne kierunki rozwoju MŚP w Gruzji na podstawie analizy danych statystycznych. Artykuł kończy się konkluzjami uwzględniającymi strategiczne priorytety rozwoju MSP w Gruzji.

Słowa kluczowe: MSP, biznes globalny, konkurencyjność, Gruzja, przedsiębiorczość

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SELECTION OF RELEVANT VARIABLES IDENTIFYING THE RELATIONSHIP BETWEEN THE GENERAL GOVERNMENT SECTOR SIZE AND THE ECONOMY

The article is dedicated to research on relations between size of general government sector and the economy. The aim of this article is determination of the most important values that are used to identify relations between size of the sector and the economy, as well as determination of how frequently they appear in relation to pair of the variables that are being researched. In exploration of relations between the variables that describe size of general government sector and the economy, the authors used methodology that bases on Bayes networks. The object of the analyses was the economies of EU member states and their public finances systems. The period that was selected for the research has covered the years 2000–2013 (inclusive). In order to describe economies, the authors selected 18 variables, whereas to describe general government sector 15 variables. All variables were sourced from databases of Eurostat, OECD and World Bank. Among economy's measures and general government sector's measures, there were also some benchmarks found as standard ones (classical ones) as well as measures proposed by the authors, which were not used in the scientific descriptions that were dedicated to researches on sizes of general government sector. Ipso facto, this article fits in the discussion on, general government sector and optimization of its size, and at the same time it provides starting point for further research on sector's size and its influence on economy.

Keywords: General government sector, general government sector size, economy, economic policy, public finance, relationship between the general government sector size and the economy

1. INTRODUCTION

The impact of the general government sector on the economy is a subject of continuous analyses. As part of the research on the relations linking the economy, there is a number of approaches that are often being based on analogous variables, but lead to entirely different conclusions. An example that confirms the above statement is the results of research on the impact of public spending on the economy, as well as stimulus and de-

stimulus impact of taxes on economic activity and the macroeconomic situation of country[4]. In both cases, the conducted research has frequently provided different results. This fact means that the question of dependences on the line "general government sector - economy" was still not sufficiently explored and explained. The topic of selection of variables that describe sizes of general government sector is still open. There are also constant studies on the methodology aimed for identifying and explaining the relation between the size of government and/or general government sector and its impact on the economy. Finally, a newer approach also abounds way of standardization and combination of input variables that are being compared (presenting the size of the general government sector) and outcome variables (i.e. parameters that describe the economy).

Considering the above, the purpose of this article was to typify the most important variables designed to identify the relations between the size of the general government sector and the economy. The realization of research objective has started with the analysis of the research approaches that were used in the past to describe the size of the central government and the general government sector. The conducted study has shown two patterns. First of all, there is vastly more frequent research on the impact of the size of the central government on the economy, rather than its impact on the size of the whole general government sector. Secondly, the dominant approach in defining the size of the central government and the size of the general government sector, is the use of measures based on income and public expenditure of the general government sector, which are expressed in relative values and absolute values, taking into account their internal structure (ie. the components of public revenues and expenditures), and a reference to the nominal and real ratios. This article assumes that due to the fact that the central government, according to ESA2010, is part of the general government sector, the measurements used to measure and extended by other components of the industry (referred in ESA2010), can be used to measure the size of the entire general government sector.

According to the results of the analyses, total public (general government) spending (expenditure / outlays), as a measure of the size of the central government (and hence to that also general government sector) appears in the literature continuously over the few past decades. The measure was used inter alia by Cameron[5], Saunders[6], as well as Bairam[7] and

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Conte & Darrat[8]. It also finds its application in a bit later studies of following authors: Hansson & Henrekson[9] and Gwartney et al.[10]. The measure can be also found in current studies that are dedicated to measurement of central government and general government sector. These studies were conducted by, among others, Chobanov & Mladenova[11], de Witte & Moesen[12], as well as Colombier[13], Afonso & Furceri[14] and Bergh & Karlsson[15] and Bergh & Henrekson[16].

In addition to nominal value of public spending that is commonly used to measure the size of the general government sector, in the literature there are quite frequent appearances of measures of sector taken by using relative measures, i.e. share of nominal government expenditure in nominal GNP ratios (or GDP ratios). The measure appeared in studies of Marlow[17], Barth & Bradley[18], Peden & Bradley[19], as well as in studies of Carlstrom & Gokhale[20], Engen & Skinner[21] and Yavas[22]. The measure was also used by Fölster & Henrekson[23], Dar & Amirkhalkhali[24], as well as by Afonso et al.[25]. Share of government

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nominal expenditure in nominal GNP ratios (or GDP ratios), constitutes measure used also in the studies of Dilrukshini[26], Scully[27] and Bose et al.[28] It was similarly often reffered by Ramayandi[29], Kustepeli[30], as well as Yuk[31]. The measure was also mentioned in the studies on central government and general government sector by Jiranyakul & Brahmasrene[32], Magazzino & Forte[33], as well as by Ruta et al.[34] and di Liddo et al.[35] Modified aspect of the measure mentioned above, which included realative measures in the place of public spending given in nominal values (i.e., real government expenditure to real GDP), are used in studies of inter alia Peltzman[36] and Marlow[37].

An alternative to presented above measures of the size of the central government and the general government sector, which refer to the overall level of public spending given in both relative and absolute terms, is the analysis of government and consumer spending sector made on the basis of the ratio share of government consumption in GDP expenditure. The measure was used in the studies of inter alia. Landau[38] and Ram[39]. It can be also found in the studies of following authors: Barth & Bradley[40], Grier & Tullock[41], and Carl-

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[40] J.R. Barth, M. Bradley, *The impact of government spending on economic activity*, Mimeo. The National Chamber Foundation, Washington 1988.

strom & Gokhale[42] and Levine & Renelt[43]. The level of consumer spending as the measure of sector was also used by Lin[44] and Guseh[45], as well as Vedder & Gallaway[46], Bose et al.[47] and Ramayandi[48]. Finally, general government sector scale of consumption constitutes the exponent of its size in the studies of Gunalp & Dincer[49] and Chobanov & Mladenova[50].

A kind of "modification" of the presented above ratio, is its recognition in real terms using ratios of real government consumption expenditure to real GDP used, among others, by Summers & Heston[51], Barro[52], as well as by Easterly & Rebelo[53], Sheehey[54] and Dar & Amirkhalkhali[55]. Consumer spending as a measure of central government and general government sector are also given per capita ratio and recognized as a measure, which is called real government consumption expenditure to real GDP per capita[56]. Measures related to consumer spending, as a ratio of the size of the general government sector, are share of government consumption expenditure in total consumption expenditures used by Afonso & Jalles[57] and growth rate of government consumption expenditure in GDP that ap-

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[57] A. Afonso, J. Jalles, *Economic Performance and Government Size*, Working Paper no. 21, DE UECE.

pears inter alia in studies of Ram[58] and Guseh[59]. Finally, it should be noted that in addition to the classic comparison of public spending to GDP (including current expenditure), in the literature there are perceived attempts to modify this-way-understand ratio of the general government sector. For instance Korpi[60] and Alexander[61], in place of the consumer spending that are referred in standard way to GDP, decided to use such measures as government final consumption, current disbursements of government, or total outlays of government include current disbursements plus gross capital formation.

Literature suggests also that size of central government and general government sector in economy is expressed by the scale of sector's investment spending. Measures that present such recognition of the issue being studied are inter alia: share of government investment in GDP Expenditure applied by Barth & Bradley[62], Easterly & Rebelo[63], Illarionov & Pivovarova[64], and Ramayandi[65], Gross real public investment is real GDP, as well as total consolidated public investment and public investment by general government to GDP, which were used in the studies of Easterly & Rebelo[66].

The division into consumer and investment spending, as a measure of the size of the central government and general government sector, complement the disaggregated measures of government expenditures (government provision of goods and services, defense, education, subsidies to industries, etc.) used in the studies of Friedland & Sanders[67] and Levine & Renelt[68], but also in studies of Easterly & Rebelo[69], Hansson & Henrekson[70] or Lin[71]. This measure, as the exponent of the size of central government and because of

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[66] W. Easterly, S. Rebelo, *Fiscal policy and economic growth: An empirical investigation*, "Journal of Monetary Economics" 1993, Vl. 32(3), pp. 417–458.

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[69] W. Easterly, S. Rebelo, *Fiscal policy and economic growth: An empirical investigation*, "Journal of Monetary Economics" 1993, Vol. 32(3), pp. 417–458.

[70] P. Hansson, M. Henrekson, *A new framework for testing the effect of government spending on growth and productivity*, Public Choice 1994, Vol. 81(3-4), pp. 381–401.

[71] S.A.Y. Lin, *Government spending and economic growth*, "Applied Economics" 2001, Vol. 26, pp. 83–94.

that also general government sector, was also used by Heitger[72], Vedder & Gallaway[73], and finally the Romero-Avila & Strauch[74].

A measure which, due to the reference to public expenditure structure corresponds with presented above approach to measure the size of the central government and general government sector, is the ratio called level of public transfer payments (including social security expenditure), used among others in the studies of authors such as Friedland & Sanders[75], Korpi[76] as well as by Barth & Bradley[77], Easterly & Rebelo[78] or Henrekson & Hansson[79]. The last of the measures based on public spending and related to its configurations of presented parameters describing general government sector, is measure called expenditure shares computed as the average of (government investment + current disbursements of government) to GDP. It was used in the studies of Folster & Henrekson[80].

In addition to review of presented above measures of the size of the central government and general government sector based on public expenditure, there is equally important place in the literature for measures based on public revenues. The most general category of income-based measures are the ratios based on the total underlying values of public revenues related to GDP or GNP. This type of measure is share of government revenue in GNP used by Rubinson[81] and Korpi[82]. Due to its general character, the more beneficial should be ration called disaggregated measures of government revenue that includes structure of public revenues components. This measure was applied by, among others, Romero-Avila & Strauch[83]. The consequence of breaking the total pool of public revenues into its sub-parts, was to use to measure a size of central government and the general government sector some measures, which are based on taxes as a main component of public revenue. An example of such measure is the ratio called the total tax revenue

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[76] W. Korpi, *Economic Growth and the Welfare State: Leaky Bucket or Irrigation System?*, "European Sociological Review" 1985, Vol. 1, No. 2 (Sep., 1985), pp. 97–118.

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that was used, among others, by Agell et al.[84], and Colombier[85] as well as Afonso & Furceri[86], Bergh & Karlsson[87] and Bergh & Henrekson[88]. This measure, however, give the value of tax revenue in nominal terms, which reduces the amount of information resulting from the values presented this way. A slightly different measure based on taxes is ratio of taxation to GDP. Presented measure shows the ratio of tax burden to GDP. Because of that it is not considered as a measure of tax revenues, but the scale of tax burdening economy. This indicator is used in the studies by, among others, Rabushka[89] as well as Kormendi & Koester[90], and Folster & Henrekson[91], and Chobanov & Mladenova[92]. Approximate measures of the fiscal burden are development of presented relative measures. The first of these is the ratio called average tax rates (total tax revenue divided by GDP), used among others by Engen & Skinner[93] and Agell et al.[94] The second measure is a parameter called tax shares, which is computed as the average of (total direct taxes + social security contributions received by government + Indirect taxes) to GDP, and which was used in study of inter alia Folster & Henrekson[95]. Complement to measures that base on tax revenue and tax rates is the ratio called the government fiscal surplus ratio to GDP, which is used in, among others, studies of Levine & Zervos[96].

The natural consequence of expressing the size of the central government and the general government sector detachable from the revenue side and the expenditure side, is a reference of these comparisons' results to the figures of sector that take into account the information load carried out separately by both sides of the public finance system (revenue and expenditure sides). The ratio that opens above group of measures that are used for measurement of size of the central government and general government sector, is ratio based on results of entire budget and entire sector. To these measures we can include

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share of the public budget in total output, which was used in the study of Bajo-Rubio[97], central government surplus (consolidated public sector surplus) to GDP, followed in the study by Easterly & Rebelo[98], as well as the central government deficit measure that was used in the article of Alexander[99] and government financial balance measure (ratio of government receipts minus outlays to GDP), used in the development of Dar & Amirkhalkhali[100]. The ratio called the general government net lending corresponds with the ratios presented above. This indicator was applied, among others, in study of Chobanov & Mladenova[101].

Presented above approaches to the measurement of the general government sector do not cover the issue of ratios and approaches to quantify of its size. The group of measures that has slightly different structure and describes the size of central government and the general government sector, are some ratios based on underlying assets held by the government and the sector (e.g. share of assets owned by government in total national assets and sale of state assets), as well as ratio based on the accumulation of capital (eg. gross fixed capital formation). The first of asset-backed measures was used inter alia in study of Illarionov & Pivovarova[102]. The second was used in study of Chobanov & Mladenova[103]. The last of the ratios that base on assets was applied in the study of authors such as Alexander[104] or Easterly & Rebelo[105], but also in studies of Heitger[106] and Dar & Amirkhalkhali[107]. Supplement of measures based on public funds and financial assets, are the ratios that relate to the number of people working in the sector, such as the general government sector employment and share of employees in the government sector in overall employment. These measures were used in the study of, among others, Gupta et al.[108] and Illarionov & Pivovarova[109] or McTigue[110] and Mitchell[111].

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[97] O. Bajo-Rubio, *A further generalization of the Solow growth model: the role of the public sector*, "Economic Letters" 2000, Vol. 68(1), pp. 79–84.

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[106] B. Heitger, *The Scope of Government and Its Impact on Economic Growth in OECD Countries*, Kiel Working Paper 2001, No. 1034, pp. 1–36.

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[110] M. McTigue, *Rolling Back Government: Lessons from New Zealand*, April 2004, Vol. 33, No 4, reprinted by permission from Imprimis, the National speech digest of Hillsdale College (www.hillsdale.edu).

Review of presented approaches to measure the size of the central government and the general government sector demonstrates a number of research efforts to develop a set of variables that allow to describe a size of general government sector in the best way. This article and its research objective is part of a discussion on exploring ratios of the size of the general government sector. An integral part of the article is also the attempt to identify the relationship between the size of the general government sector and the economy, which constitutes an additional aspect of the research work adopted by the authors of this study.

2. DATA AND METHODS

2.1. Data collection

The starting point for the preparation of this article was the selection of variables available to describe the size of the general government sector and the economy. The object of analysis was the economies of the EU Member States and their public finance systems. For these studies, it was admitted to cover a period of 13 years and to take into account the years from 2000 to 2013 (inclusive), with the exception of data from the year 2001. This year due to the large number of missing data were eliminated from the analysis. Basing on literature review and research experience of authors, there were 18 variables selected to describe the economy (see Table 1) and 15 variables selected in order to describe general government sector (see Table 2). The collected data were quantitative in nature and took into account the values given in both relative and absolute terms. The source of statistical data was the databases of Eurostat, OECD and World Bank. Among the ratios of the economy and the general government sector, there were also included measures considered as both standard (classic) and measures proposed by the authors, which have not been used in studies dedicated to research on the size of the general government sector and the economy. Their selection was purposeful and corresponded to specificity of the topic being examined. Thus, the article brings added value in the form of test variables, which analysis have not been conducted in studies dedicated to the above topics.

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[111] D.J. Mitchell, *The Impact of Government Spending on Economic Growth*, The Heritage Foundation, March 31, 2005, No. 1831.

Table 1. Variables describing the economy

No	Name	Unit
1	External balance of goods and services	Million Euro
2	Gross Domestic Product in current prices (per inhabitant)	GDP per inhabitant
3	Production in industry – dynamic	Percentage change compared to same period in previous year
4	Balance of the current account	Million Euro
5	Potential output of total economy	Million Euro
6	Harmonised Indices of Consumer Prices (HICPs)	Annual average rate of change
7	Inward FDI flows	Million USD
8	FDI (Foreign direct investment)	Million USD
9	Real effective exchange rate	Index 1999 = 100
10	Human Development Index – HDI	Value from 0 to 1
11	Outward FDI flows	Million USD
12	Growth rates of GDP (percent)	Percentage change
13	Gross capital formation (% GDP)	% GDP
14	Gross Domestic Product in current prices (per inhabitant) - dynamic	Percentage change
15	Activity rate	in %
16	Retail sales – dynamic	Index of turnover – Total 2010 = 100
17	Potential output of total economy - dynamic	Annual average rate of growth - percentage
18	Unemployment rate	in %

Source: Own work.

Table 2. Variable describing size of general government sector

No	Name	Unit
1	General Government gross capital formation (% GDP)	% GDP
2	Government consolidated gross debt (% GDP)	% GDP
3	Public sector employment	Number of people
4	Total General Government Expenditure (euro per inhabitant)	euro per inhabitant
5	Total General Government Revenue (euro per inhabitant)	euro per inhabitant
6	Net lending/ borrowing	Million Euro
7	Total General Government Expenditure (% GDP)	% GDP
8	Central government deficit (% GDP)	% GDP
9	General Government Sector Output (% GDP)	% GDP

Table 2 (contd). Variable describing size of general government sector

No	Name	Unit
10	Gross value added or General Government total value-added	basic (current) prices
11	The ratio of total taxes to GDP	% GDP
12	Final consumption expenditure	% GDP
13	General government deficit (% GDP)	% GDP
14	Total General Government Revenue (% GDP)	% GDP
15	General government Gross fixed capital formation (% GDP)	% GDP

Source: Own work.

The data were incomplete (missing attribute values), noisy (containing errors) and unnormalized. Therefore, in order to prepare the data for the analysis a preprocessing was necessary. The data preprocessing included three steps: (**i**) data cleaning to remove incompleteness and noise (**iii**) data reduction i.e. discretization (**ii**) data integration. The data was characterized by a large number of missing attributes/cases. For this reason, it was assumed that for further research the attributes/cases, in which the number of missing values is less than 1/3 of the total number, were selected. Then, single missing values were completed using advanced methods based on generalized additive models and the method of k-nearest neighbors.

The data describing numerical attributes were discretized. Two methods of discretization process were used: equal-width, where the interval range of values is constant and equal-frequency, where frequency of instances in the range is constant. For further analysis the following numbers of discretization intervals were selected: 4, 6 and 8. Moreover the interval labels were used to replace actual data values.

In order to assess the impact of the general government sector on the economy the data integration was required. The data was collected in the form of decision tables[112] i.e. tables of 2a type (consisting of any number of descriptive attributes (variables from general government sector size) and only one dependent attribute (called decision from economy domain) located in the rightmost column. There were 224 decision tables for examining the relationship between general government sector size and the economy , which were prepared for each discretization interval respectively.

2.2. Methods

The main goal of our research was to identify the most significant factors defining the relationship between general government sector and economy. To achieve this goal we used an effective method from machine learning based on Bayesian network. Therefore a brief introduction to the mentioned learning model seems necessary.

Bayesian networks[113] are graphical representation of probabilistic relationships among a set of random variables $X=\{X_1,..,Xn\}$. Each variable Xi (node in graph) contains finite

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[112] Z. Pawlak, *Rough Sets*, Intern J Comp Inf Sci 1982, 11, pp. 341–356.

[113] F.V. Jensen, *Bayesian Networks and Decision Graphs*, Springer-Verlag, New York 2001.

set of mutually exclusive states (values) x1,…,xn. The nodes and arcs form a directed, acyclic graph (DAG). The set of directed connections (arcs) in the network defines a hierarchy of nodes. If there exists an arc going out from node Xi to node Xj, then we say that Xi is a parent of Xi or Xj is a child of Xi. The intuitive meaning of an arc in the network corresponds to the statement that Xi has a direct influence on Xj. Each node is annotated with a conditional probability distribution (CPD) that represents p(Xi|Pa(Xi), where Pa(Xi) denotes the parents of Xi in DAG. The pair (DAG, CPD) describes the joint distribution p(X1,…Xn). An unique joint probability distribution over X from DAG is expressed by the following relationship:

$$p(X_i, \dots, X_n) = \prod_i p(X_i | Pa(X_i)) \tag{1}$$

Bayesian networks are based on the assumption of independence of nodes, so the network structure is essential for specifying the intransitive dependencies and provides information about the formation of probability distribution. Bayesian networks can be constructed manually or learned from data. With the increasing availability of data, learning is evidently a more feasible alternative for developing a Bayesian network. The Bayesian network learning problem can be categorized as 1) a parameter-learning problem when the structure is known, and 2) a structure-learning problem when the structure is unknown. Our research focused on the latter issue. Among various methods of structure learning[114], the greedy search provides a way to obtain a good model in a reasonable time frame as compared to other methods. For a fixed amount of computational time, a greedy search with random restarts produces better models than either simulated annealing or best-first search does[115]. In our research, Bayesian belief networks are developed with the help of a heuristic algorithm using the Bayesian function of network structure to distribution matching as a scoring function, named K2[116].

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[114] G.F. Cooper, E. Herskovitz, *A Bayesian Method for the Induction of probabilistic networks from data*, Mach Learn 1992, 9, pp. 309–347; A.L. de Santana, C.R. Frances, C.A. Rocha, S.V. Carvalho, N.L. Vijaykumar, L.P. Rego, J.C. Costa, *Strategies for Improving the Modeling and interpretability of Bayesian networks*, Data and Knowledge Engineering, 2007, 63(1), pp. 91–107; F. Liu, F. Tian, Q. Zhu, *An Improved Greedy Bayesian Network Learning Algorithm on Limited Data*, Lecture Notes in Computer Science, 2007a, Part I, 4668, pp. 49–57; F. Liu, Q. Zhu, *The Max-relevance and Minredundancy Greedy Bayesian Network Learning Algorithm*. Lecture Notes in Computer Science, 2007, Part I, 4527, pp. 346–356; W. Lam, F. Bacchus, *Using Causal Information and Local Measures to Learn Bayesian Networks* [in:] Proceedings of the Ninth Conference on Uncertainty in Artificial Intelligence, D. Heckerman, A. Mamdani (eds.), Morgan Kaufmann, 1993, pp. 243-250; W. Lam, F. Bacchus, *Learning Bayesian Belief Networks: an Approach Based on the MDL Principle*, Computational Intelligence, 1994, 10(3), pp. 269–293; D.M. Chickering, D. Heckerman, C. Meek, *A Bayesian Approach to Learning Bayesian Networks with Local Structure*, Technical report MSR-TR-97-07, Microsoft Research 1997b; H. Steck, *On the Use of Skeletons when Learning in Bayesian Networks* [in:] *Proceedings of the Sixteenth Conference on Uncertainty in Artificial Intelligence*, C. Boutilier, M. Goldszmidt (eds.). Morgan Kaufmann, 2000, pp. 558–565; E. Faulkner, *K2GA: Heuristically Guided Evolution of Bayesian Network Structures from Data*, in Proceedings of the IEEE Symposium on Computational Intelligence and Data Mining, IEEE, 2007, pp. 18–25; F. Sahin, A. Devasia, *Distributed Particle Swarm Optimization for Structural Bayesian Network Learning* [in:] Swarm Intelligence: Focus on Ant and Particle Swarm Optimization, F.T.S. Chan, M.K. Tiwari (eds.), I-Tech Education and Publishing, Chapter 27, Vienna, Austria 2007, pp. 505–532.

[115] D.M. Chickering, *Optimal Structure Identification with Greedy Search*, Journal of Machine Learning Research" 2002, 3, pp. 507–55.

[116] F.V. Jensen, *op. cit.*

Our experience with this method shows that it is robust – it finds informative features in data sets. It has been successfully used in various applications of medicine[117].

Initially, the set of classifiers (learning model) for 4, 6 and 8 discretization intervals in the form of bayesian network was built. The BeliefSEEKER system[118] was used for this purpose. The classifiers in the form of bayesian networks were obtained by applying the greedy algorithm K2 maintaining constant value of Dirichlet parameter ($\alpha = 50$), established during previously performed analysis of data sets. Then the learning models were tested using 10-fold- cross-validation. Ten-fold cross validation is commonly accepted as a standard way of validating classifiers. In this technique all cases are randomly reordered, and then a set of all cases is divided into ten mutually disjoint subsets of approximately equal size. For each subset, all remaining cases are used for training, i.e., for network construction, while the subset is used for testing. This approach allowed to obtain the best learning models (in form of networks) and also allowed studying the importance of attributes used for the description of the general government sector size.

3. RESULTS AND DISCUSSION

Evaluation of the classification effectiveness of the generated Bayesian networks indicates that the obtained learning models are characterized by a high classification efficiency for 4 discretization intervals. Due to the large number of evaluated classificators, as mentioned above, only selected results (for *unemployment rate* and *gross capital formation*), were presented in Table 3.

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[117] J.W. Grzymała-Busse, Z.S. Hippe, T. Mroczek, W. Paja, A. Buciński, *A Preliminary Attempt to Validation of Glasgow Outcome Scale for Describing Severe Brain Damages* [in:] Z.S. Hippe, J.L. Kulikowski (eds.), *Human-Computer Systems Interaction Backgrounds and Applications*, Springer-Verlag, Berlin/Heidelberg 2009, pp. 173–182; T. Mroczek, J.W. Grzymała-Busse, Z.S. Hippe, *A New Machine Learning Tool for Mining Brain Stroke Data*, in Proceedings of 3rd IEEE International Conference on Human System Interaction (HSI'2010), Rzeszow 2010, 13–15.05.2010, pp. 246–250; T. Mroczek, K. Pancerz, J. Warchoł, *Belief Networks in Classification of Laryngopathies Based on Speech Spectrum Analysis*, "Lecture Notes in Artificial Intelligence" 2012, 7414, pp. 222–231.

[118] T. Mroczek, *Bayesian Network* [in:] Z.S. Hippe, J.W. Grzymała-Busse (eds.), *Selected methods data mining. Analysis of the inconsistence data*, Springer –Verlag 2011, pp.55–75 and 85–99.

Table 3. Classification accuracy of learning models obtained for various discretization intervals

The goal of the consultation - *unemployment rate*	The goal of the consultation - *gross capital formation*
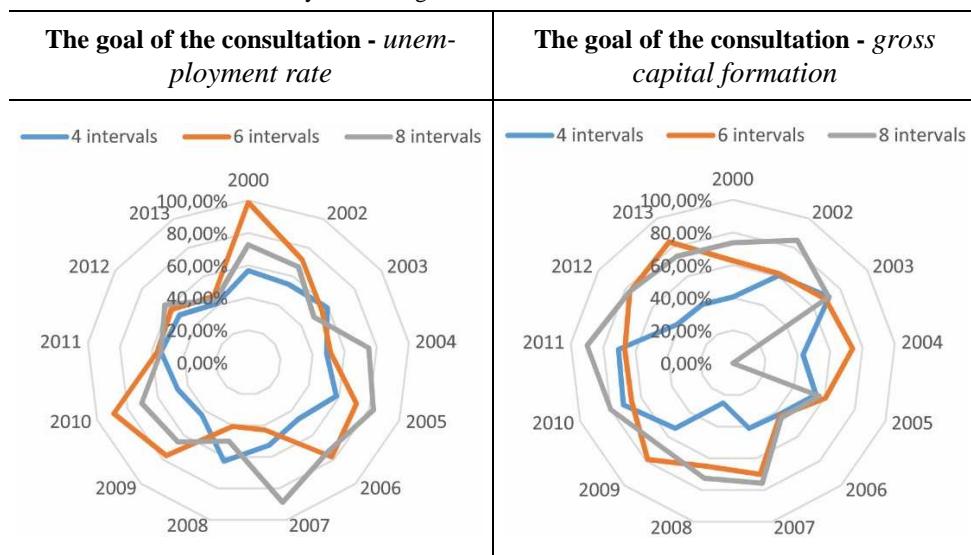
Source: Own work.

Analysis of the best learning models (for 4 discretization intervals) allowed finding the most important attributes describing size of the general government sector. The selected variables describe by far the largest extent the relationship between the size of the general government sector and the economy. Due to this, selected variables are the set of indicators that allow you to combine information about the scale of the sector and its potential impact on the economy. The most important attributes in Bayesian networks are the attributes having direct influence on the dependent variable. The frequency of attribute occurrences in networks is presented in Table 4.

The significance of the most relevant attributes was also confirmed during the analysis of learning models for 6 and 8 discretization intervals. It turned out that attributes indicated as the most important (from a classification point of view) for the best learning models had also a major role during building the learning models for 6 and 8 discretization intervals.

The Table 4 presents occurrences of the most significant attributes in Bayesian networks describing relation of general government sector with the economy. In accordance to the results of undertaken calculation of variable describing general government sector, which in the period of 2000-2013 was the most frequently indicated in the rules describing economy, was a parameter called total general government revenue (euro per inhabitant). In entire period under consideration, this parameter occurred 66 times in rules that show relation of sector with variables describing economies of examined EU countries. Second parameter in terms of frequency (61 cases) in the rules describing the relationship of the sector and the economy, was the variable called total general government expenditure

(euro per inhabitant). Third place was taken by ratio net lending / borrowing (million euros), which appeared in the 46 rules and proved a relation between size of the general government sector and the economy.

Next position were taken by the flowing variables: public sector employment (number of people) – 36 occurrences, total general government expenditure (% GDP) – 35 occurrences, central government deficit (% GDP) – 33 occurrences and general government deficit (% GDP) – 30 occurrences in rules describing relation of general government sector with economy. Following ratios noted less than 30 occurrences in rules describing examined dependence: ratio of total taxes to GDP (% GDP) – 28 occurrences and total general government revenue (% GDP) – 24 occurrences. Some of the measures performed in the research even worse: government consolidated gross debt (% GDP) – 19 occurrences in rules, final consumption expenditure (% GDP) – 16 occurrences in rules, and finally general government gross fixed capital formation (% GDP) – which similarly to the previous ratio proved 16 interdependences between size of the general government sector and the economy. From the other hand, the ratios that had decisively worst performance in comparisons, were the variables describing size of sector as general government sector output (% GDP), general government gross capital formation (% GDP) and gross value added (general government total value-added) (basic (current) prices). In the case of the first of them, it was only 13 instances in the rules describing the relation of the general government sector and the economy, and for two consecutive with only 12 identified interdependences.

Next dimension of benchmarking is to draw attention to the scale of the relations identified in relation to a single variable describing the size of the general government sector in cross-section of each year under examination. The variable describing the size of the sector, which was found in cross-section of individual years under examination as the most frequent one, was the parameter called net lending / borrowing (million euros), which in the years 2010 and 2013 occurred in 13 rules. The second variable in this ranking was total general government expenditure (euro per inhabitant), which in 2011 occurred in 11 rules defining the relation between the size of the sector and the economy. In third place of ranking, the authors listed ex aequo variables: total general government revenue (euro per inhabitant) and the general government deficit (% GDP), which respectively in 2010 and 2013 had 10 occurrences in the rules describing the relationship the size of the general government sector and the economy. Three variables noted 9 occurrences in the rules, i.e. public sector employment (number of people) in 2004, the central government deficit (% GDP) in 2012, and total general government revenue (% of GDP) in 2002. In the case of other variables describing the size of the general government sector and its relation with the economy, the frequency of occurrences in the rules did not exceed 5 cases.

In the next stage of research based on the results obtained by using Bayesian network, it was found which of variables describing the size of general government sector and the economy were correlated and also in how many years this relation was noted. Presentation of research findings is shown in Table 5. According to its content, the variables describing size of general government sector, which had strongest relation to variables describing the economy, were following ratios: total general government expenditure (euro per inhabitant) and total general government revenue (euro per inhabitant). First of mentioned had 11-years lasting relation with the variables describing economy – Gross Domestic Product in current prices (per inhabitant). Second measure confirmed relation with variable FDI

(foreign direct investment) (Million USD) for 11 years, and with variable Gross Domestic Product in current prices (per inhabitant) for 10 years.

The broadest scale of relations between variable describing general government sector and the variables describing the economy was characterized by two ratios. The first of these is public sector employment (number of people), and the second is the net lending / borrowing (million euros). Both variables occurred respectively in 17 out of the 18 variables describing the economy. Parameter public sector employment showed no relationship only with variable retail sales – dynamic (index of turnover – total 2010 = 100). In turn, the parameter net lending / borrowing kept "neutrality" only in relation to a variable called production in industry – dynamic (percentage change compared to same period in previous year).

Next group of variables describing general government sector, which was found with very extended scale of relations with economy, was composed with three ratios: total general government expenditure (euro per inhabitant), total general government revenue (euro per inhabitant), as well as the ratio of total taxes to GDP (% GDP). Invoked variables showed relations with 16 parameters describing economy. First of invoked variables did not show any relations only with ratio retail sales – dynamic (index of turnover – total 2010 = 100) and ratio real effective exchange rate (index 1999 = 100). Second variable describing general government sector was left with no relation with variables for economy as: potential output of total economy (million euro) and unemployment rate (in %). On the other hand, last of invoked variables describing general government sector had not relation with ratio for economy as activity rate (in %) and retail sales – dynamic (index of turnover – total 2010 = 100).

The last group of variables, in terms of scale of relations with the economy and which describe the general government sector, was composed from two ratios: the general government deficit (% GDP) and total general government revenue (% of GDP). Both variables did not show an association with only three parameters describing the economy. First of them was neutral towards variables as: production in industry – dynamic (percentage change compared to same period in previous year), gross domestic product in current prices (per inhabitant) – dynamic (percentage change) and potential output of total economy – dynamic (annual average rate of growth – percentage). From the other hand, second variable have not occurred in the rules describing economy in reference to following variables: production in industry – dynamic (percentage change compared to same period in previous year), balance of the current account (million euro), as well as activity rate (in %).

The worst in comparisons on scale of the relations between the variable describing the general government sector and the variables describing the economy, was the ratio of general government gross capital formation (% of GDP), which is not found in 11 rules clarifying the relationship of sector with the economy. On the following positions in the ranking, there were listed following variables: the general government sector output (% GDP) – no relation to the 8 variables for the economy, as well as gross value added (the general government total value-added) (basic (current) prices), final consumption Expenditure (% of GDP) and general government gross fixed capital formation (% of GDP) – which did not appear in the 7 rules explaining the relation to the economy.

4. CONCLUSION

The research has found a number of regularities. Firstly, conducted analyzes allowed to build a ranking of variables describing the size of the general government sector according to the maximum number of occurrences in the rules describing the economy (see Table 6). Variables describing size of general government sector that occurred in the largest number of rules explaining relation of sector and the economy were: total general government revenue (euro per inhabitant) and total general government expenditure (euro per inhabitant). First of mentioned variables occurred in 66 rules and second in 61 rules. On the next places of the ranking, there were: net lending/ borrowing (million euro) – 46 occurrences in rules, public sector employment (number of people) – 36 occurrences in rules and total general government expenditure (% GDP) – 35 occurrences in rules describing relation with the economy. Variables describing size of general government sector, that were characterized by the smallest number of occurrences in the rules describing relation with the economy were: general government sector output (% GDP) – 13 occurrences, as well as general government gross capital formation (% GDP) and gross value added (general government total value-added) (basic (current) prices) –12 occurrences.
Secondly, the research allowed to create ranking of variables describing the size of the general government sector basing on the number of relationships identified in relation to a single variable describing the size of the general government sector with variable describing the economy (see Table 7). Largest number of relations with the variables describing economy had the variable called net lending/ borrowing (million euro) – 13 occurrences. On the next places, there were variables total general government expenditure (euro per inhabitant) – 11 occurrences and *ex aequo* two variables total general government revenue (euro per inhabitant) and general government deficit (% GDP) –10 occurrences. Without any doubts, the worst score was obtained by two variables, i.e. gross value added (general government total value-added) (basic (current) prices) and general government gross capital formation (% GDP). Referring to the first of them, it occurred only 3 times in the conducted research and when comes to second of them, it had only 2 occurrences in the rules explaining relations of size of general government sector and the economy.

Thirdly, as a result of research, it was found which of the variables describing the size of the general government sector and the variables describing the economy in the period showed the highest frequency of relations measured by the number of years, where relations between variables were identified (see Table 8). According to results of research, the variable total general government revenue (euro per inhabitant) describing size of general government sector has decisively highest frequency of relations with variable FDI (foreign direct investment) (million USD) describing economy, whereas variable total general government expenditure (euro per inhabitant), was found the most frequent relation with parameter Gross Domestic Product in current prices (per inhabitant) describing the economy. In both cases, the relation was identified in 11 out of 13 years of examined years. The relations with variable FDI (foreign direct investment) (million USD) describing economy, was also exhibited by a variable called public sector employment (number of people), where the identified relation was found in 9 examined years. Remaining, the most frequent variables occurring in rules that describe size of general government sector were corresponding with other (than mentioned above), variables describing economy. In case of variable net lending/borrowing (million euro), the one was the variable activity rate (in %), and describing it relation was noted in 8 years from examined period. In 8 out of 13

analyzed years, the authors identified also relation of variables central government deficit (% GDP) and real effective exchange rate (Index 1999 = 100). When comes to variable total general government expenditure (% GDP), it corresponded with Gross Domestic Product in current prices (per inhabitant) - dynamic (percentage change), when total general government revenue (% GDP) showed relationship with potential output of total economy - dynamic (annual average rate of growth - percentage). Identified relations, similarly to previous pair of variables, occurred in 7 years from examined period. Three variables describing size of general government sector were the worst in ranking prepared by basing on mentioned criteria: final consumption expenditure (% GDP), general government gross fixed capital formation (% GDP) and general government gross capital formation (% GDP). Variable called final consumption expenditure (% GDP), occurred in the rules describing economy by the parameters as: FDI (Foreign direct investment) (Million USD) and Harmonized Indices of Consumer Prices (HICPs) (Annual average rate of change). On the other hand, variable called general government gross fixed capital formation (% GDP) showed relation with three variables describing the economy. These included unemployment rate (in %), potential output of total economy - dynamic (annual average rate of growth – percentage) and gross capital formation (% GDP). All dependences mentioned above occurred in 3 out of 13 years of examination period. The last of the variables, i.e. general government gross capital formation (% GDP) describing size of general government sector, was even worst. It corresponded with three variables describing the economy: unemployment rate (in %), gross capital formation (% GDP) and harmonized indices of consumer prices (HICPs) (annual average rate of change). The relation between mentioned variables describing size of general government sector and the economy was noted in only 2 out of 4. The study helped to build the ranking of variables describing the size of the general government sector by the number of variables describing economy in relation to which, identified measures of sector have shown the interdependency (see Table 9). The variables determining size of the general government sector, which showed the relationship with 17 out of 18 variables of the economy were: public sector employment (number of people) and net lending / borrowing (million euros). Equally high score was found in relation to the three other variables describing the size of the sector, i.e. total general government expenditure (euro per inhabitant), total general government revenue (euro per inhabitant) and the ratio of total taxes to GDP (% of GDP). In relation to each of them, the authors have found interdependences with 16 variables describing the economy of the EU countries under investigation. In contrast, the least in this ranking came out the following ratios of the size of the general government sector: gross value added (the general government total value-added) (basic (current) prices), final consumption expenditure (% of GDP) and general government gross fixed capital formation (% of GDP). They showed association with 11 out of 18 variables describing the economy. Ever worse score was obtained by the variables general government sector output (% GDP) – showing a relationship with a 10 variables describing the economy, and eventually the general government gross capital formation (% of GDP) – corresponding only with 7 variables describing the economy of the EU countries under examination.

Developed classifications enabled to create collection presenting collectively ranking positions of variables describing size of the general government sector based on each of the four criteria listed in Tables 6, 7, 8 and 9. On this basis, the authors determined the average position in ranking for each variable describing the sector. In the next step, the variables specifying size of general government sector were put in order by the criteria of

average ranking position occupied by each of variable. It was assumed that the higher ranking position of the variable is, the better it fits to explain interdependences occurring between the size of the general government sector and the economy (see Table 10). According to prepared ranking, three variables that simultaneously obtained the highest position were total general government expenditure (euro per inhabitant), as well as total general government revenue (euro per inhabitant) and net lending/borrowing (million euro). Second place was taken by the variable called public sector employment (number of people), and third place went to central government deficit (% GDP). Next group was formed from four variables that were listed on fourth place, i.e. variables, which fit in smaller degree to explain relation between size of the sector and the economy. The variables inside the group were general government deficit (% GDP), total general government expenditure (% GDP), total general government revenue (% GDP) and variable the ratio of total taxes to GDP (% GDP). On fifth place, there were *ex aequo* government consolidated gross debt (% GDP) and general government sector output (% GDP). Variables, that were ranked on sixth place, and because of that were qualified to explain the relation between the general government sector and economy in the second smallest degree were: final consumption expenditure (% GDP), and in next order gross value added (general government total value-added) (basic (current) prices) and general government gross fixed capital formation (% GDP). Last, seventh place was taken by the variable called general government gross capital formation (% GDP), what proved that it has the weakest relation between size of the general government sector and the economy.

Recieved findings constitute the basis for further research focusing on two research problems. The first of these will be to investigate the relationship between the variables describing the size of the general government sector and the variables describing the economy, using decision rules. Indicated decision rules are "if-then" rules that describe certain characteristics of combination between values of condition attributes and decision attributes. Among the various decision rule generation methods we have chosen the LEM2 algorithm[119] for further analysis. Second research problem, to which authors will dedicate separate paper is to improve the efficiency of learning models classification that describe relations between size of general government sector and the economy. The average effectiveness of analyzed learning models classification was 63,31%. We expect to improve the quality of classification by merging data for each dependent attribute (from economy domain). Until now the learning models were generated for each year separately. Consequently, it could lead to the dispersion of information hidden in the data. In order to eliminate this problem the data will be grouped by years for each of the dependent variable.

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[119] J.W. Grzymala-Busse, *LERS – A system for learning from examples based on rough sets* [in:] R. Slowinski (ed.), *Intelligent Decision Support. Handbook of Applications and Advances of the Rough Set Theory*, Kluwer Academic Publishers, Dordrecht, Boston, London 1992.

Table 4. Occurrences of the most significant attributes in Bayesian networks describing the relationship of the general government sector size and the economy

Parameters describing the relationship of general government sector size and the economy	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
General Government gross capital formation (% GDP)	2	1	2	-	1	1	2	-	-	-	1	2	-
Government consolidated gross debt (% GDP)	1	1	2	1	5	1	4	-	-	1	1	-	2
Public sector employment (Number of people)	6	6	1	9	6	1	6	1	-	-	-	-	-
Total General Government Expenditure (Euro per inhabitant)	6	3	5	6	6	2	8	2	1	3	11	4	4
Total General Government Revenue (Euro per inhabitant)	8	8	8	10	4	1	5	3	1	5	5	3	5
Net lending/ borrowing (Million Euro)	4	2	3	2	-	-	-	-	-	13	2	7	13
Total General Government Expenditure (% GDP)	4	4	5	5	1	-	4	-	-	2	1	5	4
Central government deficit (% GDP)	5	4	2	1	-	-	-	-	1	3	4	9	4
General Government Sector Output (% GDP)	3	4	3	1	-	2	-	-	-	-	-	-	-
Gross value added (General Government total value-added) (Basic (current) prices)	2	1	1	-	3	1	-	1	-	1	-	-	2
The ratio of total taxes to GDP (% GDP)	3	5	2	2	3	1	3	-	-	3	4	2	-
Final consumption expenditure (% GDP)	1	1	1	-	-	-	-	-	-	4	2	4	3
General government deficit (% GDP)	3	2	1	1	-	-	1	-	-	6	1	5	10
Total General Government Revenue (% GDP)	-	9	3	4	-	-	1	-	-	3	1	1	2
General government gross fixed capital formation (% GDP)	-	-	2	4	-	1	2	1	-	2	-	2	2

Source: Own work.

Table 5. Juxtaposition presenting relation between variables that describe size of general government sector and particular variables describing economy in analyzed period 2000-2013 (number in bracket states for number of years in analyzed period, where the relation between the variables was identified)

	Unemployment rate (in %)	Potential output of total economy dynamic (Annual average rate of growth percentage)	Retail sales - dynamic (Index of turnover – Total 2010 = 100)	Activity rate (in %)	Gross Domestic Product in current prices (per inhabitant) – dynamic (% change)	Gross capital formation (% GDP)	Growth rates of GDP (Percentage change)	Outward FDI flows (Million USD)	Human Development Index – HDI (Value from 0 to 1)	Real effective exchange rate (Index 1999 = 100)	FDI (Foreign direct investment) (Million USD)	Inward FDI flows (Million USD)	Harmonized Indices of Consumer Prices (HICPs) (Annual average rate of change)	Potential output of total economy (Million euro)	Balance of the current account (Million euro)	Production in industry – dynamic (% change compared to same period in previous year)	Gross Domestic Product in current prices (per inhabitant)	External balance of goods and services (Million euro)
General Government gross capital formation (% GDP)	2	1	1	-	-	2	-	-	-	-	-	-	2	1	-	-	1	-
Government consolidated gross debt (% GDP)	1	2	3	-	4	4	2	-	2	1	1	1	-	1	2	1	-	1
Public sector employment (Number of people)	7	3	-	8	3	2	1	8	1	4	9	8	2	2	8	8	2	5
Total General Government Expenditure (Euro per inhabitant)	1	2	-	4	4	4	2	1	6	-	4	7	2	2	8	1	11	5

Table 5 (contd). Juxtaposition presenting relation between variables that describe size of general government sector and particular variables describing economy in analyzed period 2000-2013 (number in bracket states for number of years in analyzed period, where the relation between the variables was identified)

	9	10	4	8	-	3	9	11	2	5	10	3	2	5	4	3	2	-
Total General Government Revenue (Euro per inhabitant)	9	10	4	8	-	3	9	11	2	5	10	3	2	5	4	3	2	-
Net lending/ borrowing (Million Euro)	6	2	-	4	3	5	2	4	6	2	1	6	5	3	8	4	4	7
Total General Government Expenditure (% GDP)	2	2	1	-	4	6	2	1	1	-	-	6	4	7	-	4	4	2
Central government deficit (% GDP)	5	1	-	4	3	3	1	3	8	-	1	3	-	3	3	4	-	1
General Government Sector Output (% GDP)	-	-	6	3	-	-	4	3	3	-	2	2	-	-	1	3	-	1
Gross value added (General Government total value-added) (Basic prices)	-	-	1	-	2	-	-	1	2	-	1	5	-	1	1	1	1	1
The ratio of total taxes to GDP (% GDP)	1	1	5	1	3	2	1	2	1	2	2	2	1	1	-	-	6	2
Final consumption expenditure (% GDP)	1	-	-	-	-	3	2	3	-	1	1	-	1	2	1	2	1	-
General government deficit (% GDP)	6	2	-	4	2	4	1	4	5	1	1	2	2	-	6	1	-	2
Total General Government Revenue (% GDP)	6	2	-	-	1	5	1	2	3	1	1	5	4	5	-	1	7	1
General government gross fixed capital formation (% GDP)	-	1	1	2	2	2	1	-	-	-	-	1	3	-	-	1	3	3

Source: Own work.

Table 6. Ranking by maximum number of appearances of variable describing size of general government sector in the rules that describe economy in the period 2000-2013 (inclusive)

No	Name	Variable value
1	Total General Government Revenue (Euro per inhabitant)	66
2	Total General Government Expenditure (Euro per inhabitant)	61
3	Net lending/ borrowing (Million Euro)	46
4	Public sector employment (Number of people)	36
5	Total General Government Expenditure (% GDP)	35
6	Central government deficit (% GDP)	33
7	General government deficit (% GDP)	30
8	The ratio of total taxes to GDP (% GDP)	28
9	Total General Government Revenue (% GDP)	24
10	Government consolidated gross debt (% GDP)	19
11	Final consumption expenditure (% GDP)	16
11	General government gross fixed capital formation (% GDP)	16
12	General Government Sector Output (% GDP)	13
13	General Government gross capital formation (% GDP)	12
13	Gross value added (General Government total value-added) (Basic (current) prices)	12

Source: Own work.

Table 7. Ranking by number of identified relations in relations to single variable that describe size of general government sector with the variable describing economy in period 2000-2013 (inclusive)

No	Name	Variable value
1	Net lending/ borrowing (Million Euro)	13
2	Total General Government Expenditure (Euro per inhabitant)	11
3	Total General Government Revenue (Euro per inhabitant)	10
	General government deficit (% GDP)	10
	Central government deficit (% GDP)	9
4	Public sector employment (Number of people)	9
	Total General Government Revenue (% GDP)	9
	Total General Government Expenditure (% GDP)	5
5	The ratio of total taxes to GDP (% GDP)	5
	Government consolidated gross debt (% GDP)	5
	Final consumption expenditure (% GDP)	4
6	General government gross fixed capital formation (% GDP)	4
	General Government Sector Output (% GDP)	4
7	Gross value added (General Government total value-added) (Basic (current) prices)	3
8	General Government gross capital formation (% GDP)	2

Source: Own work.

Table 8. Ranking by number of years, where identified relation between variable describing size of general government sector and variable describing economy in period 2000-2013 (inclusive)

No	Name of variable describing size of general government sector	Name of variable describing economy	Number of years, where relation between variable describing size of general government sector and the economy was identified
1	Total General Government Expenditure (Euro per inhabitant)	Gross Domestic Product in current prices (per inhabitant)	11
1	Total General Government Revenue (Euro per inhabitant)	FDI (Foreign direct investment) (Million USD)	11
2	Public sector employment (Number of people)	FDI (Foreign direct investment) (Million USD)	9
3	Net lending/ borrowing (Million Euro)	Activity rate (in %)	8
3	Central government deficit (% GDP)	Real effective exchange rate (Index 1999 = 100)	8
4	Total General Government Revenue (% GDP)	Potential output of total economy - dynamic (Annual average rate of growth - percentage)	7
4	Total General Government Expenditure (% GDP)	Gross Domestic Product in current prices (per inhabitant) - dynamic (Percentage change)	7
5	General Government Sector Output (% GDP)	Production in industry – dynamic (Percentage change compared to same period in previous year)	6
5	The ratio of total taxes to GDP (% GDP)	Potential output of total economy - dynamic (Annual average rate of growth - percentage)	6
		Activity rate (in %)	6
	General government deficit (% GDP)	External balance of goods and services (Million euro)	6

Table 8 (contd). Ranking by number of years, where identified relation between variable describing size of general government sector and variable describing economy in period 2000-2013 (inclusive)

6	Gross value added (General Government total value-added) (Basic (current) prices)	Growth rates of GDP (Percentage change)	5
7	Government consolidated gross debt (% GDP)	Gross Domestic Product in current prices (per inhabitant) - dynamic (Percentage change)	4
		Gross capital formation (% GDP)	4
	Final consumption expenditure (% GDP)	FDI (Foreign direct investment) (Million USD)	3
		Harmonised Indices of Consumer Prices (HICPs) (Annual average rate of change)	3
8		Unemployment rate (in %)	3
	General government gross fixed capital formation (% GDP)	Potential output of total economy - dynamic (Annual average rate of growth - percentage)	3
		Gross capital formation (% GDP)	3
		Unemployment rate (in %)	2
9	General Government gross capital formation (% GDP)	Gross capital formation (% GDP)	2
		Harmonised Indices of Consumer Prices (HICPs) (Annual average rate of change)	2

Source: Own work.

Table 9. Ranking by number of appearances of variable describing size of general government sector in rules that describe relation between economy in the period 2000-2013 (inclusive)

No	Name	Number of appearances (Number of variables that describe the economy = 18)
1	Public sector employment (Number of people)	17
	Net lending/ borrowing (Million Euro)	17
2	Total General Government Expenditure (Euro per inhabitant)	16
	Total General Government Revenue (Euro per inhabitant)	16
	The ratio of total taxes to GDP (% GDP)	16
3	General government deficit (% GDP)	15
	Total General Government Revenue (% GDP)	15
	Government consolidated gross debt (% GDP)	14
4	Total General Government Expenditure (% GDP)	14
	Central government deficit (% GDP)	14
5	Gross value added (General Government total value-added) (Basic (current) prices)	11
	Final consumption expenditure (% GDP)	11
	General government gross fixed capital formation (% GDP)	11
6	General Government Sector Output (% GDP)	10
7	General Government gross capital formation (% GDP)	7

Source: Own work.

Table 10. Classification of variables describing size of general government sector that exhibits "strongest" relations with the variables describing economy by the criteria of average ranking position gained in the particular rankings

Name of variable describing size of general government sector	Rank-ing 1	Rank-ing 2	Rank-ing 3	Rank-ing 4	Average ranking position of variable	Variable describing size of general government sector that exhibits its strongest relation with the economy
Total General Government Expenditure (Euro per inhabitant)	2	2	1	2	2	1
Total General Government Revenue (Euro per inhabitant)	1	3	1	2	2	1
Net lending/ borrowing (Million Euro)	3	1	3	1	2	1
Public sector employment (Number of people)	4	4	2	1	3	2
Central government deficit (% GDP)	6	4	3	4	4	3
Total General Government Expenditure (% GDP)	5	5	4	4	5	4
General government deficit (% GDP)	7	3	5	3	5	4
Total General Government Revenue (% GDP)	9	4	4	3	5	4
The ratio of total taxes to GDP (% GDP)	8	5	5	2	5	4
Government consolidated gross debt (% GDP)	10	6	7	4	7	5
General Government Sector Output (% GDP)	12	6	5	6	7	5
Final consumption expenditure (% GDP)	11	6	8	5	8	6
General government gross fixed capital formation (% GDP)	11	6	8	5	8	6

Table 10 (contd). Classification of variables describing size of general government sector that exhibits "strongest" relations with the variables describing economy by the criteria of average ranking position gained in the particular rankings

| Gross value added (General Government total value-added) (Basic (current) prices) | 13 | 7 | 6 | 5 | 8 | 6 |
| General Government gross capital formation (% GDP) | 13 | 8 | 9 | 7 | 9 | 7 |

Ranking 1. Ranking by maximum number of appearances of variable describing size of general government sector in the rules that describe economy in the period 2000-2013 (inclusive)

Ranking 2. Ranking by number of identified relations in relations to single variable that describe size of general government sector with the variable describing economy in period 2000-2013(inclusive)

Ranking 3. Ranking by number of years, where identified relation between variable describing size of general government sector and variable describing economy in period 2000-2013 (inclusive)

Ranking 4. Ranking by number of appearances of variable describing size of general government sector in rules that describe relation between economy in the period 2000-2013 (inclusive)

Source: Own work.

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SELEKCJA ZMIENNYCH IDENTYFIKUJĄCYCH ZALEŻNOŚĆ MIĘDZY WIELKOŚCIĄ SEKTORA FINANSÓW PUBLICZNYCH I GOSPODARKI

Artykuł poświęcony został zbadaniu związków zachodzących pomiędzy rozmiarem sektora finansów publicznych (SFP) a gospodarką. Celem niniejszego artykułu jest zidentyfikowanie najważniejszych zmiennych służących zobrazowaniu związków zachodzących pomiędzy rozmiarem SFP i gospodarką oraz ustalenie częstotliwości ich występowania w relacji do badanych par zmiennych. Do odkrywania związków pomiędzy zmiennymi opisującymi rozmiary SFP oraz gospodarki wykorzystano metodologię bazującą na sieciach Bayesa. Analizie poddano gospodarki państw UE oraz ich systemy finansów publicznych. Okres przyjęty do badań obejmował roczniki od 2000 do 2013. Do opisu gospodarki wytypowano 18, a do opisu SFP 15 zmiennych, dla których źródłem były bazy Eurostat, OECD oraz Banku Światowego. Wśród miar gospodarki oraz SFP znalazły się zarówno miary

uznawane za standardowe (klasyczne), jak i mierniki zaproponowane przez autorów. Prze-prowadzone badania pozwoliły zbudować ranking zmiennych opisujących rozmiary SFP według klasyfikacji opartej na maksymalnej liczbie ich wystąpień w regułach opisujących gospodarkę. Badanie umożliwiło także opracowanie rankingu zmiennych opisujących rozmiary SFP oparte na liczbie związków identyfikowanych w odniesieniu do pojedynczej zmiennej opisującej rozmiary SFP ze zmienną opisującą gospodarkę. W wyniku analiz ustalono, które ze zmiennych opisujących rozmiary SFP oraz zmiennych opisujących gospodarkę wykazywały w badanym okresie największą częstotliwość związków mierzoną liczbą lat, w których identyfikowano powiązania pomiędzy zmiennymi. Badanie pozwoliło zbudować ranking zmiennych opisujących rozmiary SFP według kryterium liczby zmiennych opisujących gospodarkę, w stosunku do których miary SFP wykazywały związek. Przeprowadzone ustalenia powodują, że artykuł wpisuje się w dyskusję nad SFP i optymalizacją jego rozmiaru, a jednocześnie stanowi punkt wyjścia dla dalszych badań nad jego wielkością oraz wpływem na gospodarkę.

Słowa kluczowe: Sektor finansów publicznych, wielkość sektora finansów publicznych, gospodarka, polityka gospodarcza, finanse publiczne, związki pomiędzy rozmiarem sektora finansów publicznych i gospodarką

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EXPLORING VALUES AND ATTITUDES TOWARDS CSR AMONGST CEMS SGH STUDENTS IN POLAND

The objective of the paper is to explore the values and attitudes of CSR amongst CEMS SGH students in Poland. CEMS – the global alliance of management education is an association of best universities around the world. There are 29 prominent partner universities, amongst others are: Warsaw School of Economics in Poland, University of Economics in Czech Republic or ESADE in Spain. Students are perceived as future managers of the corporate world and their perception about CSR is deemed important to business organisations. The education sector is seen as playing a crucial role in preparing the next generations of future leaders through incorporating CSR related subjects into programmes and research. The study will offer a unique insight into the CSR attitudes of business students in a job choice context answering the question in which extent CEMS education shapes the values of students. The research was undertaken using online survey. CSR values were explored in the context of a hypothetical job search scenario. While the majority of students rated CSR values highly in the job choice scenario, a larger majority were willing to trade this off for greater extrinsic benefits. The results of the research will permit to design effective business programmes that shape the social responsibility behaviours of the next generation of managers and leaders. This paper used survey data from small sample of management students in a limited geographic area that is Poland. Hence, it might be difficult to generalize the results to a larger, more representative population.

Keywords: Corporate social Responsibility, CEMS education, business education, values, attitudes to corporate social responsibility

1. INTRODUCTION

Over the past decade and especially since the global financial crisis beginning in 2008 there has been an increasingly vocal debate inside the world's 13,000 business schools and related stakeholders in companies and elsewhere, about whether management education is fit for purpose, triggering conversations among business educators and the business press, asking "Just what are they teaching in business schools?"[2].

In order to counter this unhealthy phenomenon, many business schools and academic scholars call for reinforcement of the concept of corporate social responsibilities (CSR) in their programs and curriculum in order to shape and instil such values in the people that will lead the corporations tomorrow[3]. The question is no longer whether CSR should have a place in the business curricula, but how it should be incorporated, and, perhaps more importantly, what role business schools have to play in CSR education.

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Worldwide, organizations are increasingly expected to behave in ethically and socially responsible ways and their leaders to possess the competencies and skills to address a range of issues including equity, sustainability and ethics[4].

Universities should prepare students to enter the labour market so that graduates can forecast and react to changes that may occur in the future economy. The scope of university education should embrace the global scope of companies. Simultaneously, universities[5] should play an active role in disseminating good citizenship, creating the conditions for the development of free economy and development of good relations with the stakeholders[6].

Organizations that will be employing management graduates increasingly demand them to "hit the ground running". Van Baalen and Moratis[7] have addressed the issue of relevance from the perspective of the role of business schools emerging network economy. They contend: "The management curriculum itself has been a focus of corporate criticism over the years, being accused of being developed on the basis of a view that has been characterized as being too internally oriented. Business schools, many corporate executives will contend, should have a keen eye for what happens outside its walls and try to bridge the dicrepancies of what they offer and the corporate sector really needs. Existing perceived curricular deficiencies have to be overcome, which, perhaps, can be realized best by developing close intellectual partnerships with the business sector. The main challenge business schools are being posed with considering the business school curriculum entails developing curricula and educating managers in order to prepare managers for the network economy".

While the turbulent international business environment challenges business executives to rethink existing managerial models, Garcia and Dolan[8], Dolan and Richley[9], Dolan et al.[10] developed an original framework emphasizing the importance of the underlying values structure, and asserting that it is essential for today's managers, to replace earlier philosophies such as "Management by Instruction" and "Management by Objective". Dolan and his colleagues propose that "Management by Values" is the emerging strategic leadership tool of significant potential for practical applications to resolve the problems facing the 21st century organizations. Thus, managers' values represent a predisposition to behave; the chain leading from attitudes to behaviour is direct and is explicit in the work context.

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[7] P.J. Van Baalen, L.T. Moratis, *Management Education in the Network Economy: Its Context, Content, and Organization*, Kluwer Academic Publishers, Dordrecht 2001.

[8] S. Garcia and S.L. Dolan, *La direccio´n por valores*, McGraw-Hill, Madrid 2003.

[9] S.L. Dolan, B. Richley, *Management by values (MBV): a new philosophy to absorb the complexity of managing organization in a new economic order* [in:] *Handbook of Business Strategy,* ed. P. Coats, 2005.

[10] S.L. Dolan, S. Garcia, B. Richley, *Managing by Values: A Corporate Guide to Living, being Alive and Making a Living in the 21st Century*'', Palgrave-Macmillan, London 2006.

CSR has been an increasingly important area of focus in both academia and in practice. As an example, Christensen et al.[11] found that 42 percent of the top global MBA programs require CSR as part of their core content. Many higher learning institutions conduct CSR activities for the benefit of their stakeholders – including administrators, lecturers, staff, and students – together with the community. Universities are known as places in which students can gain knowledge and experience, and are platforms to promote beneficial and healthy lifestyles to students, including exposure to and practice of good CSR[12]. As the corporate world debates the merits of corporate sustainability specialists versus mainstream generalists, there is a growing need for business educators to grasp this issue by the horns. To date, with a few exceptions, business education at European level and international level has failed to answer the debate in a coherent way.

Higher education institutions are argued to play a pivotal role in global sustainable development: "No institutions in modern society are better situated and none more obliged to facilitate the transition to a sustainable future than colleges and universities"[13]. This pressure on business schools to transform themselves is being met with a variety of responses. These include a growing number of courses and seminars, in-house consulting, new academic research and teaching networks and a plethora of tools. Moreover more and more universities make close links with foreign universities to deliver world class education. On the other hand business schools have been accused of assisting to create "the end of the business world as we know it" with calls for a greater emphasis on ethics ("The Economics" 2009). A report on business schools curricula "post downturn" by Durham Business School (2009) acknowledged that business schools were widely criticized for contributing to the current economic crisis by producing MBAs that "are focused on creating shareholder value and high risk strategies instead of sustainable practices and stakeholder responsibility". For Haniffa[14]: "Business school faculty can have the greatest impact on the way the next generation of corporate leaders think, which will be more effective than any legislation. They need to be role models who can inspire and challenge current business models. We have to move away from teaching business as a science devoid of moral or ethical considerations, as that results in managers who lack personal reflection and values".

Critics say that these remedies attempting to educate future managers comes too late, but other believe that it might minimize future ethically based risks, all depending on the set of values the future managers enter the world of work after graduation.

2. IMPORTANCE OF CSR EDUCATION – LITERATURE REVIEW

Despite differences of opinion about the efficacy of CSR, there is a general consensus among academics, policy makers, and practitioners that corporations operate with a social

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[11] L.J. Christensen, E. Pierce, L.P. Hartman, W.M. Hoffman, J. Carrier, *Ethics, CSR, and sustainability education in the Financial Times top 50 global business schools: baseline data and future research directions*, "Journal of Business Ethics" 2007, Vol. 73 No. 4.

[12] C. Nicolescu, *Corporate Social Responsibility in the Romanian Higher Education*, Open Society Institute, Romania 2006.

[13] D. Orr, *The Nature of Design, Oxford University Press*, New York 2002.

[14] R. Haniffa, *Ethics are needed in the boardroom*, "Financial Times" 2009, November 29, available at: www.ft.com/cms/s/4230ad3e-db4f-11de-9023-00144feabdc0.html (accessed 25 January 2010).

sanction that requires that they operate within the norms and mores of the societies in which they exist[15].

Management education needs to keep up with current and anticipate future developments and align its curriculum to the best extent possible with the demands of business while at the same recognizing its objective to educate students in a culture of liberal education. A prominent recent turn in the challenge of relevance pertains to a profound development in the world of business: the increased attention for corporate social responsibility (CSR).

CSR increasingly receives attention from managers and researchers. However, most of this research was conducted in the context of developed countries, which are prominent in their CSR activities. Compared with the growing body of literature on the nature of and consequences of CSR, however, the matter of how to improve the companies' level of CSR has received relatively limited attention. Nonetheless, CSR research in the recent past has primarily focused on identifying the ideal "how to carry out CSR". Scholars have paid considerable attention in studying the relationship between CSR and firm performance. Yet, little empirical research demonstrates how can education sector can shape values and attitudes of business students.

Clearly, with increasing public exposure, corporate social responsibility is building a more solid platform in the public's awareness, but at the same time there is a common struggle between the wish to be socially responsible and the competing pressures of business performances. What is important to note, however, is that there is escalating evidence from academic studies that shows "positive correlations between responsible business behaviour and return-on-investment, stock price, consumer preferences and employee loyalty"[16].

Business schools may play an important role, both by developing business-oriented research on the concept and the implementation of CSR and by mainstreaming them in their different training and education programmes. Academic institutions are in a position to provide today's and tomorrow's managers with knowledge about the positive impact of a CSR strategy on companies' long-term performance and about the tools and procedures that characterize a sound and integrated CSR approach.

This is confirmed by Kolondinsky et al.[17], Persons[18] who ascertain that the education sector is seen as playing a critical role in preparing the next generation of leaders both through research into CSR and by incorporating CSR-related subjects into their education and training programs.

Business schools have a duty to give students a solid grounding in the theory underpinning the role of sustainability as a preparation for the real world situations they will ultimately encounter. Universities recognize that teachers of core courses like – such as finance, strategic management, marketing and accounting – need to know where sustainability issues affect their own module content and how to teach this relationship.

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[15] P. Jain, S.K. Datta, A. Roy, *Awareness and attitude towards corporate social responsibility*, "International Journal of Law and Management" 2014, Vol. 56, Iss. 3, http://dx.doi.org/10.1108/IJLMA-05-2012-0012.

[16] B.N. Kumar and H. Steinmann (Eds), *Ethics in International Management*, de Gruyter, New York 1998.

[17] R.W. Kolondinsky, T.M. Madden, D.S. Zisk and E.T. Henkel, *Attitudes about corporate social responsibility: business student predictors*, "Journal of Business Ethics" 2010, (91).

[18] O. Persons, *Incorporating Corporate Social Responsibility and Sustainability Into a Business Course: A Shared Experience,* „Journal of Education for Business" 2012, (87).

Therefore CSR education is considered important for a number of reasons.
1. Firstly, as noted, it is seen as indispensable for the development of a new generation of socially responsible leaders[19].
2. Secondly, it is becoming increasingly important in professional (e.g. accounting) and educational accreditation (e.g. Association to Advance Collegiate Schools of Business)[20].
3. Thirdly, effective CSR strategies are increasingly recognized as good business practice[21].
4. Lastly, sensitizing students to CSR issues should assist them in the job search process by enabling them to more accurately discriminate between the genuine CSR credentials and "spin" signalled by potential employers[22].

However, while much has been written about the need for CSR education, particularly in postgraduate programs, far less attention has been paid to exploring the CSR values and attitudes of students at the undergraduate level[23]. Yet knowledge of these, particularly for educational institutions is important for at least two reasons. First, curricula which content and delivery acknowledges and incorporates students' views and opinions increases their relevance and meaning[24], which ultimately should increase the ability of courses to address the social responsibility demands of organizations and the broader society. This is particularly important for subjects that are grounded in concepts such as values, sustainability and moral obligation typical of those offered in the suite that comprises CSR education.

Second, at the classroom level knowing about students' CSR views and attitudes should enhance educators' ability to frame the discourse in ways that students can relate to and engage in. Business education in particular has long been criticized for being overly procedural, organization-centric and geared towards the ethics of personal advantage[25]. Moreover, given the global increase in awareness of environmental and social responsibility issues, it is worth to investigate the possible values and attitudes to CSR.

Therefore, the aim of this paper is to explore the CSR values of current SGH CEMS (Global Alliance in Management Education) students. The students which have been selected are coming from Warsaw School of Economics (SGH) in Poland. The context selected is that of a hypothetical job scenario. Gauging students' views is seen as an important element in the CSR curriculum development planned for future years. The quality of business education has implications for the relevance of courses offered at the institution concerned and students' job choice decisions, both of which have implications for

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[19] *Ibidem.*

[20] M.G. Lamoreaux and P. Bonner, *Preparing for the next opportunity*, "Journal of Accountancy" 2009, (208) No. 5; O. Persons, *op. cit.*

[21] I. Ducassy, *Does Corporate Social Responsibility Pay Off in Times of Crisis? An Alternate Perspective on the Relationship between Financial and Corporate Social Performance.* Corporate Social Responsibility and Environmental Management Corp. Soc. Responsib. Environ. Mgmt 2012.

[22] D. Owen, *CSR after Enron: a role for the academic accounting profession?,* "European Accounting Review" 2007, (14), No. 2.

[23] R.W. Kolondinsky, T.M. Madden, D.S. Zisk and E.T. Henkel, *op. cit.*

[24] M. Prosser & K. Triggler, *Understanding Learning and Teaching. The experience in higher education,* University Press ed., Milton Keynes 1999.

[25] D. Owen, *op. cit.*; R.W. Kolondinsky, T.M. Madden, D.S. Zisk, and E.T. Henkel, *op. cit.*

future directions of work practice. The key dimensions of this investigation and their justification are discussed in the following section.

Understanding dimensions of students' CSR perceptions is an important first stage in educating the next generation of employees/leaders to be both socially responsible and astute in the job choice process. Changes in the broader society and possible changes in generational preferences suggest that research into students' CSR work values and attitudes needs to be ongoing. As part of this, the study described here addresses the following research questions:

RQ1. Is organizational CSR an important criterion in the job choice process among CEMS SGH students in Poland?

RQ2. What decisions is going to be made by CEMS SGH graduate concerning the company which offers great career opportunities but is very little engaged in CSR?

RQ3. What are students' value priorities among key CSR dimensions?

This paper has as its focus a small-scale study comprising of 45 CEMS SGH (Warsaw School of Economics in Poland). The questionnaire was tested first within CEMS CLUB Warsaw to assess whether the questions were clear and easily understood. The research commenced on 10th May 2015 and was completed on 1st December 2015 using electronic survey. The link to the questionnaire was placed on Facebook CEMS SGH groups. Additionally the questionnaire was sent to current students and alumni of CEMS in Poland using regular email. The questionnaire altogether was sent to 200 students. As it was an online survey the respondents had a chance to post their comments online. The questionnaire was well received. Students were sharing their positive experiences regarding taking part in CSR projects whilst studying.

In the survey the majority of students and graduates were aged (18–25). The sample was nearly equal considering the participation of female (46,67 per) and men (53,33%).

3. GLOBAL ALLIANCE IN MANAGEMENT EDUCATION (CEMS)- MAIN IDEAS AND ASSUMPTIONS

CEMS is the network of best universities and corporate partners that offer joint Master programme on Management on the higher international level. Internalization of the higher education sector forces structural changes in universities all over the world. Along with an increasing number of students participating in students' exchange there is a growing search for new models of business education, a growing presssure for making changes or implementing certain patterns.

This is one of the reason why universities partner with the others but it is also followed by the increasing competition for home-based and overseas students and higher educational institutions now recognise that they need to market themselves in a climate of international competition. The flag product of CEMS is Master in International Management (MIM). This one-year joint degree programme is exclusively open to the Master's students of the CEMS schools who meet very strict selection criteria, and receive the CEMS degree in conjunction with their home degree. CEMS also fosters faculty cooperation for joint teaching, research and doctoral education. The CEMS-MIM was intended to provide students with an opportunity to commute between the various countries and partner schools, thus widening their national horizons (Fig. 1).

Fig. 1. Structure of CEMS MIM programme

Source: Own development.

The mission of the organization is formed as such: "CEMS is a global alliance of academic and corporate institutions dedicated to educating and preparing future generations of global business leaders to enter into a multilingual, multicultural and interconnected business world through the CEMS Master's in International Management"[26].

The partnership between companies and universities is a unique feature of the CEMS organisation, giving room to an enormous potential of networking and international cooperation. The partnership materialises in the joint development and teaching of the CEMS MIM, which represents both a platform for academics and practitioners for knowledge creating cooperation in the field of Management and a unique learning opportunity for students by giving them access to innovative course content, relevant international exposure and applied project work[27]. Since late-2010, CEMS has welcomed NGOs and inter-governmental organisations into the alliance to stimulate positive change in international management and to broaden students' views to foster critical thinking. CEMS commitment to an ethical and responsible approach to management education includes a strong focus on sustainability. Through the involvement of social partners in the classroom and governance, to faculty groups and students working on corporate social responsibility and sustainability issues, all CEMS stakeholders benefit from this global discussion on sustainability.

The CEMS MIM learning objectives are its core attributes that constitute the programme's specific, competitive positioning are such as:

1/ Internationalism

Our graduates are knowledgeable international business practitioners, able to execute effective business decision-making and change management in diverse contexts.

2/ Practical Approach

Our graduates apply advanced management and leadership competencies developed through systematic experience of and engagement with the corporate world.

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[26] www.cems.org (retrived: February 10, 2015).

[27] University Guideline for the CEMS Master's in International Management, internal CEMS materials.

3/ Responsible Citizenship

> Our graduates champion a holistic vision of responsible business decision-making, leadership and citizenship, informed by ethical reasoning, personal integrity, and respect for social diversity.

4/ Reflective Critical Thinking

> Our graduates are confident, agile, and reflective decision-makers and problem-solvers, able to formulate and apply innovative solutions to complex business challenges.

5/ Comprehensive Leadership

> Our graduates are fully aware of their personal responsibility and accountability and of the ethical and cultural frameworks in which leadership is exerted[28].

CEMS network is a response to the complexity of managing in today's economic landscape at the same time because of the level of development of management science, it is necessary to offer the curriculum drawing on the experience of the best universities and companies in the world. One university hasn't got the most talented professors. In the globalized world the knowledge has to be gathered from universities worldwide, companies and non-profit organization alike. Only constant observation of the business world can prepare future leaders to face incoming challenges.

The CEMS Courses, which integrate corporate and academic expertise in the discussion of international business scenarios with students, are mainly taught in the programme's first semester; whereas the second semester is leading students to more independent learning activities: in a consulting-like team driven Business Project, and in writing an international research paper. Multicultural aptitude and multilingual skills – excellence in written and oral English being a must – an internship abroad and Skills Seminars aim at completing the CEMS graduates profile: fit for starting a career and assuming responsibility in the fast changing environment of global management tasks[29].

Skill Seminars are training seminars in practical skills relevant to an international management environment. The topics may include:

- Time management,
- Intercultural skills,
- Moderation techniques,
- Group work abilities,
- International negotiation,
- Presentation skills.

Small groups of students (10–15 students) ensure an interactive dimension. **Skill Seminars are not graded**. **The emphasis is on training, not on assessment of the performance**. Skill Seminars are offered within CEMS programme, very often in close cooperation with companies. In case of SGH, CEMS students for the cohort 2015/2016 are taking part in the obligatory skill seminar titled: *Responsible Global Leadership*. Participation in the skill seminar is obligatory and essential for students to start an effective professional career and adjust easily to an international management environment. The core module obligatory for all the students is: *Corporate Governance* which is based on case study analysis.

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[28] www.cems.org (retrived: February 10, 2015).

[29] University Guideline for the CEMS Master's in International Management, internal CEMS materials.

The combination of two worlds: the companies and universities from around the world, it is essential today, when the various disciplines of science and technology have developed their own code of conduct and the globalization of knowledge and modern technology have long since entered the walls of the university. In the knowledge -based economy, two actors, i.e. businesses and universities, they seem to be preoccupied to close cooperation. These two partners who have different missions and objectives, have a chance to solve the current economic, social, religious dilemmas. The young graduate equipped with an arsenal of knowledge, ideas, will be challenged to pass it on, to serve businesses, the state with their skills, knowledge. In today's globalized world, universities are becoming the mainstay of knowledge and guarantee of its sharing.

4. RESULTS AND DISCUSSIONS

As a current student or graduate, the needs of job seeker largely concern judging whether or not a particular organization would be a good place to work[30]. A number of empirical studies support the significance of CSR activity on these judgements, finding that perceptions of positive CSR performance enhance organizational attractiveness and subsequent job pursuit intentions[31]. It has been found that CSR education enables students to better evaluate the CSR credentials of potential employers[32].

It was not surprising that 75,56% of CEMS SGH students think that organization commitment towards CSR should be visible through environmental, ethical human rights and consumer concerns into every day in their business operations. But every fourth student thinks that CSR is of a second importance as the main obligation for a company is to make profit. SGH students are very much performace oriented and the main specialization that students enrol at bachelor level is Finance and Accounting. Moreover students are aware that after completing such degree they will have not a problem to find a job after graduation. Close links with the business may possible for the best students to be spotted by the potential emplyoer. It may the case where a teacher becomes a boss.

CSR rating is an important factor to consider when applying for a job.

The responses to the question: how important is the business education in shaping CSR values and attitudes is presented on the Fig. 2

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[30] H.S. Albinger, S.J. Freeman, *Corporate social performance and attractiveness as an employer to different job seeking population*, "Journal of Business Ethics" 2000, Vol. 28; K.B. Backhaus, B.B. Stone, K. Heiner, *Exploring the relationship between corporate social performance and employer attractiveness,* "Business and Society" 2002, Vol. 41, No. 3.

[31] T.S. Behrend, B.A. Baker and L.F. Thompson, *Effects of pro-environmental recruiting messages: the role of organizational reputation*, "Journal of Business Psychology" 2009, Vol. 23; W.R. Evans, and D.D. Davis, *An examination of perceived corporate citizenship, job applicant attraction and CSR work role definition*, "Business and Society" 2011, Vol. 50 No. 3.

[32] D. Owen, *op. cit.*; W.R. Evans, D.D. Davis, *op. cit.*

Fig. 2. Importance of business education in shaping SGH student attitudes towards CSR
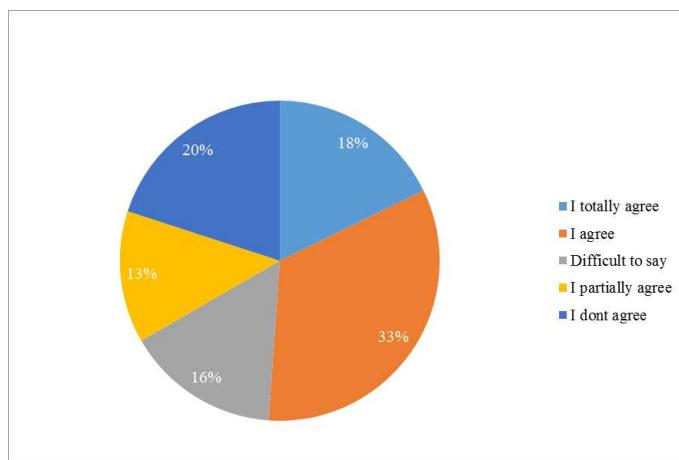
Source: Own development.

Students of CEMS SGH were certain on importance of business education. 18% total-ly agree with that statement. 50% of students assume that my business education influ-enced the way they think of CSR. To test the statistical hypothesis, the zero and alternative hypothesis were tested with the use of χ^2 statistics. The H_0 and H_1 hypothesis can be for-mulated as follows:

H_0 = the classes I have participated in did not influence me to be more socially respon-sible
H_1 = the classes I have participated in influenced me to be more socially responsible
χ^2 = 17,12 when p = 9,48, and α=0,05

Therefore the H_0 is rejected for the benefit of H_1 hypothesis. This confirms that the business education in both universities shapes the attitudes of the students which is con-sistent with Kolodinsky[33]. This is a signal for educators of the importance of CSR subjects that should be incorporated within the business curricula. Students working on real life examples can perceive the value and importance of CSR that should be built within each area of business operation.

The next question: "If a company provided outstanding career opportunities/travel op-portunities/salary and rewards but engaged very little in CSR, I would NOT consider applying to such a company" was designed not only to validate the previous item, but also to evaluate whether students' view on the importance of CSR would waver if faced with a situation that entailed trade-offs. The division of answers in visible on Fig. 3.

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[33] R.W. Kolondinsky, T.M. Madden, D.S. Zisk and E.T. Henkel, *op. cit.*

Fig. 3. Business opportunities but little engagement in CSR
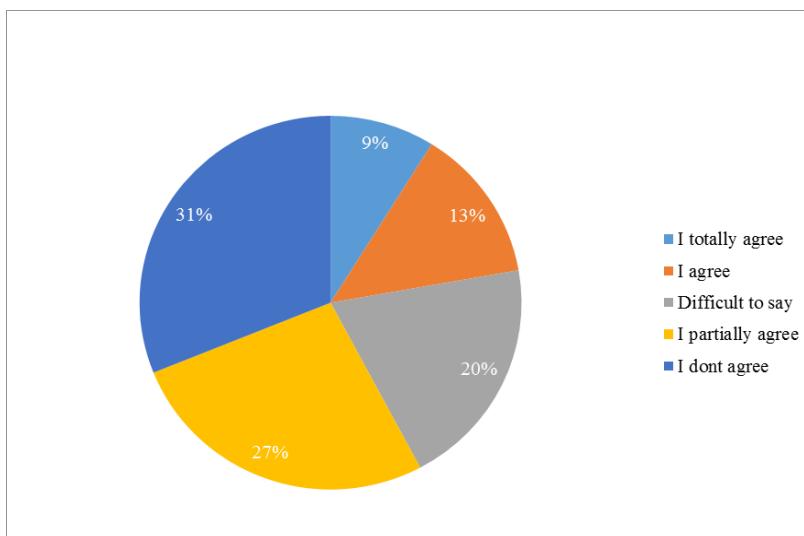
Source: Own development.

With respect to proposition two, the hypothetical CSR-rewards trade-off option, over half the sample (58 per cent) reported that they would consider applying to an organization that offered outstanding rewards but engaged little in CSR, 22 per cent maintained their CSR value stance by agreeing with the proposition and 20 per cent were undecided. The distribution of answers is interesting considering the average grade and gender. Every fourth student with a high average grade (4.5–5.0) would not consider applying to such company. This confirm the value of god marks. Are they a condition for obtaining a well-paid job and the possibility to choose amongst alternative job offers? It may be the reason. The response rate considering gender is not significant 23,81 per cent of female would not accept such offer and 20,84 per cent of men respectively. The difference between the means (utilizing the full five-point Likert scale) for the two propositions was statistically significant.

H_o = the student will not consider applying to a company which engaged very little in CSR even though it provided outstanding career opportunities
H_1 = the student will consider applying to a company which engaged very little in CSR even though it provided outstanding career opportunities
χ^2 =17,78 when p=9,48, and α=0,05 SGH CEMS

Therefore the H_0 hypothesis is rejected for the benefit of H_1 hypothesis.

The students would apply to a company which is very little engaged in CSR but offers outstanding career opportunities. On such basis it can be concluded that although SGH students have a positive attitude towards CSR when challenged with job prospects they would not drop a great chance of potential job when a company is very little engaged in CSR. That pecuniary rewards would seem to sway the social conscience of a majority of

students, however, is consistent with much of the research on new generation suggesting a tendency to be motivated more by economic rewards and start salaries than other generations. This can explained as well by the situation that for young generation it is becoming more and more difficult to obtain a well-paid job. Great education is just a gate to the business world not a guarantee. Moreover when applying for a first job it is expected from students that during their time at the university apart from studying they were involved in different student initiatives or were part of student's association. Since SGH has got prominent links with the business, the quest for excellent students is always in search. Even though SGH is ranked as the best business school in Poland we would expect students to be more socially astute knowing their privilege of being a graduate from a well-known business school in Poland. Another explanation can be offered saying that CSR module has just been recently incorporated into curriculum in business schools (roughly 10–15 years ago)

To assess perceptions of the relative importance of five CSR dimensions respondents were asked to rank each using a scale from 1 ("most important") to 5 "(least important"). Four of the dimensions and their descriptions were drawn from the RepuTex (2011) Corporate Sustainability Report. These are corporate governance (ethical business conduct, audit and compliance, shareholder relations), workplace practices (workplace relations, occupational health and safety, anti-discrimination measures), social impact (human rights, community investment and development) and environmental impact (pollution, use of unsustainable resources, use of animals for product testing). To explore the market practices dimension further a fifth dimension "fair operating practices" was added.

Table 1 shows the frequencies and rank of the five CSR dimensions explored. It can be seen that in the "most important" column workplace practices ranked first (48,89 per cent) and environmental impact last (8,89 per cent). At the opposite end of the spectrum, rated the "least important" were environmental impact and fair operating practices (35,56 and 24,44 per cent, respectively). Overall, it appears that when it comes to the question of CSR in the workplace, the students were the most concerned about workplace practices and policies and were the most undecided or negative in about issues of environmental impact.

The relative importance of each dimension has been found to vary according to the stage of the job acquisition process, the job role envisaged, student characteristics and the extent of their CSR education. While initial attraction/job pursuit intentions appear to be mostly influenced by the first three of these dimensions (possibly because they serve as a proxy for the organization's working conditions), the findings for environment appear to be the most diverse.

Table 1. Ranking of CSR initiatives

CSR dimensions	1 (most important)	2	3	4	5 (least important)
Workplace practices	48,89%	20,00%	17,78%	8,89%	4,44%
Social impact	13,33%	28,89%	20,00%	24,44%	13,33%
Corporate governance	11,11%	20,00%	24,44%	22,22%	22,22%
Environmental impact	17,78%	8,89%	11,11%	26,67%	35,56%
Fair operating practices	8,89%	22,22%	26,67%	17,78%	24,44%

Source: own development.

Using a hypothetical job choice scenario this study sought to understand SGH CEMS and VSE CEMS students' attitudes towards organizational social responsibility values in an era of heightened sensitivity around human and environmental issues.

Whilst more than half the sample agreed that organizational CSR was important, the hypothetical trade-off posited between higher extrinsic work rewards and lower CSR resulted in a significant reversal of the reported importance of CSR values in the job choice decision. That pecuniary rewards would seem to sway the social conscience of a majority of students, however, is consistent with much of the research suggesting a tendency to be motivated more by economic rewards and start salaries[34]. Referring to the CSR dimensionality analysis, when students were asked to rank the five CSR dimensions, noticeable differences emerged. Workplace practices were rated as the most important social responsibility dimension in this Polish context and environmental impact, corporate governance and climate as the least important. The high ranking given to workplace practices is consistent with the findings of other studies. Concern about workplace practices may be more paramount for the current generation of job seekers, given the stressful and uncertain nature of the contemporary workplace[35].

Given the conflicts in research findings on work values referred to earlier, the analysis of individual differences demonstrated a striking consistency regarding the influence of gender and average grade during CEMS students on CSR work values. Female students' stronger altruistic values as indicated by their resistance to the financial rewards/CSR trade-off are consistent with patterns identified in other generations[36] as is the positive correlation identified between CSR importance and average grade. This leads to the conclusion that within the context of CSR values and their drivers, intergenerational differences maybe over-emphasized and that certain within-generation differences are more significant. One important implication is the need for educators to be aware that different student groupings may adopt different paradigms for interpreting CSR issues and may require approaches tailored to their specific needs in learning to apply CSR values in ethical and recruitment decisions. In the broadest of terms females, males and high and low achievers constitute four possible groupings.

Although it was a survey students eagerly shared their experiences in taking part in CSR initiatives. The most popular seemed to be: Polish-Israel dialogue forum or CEMS Chance. Chance CEMS is an innovative project aimed at ambitious and talented pupils of junior high school and upper secondary schools. The initiative aims to help young people make educational decisions and to plan career. It is organized two times per year in the form of conferences and workshops.

5. CONCLUSION

This study reinforces the importance of exploring the CSR work values of CEMS SGH students and their priorities among key CSR dimensions to help inform the design of curricula that will enhance their social responsibility values and their job choice decisions. Although the majority of students place a high ranking to CSR stating that CSR is an

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[34] P. Chen, Y. Choi, *Generational differences in work values: a study of hospitality management,* "International Journal of Contemporary Hospitality Management" 2008, (20), No. 6.

[35] J.M. Twenge, S.M. Campbell, *Generational differences in psychological traits and their impact on the workplace*, "Journal of Managerial Psychology" 2008, (23).

[36] K.B. Backhaus, B.B. Stone, K. Heiner, *op. cit.*

important factor when searching for a job but faced with a reality the answers contradict the previous statement. Students would accept job offer with a company that is barely engaged in CSR. The results may reflect quite high unemployment amongst graduates and therefore simply students may not have the choice. Students at CEMS SGH have a unique opportunity to study practically. Because some modules are run by the managers from different companies and SGH as a business school must make sure that they follow and teach young generations an appropriate approach toward CSR. The current findings represent a starting point for curriculum development, changes in the broader society as well as naturally occurring differences between student cohorts make it advisable also to periodically monitor students' CSR views. The results here have the potential to serve as a valuable benchmark for evaluating the impact of the planned curricula on the CSR values of business students in future years.

Business education is by nature an academic field that deals with very practical situations and must ultimately produce hands-on solutions. Thus corporate sustainability thinking needs to be built into business education in a way that reflects the real issues that students will have to deal with as future managers in everyday strategic decision-making, not just in times of crisis.

Limitation of this study is the relatively small sample size. This is a concern both in terms of external validity and statistical power. First, it is difficult to generalize results from an experiment employing a small student sample to a larger, more representative population. Thus, the robustness of the results from this study needs to be tested in future studies conducted with a larger, more representative sample. Second, a small sample size tends to be associated with a relatively low statistical power.

Additionally, the study did not investigate the reasons underlying the responses, particularly in the case of the "neither agree/disagree" category and the prioritization of "workplace practices" in the dimensionality analysis. Exploring the reasons behind these responses would be fruitful areas of further research. Lastly, as the data are self-reported and drawn from two location the results are limited in their generalizability to other contexts. They may, however, serve as a useful point of comparison with similar studies involving different disciplines.

The results of this research need to be confirmed by further research in several directions. First, the questionnaire might be diffused in other countries with different educational systems in order to confirm the impact of academic institution on the way CSR is perceived considering cultural differences. Second, the questionnaire should be submitted to a group of older managers in order to check whether and to what extent the impact of the academic institution is confirmed after several years of experience as managers.

The results of this study have provided some valuable insights that can be used to inform the design of an effective business program as part of one institution's efforts to shape the social responsibility and job choice behaviours of the next generation of managers and leaders.

The increasing awareness of CSR in the society calls for systematic research that could potentially provide managerial guidance for corporate decision makers and organization leaders. The phenomenon of CSR ensures long-term sustainability and new horizons for the corporate houses and on the other hand, poses thought-provoking research questions; in and of itself, it is a fascinating topic for academic endeavors. One more time the author would like to highlight that business schools are in a unique position, placed between student and employers, to lead in exploring corporate social responsibility issues.

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EKSPLORACJA WARTOŚCI I POSTAW SPOŁECZNIE ODPOWIEDZIAL-NYCH WŚRÓD STUDENTÓW SGH CEMS

Celem niniejszego artykułu jest zbadanie wartości i postaw CSR wśród studentów CEMS SGH w Polsce. CEMS – światowy sojusz edukacji zarządzania jest stowarzyszeniem najlepszych uniwersytetów na całym świecie. Sojusz skupia 29 znanych uniwersytetów partnerskich, wśród grona prominentnych uczelni znajdują są: Szkoła Główna Handlowa w Polsce, Uniwersytet Ekonomiczny w Czechach lub ESADE w Hiszpanii. Studenci są traktowani jako przyszli menedżerowie a ich postrzeganie CSRu jest uważane za ważne dla organizacji biznesowych. Sektor edukacji jest postrzegany jako odgrywający kluczową rolę w przygotowaniu kolejnych pokoleń przyszłych liderów poprzez włączenie CSRu do programów nauczania czy programów badawczych. Badanie oferuje unikalny wgląd co do postaw CSRowych studentów w kontekście odpowiedzi na pytanie, w jakim stopniu edukacja studentów CEMS kształtuje wartości studentów. Badanie zostało przeprowadzone za pomocą ankiety online. Wartości CSR zostały zbadane w kontekście hipotetycznego scenariusza w poszukiwaniu pracy. Podczas gdy większość studentów oceniło wartości CSR wysoko w scenariuszu wyboru pracy, to w sytuacji zaoferowania wysokich benefitów i niskiej aktywności CSRowej firm studenci byli skłonni pójść na kompromis. Wyniki badań pozwolą na opracowanie skutecznych programów biznesowych, które kształtują społeczne zachowania odpowiedzialności przyszłych pokoleń menedżerów i liderów. W artykule wykorzystane dane z badań z małej próby studentów zarządzania na ograniczonym obszarze geograficznym, którym jest Polska. Stąd niemożliwe jest uogólnianie wyników do większej, bardziej reprezentatywnej populacji.

Słowa kluczowe: społeczna odpowiedzialność biznesu, edukacja CEMS, edukacja biznesowa, wartości, stosunek do społecznej odpowiedzialności biznesu

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OGRANICZENIA FUNKCJI KOMUNIKACYJNEJ OPAKOWAŃ PRODUKTÓW SPOŻYWCZYCH UŻYTKOWANYCH PRZEZ STARSZYCH KONSUMENTÓW[3]

Na współczesnym, konkurencyjnym rynku produktów spożywczych szczególną rolę w zakresie komunikowania się z konsumentem pełni opakowanie. Opakowanie realizuje funkcję komunikacji głównie poprzez warstwę wizualną, na którą składają się znaki tworzące kod opakowania, tj. kształt, forma konstrukcyjna, materiał opakowaniowy, wielkość, rodzaj zamknięcia, barwa, napisy czy grafika. Na opakowaniach produktów spożywczych zamieszczane są znaki o charakterze fakultatywnym oraz znaki obligatoryjne, które muszą się znaleźć na opakowaniu ze względu na unormowania prawne. Przepisy prawa wskazują na zestaw informacji, jaki musi się znaleźć na opakowaniu produktu spożywczego oraz na ich fizyczny wygląd zapewniający czytelność, widoczność i zrozumiałość informacji. Spełnienie wymagań prawnych w zakresie fizycznego wyglądu informacji nie zawsze daje gwarancję właściwego pełnienia przez opakowanie funkcji komunikacyjnej. Ograniczeniem w tym zakresie mogą być np. specyficzne cechy konsumenta w starszym wieku, które utrudniają lub uniemożliwiają prawidłowe odszukanie, odczytanie i zrozumienie zamieszczanych na opakowaniach informacji. W artykule zaprezentowano wyniki badań dotyczące identyfikacji problemów starszych konsumentów z użytkowaniem opakowań produktów spożywczych. Szczególną uwagę zwrócono na najczęściej wskazywane przez starszych konsumentów problemy z informacyjnością opakowań w zakresie ich odnalezienia, odczytania i zrozumienia. Problemy starszych konsumentów z informacyjnością opakowań stanowią ograniczenia we właściwym pełnieniu przez opakowania funkcji komunikacyjnej. Badania przeprowadzono z wykorzystaniem dwóch metod: metody ankietowej oraz metody eyetracking. Analiza wyników badań pozwoliła na zidentyfikowanie źródeł problemów z wyszukiwaniem, odczytaniem i zrozumieniem informacji zamieszczanych na opakowaniach produktów spożywczych poprzez określenie problemów z informacyjnością opakowań w odniesieniu do cech opisujących respondentów a także poprzez percepcję poszczególnych elementów opakowania przez konsumentów w starszym wieku.

Słowa kluczowe: opakowanie, produkt spożywczy, starszy konsument, znakowanie, funkcja komunikacyjna

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1. WPROWADZENIE

W warunkach rosnącego w ostatnich latach rynku spożywczego w Polsce, mierzonego wzrostem podaży produktów oraz ich zróżnicowaniem wzrasta rola komunikowania się przedsiębiorstw z potencjalnymi konsumentami. Bardzo ważną rolę w komunikowaniu się na konkurencyjnym rynku produktów spożywczych pełni opakowanie tworzące razem z produktem tzw. produkt zintegrowany. Produkt bowiem, z racji swego stanu skupienia bądź właściwości fizycznych lub chemicznych, jest inherentnie związany z opakowaniem, które towarzyszy mu w drodze do konsumenta[4].

Istotą funkcji komunikacyjnej pełnionej przez opakowanie jest informacja przekazywana dla wielu celów (identyfikacji, sprzedaży, ostrzeżenia, właściwego użycia lub usuwania) poprzez możliwe drogi percepcji (wizualnie, dotykowo, słuchowo, węchowo i smakowo)[5]. Opakowanie realizuje więc funkcję komunikacji poprzez nadaną mu celowo warstwę wizualną oraz wrażenia dotykowe, słuchowe, węchowe i smakowe. Warstwa wizualna opakowań jednostkowych produktów konsumpcyjnych jest nośnikiem zakodowanych w określony sposób komunikatów znaczeniowych. Do podstawowych elementów składowych warstwy wizualnej opakowań, które określane są jako znaki tworzące kod opakowania należą: kształt, forma konstrukcyjna, materiał opakowaniowy, wielkość, rodzaj zamknięcia barwa opakowania, napisy, grafika i inne[6].

Wśród znaków zamieszczanych na opakowaniach produktów spożywczych wyróżnić można znaki o charakterze fakultatywnym – są to znaki, które można nadać w dowolnej formie i ilości, a także obligatoryjnym – znaki, które koniecznie muszą się znaleźć na opakowaniu ze względu na unormowania prawne oraz które stanowią warunek wprowadzenia produktu na rynek.

Wymagania odnoszące się do konieczności zamieszczania różnych znaków na opakowaniu produktów pojawiają się w licznych aktach prawnych, jednak podstawowe kwestie w tym zakresie zostały określone w Rozporządzeniu Parlamentu Europejskiego i Rady UE nr 1169/2011 z 25 października 2011 roku w sprawie przekazywania konsumentom informacji na temat żywności.

Zgodnie z zasadami ogólnymi rozporządzenia w oznakowaniu produktu spożywczego obowiązkowe jest podanie kilku informacji, takich jak: nazwa produktu, wykaz składników wraz z zaznaczonymi w nim alergenami, ilość netto, data minimalnej trwałości lub termin przydatności do spożycia, warunki przechowywania lub warunki użycia, nazwa lub firma i adres podmiotu odpowiedzialnego za informację na temat żywności oraz informacja o wartości odżywczej. Zgodnie z rozporządzeniem informacje na temat żywności muszą być rzetelne, jasne i łatwe do zrozumienia dla konsumenta. Ponadto informacje dotyczące żywności w opakowaniu powinny być oznaczone w sposób trwały i czytelny (wielkość czcionki nie mniejsza niż 1,2 mm). Tym samym rozporządzenie wprowadza definicję czytelności oznaczającej fizyczny wygląd informacji, dzięki któremu informacja jest wizualnie dostępna ogółowi społeczeństwa, a który określają różne elementy, m.in. rozmiar czcionki, odstępy między literami, odstępy między wierszami, grubość linii pisma, barwa czcionki,

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[4] M. Lisińska-Kuśnierz, M. Ucherek, *Opakowania w ochronie konsumenta*, Wydawnictwo Akademii Ekonomicznej w Krakowie, Kraków 2006.

[5] H.E. Lockhard, *A Paradigm for Packaging,* "Packaging Technology and Science" 1997, 10(5), pp. 237–252.

[6] J. Szymczak, M. Ankiel-Homa, *Opakowanie jednostkowe produktów jako narzędzie komunikacji rynkowej*, „Marketing i Rynek" 2007, nr 6, s. 16–20.

rodzaj czcionki, stosunek szerokości liter do ich wysokości, powierzchnia materiału oraz kontrast między pismem a tłem.

Z punktu widzenia konieczności spełnienia pozostałych wymagań dotyczących widoczności i zrozumiałości informacji znajdujących się na opakowaniach produktów spożywczych pomocne mogą okazać się definicje zaproponowane przez M. Lisińską-Kuśnierz. Zgodnie z nimi widoczność znakowania: „określa stopień w jakim wygląd fizyczny informacji decyduje o dostrzeżeniu i znalezieniu treści przekazu przez ogół społeczeństwa, a który określają elementy takie jak: rodzaj czcionki, wielkość czcionki, kontrast barwy tła i czcionki, barwa tła lub wielkość opakowania, jego forma konstrukcyjna i powierzchnia". Natomiast zrozumiałość znakowania: „określa stopień w jakim wygląd fizyczny informacji decyduje o uporządkowaniu, spójności i odbiorze sensu komunikatu zgodnie z intencją nadawcy przez ogół społeczeństwa. Na zrozumiałość wpływ mają takie elementy znakowania jak np. nazwy łacińskie, kombinacje liter i liczb, zawiłe sformułowania, hasła, używanie niezrozumiałych słów, zbyt długie zdania, informacje prezentowane jednocześnie w kilku językach, dzielenie wyrazów, przesłanianie tekstu przez elementy graficzne"[7].

Spełnienie określonych wymogami prawa oraz powyższymi definicjami wymagań w zakresie czytelności, widoczności oraz zrozumiałości znaków zamieszczanych na opakowaniach produktów spożywczych decyduje o właściwym pełnieniu przez opakowanie funkcji komunikacji. Spełnienie wymagań prawnych oraz uwzględnienie powyższych definicji nie zawsze jednak daje gwarancję właściwego pełnienia przez opakowanie funkcji komunikacyjnej. Ograniczeniem w tym zakresie mogą być specyficzne cechy konsumenta, które utrudniają lub uniemożliwiają prawidłowe odszukanie, odczytanie i zrozumienie informacji zamieszczanych na opakowaniach. Do takiej szczególnej grupy konsumentów zaliczyć można konsumentów w starszym wieku. Zwrócenie uwagi na specyfikę tej grupy konsumentów wydaje się być celowe gdyż w wyniku zmian demograficznych liczba starszych konsumentów ciągle rośnie i w kolejnych latach będzie się zwiększać. W 2015 roku żyło w Polsce prawie 8,5 mln osób w wieku 60 lat i więcej Natomiast do 2050 roku spodziewany jest przyrost odsetka ludności w wieku 60 lat i więcej o prawie 19%. W rezultacie udział osób starszych w populacji mieszkańców Polski zwiększy się z 21,5% w 2013 r. (8,3 mln) do 40,4% (13,7 mln) w ostatnim roku prognozy[8]. Starsi konsumenci odgrywają na rynku coraz większa rolę, ich siła nabywcza wzrasta i stają się coraz bardziej liczącą się grupą odbiorców oferowanych na rynku towarów i usług[9]. Tym samym stają się coraz częściej podmiotem prowadzonych badań naukowych, również w zakresie wymagań i oczekiwań wobec opakowań produktów spożywczych[10].

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[7] M. Lisińska-Kuśnierz, *Food packaging as non-satisfactory communication instrument in opinion of consumers*, [w:] *Innovations in Product Development and Packaging*, red. A. Cholewa-Wójcik, A. Kawecka, Polskie Towarzystwo Towaroznawcze, Kraków 2014.

[8] Główny Urząd Statystyczny, 2016.

[9] M. Kulbaczewska, *Starszy konsument na rynku turystyki uzdrowiskowej*, Polskie Stowarzyszenie Zarządzania Wiedzą, Seria: Studia i Materiały, 2011, nr 50, s. 92–103.

[10] L. Duizer, T. Robertson J. Han, *Requirements for Packaging from an Ageing Consumer's Perspective,* "Packaging Technology and Science" 2009, 22, pp. 187–197; C. Hare, D. Kirk, T. Lang, *Identifying the expectations of older food consumers,* "Journal of Marketing Practice: Applied Marketing Science" 2009, 5 (6/7/8), pp. 213–232.

Dostępne w polskiej literaturze badania oczekiwań konsumentów w zakresie informacji na opakowaniach dotyczą najczęściej wszystkich grup wiekowych respondentów[11]. Istotne więc wydaje się badanie konsumentów w starszym wieku w zakresie ich wymagań związanych z informacją zamieszczaną na opakowaniach produktów spożywczych.

Celem artykułu jest identyfikacja problemów starszych konsumentów związanych z informacjami przekazywanymi przez opakowanie produktów spożywczych stanowiących ograniczenia dla prawidłowego pełnienia przez opakowanie funkcji komunikacyjnej.

2. METODYKA BADAŃ

Badania zostały przeprowadzone z wykorzystaniem dwóch metod: metodą ankietową oraz metodą eyetracking.

Badania ankietowe zostały przeprowadzone w okresie listopad–grudzień 2015 roku w grupie 600 konsumentów w wieku 60 lat i więcej zamieszkujących teren województwa małopolskiego. Dobór próby miał charakter kwotowy i przedstawiał się następująco (tab. 1.)

Tabela 1. Populacja badanych respondentów

	Wieś		Miasto do 20 tys.		Miasto 20–200 tys.		Kraków		
Wiek	K	M	K	M	K	M	K	M	Ogó-łem
60–69 lat	75	64	20	16	32	25	47	35	314
70–79 lat	48	32	12	8	18	12	28	18	176
80 lat i więcej	35	16	8	3	12	5	21	10	110
Razem:	270		67		104		159		600

Źródło: opracowanie własne.

Badania zostały przeprowadzone metodą wywiadu kwestionariuszowego CATI. Kwestionariusz ankietowy składał się z dwóch części. Pierwsza z nich zawierała pytania dotyczące identyfikacji potrzeb i oczekiwań starszych konsumentów w odniesieniu do opakowań produktów spożywczych, m.in.: pytania o problemy, jakie zdarzają się starszym konsumentom w kontakcie z opakowaniem produktu spożywczego. Drugą część kwestionariusza ankietowego stanowiły pytania opisujące respondentów.

Analizę wyników badań ankietowych przeprowadzono z wykorzystaniem analizy korespondencji, która jest metodą łączącą redukcję wymiarów ocen obiektów oraz odzwierciedlenie na mapie percepcyjnej obiektów z uwzględnieniem ich wybranych cech[12]. Zaletą analizy korespondencji jest możliwość czytelnej, graficznej prezentacji współwystępowa-

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[11] R. Wierzejska, *Informacje żywieniowe na opakowaniach produktów spożywczych – podejście konsumentów*, „Przemysł Spożywczy" 2012, 66(5); G. Krasnowska, A.M. Salejda, *Ocena wiedzy konsumentów na temat znakowania żywności*, „Żywność. Nauka. Technologia. Jakość" 2011, 1(74), s. 173–189; M. Tomaszewska-Pielacha, I. Ozimek, *Czytelność, zrozumiałość i kompletność informacji zamieszczanych na opakowaniach żywności w opinii konsumentów*, „Problemy Higieny i Epidemiologii" 2011, 92(4), s. 820–823.

[12] A. Zaborski, *Skalowanie wielowymiarowe w badaniach marketingowych,* Wydawnictwo. Akademii Ekonomicznej we Wrocławiu, Wrocław 2001, s. 30; K. Jajuga, *Statystyczna analiza wielowymiarowa*, PWN, Warszawa 1993; E. Gatnar, M. Walesiak, *Metody statystycznej analizy wielowymiarowej w badaniach marketingowych,* Wydawnictwo Akademii Ekonomicznej we Wrocławiu, Wrocław 2004.

nia kategorii zmiennych[13]. Interpretacja otrzymanych wyników polega na ocenie położenia punktów obrazujących kategorie zmiennych na wykresie. W tym celu należy wziąć pod uwagę trzy elementy:

– położenie punktu wobec centrum rzutowania,
– położenie punktu względem innych punktów określających kategorie należące do tej samej cechy,
– położenie punktu względem punktu opisującego kategorię innej cechy[14].

Metodologia analizy korespondencji opiera się na teście niezależności χ^2. Test niezależności chi-kwadrat stosowany jest w przypadku badania niezależności cech niemierzalnych (jakościowych) lub w przypadku badania niezależności cechy jakościowej z ilościową[15].

Badania metodą eyetracking przeprowadzono w czerwcu i lipcu 2016 roku wśród 60 celowo dobranych respondentów w wieku 60 lat i więcej.

Metoda eyetracking polega na śledzeniu ruchów gałek ocznych uczestników badania zapisując jednocześnie sakady (intensywne ruchy gałki ocznej, polegające na bardzo szybkim przemieszczaniu punktu koncentracji wzroku z jednego miejsca na inne) i fiksacje (relatywnie stała pozycja gałki ocznej, w trakcie której następują niewielkie drgania). Badanie to pozwala na określenie, w jaki sposób konsumenci postrzegają poszczególne elementy opakowania a więc umożliwiają poznanie percepcji wzrokowej potencjalnych konsumentów. Dzięki temu można się dowiedzieć m.in. na jakich obszarach skupia się wzrok konsumenta, a które są przez niego pomijane[16]. Badania przeprowadzono z wykorzystaniem eyetrackera Tobii rejestrującego ścieżkę patrzenia na zdjęciach wybranych marek mleka (Łaciate, Mlekovita, Zimne Mleko) wyświetlanych na ekranie monitora.

3. WYNIKI BADAŃ I ICH OMÓWIENIE

Wyniki badań ankietowych oraz eyetrackingowych dotyczących problemów z informacjami na opakowaniach produktów spożywczych wskazywanych przez starszych konsumentów zaprezentowano na rys. 1-6.

Wśród problemów z opakowaniami produktów spożywczych starsi konsumenci najczęściej wymieniali problemy z informacyjnością. Ponad połowa badanych osób (10,8% odpowiedzi „zdecydowanie tak" oraz 40,1% „raczej tak") wskazała na problemy z odnalezieniem, odczytaniem i zrozumieniem informacji zamieszczonych na opakowaniu.

Dalsza analiza pozwala na szczegółową charakterystykę powiązań poszczególnych wymiarów informacyjności opakowań (odnalezienie, odczytanie i zrozumienie informacji) z cechami opisującymi badanych konsumentów.

W pierwszej kolejności weryfikowano hipotezę o niezależności cech, tj. każdego z analizowanych problemów z poszczególną kategorią z metryczki za pomocą testu niezależności chi-kwadrat. Hipotezę zerową o niezależności cech odrzucano, gdy wartość obliczona statystyki chi-kwadrat przewyższała wartość krytyczną, przy założeniu, że została ona

[13] A. Stanimir, *Analiza korespondencji jako narzędzie do badania zjawisk ekonomicznych,* wyd. Akademii Ekonomicznej we Wrocławiu, Wrocław 2005, s.7.

[14] A. Stanimir, *op. cit.*, s. 76.

[15] S. Mynarski, *Analiza danych rynkowych i marketingowych z wykorzystaniem programu STATISTICA,* Wydawnictwo. Akademii Ekonomicznej w Krakowie 2003.

[16] A. Duchowski*, Eye Tracking Methodology. Theory and Practice,* Springer, London 2007.

odczytana dla wartości poziomu istotności bliskiej 0. Wyniki obliczeń wraz z podaniem granicznych poziomów istotności przedstawiono w tabeli 2.

Rys. 1. Problemy z opakowaniami produktów spożywczych wskazywane przez starszych konsumentów
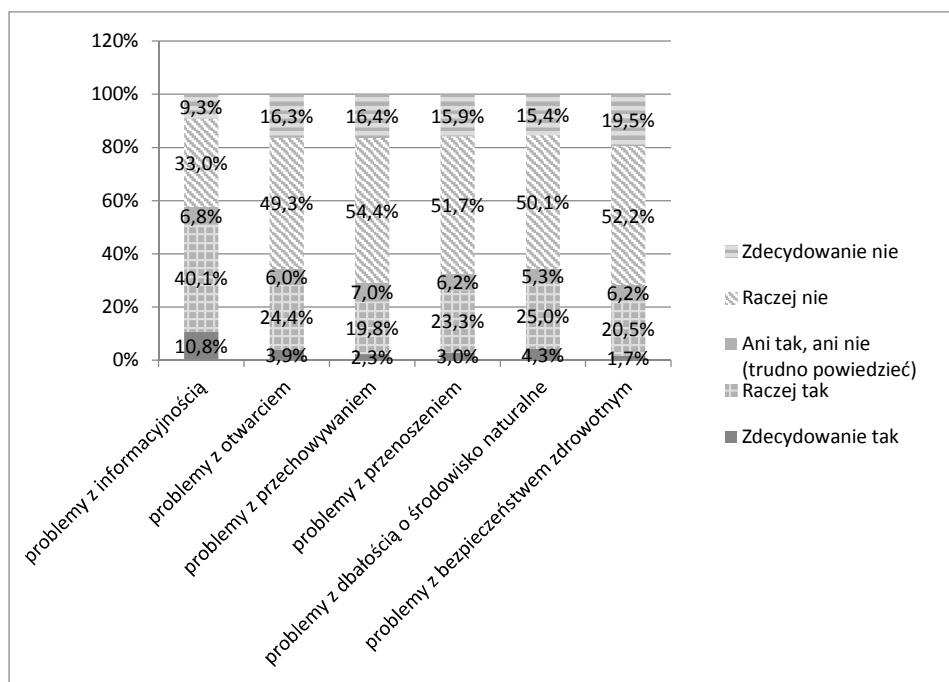
Źródło: badania własne.

Tabela 2. Wyniki testu niezależności chi-kwadrat *(w nawiasach podano graniczne poziomy istotności)*

Problemy	Wartości statystyki chi-kwadrat			
	Płeć	Wiek	Wykształcenie	Miejsce zamieszkania
Problem z odnalezieniem informacji	7,33 (0,12)	**13,43 (0,1)***	15,38 (0,22)	**25,69 (0,01)****
Problem z odczytaniem informacji	4,03 (0,4)	9,71 (0,29)	13,47 (0,34)	**27,38 (0,01)****
Problem ze zrozumieniem informacji	3,26 (0,52)	**14,35 (0,1)***	**19,14 (0,1)***	12,13 (0,44)

Źródło: opracowanie własne.

Wartości, które zostały oznaczone jedną gwiazdką oznaczają statystycznie istotną wartość chi-kwadrat przy poziomie istotności 0,1, natomiast dwie gwiazdki oznaczają statystycznie istotną wartość chi-kwadrat przy poziomie istotności 0,01.

Oznacza to, iż między analizowanymi zmiennymi występują następujące zależności: między problemem z odnalezieniem informacji a wiekiem przy poziomie istotności 0,1 i miejscem zamieszkania przy poziomie istotności 0,01, między problemem z odczytaniem informacji a miejscem zamieszkania przy poziomie istotności 0,01 i między problemem ze zrozumieniem informacji a wiekiem i wykształceniem przy poziomie istotności 0,1.

W dalszym toku artykułu zaprezentowano wyniki analizy korespondencji wykonane za pomocą programu Statistica 12 dla problemów związanych z odnalezieniem, odczytaniem i zrozumieniem informacji i kategorii metryczkowych dla których uzyskano statystycznie istotną wartość statystyki chi-kwadrat.

Wszystkie wyniki zaprezentowano w dwuwymiarowym układzie, wyjaśniającym – w każdym przypadku – ponad 90% bezwładności. Na rys. 2 przedstawiono prezentację powiązań kategorii *Problem z odnalezieniem informacji* i wieku respondentów.

W przypadku prezentacji powiązań kategorii *Problem z odnalezieniem informacji* i wieku respondentów dwuwymiarowy obszar rzutowania pozwala wyjaśnić 100,00% ogólnej bezwładności. Na rys. 2 widzimy, że oś pozioma, która ma największy udział w bezwładności, charakteryzuje się tym, że po prawej stronie względem środka osi znajdują się osoby, które raczej nie miały problemu z odnalezieniem informacji, natomiast po lewej stronie umiejscowione zostały osoby, które zdecydowanie miały problem z odnalezieniem informacji. Spośród punktów reprezentujących wiersze, najbardziej na lewo znajdują się osoby starsze – mające powyżej 80 lat, natomiast na prawo osoby młodsze mające 60 lat i więcej. Spostrzeżenia te sugerują, że większość bezwładności ogólnej wynika z różnic pomiędzy osobami mającymi problem z odnalezieniem informacji. Zdecydowane problemy z odnalezieniem informacji miały najstarsze, ankietowane osoby w wieku 80 lat i więcej, natomiast osoby w wieku 60–69 raczej nie miały problemów z odnalezieniem informacji. Ciekawy okazał się fakt, iż osoby w wieku 70–79 lat stwierdziły, że zdecydowanie nie miały problemów z odnalezieniem informacji.

W przypadku prezentacji powiązań kategorii *Problem z odnalezieniem informacji* i miejsca zamieszkania respondentów dwuwymiarowy obszar rzutowania pozwala wyjaśnić 97,43% ogólnej bezwładności. Z rys. 3 można odczytać, że mieszkańcy wsi raczej nie mają problemów z odnalezieniem informacji, mieszkańcy miast o liczbie mieszkańców 20–200 tys. zdecydowanie ich nie mają, natomiast mieszkańcy Krakowa raczej je mają. Mieszkańcy miast do 20 tys. nie określili swoich preferencji w tej kwestii.

W przypadku prezentacji powiązań kategorii *Problem z odczytaniem informacji* i miejsca zamieszkania respondentów dwuwymiarowy obszar rzutowania pozwala wyjaśnić 99,95% ogólnej bezwładności. Z rys. 4 można odczytać, że problemy z odczytaniem informacji mieli mieszkańcy Krakowa i miast liczących 20–200 tys. mieszkańców. Mieszkańcy wsi raczej nie mieli takich problemów. Mieszkańcy miast do 20 tys. nie określili swoich preferencji w tej kwestii.

Rys. 2. Prezentacja powiązań kategorii *Problem z odnalezieniem informacji* i wieku respondentów
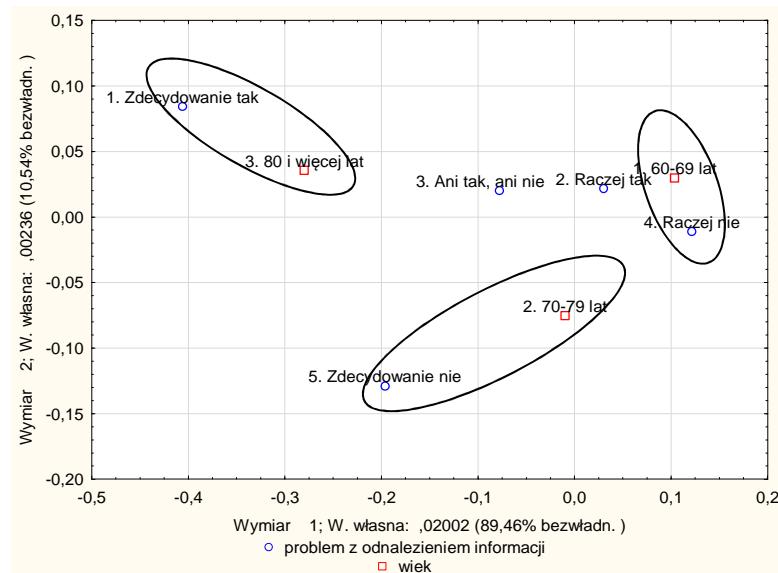
Źródło: opracowanie własne.

Rys. 3. Prezentacja powiązań kategorii *Problem z odnalezieniem informacji* i miejsca zamieszkania respondentów
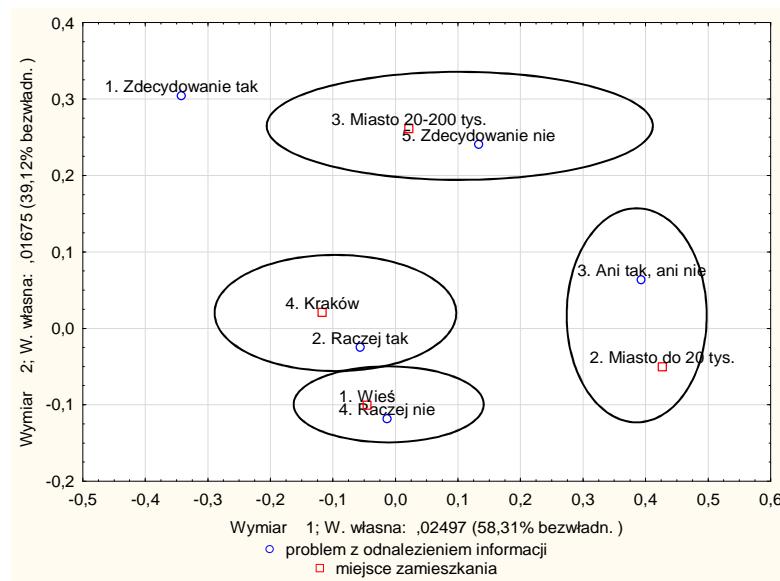

Źródło: opracowanie własne.

Rys. 4. Prezentacja powiązań kategorii *Problem z odczytaniem informacji* i miejsca zamieszkania respondentów


Źródło: opracowanie własne.

Rys. 5. Prezentacja powiązań kategorii *Problem ze zrozumieniem informacji* i wieku respondentów
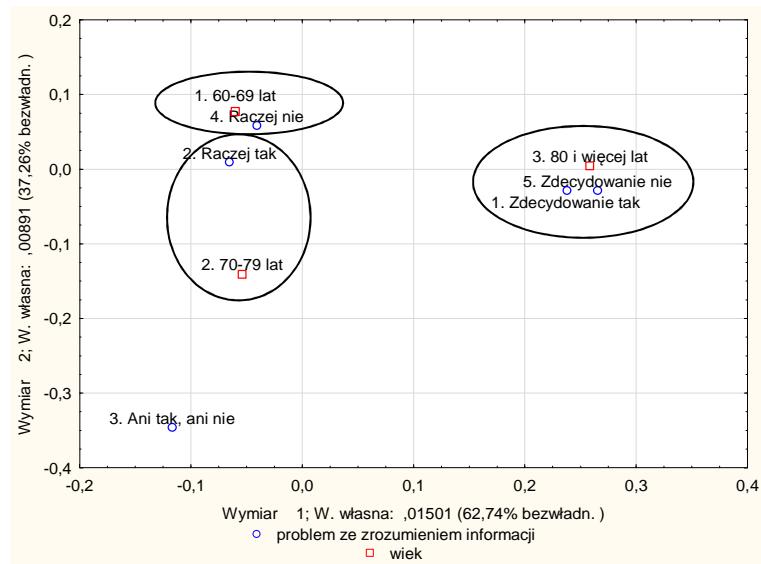
Źródło: opracowanie własne.

W przypadku prezentacji powiązań kategorii *Problem ze zrozumieniem informacji* i wieku respondentów dwuwymiarowy obszar rzutowania pozwala wyjaśnić 100,00% ogólnej bezwładności. Z rys. 5 można odczytać, że problemy ze zrozumieniem informacji raczej miały osoby w wieku 70–79 lat. Raczej ich nie miały osoby w wieku 60–69 lat. Respondenci w wieku powyżej 80 lat określili dwuznacznie tę kwestię, część z nich zdecydowanie je miała, a cześć zdecydowanie ich nie miała.

Rys. 6. Prezentacja powiązań kategorii *Problem ze zrozumieniem informacji* i wykształcenia respondentów
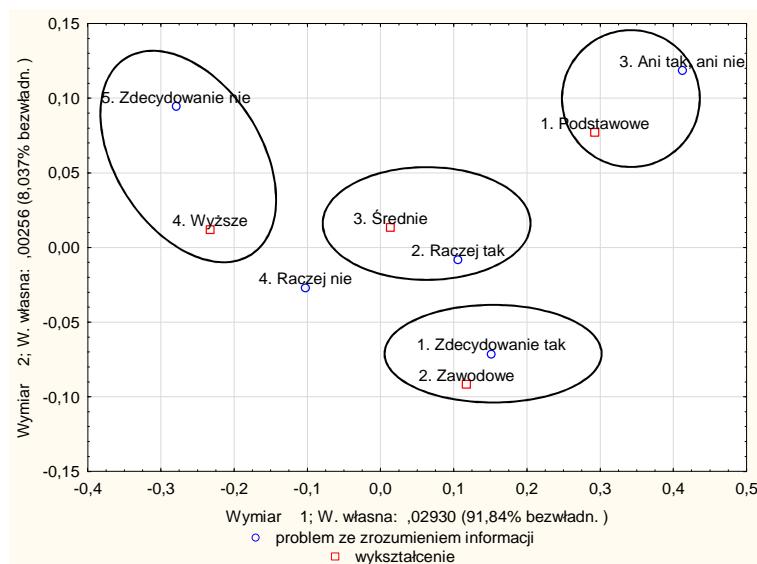
Źródło: opracowanie własne.

W przypadku prezentacji powiązań kategorii *Problem ze zrozumieniem informacji* i wykształcenia respondentów dwuwymiarowy obszar rzutowania pozwala wyjaśnić 99,88% ogólnej bezwładności. Z rysunku 6 można odczytać, że problemy ze zrozumieniem informacji zdecydowanie miały osoby z wykształceniem zawodowym. Raczej je miały osoby z wykształceniem średnim. Zdecydowanie ich nie miały osoby z wykształceniem wyższym. Respondenci z wykształceniem podstawowym nie określili swoich preferencji w tej kwestii.

Dodatkowych informacji na temat problemów starszych konsumentów z informacyjnością opakowań produktów spożywczych dostarczyły badania metodą eyetracking. Zadaniem konsumentów było wyszukiwanie informacji o terminie przydatności do spożycia oraz o składzie produktu na wybranych opakowaniach mleka. Wyniki badań zaprezentowano na rysunkach 7 i 8.

Rys. 7. Mapy cieplne obrazujące rozkład uwagi wzrokowej podczas wyszukiwania informacji o terminie przydatności do spożycia [suma długości fiksacji (skupień wzroku)] na poszczególnych elementach opakowania (najciemniejsze miejsca to te, na które respondenci patrzyli najdłużej)

Źródło: badania własne.

Wyniki badań pokazują, iż uwaga wzrokowa badanych osób była najmniej rozproszona na opakowaniu mleka marki Mlekovita oraz mleka Łaciate – fiksacje odnotowano w większości tam gdzie znajduje się informacja o terminie przydatności do spożycia. Natomiast na opakowaniu mleka marki Zimne Mleko uwaga konsumentów była rozproszona – konsumenci poszukiwali informacji na opakowaniu (na etykiecie oraz na butelce) podczas gdy informacja umieszczona jest na zamknięciu opakowania.

Rys. 8. Mapy cieplne obrazujące rozkład uwagi wzrokowej podczas wyszukiwania informacji o składzie produktu [suma długości fiksacji (skupień wzroku)] na poszczególnych elementach opakowania (najciemniejsze miejsca to te, na które respondenci patrzyli najdłużej)

Źródło: badania własne.

W trakcie poszukiwania informacji o składzie produktu uwaga wzrokowa badanych osób skupiona była na etykietach zamieszczonych na opakowaniach i w przypadku opakowań mleka marki Łaciate oraz Mlekovita wskazania składu były prawidłowe. W przypadku mleka marki Zimne Mleko odnotowano wiele błędnych wskazań tej informacji.

4. PODSUMOWANIE

Starzenie się społeczeństw generuje nowe wyzwania dla specjalistów ds. jakości, marketingu, czy rozwoju nowych produktów Segment starszych konsumentów będzie wzrastał w kolejnych latach, co oznacza konieczność wdrożenia specjalnych narzędzi marketingowych uwzględniających nawyki, potrzeby i oczekiwania tej grupy docelowej w odniesieniu do produktów i ich opakowań.

Opakowanie może odegrać szczególną rolę w dotarciu do starszych konsumentów poprzez właściwie pełnioną funkcję komunikacji. Właściwie pełniona przez opakowanie funkcja komunikacji oznacza umożliwienie konsumentom w starszym wieku szybkie i prawidłowe odnalezienie, odczytanie i zrozumienie informacji zamieszczonych na opakowaniach. Tymczasem przeprowadzone przez autorów artykułu badania wskazują na to, że największe problemy starszych z opakowaniami produktów spożywczych są związane z ich informacyjnością. Szczegółowa analiza wyników badań uwzględniająca powiązania informacyjności opakowań z cechami opisującymi konsumentów pozwala dodatkowo stwierdzić, że największe problemy z odnalezieniem informacji na opakowaniach produktów spożywczych mają osoby w wieku powyżej 80 lat mieszkający w Krakowie, natomiast największe problemy ze zrozumieniem zamieszczanych na opakowaniach informacji mają osoby w wieku powyżej 70 lat z wykształceniem zawodowym. Dodatkowym argumentem przemawiającym za zwróceniem szczególnej uwagi na najstarszych w grupie starszych konsumentów jest zjawisko tzw. podwójnego starzenia się polegające na szybszym niż ogółem tempie wzrostu odsetka ludności w wieku 80 i więcej lat. Według przewidywań GUS, osoby co najmniej 80-letnie będą w 2050 r. stanowiły 10,4% populacji kraju, podczas gdy w 2013 r. było to zaledwie 3,9%.

Przeprowadzone przez autorów artykułu badania metodą eyetracking pozwoliły na identyfikację problemów starszych konsumentów związanych z informacyjnością opakowań produktów spożywczych poprzez badanie uwagi wzrokowej na poszczególnych elementach opakowania. Wyniki badań potwierdziły problemy starszych konsumentów z wyszukiwaniem i zrozumieniem informacji na wybranych opakowaniach produktów spożywczych.

Poznanie szczególnych potrzeb, wymagań i oczekiwań starszych konsumentów w zakresie informacji zamieszczanych na opakowaniach produktów spożywczych jest szczególnie ważne dla dostosowania oferty produktowej skierowanej do tej grupy odbiorców. Prowadzenie badań w tym zakresie powinno być oparte na wiedzy dotyczącej specyficznych cech i wewnętrznego zróżnicowania grupy konsumentów w starszym wieku. Znakowanie produktów spożywczych umożliwiające starszym konsumentom prawidłowe odnalezienie, odczytanie i zrozumienie informacji zamieszczonych na opakowaniu jest ważnym czynnikiem wpływającym na decyzje zakupowe starszych konsumentów oraz – co najważniejsze – elementem zapewnienia bezpieczeństwa spożycia produktu.

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LIMITATIONS OF COMMUNICATIVE FUNCTION OF FOOD PRODUCTS PACKAGING USED BY THE OLDER CONSUMER

In today's competitive food market packaging fulfills a special role in terms of communicating with the consumer. Packaging performs the function of communicating mainly through the visual layer, which consists of signs forming a code package, i.e. the shape, form design, material, size, type of closure, color, subtitles and graphics. The law indicates a set of information that must be found on the packaging of the food and their physical appearance ensures readability, visibility and under-standability of information. The fulfillment of legal requirements regarding the physical appearance of information is not always a guarantee of proper performance of the package communicative func-tion. The limitation in this regard may be, e.g. specific features of the consumer in the elderly, which make it difficult or impossible to properly locate, read and understand the information placed on the packaging. The article presents the results of research on the identification of problems of older con-sumers with the usage of food packaging. Particular attention was paid to the most frequently pointed

information problems by older consumers in the field to find, read and understand such information. The study was conducted using two methods: the questionnaire and the method of Eyetracking. The analysis of the results allowed identifying the sources of problems with searching, reading and understanding the information placed on the packaging of food products by identifying these problems in relation to the characteristics describing the respondents as well as by the perception of individual elements of the package by the consumer in old age.
Keywords: packaging, food product, older consumer, labeling, communicative function

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CUSTOMER EXPERIENCE – DOES IT MATTER?

The purpose of this article is to describe a role of a Customer Experience as a tool to increase the sale of products or/and services provided by an organization, on the example of Oracle Corporation. The customer experience is a mix of the physical image of the enterprise and the feelings and sensations evoked by it, consciously and unconsciously at every stage of the customer contact with the enterprise and the brand at all points of the contact (so called touch-points). A set of experiences creates the image in the mind of the customer and at the same time the image of the brand and its values, having influence on the evaluation of the activities of the firm and the brand, a tendency to go into closer relations with the enterprise and purchasing decisions(CRM)[3]. In its study on the relationship between customer experience and customer loyalty, the company Forrester Research[4] found that customers who had a positive experience were more likely to come back for another purchase, more likely to recommend the business to a friend, and less likely to switch to a competitor[5]. The article is a part of a series of articles on building the model of the professional customer service and the relationship sales in the enterprise.

Keywords: Customer Experience, Customer Relationship Management, customer value, customer loyalty, customer satisfaction

1. INTRODUCTION

A Customer Experience is a process of interactions between an organization and a customer over the duration of their relationship. These interactions include a customer's attraction, awareness, discovery, cultivation, advocacy along with purchase of goods and use of services. It is measured by an individual's experience during all points of contact against his/her expectations[6].

Customer Experience Management is a science about knowing your customers as completely as possible. Such knowledge can create and deliver personalized experiences that will make them not only to be loyal to the organization, but also to advertise to others about its offer. This positive word of mouth is considered in various researches introduced

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[6] SAS Institute Inc., *Customer Experience Management What It Is and Why It Matters* (10.12.2016), www.sas.com; Customer Experience Management (tab on the website).

by McColl-Kennedy & Smith[7]; Bernhardt & Kennett[8] and Piercy[9] as the most valuable form of effective marketing any organization can work out.

2. GAINING KNOWLEDGE ABOUT CUSTOMERS

A deep knowledge about customers comes from extracting records about them from all points of contacts and channels across the entire organization. It's about gathering, mining and processing customers' data quickly and efficiently with precision and accuracy.

The concept of Customer Experience is a crucial differentiator in today's competitive global marketplace. There is substantial business value in managing the customer experience effectively. Good customer experience management can:
- strengthen brand preference through great experiences;
- increase revenue with incremental sales from existing customers and new sales from positive word of mouth;
- improve customer loyalty and create advocates through valued and memorable customer interactions;
- lower costs by reducing customers fluctuation[10].

To achieve that an organization should create and use the system that will be able to consolidate data into a single view of the customer. Having such single view across interactions, channels, products and time, would facilitate coordinated customer communications. Various factors can affect the customer experience, therefore it is important to:
- create and maintain complete customer profiles;
- personalize all customer interactions;
- get the right information to the right place at the right time on regular basis.

To deliver a five star Customer Experience, the organization should know its customers better than competitors do. This means the organization should understand and measure customers' journeys at the point of his/her first contact till the completed purchase, use and lastly return of products or warranty/claim procedure, when needed. The more an organization knows about its current and prospective customers, the more effective it will be at delivering relevant offers to them. The more relevant offers are, the closer relationship between business and customers becomes driving metrics like loyalty and retention up due to the positive customers' experience[11].

In the past, companies have used mainly structured data e.g., demographic, transactional and log data to construct customer profiles. Today, organizations should include emerging types of data like social media, video, RFID (radio-frequency identification), sensor, geolocation, etc. tied together with cross-channel coordination. And add contact,

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[7] J.R. McColl-Kennedy, A.K. Smith, *Customer Emotions in Service Failure and Recovery Encounters* [in:] W.J. Zerbe, N.M. Ashkanasy, and C.E.J. Härtel (ed.) *Research on Emotion in Organizations: Individual and Organizational Perspectives on Emotion Management and Display*, UK Elsevier, Oxford 2006, pp. 237–268.

[8] K.L. Bernhardt, N. Donthu and P.A. Kennett, *A Longitudinal Analysis of Satisfaction and Profitability*, "Journal of Business Research" 2963/98, pp. 161–171.

[9] N.F. Piercy, *Customer Satisfaction and the Internal Market: Marketing Our Customers to Our Employees*, "Journal of Marketing Practice: Applied Marketing" 1 (1995), pp. 22–44.

[10] Capacity – Outsource Empower Grow, Customer Experience and You, 2015, www.capaciti.com.au, on-line document (10.12.2016).

[11] SAS Institute Inc., *'Customer Experience Management...*

response and transactional history throughout the customer life cycle, as well as customer value, profitability and behavioural analysis[12].

By analyzing traditional, structured data in conjunction with newer types of data, an organization can:

- learn how to improve the customer experience at every touch points;
- understand what customers want and expect from it;
- make better decisions and faster;
- make it personal.

Once there is a thorough understanding of the customer, the organization can use that knowledge to personalize every interaction. It is important to focus not only on the customer, but also on the context in which the customer operates. By adding context to the focus, the organization can deliver relevant, insightful offers, recommendations, advice and service actions and thus creates again a positive customer experience[13].

These days customers have more presence, power and choice than before. Therefore, improving the interactions between business processes and customers entirely from their perspective is a vital subject to discuss within the organization. If the organization ignores that subject and do not provide a personal, relevant, timely and insightful service, it will start to alienate itself from customers effecting in customers outflow.

To deliver the best value at each customer touch point and improve the Customer Experience the organization needs to map a path in the customer life cycle. Each path's stage is important from initial consideration, through active evaluation, to the moment of purchase and even to the post-purchase procedure. And each stage is an opportunity to gain more insight in customers' requirements.

The another important fact about Customer Experience is gaining positive aspects of clients` satisfaction. Customer satisfaction is variously presented in the literature for example P. Kotler defines satisfaction as the "state felt by the body and connected with a comparison of perceived characteristics of the product and the expectations of individuals regarding these characteristics"[14].

According to K. Mazurek-Łopacińska satisfaction is the "emotional response to the comparative processes started by the client, consisting of the combination of their experiences and feelings after consumption of a product or service with expectations, individual standards or specific evaluation pattern"[15].

The complete definition of consumer satisfaction formulated R.B. Woodruff and S.F. Gardial, describing it as a positive or negative feeling a client in relation to the value received as a result of use of a particular product offered in a given situation. This feeling

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[12] *Ibidem.*

[13] *Ibidem.*

[14] Cyt. za: L. Nieżurawski, B. Pawłowska, J. Witkowska, *Satysfakcja klienta. Strategia – pomiar – zarządzanie. Koncepcja wewnętrznego urynkowienia współczesnej organizacji*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń 2010, s. 51–52.

[15] K. Mazurek-Łopacińska, *Zachowania nabywców i ich konsekwencje marketingowe*, PWE, Warszawa 2003, s. 305.

may be a direct reaction to the use of the product or complete response to a series of situations experienced[16].

Among the steps leading to the achievement of satisfaction stand out:

- − fulfillment – consisting in the offering by the company what the buyer needs;
- − value – meaning the fulfillment of the expectations of the buyer with regard to price;
- − convenience – consisting of the easy availability of the product;
- − confidence – the confidence of the buyer as to the fact that the product is trustworthy;
- − achieving customer satisfaction[17].

The level of customer satisfaction thus depends on the actual characteristics of the product or service, the individual characteristics of the buyer and its requirements for the product (service), communication policy pursued by the company and previous experience of the consumer. These factors affect the perception of the product or service by the purchaser and the shape of its expectations, and that as a result determine the level of satisfaction[18].

3. THE CUSTOMER EXPERIENCE VALUE EQUATION

According to Oracle research, Customer Experience (CX) is a complex practice area that requires clear vision, the right tools, and great execution to succeed. They recommend thinking about CX in terms of three major areas: Acquisition (A), Retention (R), and Efficiency (E). These areas play a critical role in any business. When combined, these three areas as the CX Value Equation looks as below[19]:

$$CX = A + R + E$$

Acquisition refers to an organization's ability to increase its customer base. Retention is the ability to keep and grow current customers. And Efficiency allows an organization to do more for its customers with less resources. Each CX practice area has three identified business challenges, adding up to a total of nine CX business challenges for success (Tab. 1)[20].

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[16] P. Nowicki, T. Sikora, *Czynniki kształtujące satysfakcję klienta oraz korzyści z pomiaru satysfakcji klienta w procesie doskonalenia jakości* [w:] *Zarządzanie jakością – doskonalenie organizacji*, red. T. Sikora, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków 2010, s. 204–205.

[17] A. Iwanicka, *Satysfakcja i jej rola w aktywności rynkowej nabywcy finalnego*, „Zeszyty Naukowe Politechniki Rzeszowskiej" 2009, nr 260, s. 57.

[18] K. Mazurek-Łopacińska, *op. cit.*, s. 308.

[19] Oracle Corporation, *'Customer Experience (CX) Metrics and Key Performance Indicators'*, online leaflet, 2012 (10.12.2016).

[20] *Ibidem.*

Table 1. Customer Experience (CX) Metrics and Key Performance Indicators

ACQUISITION (increase sales)	RETENTION monetize relationships)	EFFICIENCY leverage investments)
Generate more opportunities	Increase share of wallet	Increase ROIC/EVA
Increase brand equity	Drive loyalty	Increase productivity
Increase market share	Drive advocacy	Decrease cost of operations

Source: based on Oracle Corporation, *'Customer Experience (CX) Metrics and Key Performance Indicators'*, online leaflet, 2012 (10.12.2016).

Acquisition focuses on how an organization can increase its customers' base by gaining new or additional customers. It can consist of three business challenges:
- generate More Opportunities through an increase the amount of visitor and customer traffic so that there are additional opportunities for sales transactions; organizations benefit from having a respected brand, being visible and by creating great Customer Experiences;
- increasing Brand Equity as a key objective that builds corporate value and can influence sales and customer measurements such as increasing the average value of an order, improving customer conversion (switching from a competitor) rates and driving higher revenues;
- increase in Market Share provides companies with sustainability, growth, and pricing influence; improving market share naturally leads to an overall better financial position for companies.

Retention focuses on how organizations keep their customers to reduce outflow and to increase their life-time value. There are three important business challenges associated with Retention:
- the first challenge is to create customer Loyalty; a customer who is loyal is one who resists switching to another brand or doing business with another organization;
- drive Advocacy is a desired result that goes beyond loyalty; in the social age, a positive word of mouth can drive a company to success. A customer who tells their friends, family, or colleagues about how much they are satisfied by doing business with the organization is the best advocate of all.
- increasing the Share of Wallet for each customer drives higher profit; expanding sales through expansion of sales to each customer is one of the best and most profitable approaches to increase revenue.

Efficiency focuses on doing the right operational activity to deliver the desired results at a lower cost to the organization. There are also three important business challenges in this area[21]:
- increase Return on Invested Capital (ROIC) or Economic Value Add (EVA), both are key measures of a company's efficiency (increases in these areas typically indicate a strengthening of the company's financial position);

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[21] *Ibidem.*

the major challenge represents traditional accounting of the expenses associated with the customer interaction and Decreasing the Cost of Operations (these expenses refer to those costs associated with servicing the customer base either before they purchase a product or after);

−   at most organizations, the largest cost associated with doing business is its employees (improving the productivity of this asset can go a long way toward improving the overall impact that employees can have delivering a great customer experience[22].

Each of business challenges provided above has measurements that organizations can use to track the results in general performance. These measures inform the management if there are any areas where the organization is currently underperforming and where improvements may be made, or if there are any areas of excellence that can be treated as a perfect example for other departments and people to create positive customer experience during mutual interactions.

4. ROLE OF CUSTOMER SERVICE IN CUSTOMER EXPERIENCE

From a Human Resources Management perspective, it is important to highlight the significance of attracting, developing, and retaining employees who display a customer-oriented personality. Thus, best practices in selection/hiring procedures should be implemented to ensure that front-line service employees represent the behaviour of a customer-oriented profile. The organization may be able to better place the right applicants into the right job. Customer Orientated employees are able to better take care of customers, can correctly read customers' needs, develop personal relationships with them, and deliver good service on time, and thus they will create a unique positive Customer Experience[23].

Recent studies have also found that customer services employees empowerment exerts a positive influence on their customer orientation[24]. According to Lee and Koh, empowerment is "the psychological state of a subordinate perceiving four dimensions of meaningfulness, competence, self-determination and impact, which is affected by the empowering behaviours of the supervisor"[25]. Thus, training supervisors on how to empower their employees may be crucial for the development of customer-oriented workers. Service organizations having an empowerment culture may enhance employees' predisposition to meet customers' needs. If employees find meaning in their tasks, they should be more inclined to give their customers individual attention and resolve any problem thus creating a positive experience for customers. Customer service employees who are confident about their role in the organization are more likely to feel that it is important to anticipate customers' needs, and find satisfaction in delivering a good service on time. Finally, if employees have influence and control over their jobs, they may be inclined to exercise initiatives in improving interactions and developing closer relationships with their customers[26].

Employee Job Satisfaction has been defined by Antoncic *et. al.* as a combination of following elements: general satisfaction with work, employee relationships, the remunera-

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[22] *Ibidem.*

[23] G. Gazzoli, H. Murat, P.B. Kim, *Explaining Why Employee-Customer Orientation Influences Customers' Perceptions of the Service Encounter*, "Journal of Service Management" 2013, no. 24, pp. 382–400.

[24] *Ibidem.*

[25] M. Lee, J. Koh, *Is Empowerment Really a New Concept?,* "The International Journal of Human Resource Management" 2001, no. 12, pp. 684–695.

[26] G. Gazzoli, H. Murat, P.B. Kim, *Explaining...*

tion, benefits, organizational culture and an employee loyalty as a crucial antecedent of intrapreneurship[27]. Additionally, the job satisfaction is "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences"[28] and this is considered to be vital for the delivery of quality. Pugh used emotional contagion theory to explain the correspondence between employee affect and customer's responses to service[29]. The service-profit chain framework holds that satisfied employees are more productive and provide better service quality then less satisfied employees, leading to higher customer satisfaction and experience[30]. Theoretically, a committed employee is more likely than a less committed employee to accept and support organizational goals by demonstrating behaviours that enhance the quality of interaction in service encounter[31]. Various researchers have empirically demonstrated the relationship between Customer Orientation and the Customer Experience[32]. The results presented in their studies support the suggestion that Job Satisfaction and Customer Orientation are key drivers of employee performance, and that high quality interactions between frontline employees and customers are likely to positively affect a customer's consumption experience. Overall, the pattern of results reported here suggests that the higher an employee rates of Customer Orientation level, the more the employee is satisfied with and committed to the job; in turn, customers will view their interaction with such an employee higher than usual, resulting in increasing levels of positive Customer Experience through the Customer Satisfaction.

Another aspect of gaining better results in organizations is the introduction of Customer Experience Management (CXM) which can be defined as a system of comprehensive and long-term actions and not closed in time the marketing campaign. Its implementation is basically a reconstruction of the enterprise in all its pillars which relate to the interaction with customers. Marketing is the only action centered around the product and it is an important complement to CXM. As a product (or a service) is of the poor quality and did not meet the expectations, even the most friendly customer service can act little things to make a success. It should be known as well that the replacement of the advertising campaigns by Customer Experience Management is a good solution especially for large enterprises with the established position in the market and fighting with several rivals. Small and entering the market enterprises should not give up the extensive promotional activities because they are necessary to raise brand awareness among potential customers. The enterprise should first find people who visit the place, make a purchase and then recommend the brand to others[33].

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[27] J.A. Antoncic, B. Antoncic, *Employee Satisfaction, Intrapreneurship and Firm Growth: A Model*, "Industrial Management & Data Systems" 2011, no. 111, pp. 589–607.

[28] E.A. Locke, *The Nature and Causes of Job Satisfaction* [in:] M.D. Dunnette (ed.) *Handbook of Industrial and Organizational Psychology*, Chicago: Rand McNally, Chicago 1976, pp. 1297–1349.

[29] S.D. Pugh, *Service with a Smile : Emotional Contagion in the Service Encounter*, Academy of Management Journal" 2001, no. 44, pp. 1018–1027.

[30] J.L. Heskett, T.O. Jones, G.W. Loveman, W.E. Sasser, L.A. Schlesinger, *Putting the Service-Profit Chain to Work Putting the Service-Profit Chain to Work*, "Harvard Business Review" 1994, no. 72, pp. 164–174.

[31] G. Gazzoli, et. al., *op. cit.*

[32] M.K. Brady, J.J. Cronin, *Customer Orientation: Effects on Customer Service Perceptions and Outcome Behaviors*, "Journal of Service Research" 2001, no. 3, pp. 241–251.

[33] *Wrażenia klienta są najważniejsze*, www. poradnikprzedsiebiorcy.pl (10.12.2016).

5. CONCLUSIONS

According to Rawson *et. al* an organization that is able to skilfully manage the entire Customer Experience path obtains such rewards as: enhanced customer satisfaction, reduced outflow, increased revenue, higher employee satisfaction[34] leading to overall positive Customer Experience.

In today's connected, digital world, managing the Customer Experience can be even more critical in gaining a competitive advantage than ever. The Internet has enabled a new era of transparency, empowering consumers to instantly share their experiences with other users around the world. Today, transforming Customer Experience into an advantage requires taking the service well beyond just customer service. It requires engaging in continuous dialogue with customers, distributing feedback and insights throughout the business, empowering employees to take action, and innovating in response to create an excellent Customer Experience. The companies that can develop these capabilities will be able to drive a real financial impact[35].

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[7]   Heskett J.L., Jones T.O., Loveman G.W., Sasser W.E., Schlesinger L.A., *Putting the Service-Profit Chain to Work Putting the Service-Profit Chain to Work*, "Harvard Business Review" 1994, no. 72.
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[34] A. Rawson, E. Duncan, C. Jones, *The Truth About Customer Experience*, "Harvard Business Review" 2013, no. 9, www.hbr.com (10.12.2016).

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DOŚWIADCZENIE KLIENTA – CZY TO MA ZNACZENIE?

Celem niniejszego artykułu jest opisanie roli, jaką pełni doświadczenie klienta (CX – *Customer Experience*) jako narzędzie umożliwiające podnoszenie poziomu sprzedaży produktów lub usług świadczonych przez daną organizację, na przykładzie studium przypadku firmy Oracle. „Doświadczenie klienta to mieszanka fizycznego wizerunku firmy oraz uczuć i do-znań wywoływanych przez nią świadomie i bezwiednie na każdym etapie kontaktu klienta z firmą i marką, we wszystkich punktach kontaktu (touch-points). Zbiór doświadczeń tworzy obraz w umyśle klienta, a zarazem wizerunek marki i jej wartości, wpływając na ocenę dzia-łań firmy i marki, skłonność do wchodzenia z firmą w bliższe relacje oraz na decyzje zaku-powe" (CRM). W badaniach na temat relacji między doświadczeniem klienta a jego lojalno-ścią firma Forrester Research stwierdziła, iż klienci, którzy odnieśli pozytywne wrażenia w kontaktach z daną organizacją, byli skłonni ponawiać zakupy lub korzystać z usług tejże in-stytucji oraz, co bardzo istotne, polecać ją swoim znajomym i rodzinie. Przy tym ryzyko odej-ścia do konkurencji znacznie malało. Co więcej, klienci ci wykazywali chęć pozostania przy danej organizacji na dłużej, czyli pojawiały się pierwsze oznaki lojalności. Artykuł stanowi część serii artykułów na temat budowania modelu profesjonalnej obsługi klienta i sprzedaży relacyjnej w przedsiębiorstwie. Ponadto w tekście zaprezentowano najważniejsze informacje dotyczące satysfakcji klienta, jak i pracowników w organizacji, którzy poprzez odpowiednią motywację mogą stanowić istotny element budowania pozytywnego doświadczenia klienta.

Słowa kluczowe: doświadczenie klienta, zarządzanie relacjami z klientami, wartość dla klienta, lojalność klienta, satysfakcja klienta

Agnieszka WIDAWSKA-STANISZ[1]

GAMIFICATION IN THE URBAN AREA

Present customers are inundated with the advertisement communications from all sides. Most of them, consciously or not, are unnoticed. The authors of advertising projects look for the ways of getting to the receivers in the world with too much information. There are difficulties in reaching the potential receivers of campaigns promoting different kinds of actions in the urban area. It means the promoting the city as tourist attraction, teaching the history of place or involving the residents in caring of aesthetics. Another argument for gamification is the increasing amount of people interested in games. According to research more and more people choose various kinds of games as the form of entertainment. We are attracted by achieved levels, badges and prizes. If it happens in a particular society, motivating us to take action, in amusing atmosphere, the involvement in game appears automatically. A huge interest in games and other mechanisms begins to translate to other areas. Gaming and the elements of games are more often used in the management of relationship with purchasers and building their involvement. The gamification is associated with sale, education and trainings, brand promoting, product promoting, recruitment, administration and management. The goal of paper was the presentation of the essence of gamification concept with the focus on the actions connected with the gamification of the urban area. It was assumed that gamification can be helpful in motivating both residents of cities and tourists to take care of common space, to involve and work out proper habits and attitudes.

Keywords: gamification, urban area, purchaser engagement, the management of relations, marketing

1. INTRODUCTION

The idea of gamification is not a new one. A lot of tools used today as part of gamification have been already used. "Psychologists have used different kinds of games to the examination of human psyche and the mechanism of behaviour, for many years"[2].The researchers of subject point that the attitudes of modern gamification theory can come from both the socialist ideology of work competition and motivating techniques used in the 1990s in American corporations[3]. Today gamification dominates in entertainment, marketing, human management, training, branding, relationship management and many other areas. The actions using the elements of games are used thanks to the changing of ways of communication, new technologies development and increasing meaning of social media. A modern purchaser, a potential employee, a supplier or a broker looks for something new, something which is interesting for them to come back to this activity, something which has got the element of competition and involvement.

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Paweł Tkaczyk provides, that „Harvard Business Review has placed the gamification on the list of trends, which cannot be ignored in the nearest future, naming it "one of the most decisive marketing conceptions of last times"[4].

The results of research show that more and more Poles love games. The most favourite games are on-line ones. According to TNS OBOP in 2012 "as many as 77% of Polish Internet users declared that they had ever played on-line, but one fifth of them had played more than once a day"[5]. One year later, in 2013, according to the research conducted by Research NK and presented during game Industrial Trends, the amount of players had increased to 85%.

Game Industrial Trends Report from 2014 shows how the profile of games users has changed[6]:

1. The participation of players in the age of 25–34 has dropped from 95% to 89%, but the participation of players 50+ has increased.
2. As much as 80% of information about games is found from the Internet, 41% of it is achieved by search engine.
3. From 48% to 35% the meaning of social media has dropped.
4. 59% of men think that games have influenced their life positively.
5. Men play on laptops and PCs in so called shooting games, they chose more often sport games as well.
6. Women like mobile versions of games and games from search engines, they like more and more logical games and they choose them in social services.

With the development of modern technologies the number of people who use mobile devices is increasing. They use smartphones and tablets. The consumers like games and they play. That is why the marketers should use this fact and start to use game in their work in order to manage the relationship with customers and to build their involvement. „If these mechanisms work so well, that almost 20 million of people plant daily virtual vegetables enthusiastically in „FarmVille"[7], so why don't use them in the other boring but crucial spheres of life?"[8]

The goal of this work is to show how one of the newest trends in marketing called gamification works and to show the possibilities of using games in the urban areas. In this study it is assumed that gamification can help with motivating the residents of cities and tourists to take care about the common space, involve them, teach and work out some proper habits.

2. THE MATTER OF GAMIFICATION

Gamification is the process of implementation the structure and mechanism of game (points, badges, levels, challenges and prizes) to the real world in order to provoke the

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[4] P. Tkaczyk, *Grywalizacja. Jak zastosować mechanizmy gier w działaniach marketingowych*, Wyd. Helion, Gliwice 2012, p. 149–150.

[5] *W co gramy w sieci*, http://media2.pl/internet/89586-TNS-OBOP-W-co-gramy-w-sieci.html access: 30.05.2014.

[6] *Rynek gier się zmienia*, http://grywalizacja24.pl/rynek-gier-sie-zmienia/ access: 5.10.2015.

[7] FarmVille – search engine game, which lets player transform in the role of virual farmer, integrated with social service Facebook, which allows to inform friends about activity, inviting them and other actions making the number of players bigger.

[8] *Grywalizacja, czyli gamification po polsku*, http://www.eksoconline.uni.lodz.pl/?p=882 access: 20.09.2015.

involvement of users, to change their behaviour and to solve different types of problems[9]. Gamification is not only the act of promoting by introducing new brand to game, but also translation the mechanisms and involving the solutions from games to the real world, in the way to motivate and affect us. We can promote a brand; we can encourage and motivate the target group to take particular actions[10]. Paweł Tkaczyk claims that gamification means the using of mechanisms and techniques known from various types of games (board, plot or computer ones) to increase the involvement of user in action in the situations which are not games, particularly, when they are thought to be boring and routine[11]. Unfortunately, this term is overused very often by specialists in marketing. Gamification is not typical loyalty program, where the producer persuades people to collect stamps, which we can exchange for a prize. In the gamification such elements like points, rewards, ranks, results tables, plot, and communication systems between players. "The working of this loop is very easy, even banal: customers, who take actions crucial for us (buy, for instance), take decisions important for us and get from us positive reinforcement (points, badges etc.) The achievement of next points and badges is connected with next positive reinforcement (we give customers something more, that they expect), so we motivate people to take next actions crucial for us"[12].

3. TOOLS OF GAMIFICATION

The matter of gamification consists in building the involvement and strong emotions between the receiver of message (a purchaser, an employee, and partner) and a brand, product or service. These emotions appear when the plot of game is built. P. Tkaczyk mentions about „ designing of curiosity" to help a person with „going deeper" in the game, to make it multilevel and giving a lot of different possible solutions. "On the base of analysis of successful projects 3 pillars are determined, which are the guarantee of success, so strong and long-lasting involvement of participants:
− Fun – understood by satisfaction, not only connected with something funny. It is momentary entertainment giving the pleasure.
− Friends – the possibility of fun in community, inviting friends, meeting new people, cooperation and competing. It is fulfilling of human need to make friends and keeping in touch with other people, feeling of belonging to community is a key to success social games, but also projects based on crowdsourcing[13].

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[9] K. Wrona, *Grywalizacja i gry oraz ich potencjał do wykorzystania w strategiach marketingowych*, „Marketing i Rynek", nr 10/2013, s. 25.

[10] *Raport Game Industry Trendy 2012*, http://www.git2012.pl/raport access: 25.08.2015.

[11] M. Laskowski, *Wykorzystanie czynników grywalizacyjnych w tworzeniu aplikacji użyteczności publicznej*, Zeszyty Naukowe Uniwersytetu Rzeszowskiego, https://www.ur.edu.pl/file/57419/2.pdf, access:1.10.2015.

[12] *Założenia grywalizacji dla budowania lojalności*, http://grywalizacja24.pl/zalozenia-grywalizacji-dla-budowania-lojalnosci-klienta/ access: 31.08.2015.

[13] Crowdsourcing- outsourcing of work a group of people instead of basing on traditional system of working – appointing work to narrow group of specialists. *Crowdsourcing* is appointing tasks provided for small group of people to undetermined crowd: Internet users, consumers, volunteers. "Crowd" can be rewarded for doing its tasks, but not has to. A lot of people decide to share their knowledge, talents for free. They have satisfaction from working for society. *Crowdsourcing* can be smartly transformed as a part of gamification and encourage people to share their time and knowledge with playing and competing in the same time [Source: http://grywalizacja24.pl/crowdsourcing/ access 25.08.2015].

− Feedback – receiving by users fast back information about their actions"[14].

Plot of game should be lined by special tools maintaining the competition, fun, communication and interactions between players. Paweł Tkaczyk mentions that the basic elements influencing on the users motivation and being part of game structure is as follows:

− Rewards. They are the most often in the form of points, but it is advised to adjust the form of rewards to the plot of game and given story

− Feedback, thanks to which a player can be informed about their achievements (sometimes in the comparison with the results of other players) in a clear and fast way.

− Statuses and levels. The levels provide permanent interest in game, and the passing from one level to another is the goal itself. The achieving particular level is visible in the status of player, who can be the motivator for the other players in taking next actions.

− Achievements and challenges, which prevent people from „go away" from a game and whose achieving make players be closer to the finish of particular level of game. Thanks to overcoming the difficulties a player gets the feeling of satisfaction and willingness to solve next task. It is important to provide new, different challenges, which can involve the players and take their attention.

− Table of results. The possibility of comparing results favours the competition and defeating others.

− Virtual possessions and places, thanks to which the users can express themselves and make friends with other players. Here we can mention virtual presents and other mechanisms supporting altruism and helping others[15].

There are a lot of spheres where the gamification can be used: sale, education and trainings, brand promotion, product promotion, recruitment, administration and management.

It is worth mentioning that not all things which we can play in, can be called gamification. It is not loyalty program and city game as well[16]. There are all 3 elements (Fun, Friends, Feedback), but every city game finishes very fast, but the gamification is long-lasting involvement of players.

4. TYPOLOGY OF PLAYERS

According to R. Bartle, the author of „Games People Play" a professor of Essex University, players expect from virtual world the following profits:

− discovering the world – it is crucial for those, who like visiting virtual world and learn about its laws,

− achievements inside game – it is important for those, who realise the goals pointed by game consistently and want to do their best in playing,

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[14] S. Starzyński, *Gryfikacja, modny termin nadużywany przez marketerów*, http://www.git2012.pl/raport access: 25.08.2015.

[15] B. Jaskowska, *W to nam graj! Grywalizacja w promowaniu usług bibliotecznych.* Biblioteka jako marka: materiały z VII Forum Młodych Bibliotekarzy w Łodzi, 11–12 września 2012 r., http://repozytorium.ur.edu.pl /bitstream/handle/item/127/Grywalizacja_BJaskowska.pdf?sequence=1, access: 1.10.2015.

[16] City game – a form of entertainment using the city area where participants have particular tasks such as solving problems, looking for hidden places, gaining points and rewards.

– coming into contact with others – a key for those who like contacts, conversations, which can be transferred to the real world,
– influencing other people – important for those, who like chaos, challenge the others, rob and kill[17].

In this way we can determine four basic types of players by theirs motivation and behaviours in virtual world:

1. Explorers – gain the experience, go sightseeing around virtual world, they want to learn about it as much as possible.
2. Archivers – collect points, like games with results tables and levels.
3. Socialisers – gain the social experience, the game is for them an introduction to long-lasting social interactions. They care about other players; a game itself is for them some kind of background for meeting interesting people
4. Killers – they are interested in loosing of other players. They care about their power over the others[18].

5. GAMIFICATION IN THE URBAN AREA

Gamification in the urban area is the one of change directions, to which city marketing is going to head to. It is about increasing involvement of participants in city promotion or learning about its history, involving participants in caring about the aesthetics of city and creating its facilities. Among some interesting examples of gamification connected with urban area are presented:

1. Application CivCity which is created to activate the residents of American city Ann Arbor. „The whole is based on the assumption that the more aware residents are the more active ones. (…) The points in CivCity are collected for all activities connected with the city life – cleaning the area or taking part in events organised in Ann Arbor. The project has got function responsible for improving the local business, as well"[19].
2. Recuperator is an idea connected with dogs' droppings in the urban area. This idea has appeared as a result of Think Blue action[20], which the goal was the working out of actions influencing the comfort of life in small communities. It was the idea of Volkswagen Company and it the idea of dogs' recuperator succeeded. „The working of recuperator is simple. After bringing packed droppings, a minder of an animal can become a player by getting a chance for winning an ecological gadget"[21].
3. Turkish company Pugedon tried to solve the problem of ownerless dogs and plastic bottles recycling. The containers, where people can put plastic bottles, are placed in Istanbul. There is a reward for every bottle, but this reward is given to ownerless dogs. There is food and water for dogs in containers, which is dispensed every time when an empty plastic bottle is placed there. In this way the company wants to remind people

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[17] P. Tkaczyk, *Grywalizacja. Jak zastosować..*, p. 78.

[18] P. Tkaczyk, *op.cit.*, p. 78.

[19] *Grywalizacja w mieście*, http://grywalizacja24.pl/grywalizacja-w-miescie/ access: 1.10.2015.

[20] The action was a part of global campaign Think Blue by Volkswagen, during which over 350 projects were realised in 35 countries. There are another kinds of them planned in Poland.

[21] *Rekuperator – grywalizacja sprzątania*, http://grywalizacja24.pl/rekuperator-grywalizacja-sprzatania/ access: 1.10.2015.

about ecology and teach them sensitivity to homeless animals[22]. The shot of the poster is presented at Picture 1.

Picture 1. Action with the elements of gamification in Istanbul

Source: http://pugedon.com/tr/ access: 1.09.2015

4. A ticket for 30 knee bends – this action with the elements of gamification was organised in underground in Moscow (Picture 2). This action was part of physical activity and Winter Olympic Games in Sochi in 2014. At one station of Moscow underground a ticket machine was installed. It attracted people. A lot of passers- by stopped to support exercising residents of Moscow.

Picture 2. Action with the elements of gamification in Moscow underground

Source: http://www.gamification.co/2013/11/15/squat-30-times-free-metro-pass/ access: 1.10.2015.

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[22] *Zużyte butelki karmią bezdomne psy*, http://www.kampaniespoleczne.pl/kampanie,3274,zuzyte_butelki_karmia_bezdomne_psy, access: 1.09.2015.

5. Bottle Bank Arcade – action to increasing the amount of glass for recycling. In this project "it was proved that the fun was the factor which motivates people to work out positive, healthy habits. Bottle Bank Arcade was created in Sweden in 2009 and it was based on gamification. Instead of using virtual badges, points or rewards giving for passing missions, the authors of project presented the disinterested fun, which caused the joy. (…)Bottle Bank Arcade was nothing more like machine "on steroids" used for recycling. The authors put there blinking lamps and speaker taking the passers-by' attention, the bottom of START and the counter of points gained by people who took part in this fun. After starting the machine, installed lamps which there are holes for glass bottles under, blinked randomly. The task of players was efficient putting the glass bottle to active holes (blinking lamps). For each correct bottle placing the player got one point, which is showed by electronic counter"[23].

6. Another action encouraged to physical activity (Picture 3). This time French producer of mineral water Nestle Waters the owner of Contrex brand, there was a project encouraging women to use pink stationary bikes placed in one street. When women sit and started to pedal the energy made by this action powered the light show. There was neon stripteaser presented on the wall and it was enough to pedal more. There was smartphone application joined with this action "for all who are fed up with losing weight. You can dance, sing, watch films and burn calories in the meantime. The application counts on the base of simple life activities how much calories you have burned"[24].

Picture 3. Action with the elements of gamification by Contrex Nestle Waters
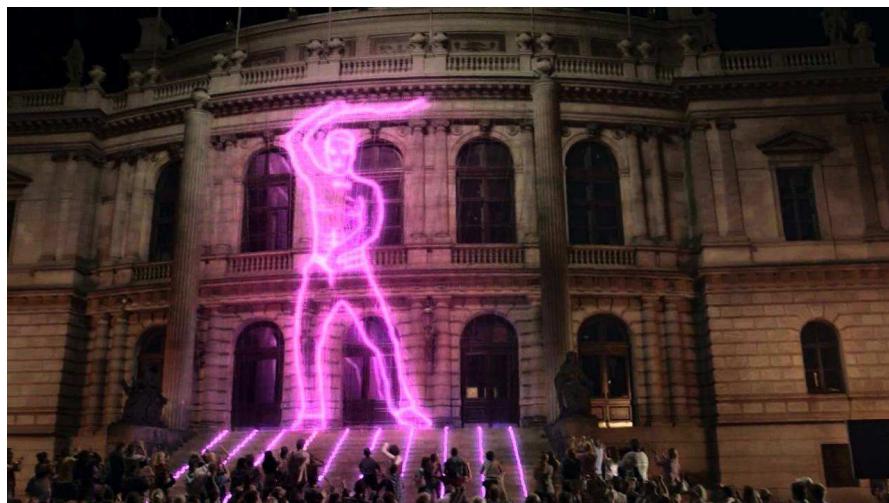
Source: http://przerwanareklame.pl/artykuly/reklama-wody-mineralnej-jakiej-swiat-jeszcze-nie-widzial/ access: 1.10.2015.

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[23] *Bottle Bank Arcade*, http://grywalizacja24.pl/bottle-bank-arcade/ access: 1.10.2015.

[24] *Reklama wody mineralnej jakiej świat nie widział*, http://przerwanareklame.pl/artykuly/reklama-wody-mineralnej-jakiej-swiat-jeszcze-nie-widzial/ access: 1.10.2015.

7. "Piano stairs" w Stockholm – gamification is used in promoting healthy lifestyle. Project with the elements gamification was executed at Odenplan in Stockholm in the form of Piano Stairs (Picture 4). The authors of project wanted to encourage people to be more active, installed project imitating the piano keys. At the beginning people observed the situation and chose an escalator, but after some time as many as 66% of passengers had fun with piano stairs".

Picture 4. Action with the elements of gamification in Stockholm

Source: http://www.thefuntheory.com/ access: 10.09.2015.

Gamification and the elements of games are more often used in the connection with other tolls. For example in tourism and city promotion gamification can be used with storytelling[25] and questing[26]. The example of questing used in the urban area is „ Royal Quest Poznan", which leads the participant of the fun through the streets of Old Town in Poznan showing known places but in different way.

There are riddles and tasks, which at the end lead to the place where a case with treasure is hidden. To complete total task a participant has to put a password from collected letters"[27].

6. CONCLUSIONS

Undoubtedly, gamification is an interesting trend and how it was shown in the examples above; it can have positive influence on involvement of participants and their experiences. The proper implementation of game mechanisms during the process of gamification can considerably influence the increasing of results (the involvement of participants, for instance). We should remember that we cannot use it as an only tool or remedy for all problems. Not every solution should be practiced in urban area. Marketers and local authorities are responsible for tools and time which they choose. All actions should be integrated in such way that that can be solid element of urban area promotion.

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[25] Storytelling – narrative marketing, telling the story to involve participants in project.

[26] Questing another words tourism with riddles- it is the form of turism with using quests – paths which lead according to clues hidden in the map. Questing is more and more popular in Poland. More and more marketing specialists use it

[27] Quest Królewski Poznań, http://www.poznan.pl/mim/turystyka/quest-krolewski-poznan,p,23594,23599,23604.html access: 10.09.2015.

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[13] Założenia grywalizacji dla budowania lojalności, http://grywalizacja24.pl/zalozenia- grywalizacji-dla-budowania-lojalnosci-klienta/
[14] *Zużyte butelki karmią bezdomne psy*, http://www.kampaniespoleczne.pl/kampanie, 3274,zuzyte_butelki_karmia_bezdomne_psy

GRYWALIZACJA W PRZESTRZENI MIEJSKIEJ

Czy grywalizacja może stać się nośnikiem informacji w przestrzeni miejskiej? Współ-cześni klienci są atakowani komunikatami reklamowymi ze wszystkich stron. Większość z tych komunikatów, świadomie lub nie, pozostaje niezauważona. Twórcy projektów re-klamowych poszukują sposobów na dotarcie do odbiorców w zalewającym nas ze wszyst-kich stron szumie informacyjnym. Trudności pojawiają się również w dotarciu z przekazem do potencjalnych odbiorców kampanii promujących różnego rodzaju działania w przestrze-ni miejskiej. Mowa tu o promowaniu miasta jako atrakcji turystycznej, przybliżaniu historii czy angażowaniu mieszkańców w dbałość o zachowanie estetyki miejsca. Innym, przema-wiającym za grywalizacją argumentem, jest rosnąca rzesza osób zainteresowanych grami. Według badań coraz więcej osób jako formę rozrywki wybiera różnego rodzaju gry. Uwiel-biamy rywalizować. Pociągają nas zdobywane poziomy, odznaki i nagrody. A jeśli to wszystko dzieje się w jakiejś określonej, dopingującej nas do działania, społeczności w at-mosferze zabawy, zaangażowanie w grę pojawia się automatycznie. Duże zainteresowanie grami i ich mechanizmami zaczyna się przekładać na inne obszary. Grywalizacja i elementy gier są coraz częściej wykorzystywane w zarządzaniu relacjami z nabywcami i budowaniu ich zaangażowania. Grywalizuje się również działania związane ze sprzedażą, edukacją i szkoleniami, promocją marki, promocją produktu, rekrutacją, w administracji i zarządza-niu. Celem opracowania było przedstawienie istoty koncepcji grywalizacji i z akcentem na działania związane z grywalizowaniem przestrzeni miejskiej. Założono, że grywalizacja może pomóc zmotywować mieszkańców miasta i turystów do dbania o wspólną przestrzeń,

zaangażować oraz wypracować właściwe nawyki i postawy. Pracę uzupełniono przykłada-mi zastosowania grywalizacji w przestrzeni miejskiej.

Słowa kluczowe: grywalizacja, przestrzeń miejska, zaangażowanie nabywców, zarzą-dzanie relacjami, marketing

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ZASTOSOWANIE METODY CSI DO BADANIA SATYSFAKCJI KONSUMENTÓW NA PRZYKŁADZIE WYBRANEJ SIECI HANDLOWEJ

Badanie satysfakcji klienta jest obecnie niezbędnym elementem służącym do zdobycia przewagi konkurencyjnej na rynku. W wypadku sektora usług precyzyjna ocena jakości nie jest jednak łatwa, ponieważ zależy od osobistych odczuć klienta. Subiektywizm w ocenie powoduje, że to, co przez jedną osobę jest oceniane bardzo wysoko, dla innej ma charakter przeciętny lub nawet negatywny. Ważnym problemem, który należy wziąć pod uwagę podczas przeprowadzania badań, jest również zrozumienie istoty pojęcia „jakość postrzegana". Jakość postrzegana nie zawsze jest równa jakości technicznej. Zależy ona od bardzo wielu zewnętrznych czynników, które często nie mają ścisłego związku z obiektywną oceną doskonałości wykonania. Wynika to z faktu, że każdy konsument na podstawie dostępnych informacji, dotychczasowych doświadczeń czy opinii innych osób wyobraża sobie daną usługę jeszcze przed jej realizacją. W związku z tym głównym celem artykułu był pomiar oczekiwań konsumentów oraz stopnia ich zadowolenia z zakupów w wybranej sieci handlowej. Dążąc do realizacji przyjętego celu, zastosowano metodę *Customer Satisfaction Index* (CSI), gdzie głównym narzędziem pomiarowym był kwestionariusz ankietowy. Metoda CSI jest jedną z najbardziej popularnych metod służących do pomiaru jakości usług. Pozwala na określenie poziomu satysfakcji oraz ukazuje wiele cennych wskazówek co do kierunku doskonalenia działalności przedsiębiorstw. Badaniem objęto 50 losowo wybranych studentów zamieszkujących miasto Rzeszów oraz dokonujących zakupów w jednej z najbardziej popularnych sieci sklepów dyskontowych. Otrzymane wyniki pozwoliły na przeprowadzenie szczegółowej analizy dotyczącej jakości obsługi oraz przedstawienie propozycji działań doskonalących.

Słowa kluczowe: satysfakcja klienta, CSI, jakość usług, sieci handlowe

1. WPROWADZENIE

W Polsce w ciągu ostatnich lat zmiany gospodarcze doprowadziły do znacznego nasycenia rynku sieci detalicznych. Ogromna różnorodność produktów oraz szeroki wachlarz możliwości ich pozyskania w znacznym stopniu stymulują wzrost oczekiwań klientów. Cena – do tej pory główny instrument oddziaływania na klienta – nie odgrywa już znaczącej roli w uzyskaniu przewagi nad konkurentami[3]. Również jakość towarów powoli staje się warunkiem oczywistym, przy którym klienci dokonują zakupu danego produktu. Gdy

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[3] M. Stoma, *Modele i metody pomiaru jakości usług*, Q&R Polska, Lublin 2012, s. 7.

jest ona na niskim poziomie, firma nie ma szans w walce konkurencyjnej z przedsiębiorstwami z danej branży[4].

O osiągnięciu i utrzymaniu przez przedsiębiorstwo długookresowego sukcesu w głównej mierze decyduje klient. To on na podstawie własnych odczuć podejmuje decyzje o wyborze danego dobra, a analizując dostępne oferty, szuka dla siebie maksymalnych korzyści. Konieczne staje się więc poszukiwanie przez przedsiębiorstwa nowych „zwabiaczy" dla potencjalnych nabywców. Należy jednak pamiętać, że działania promocyjne mają za zadanie jedynie przyciągnąć klienta, natomiast wysoka jakość obsługi oraz oferowanych produktów zatrzymują go na dłużej.

W ciągu ostatnich dekad można zaobserwować wzrost znaczenia segmentu młodych konsumentów (w wieku 18- 24 lat) oraz dostrzeżenia ich odmiennych wymagań i potrzeb w porównaniu z innymi klientami sieci handlowych. Stanowią oni dużą grupę potencjalnych i atrakcyjnych nabywców, charakteryzujących się wysokim stopniem wyedukowania oraz znajomością nowoczesnych technologii[5]. Ponadto osoby te pomimo, że często same nie dokonują zakupów i nie są ostatecznymi użytkownikami wyrobów, wywierają wpływ na decyzje zakupowe innych osób, głównie rodziców. Fakt ten również mobilizuje zarząd przedsiębiorstwa do głębokiej analizy wymagań i potrzeb młodych, potencjalnych konsumentów.

2. METODA CSI W BADANIACH SATYSFAKCJI KLIENTÓW

Metoda Wskaźnik Zadowolenia Klienta (CSI, *Customer Satisfaction Index*) jest jedną z najbardziej popularnych metod wykorzystywanych do pomiaru jakości usług[6]. Stanowi też doskonałe narzędzie służące do kreowania strategii marketingowej firmy. Pozwala na określenie poziomu satysfakcji oraz stopnia zadowolenia klientów z danego produktu czy usługi. Dzięki niej uzyskuje się odpowiedzi na następujące pytania[7]:
- jakie są oczekiwania klientów co do oferowanych produktów/usług;
- które z tych oczekiwań mają największe znaczenie dla klienta;
- w jakim stopniu produkty/usługi spełniają te oczekiwania;
- w jakie obszary należy inwestować i je rozwijać, a które z nich są przeinwestowane.

Wskaźnik CSI jest praktycznym narzędziem pomiarowym i ma w sobie wiele zalet, takich jak[8]:
- łatwość użytkowania metody;
- krótki czas wypełniania ankiety;
- rozpoznanie preferencji i oczekiwań klientów;
- możliwość porównania otrzymanych wyników dla przedsiębiorstw, które ze sobą konkurują;

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[4] J. Frąś, *Wybrane instrumenty pomiaru jakości usług logistycznych*, „Zeszyty Naukowe Uniwersytetu Szczecińskiego" 2014/66.

[5] A. Grudecka, *Strategie marketingowe sieci detalicznych w kontekście wzrostu znaczenia młodych konsumentów*, „Marketing i Rynek" 2015/11

[6] Obszerny opis metody CSI można znaleźć w: R. Wolniak, B. Skotnicka- Zasadzień, *Wybrane metody badania satysfakcji klienta i oceny dostawców w organizacjach*, Wydawnictwo Politechniki Śląskiej, Gliwice 2008.

[7] R. Wolniak, B. Skotnicka- Zasadzień, *op. cit*., s. 77.

[8] H. Hall, *Zastosowanie metody NPS I CSI w badaniach poziomu satysfakcji i lojalności studentów*, „Modern Management Review" 2013/3.

- możliwość systematycznych pomiarów (np. raz do roku).

Wskaźnik Zadowolenia Klienta pozwala na określenie stopnia satysfakcji za pomocą jednej liczby – wyrażonej nominalnie lub procentowo. Wskaźnik CSI wyrażony procentowo można znacznie łatwiej analizować w porównaniu z klasycznym wskaźnikiem CSI. W tym wypadku do interpretacji można się posłużyć kryteriami przedstawionymi w tabeli 1. Należy jednak pamiętać, że kryteria te nie są uniwersalne. Stanowią pewnego rodzaju szkielet, który należy każdorazowo dopasowywać w zależności od potrzeb danej organizacji[9].

Tabela 1. Kryteria oceny Wskaźnika Zadowolenia Klienta (CSI, *Customer Satisfaction Index*) – CSI %

Kryteria wartości CSI %	Ocena
0–40%	Bardzo źle – klient skrajnie niezadowolony
40–60%	Źle – klient niezadowolony
60–75%	Średnio – występują pewne problemy w zakresie zadowolenia klienta
75–90%	Dobrze – występują nieliczne problemy z zadowoleniem klienta
90–100%	Bardzo dobrze – klient zadowolony w wysokim stopniu

Źródło: Opracowanie własne na podstawie: R. Wolniak, B. Skotnicka-Zasadzień, *Wybrane metody badania satysfakcji klienta i oceny dostawców w organizacjach*, Wydawnictwo Politechniki Śląskiej, Gliwice 2008, s. 80.

Procedura metody CSI zawiera osiem podstawowych etapów, do których zalicza się: określenie klientów badanej firmy, dobór czynników, które mają wpływ na postrzeganie przez klientów oceny jakości produktu/usługi, konstrukcję ankiety, przeprowadzenie badań wśród klientów, opracowanie zebranych danych, obliczenie wskaźnika CSI, graficzne przedstawienie wyników na mapie jakości oraz interpretację wyników[10].

3. ANALIZA WYNIKÓW PRZEPROWADZONYCH BADAŃ

W sierpniu 2015 r. przeprowadzono badania oceny zadowolenia i lojalności klientów w jednej z najbardziej popularnych sieci handlowych. Do realizacji przyjętego celu zastosowano metodę CSI, gdzie głównym narzędziem pomiarowym był kwestionariusz ankietowy składający się z 12 wyszczególnionych obszarów.

Badanie przeprowadzono na grupie 50 studentów zamieszkujących Rzeszów oraz dokonujących zakupów w wybranej sieci sklepów dyskontowych. Dobór próby badawczej wynikał z faktu, że Rzeszów posiada młode społeczeństwo. Według Eurostat Regional

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[9] R. Wolniak, B. Skotnicka- Zasadzień, *op. cit*., s. 78–80.

[10] K. Mazurek-Łopacińska, *Badania marketingowe. Teoria i praktyka*, PWN, Warszawa 2005, s. 473–475.

Yearbook 2012 stolica Podkarpacia cechuje się największym w Europie współczynnikiem ilości studentów do ilości mieszkańców[11]. Fakt ten, bardzo mocno wpływa na rozwój miasta oraz mobilizuje przedsiębiorców i władze samorządowe do realizacji innowacyjnych projektów. Otrzymane wyniki badań mogą więc zostać wykorzystane w praktyce i stanowić cenną wskazówkę dla wszystkich podmiotów oferujących sprzedaż detaliczną.

Respondenci, uzupełniając kwestionariusz, wyrażali swoją opinię w dwóch płaszczyznach: pierwsza dotyczyła stopnia zadowolenia z wykonanej usługi, druga – poziomu istotności danej cechy. Do oceny poszczególnych czynników użyto pięciostopniowej skali typu Likerta, gdzie cyfra 5 oznaczała ocenę najwyższą, cyfra zaś 1 – najniższą. Zebrane kwestionariusze poddano analizie w specjalnie do tego celu opracowanym arkuszu kalkulacyjnym Excel. W tabeli 2 przedstawiono odpowiedzi respondentów dotyczące oceny poszczególnych czynników oraz stopnia ich ważności w wybranej sieci handlowej.

Jak wynika z przeprowadzonych badań (Tabela 2), respondenci najkorzystniej ocenili możliwość korzystania z różnych form płatności – wynik kształtuje się na poziomie 4,5. Najgorzej zaś wypadł obszar związany z programami lojalnościowymi, w którym wartość wynosi 2,94. Może to wynikać z tego, że badana sieć handlowa nie ma w swojej ofercie żadnych dodatkowych rabatów czy zniżek dla stałych klientów, które aktualnie są popularne w innych konkurencyjnych sklepach.

Analizując poziom istotności, okazuje się, że najważniejsze znaczenie dla respondentów mają kolejno: możliwe formy płatności (4,46), jakość (4,42) oraz dostępny asortyment (4,32). Dopiero na czwartym miejscu ankietowani jako ważną określili cenę towaru (4,24). Jako najmniej istotne zostały ocenione merchandising (3,42) oraz programy lojalnościowe (3,24).

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[11] Eurostat, *Focus on European cities*, Luxembourg: Publications Office of the European Union 2012, http://ec.europa.eu/eurostat/documents/3217494/5735109/KS-HA-12-001-12-EN.PDF/7fe23280-0753-4879-93bd-4b5878fae0b4?version=1.0, [dostęp: 23.01.2016]

Tabela 2. Przedstawienie szczegółowej analizy wszystkich dwunastu obszarów

WSKAŹNIK ZADOWOLENIA	ZADOWOLENIE					CZYNNIKI SATYSFAKCJI	ZNACZENIE					WSKAŹNIK ZNACZENIA
	BARDZO ZADWOLONY	RACZEJ ZADOWOLONY	OBOJĘTNY	RACZEJ NIEZADOWOLONY	BARDZO NIEZADOWOLONY		BARDZO WAŻNE	WAŻNE	OBOJĘTNE	MAŁE ZNACZENIE	NIE MA ZNACZENIA	
	5	4	3	2	1		5	4	3	2	1	
4,22	13	35	2	0	0	CENA	13	36	1	0	0	4,24
3,82	7	30	10	3	0	JAKOŚĆ	25	22	2	1	0	4,42
4,04	11	31	7	1	0	ASORTYMENT	20	26	4	0	0	4,32
3,5	4	23	18	4	1	ESTETYKA SKLEPU	5	24	17	3	1	3,58
3,86	5	37	4	4	0	WYGODA ZAKUPÓW	11	28	8	2	1	3,92
3,78	10	21	17	2	0	MERCHANDISING	5	21	17	4	3	3,42
4,06	14	26	9	1	0	AKCJA PROMOCYJNA	12	24	12	2	0	3,92
4,5	32	11	7	0	0	FORMY PŁATNOŚCI	30	14	5	1	0	4,46
2,94	3	7	27	10	3	PROGRAMY LOJALNOŚCIOWE	7	8	27	6	2	3,24
3,66	3	30	15	1	1	PROFESJONALIZM PRACOWNIKÓW	14	27	8	1	0	4,08
3,4	4	15	28	3	0	OBSŁUGA REKLAMACJI I SKARG	14	23	12	1	0	4,0
3,54	8	21	12	8	1	DOSTĘPNOŚĆ MIEJSC PARKINGOWYCH	18	21	10	1	0	4,12

Źródło: opracowanie własne.

Kolejnym etapem obliczeń jest wyznaczenie tak zwanej wagi względnej dla poszczególnych wskaźników. W celu lepszej interpretacji wyników obliczono również wartość maksymalną, którą z kolei przekształcono na wartość procentową. Obliczenie wskaźników CSI, CSI max oraz CSI % dla wybranej sieci handlowej przedstawiono w tabeli 3.

Tabela 3. Obliczenie Wskaźnika Zadowolenia Klienta (CSI, *Customer Satisfaction Index*), CSI max
oraz CSI %

CZYNNIKI SATYSFAKCJI	OCENA CZYNNIKA	WAGA CZYNNIKA	WAGA WZGLĘDNA	WSKAŹNIK CSI	CSI MAX	
CENA	4,22	4,24	0,089	0,375	0,444	
JAKOŚĆ	3,82	4,42	0,093	0,354	0,463	
ASORTYMENT	4,04	4,32	0,091	0,366	0,453	
ESTETYKA SKLEPU	3,5	3,58	0,075	0,263	0,375	
WYGODA ZAKUPÓW	3,86	3,92	0,082	0,317	0,411	
MERCHANDISING	3,78	3,42	0,072	0,271	0,358	
AKCJA PROMOCYJNA	4,06	3,92	0,082	0,334	0,411	
FORMY PŁATNOŚCI	4,5	4,46	0,093	0,421	0,467	
PROGRAMY LOJALNOŚCIOWE	2,94	3,24	0,068	0,200	0,339	
PROFESJONALIZM PRACOWNIKÓW	3,66	4,08	0,085	0,313	0,427	
OBSŁUGA REKLAMACJI I SKARG	3,4	4	0,084	0,285	0,419	
DOSTĘPNOŚĆ MIEJSC PARKINGOWYCH	3,54	4,12	0,086	0,306	0,432	
		∑ = 47,72		CSI	CSI max	CSI %
				3,802	5	76%

Źródło: opracowanie własne.

Po przeanalizowaniu otrzymanych wyników stwierdzono, że oczekiwania klientów wybranej sieci dyskontowej można uznać za zadowalające. Wskaźnik CSI % w tym przypadku wynosi 76%.

Należy jednak pamiętać, że rynek sieci dyskontowych charakteryzuje się dużą konkurencją. W celu zapewnienia przywiązania i lojalności klientów przedsiębiorstwo musi stale podnosić jakość oferowanych dóbr i usług. Warto również zwrócić uwagę na to, że wymagania konsumentów mają dynamiczny charakter. Zmiany w gustach i upodobaniach zachodzą nie tylko pod wpływem dotychczasowych doświadczeń, ale również obserwacji zachowań konkurencji.

Reasumując, można stwierdzić, że jakość oferowanych usług znajduje się na wysokim poziomie. Mimo to przedsiębiorstwo powinno stale udoskonalać wszystkie aspekty swojej działalności oraz rozpocząć działania mające na celu budowanie stałych relacji z klientami.

4. OPRACOWANIE MAPY JAKOŚCI

W dalszej części badań zebrany materiał zobrazowano na mapie pozycjonującej. Działanie to polega na naniesieniu ważności danego czynnika na osi poziomej oraz na ocenie zadowolenia klientów na osi pionowej. Opisana technika graficzna pozwoliła wyodrębnić cztery obszary. W ten sposób otrzymano informację o tym, jakie aspekty należy jak najszybciej poprawić, jakie powinny zostać udoskonalone, jakie mogą pozostać w obecnym stanie, a także które z nich są najmniej istotne[12].

Pierwszy etap budowy mapy jakości polega na wyznaczeniu punktów jej podziału. Opracowanie wyników przedstawiono w tabeli 4.

Tabela 4. Wyznaczenie punktów podziału mapy jakości dla wybranej sieci handlowej

CZYNNIKI SATYSFAKCJI	Waga czynnika	Ocena czynnika
CENA	4,24	4,22
JAKOŚĆ	4,42	3,82
ASORTYMENT	4,32	4,04
ESTETYKA SKLEPU	3,58	3,5
WYGODA ZAKUPÓW	3,92	3,86
MERCHANDISING	3,42	3,78
AKCJA PROMOCYJNA	3,92	4,06
FORMY PŁATNOŚCI	4,46	4,5
PROGRAMY LOJALNOŚCIOWE	3,24	2,94
PROFESJONALIZM PRACOWNIKÓW	4,08	3,66
OBSŁUGA REKLAMACJI I SKARG	4,00	3,4
DOSTĘPNOŚĆ MIEJSC PARKINGOWYCH	4,12	3,54
średnia	4,0	3,8

Źródło: opracowanie własne.

Na podstawie otrzymanych wyników z tabeli 5 mapę jakości podzielono na cztery części. Punkty podziału w tym wypadku wynoszą: 4,0 na osi ważności oraz 3,8 na osi satysfakcji. Graficzne przedstawienie wyników zaprezentowano na rysunku 1.

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[12] D. Zimon, U. Kruk, *Wykorzystanie metody CSI do badania logistycznej obsługi klienta na przykładzie wybranej organizacji*, „Logistyka" 2015/3.

Rys. 1. Mapa jakości dla badanej sieci handlowej
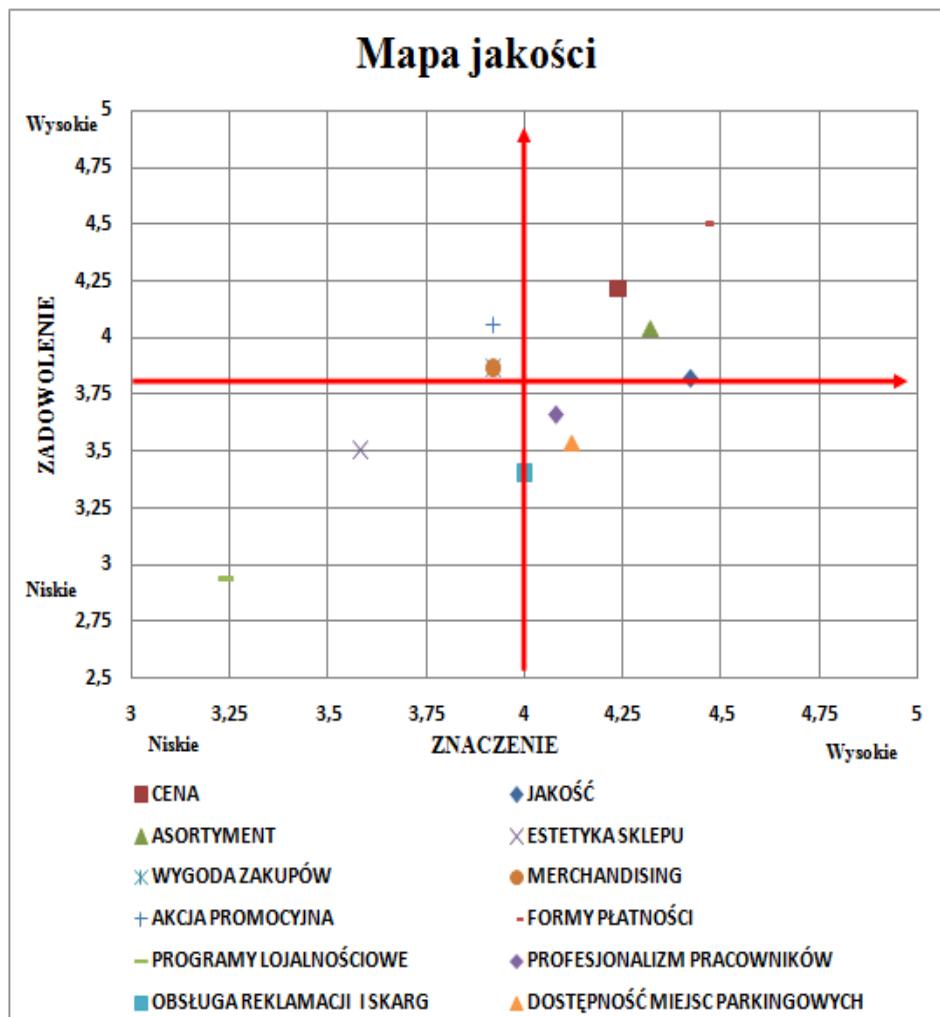
Źródło: opracowanie własne.

Analizując otrzymane wyniki, można stwierdzić, że:

- mocną stroną wybranej sieci handlowej są: możliwe formy płatności, cena oraz dostępny asortyment – te obszary należy utrzymać na obecnym poziomie;
- jakość towarów znajduje się na granicy zadowolenia klientów – ten aspekt należy stale kontrolować i udoskonalać;
- obszary, na które należy zwrócić szczególną uwagę oraz poprawić je w jak najkrótszym czasie, to: dostępność miejsc parkingowych oraz profesjonalizm pracowników;
- pewnej poprawy wymagają: programy lojalnościowe, estetyka sklepu oraz obsługa reklamacji i skarg;

- merchandising, akcje promocyjne oraz wygoda zakupów spełniają oczekiwania klientów, jednak nie są to najważniejsze czynniki podczas dokonywania zakupów.

5. WNIOSKI

Na podstawie badań i analizy literatury można stwierdzić, że badanie satysfakcji klienta jest niezwykle istotne w kontekście działalności przedsiębiorstw. Zastosowana metoda CSI umożliwiła identyfikację zarówno poziomu satysfakcji, jak i lojalności konsumentów wybranej sieci handlowej. Przeprowadzone w artykule analizy pozwoliły na sformułowanie następujących wniosków:

- klient oraz jego obsługa powinny się stać kluczowymi obszarami zainteresowań współczesnych organizacji;
- badania satysfakcji klienta pozwalają na ukazanie mocnych i słabych stron działalności przedsiębiorstw;
- dla klientów dokonujących zakupów w sieciach handlowych najważniejsze są: możliwe formy płatności, jakość towarów, dostępny asortyment oraz jego cena;
- konsumenci jako najmniej istotne wskazali obszary związane z programami lojalnościowymi, merchandisingiem, estetyką sklepu oraz jego promocją.

Do podobnych wniosków doszedł Dominik Zimon wraz z współautorami[13] po przeprowadzeniu badań nad wpływem jakości produktów na zachowania konsumentów. Udowodniono wówczas, że najważniejsze znaczenie dla nabywców podczas dokonywania zakupów mają jakość i cena towaru, natomiast reklama została wskazana jako jeden z najmniej istotnych czynników. Ponadto zaobserwowano, że wysoka jakość oferowanych produktów ma bardzo duży wpływ na osiągnięcie przez organizację sukcesu i przewagi konkurencyjnej.

Reasumując, należy stwierdzić, że istotną funkcją zarządzania każdej organizacji jest stałe ocenianie i kontrolowanie czynności w niej zachodzących, a metody i narzędzia zarządzania jakością są niewątpliwie elementami wspierającymi te działania.

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[9]   Eurostat, *Focus on European cities*, Luxembourg: Publications Office of the European Union
        2012, http://ec.europa.eu/eurostat/documents/3217494/5735109/KS-HA-12-001-12-
        EN.PDF/7fe23280-0753-4879-93bd-4b5878fae0b4?version=1.0, [dostęp: 23.01.2016]

APPLICATION OF CSI METHOD TO RESEARCH SATISFACTION OF CONSUMER IN SELECTED SALES NETWORK

Study of customer satisfaction is currently necessary component to gain competitive advantage in the market. In the case of the services sector precise assessment of quality is not easy, because it depends on the personal customer experience. Subjectivism in the assessment causes that the same thing can be rated very high by one person but for the others it can be ordinary and even negative. Very important problem which we should undertake during the study is also the understanding of the concept of "perceived quality". Perceived quality is not always equal to the technical qualities. It depends on many external factors which often do not have a close relationship with an objective assessment of performance excellence. It follows that every consumer based on available information, past experience or the opinions of others, imagine the service before its realization. The main purpose of the article is measuring consumer expectations and degree of satisfaction with shopping in selected commercial network. Seek to realization of the objectives pursued used to CSI method in which measuring tool was questionnaire. CSI is one of the most popular methods of measuring the quality of services. It allows to determine the level of satisfaction and reveals many valuable clues which concern the direction of improvement of companies. The study included 50 students lives in Rzeszow and makes purchases in one of the most popular discount store. The results allowed to detailed analysis of quality of service and present proposals for improvement activities.

Keywords: customer satisfaction, CSI, service quality, sales network

Agnieszka ZIELIŃSKA[1]

FORMUŁOWANIE STRATEGII
W ORGANIZACJI POZARZĄDOWEJ

W Polsce w grudniu 2015 r. było zarejestrowanych około 106 tys. stowarzyszeń oraz 20 tys. fundacji[2]. Duża liczba organizacji pozarządowych, a w związku z tym trudności w pozyskiwaniu zasobów finansowych i pozafinansowych, sprawiają, że podmioty te poszukują nowych możliwości i rozwiązań także w obszarze zarządzania strategicznego. Organizacje pozarządowe (NGOs) stają zatem wobec wyzwań związanych z zarządzaniem strategicznym. Okazuje się, że organizacje non-profit są zainteresowanie zarządzaniem strategicznym, jednak są również świadome braku wiedzy i doświadczenia w tym zakresie. Co więcej, wykorzystują one tylko nieliczne metody formułowania strategii. Natomiast dzięki odpowiednio sformułowanej strategii organizacja pozarządowa mogłaby wyróżnić się spośród innych podmiotów trzeciego sektora. Zapewnić sobie przewagę konkurencyjną, poprawić i ustabilizować swoją sytuację finansową oraz stworzyć warunki do dalszego rozwoju. W polskiej literaturze brakuje również badań związanych z formułowaniem strategii przez polskie organizacje pozarządowe. Tylko w nielicznych badaniach polskiego sektora pozarządowego zwraca się uwagę na zarządzanie strategiczne oraz zagadnienia związane z formułowaniem strategii przez te organizacje. Celem artykułu jest przedstawienie sposobów formułowania strategii z uwzględnieniem specyfiki organizacji pozarządowych. Podjęto próbę ustalenia, w jaki sposób organizacje trzeciego sektora formułują strategie. W pierwszej części przedstawiono podstawy teoretyczne dotyczące strategii oraz formułowania strategii. Następnie przedstawiono wyniki badań pierwotnych i wtórnych dotyczących formułowania strategii przez organizacje pozarządowe. W artykule przybliżono również koncepcję strategii synoptycznych oraz inkrementalnych. Następnie na podstawie badań własnych podjęto również próbę ustalenia, czy organizacje pozarządowe stosują strategie zamierzone, czy też niezamierzone. Wskazano również poszczególne etapy formułowania strategii przez organizacje pozarządowe.

Słowa kluczowe: strategia, formułowanie strategii, organizacja pozarządowa

1. WPROWADZENIE

Koncepcję zarządzania strategicznego dla organizacji trzeciego sektora zaadaptował J.M. Bryson, ujmując planowanie strategiczne w organizacjach pozarządowych jako sposób reakcji na zmiany płynące z otoczenia i warunków działania[3]. Planowanie strategiczne jest pomocne organizacjom non-profit w lepszym skoncentrowaniu się na szybko zmie-

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[2] *Liczba NGO w Polsce*, http://fakty.ngo.pl/liczba-ngo (dostęp: 7.07.2016 r.).

[3] J.M. Bryson, M. J.Gibbons, *Enterprise Scheme for Nonprofit Surviwal, Growth and Effectiveness*, Nonprofit Management and Leadership 2001, 11 (3), s. 271 [za:] E. Bogacz-Wojtanowskie, *Zarządzanie organizacjami pozarządowymi na przykładzie stowarzyszeń krakowskich*, Kraków 2007, s. 113.

niającym się otoczeniu[4]. Okazuje się również, że zarządzanie strategiczne w organizacjach non-profit jest pozytywnie skorelowane z ich osiągnięciami w ramach: orientacji na otoczenie zewnętrzne, funkcjonalnej orientacji oraz w zaangażowaniu kluczowego personelu[5]. Można zauważyć, że organizacje non-profit przejawiają zainteresowanie planowaniem strategicznym, jednak dostrzegają również, że wkład wykonywanych w tym procesie analiz jest niewystarczający[6].

Podejście oraz przekonania odnoszące się do sposobu zarządzania strategicznego wpływają na sposób formułowania strategii[7]. Dlatego też każda organizacja może mieć swoje własne podejście do formułowania strategii. W przypadku organizacji pozarządowych mamy do czynienia z nielicznymi narzędziami formułowania strategii. Ich zbiór jest również skromny, mało znany i bardzo rzadko stosowany[8].

Celem artykułu jest zaprezentowanie zagadnień związanych ze strategią w organizacjach pozarządowych oraz przedstawienie sposobu formułowania strategii w organizacjach trzeciego sektora. Podjęto próbę ustalenia, w jaki sposób NGOs formułują strategie.

2. STRATEGIA W ORGANIZACJACH POZARZĄDOWYCH

W literaturze można znaleźć kilka definicji strategii. Różnice w formułowaniu pojęcia strategii wynikają z przyjętego punktu odniesienia bądź to wpływów otoczenia, czy zasobów organizacji. Przykładowo definicja, którą można odnieść również do organizacji trzeciego sektora traktuje strategię jako zbiór działań dążących do satysfakcji interesariuszy organizacji, który przynosi względnie trwałe sukcesy, przewagę konkurencyjną[9]. Jednak w odróżnieniu od sektora komercyjnego NGOs powinny kłaść mniejszy nacisk na problem konkurencji[10]. Interesariuszami organizacji pozarządowej mogą być: donatorzy, pracownicy organizacji, wolontariusze, beneficjenci, media czy też opinia społeczna. Dzięki strategii intencje zawarte w misji organizacji pozarządowej mogą zostać przekształcone na rzeczywiste osiągnięcia, możliwe jest przejście od planów do rezultatów[11].

Organizacje pozarządowe wykorzystują między innymi strategie pluralistyczne, dyferencjacji oraz kooperacji. W strategii pluralistycznej największy nacisk kładzie się na współpracę z innymi organizacjami pozarządowymi, publicznymi lub firmami. Współpra-

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[4] R.G. Bratt, *Challenges for Nonprofit Housing Organizations Created by the Private Housing Market*, "Journal of Urban Affairs" 2009, 31 (1), s. 67–96 [za:] J. Domański, *Zarządzanie strategiczne oraz jego modele dla organizacji non profit* [w:] *Komputerowo zintegrowane zarządzanie*, red. R. Knosala, Opole 2010, s. 343.

[5] H.E. Griggs, *Corporatisation of the Not-for-Profit Sector: Strategic Planning and Organisational Performance in Disability-Based Organisations*, "International Journal of Disability, Development & Education", 2003, 50 (2), s. 197–220 [za:] J. Domański, *Zarządzanie strategiczne oraz jego modele dla organizacji non profit...*, s. 343.

[6] M.I. Katsioloudes, W.G. Tymon, *Strategic Planning Practices: Are they what they should be?,* "Human System Managment" 2003, 22 (4), s. 177–183 [za:] J. Domański, *Zarządzanie strategiczne oraz jego modele dla organizacji non profit...*, s. 343.

[7] E. Urbanowska-Sojki, P. Banaszyk, H. Witczak, *Zarządzanie strategiczne przedsiębiorstwem*, Warszawa 2007, s. 235.

[8] M. Lisiński, *Możliwości zastosowania metody SPACE do formułowania strategii organizacji non-profit*, „Zeszyty Naukowe Akademii Ekonomicznej w Krakowie" 2001, s. 69.

[9] J. Rokita, *Zarządzanie strategiczne. Tworzenie i utrzymanie przewagi konkurencyjnej*, Warszawa 2005, s. 24.

[10] J. Dziwulski, *Strategie zarządzania organizacjami non-profit* [w:] *Organizacje pozarządowe w społeczeństwie obywatelskim – wyzwanie dla środowisk akademickich*, red. A. Juros, Lubelski Ośrodek Samopomocy, 2002, s. 83.

[11] P.F. Drucker, *Zarządzanie organizacją pozarządową,* Warszawa 1995, s. 67.

ca umożliwia lepsze realizowanie misji oraz poszczególnych zadań. Natomiast strategia kooperacji przez uczestników sektora pozarządowego może być stosowana w zarządzaniu finansami np. aby obniżyć koszty działalności, jak również w zarządzaniu personelem przykładowo przy pozyskaniu odpowiednich ludzi na czas realizacji określonego projektu. Dzięki temu możliwe jest budowanie dobrych i długotrwałych relacji między partnerami organizacji i prowadzi do profesjonalizacji prowadzonych usług[12].

Natomiast strategie prorynkowe wiążą się z współzawodnictwem organizacji z innymi uczestnikami rynku[13]. Podejście to jest związane z narastającymi trudnościami w pozyskiwaniu środków finansowych. W związku z tym, strategie te nakłaniają i wskazują jak konkurować o klientów, donatorów czy inne źródła finansowe[14].

Ponadto, Jarosław Dziwulski podkreśla, że organizacje pozarządowe powinny stosować m.in. strategię skierowaną na innowacje. Opierać się na szansach, które płyną z otoczenia. W strategii tej duże znaczenie odgrywa kierownictwo organizacji, którego rolą jest motywowanie do zmian i tworzenie warunków ich urzeczywistnienia[15].

Warto również wspomnieć, że NGOs mogą realizować strategię ideologiczną. W tej koncepcji wizja ma charakter zbiorowy, członkowie organizacji silnie identyfikują się ze strategią. Dzięki temu możliwe jest spójne postępowanie i wypracowanie pewnych wzorów, czy też pożądanych zachowań, a pracownicy chętnie dążą do realizacji wizji, poprzez zamierzone działania[16].

3. FORMUŁOWANIE STRATEGII W UJĘCIU TEORETYCZNYM

Formułowanie strategii polega na świadomych wyborach strategii organizacji. Podczas formułowania strategii organizacja podejmuje decyzje związane z dostosowaniem działań do zmiennego otoczenia oraz ustala kierunki rozwoju w dłuższej perspektywie czasowej[17]. Jest to proces tworzenia lub określenia strategii dla danej organizacji. Na poziomie ogólnym są to decyzje, na jakich rynkach organizacja ma działać. W ramach strategii odpowiada na pytania, jak konkurować na wybranych rynkach. Następnie w przypadku strategii funkcjonalnych, jak podchodzić do każdej funkcji organizacji[18]

Budowanie strategii dotyczy ustalenia sposobów osiągnięcia wytyczonych celów, rezultatów. Proces ten jest przekładaniem na praktykę działania założeń związanych m.in. z misją organizacji, zakresem działalności organizacji oraz reguł odpowiedniej alokacji zasobów organizacji. Odnosi się również do reguł działania między innymi stopnia centralizacji, systemu informacyjnego, motywacyjnego czy kontroli. Nawiązuje do założeń współpracy z otoczeniem, wzorców pozwalających przełożyć długookresowe plany na

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[12] Szerzej A. Zielińska, *Strategie współpracy w organizacjach pozarządowych* [w:] *Zarządzanie – teoria, praktyka i perspektywy,* red. J. Adamczyk, H. Hall, Rzeszów 2012, s. 355–363.

[13] Szerzej A. Zielińska, *Strategie konkurencji w organizacjach pozarządowych*, „Zeszyty Naukowe Politechniki Rzeszowskiej, Zarządzanie i Marketing" 2011 (18), s. 209–214.

[14] D.C. Wilson, *Co-Operation and Competition In the Voluntary Sector: the Strategic Challenges of the 1990s and Beyond* [w:] J. Batsleer, Ch. Cornforth, R. Patson, Issues in Voluntary and Non-Profit Management 2003, s. 196–180, Addison – Wesley Publishing Company [za:] E. Bogacz-Wojtanowska, *Zarządzanie organizacjami pozarządowymi na przykładzie stowarzyszeń krakowskich...*, s. 114.

[15] J. Dziwulski, *Strategie...*, s. 84.

[16] J. Supernat, *Zarządzanie strategiczne. Pojęcia i koncepcje,* Wrocław 1998, s. 203–204.

[17] E. Urbanowska-Sojki, P. Banaszyk, H. Witczak, *Zarządzanie strategiczne przedsiębiorstwem*, Warszawa 2007, s. 235.

[18] R.W. Griffin, *Podstawy zarządzania organizacjami,* Warszawa 1998, s. 237.

bieżące decyzje. Określa sposoby reakcji organizacji w obliczu trudnych sytuacji, zagrożeń wynikających z otoczenia[19].

W procesie formułowania strategii wyróżniamy podejście modelowe, w którym strategia kształtowana jest w sposób sformalizowany i zestandaryzowany. W procesie tym najpierw następuje zbieranie i analiza informacji i na tej podstawie są podejmowane decyzje. Mówimy wtedy o strategii zamierzonej. Natomiast gdy strategia wynika ze spontanicznych działań i w razie potrzeb jest dostosowywana do turbulentnych warunków otoczenia, to mamy do czynienia ze strategią niezmierzoną[20]. W praktyce proces formułowania strategii jest kombinacją tych powyższych modeli.

Co więcej, strategie zamierzone tworzone są przez wyspecjalizowane, profesjonalne zespoły, wewnątrz organizacji lub poza nią, w sformalizowanych procedurach. W procesie strategii zamierzonej najpierw określa się misje oraz cel organizacji następnie dokonuje się analizy otoczenia. Dopiero na tej podstawie określane są strategie. Za opracowywaniem planów przemawia to, że dzięki nim organizacja może działać w sposób racjonalny, koordynować i kontrolować swoje działania. Jednakże, jak sugeruje H. Mintzerg, jedynie 10–30% tych strategii jest zrealizowana. W odróżnieniu strategie niezamierzone są podstawą dla strategii realizowanych[21].

Koncepcja strategii niezamierzonych (wyłaniających) pokazuje, że organizacje nie są w stanie przewidzieć wszystkich czynników i uwarunkowań zewnętrznych, powstających w miarę podejmowania decyzji. W odróżnieniu od szkoły planistycznej, gdzie misja stanowi punkt wyjścia strategii, tutaj strategię kształtują propozycje pracowników odnośnie funkcjonowania organizacji. Przy opracowywaniu strategii niezamierzonej pierwszym etapem może być diagnoza organizacji lub uwarunkowań zewnętrznych. Strategia ta jest procesem oddolnym, inicjowanym przez pracowników. W tym przypadku misja staje się pochodną decyzji inkrementalnych. Strategie powinny być kształtowane w sposób inkrementalny (przypadkowy), w wyniku prób i błędów[22]. Wyłaniając się z codziennego funkcjonowania, jako wynik różnych działań prowadzonych w różnych obszarach działalności[23].

W strategiach zamierzonych (synoptycznych) inicjatorem procesu ich tworzenia jest naczelne kierownictwo. W przypadku strategii niezamierzonych (inkrementalnych) następuje decentralizacja ośrodka decyzyjnego na pracowników różnego stopnia. Odnośnie do wdrożenia strategii odgórny, sformalizowany proces, w którym nie ma miejsca na przypadek i irracjonalne zachowanie występuje w strategii synoptycznej. Natomiast proces politycznego przetargu interesów oraz gier organizacyjnych, brak formalnego planu, duża swoboda oraz dowolność zachowań charakteryzuje podejście inkrementalne. O ile w strategiach zamierzonych ocena działań dokonywana jest okresowo, to w przypadku strategii niezamierzonych ten element jest pomijany. W praktyce zarządzania w większości podmiotów powstanie strategii jest kombinacją strategii zamierzonej i niezamierzonej[24].

W przypadku formułowania i wyboru strategii konieczne jest określenie źródeł inspiracji, które określają czynności postępowania w tworzeniu strategii. W procesie tym moż-

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[19] P. Banaszyk, R. Fimińska-Banaszyk, A. Stańda, *Zasady zarządzania w przedsiębiorstwie*, Poznań 1997, s. 37.

[20] W. Wrzosek (red.), *Strategie marketingowe*, Warszawa 2001, s. 28.

[21] *The concept of strategy*, http://www.blackwellpublishing.com/grant/pdfs/CSA5eC01.pdf

[22] J. McGee, H. Thomas, D. Wilson, *Strategy: Analysis & Practice*, Berkshire: McGraw-Hill Education 2005, s. 11.

[23] J.B. Quinn, *Strategies for Chanc. Logical Incrementalizm*, Homewood – Georgetown 1980, s. 24.

[24] K Janasz, W. Janasz, K. Kozioł, K. Szopik, *Zarządzanie strategiczne. Koncepcja. Metody, strategie*, Warszawa 2008, s. 61.

na wskazać na dwa modele. W pierwszym podejściu z zewnątrz do wewnątrz, zakłada się, że czynnikiem wpływającym na kształt strategii jest popyt i preferencje nabywców. Oznacza to, że strategia organizacji skierowana jest na zaspokojenie zapotrzebowań rynku czy też kreowanie potrzeb na dane produkty. W drugim modelu z wewnątrz na zewnątrz, źródłem inspiracji do tworzenia strategii są posiadane kluczowe zasoby i umiejętności organizacji. Jednak podobnie jak w pierwszym modelu podstawą sukcesu organizacji jest reakcja nabywcy. Dlatego też, powyższe podejścia formułowania strategii wzajemnie się uzupełniają. Zatem, wyznaczenie możliwych strategii organizacji koncentruje się wokół popytu i preferencji klientów, szans i zagrożeń wynikających z rynku oraz zasobów i umiejętności organizacji[25].

Podobnie model stworzony przez G. Hamela i C.K. Parahlada zakładał, że strategia polega na ciągłym poszukiwaniu nowości, pozyskiwaniu nowego klienta czy rynków. Natomiast punktem wyjścia formułowania strategii jest poszukiwanie i kreowanie kluczowych kompetencji organizacji[26].

4. FORMUŁOWANIE STRATEGII W ORGANIZACJACH POZARZĄDOWYCH

Formułowanie strategii w organizacjach pozarządowych jest zależne od kultury, struktury i ludzi w organizacji. Należy przy tym uwzględnić dualizm zarządzania związany z potencjałem społecznym. W NGOs mamy do czynienia z wizjonerami oraz profesjonalną kadrą zarządczą. Dlatego też skuteczne realizowanie założeń strategicznych będzie determinowane przez umiejętność współpracy, przenikania się idei między tymi powyższymi grupami. Sytuacja, w której grupy te wzajemnie się przenikają, tworząc spójną całość z logicznie wyodrębnionymi zakresami działań sprzyja rozwojowi organizacji i osiąganiu wytyczonych celów[27]. Dla organizacji pozarządowych sformułowanie i wdrażanie strategii może być sposobem na zapewnienie finansowania ich działań oraz obroną przed upadkiem[28].

Niestety, metody formułowania strategii są mało znane i bardzo rzadko stosowane przez organizacje pozarządowe[29]. Na podstawie badań własnych można stwierdzić, że zdecydowana większość organizacji pozarządowych nie realizowała strategii (55% wskazań), a 45% przypadków realizowało strategię[30]. Przeprowadzone badania umożliwiły również poznanie, jakie etapy opracowywania strategii stosowały NGOs. Poniższe zestawienie zawiera rys. 1.

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[25] W. Wrzosek (red.), *Strategie marketingowe...,* s. 32–34.

[26] K. Janasz, W. Janasz, K. Kozioł, K. Szopik, *Zarządzanie...,* s. 227.

[27] J. Fudaliński, *Koncepcja zarządzania strategicznego w organizacjach non profit – zarys problematyki*, „Przegląd Organizacji" 2006, 12, s. 24–25.

[28] G.J. Pyc, *Research of an organizational trend*, "International Journal of Health Care Quality Assurance incorporating Leadership in Health Services" 2001,14/1, s. 1.

[29] M. Lisiński, *Możliwości zastosowania metody SPACE do formułowania strategii organizacji non profit*, Zeszyty Naukowe Akademii Ekonomicznej w Krakowie, 2001, 567, s. 69.

[30] Wyniki badania pilotażowego organizacji pozarządowych z Polski Południowo-Wschodniej z 2008 r. Próba badawcza objęła 104 organizacje pozarządowe. Organizacje zostały wybrane metodą losową ze zbioru utworzonego na podstawie bazy danych Stowarzyszenia Klon/Jawor. Do badania wykorzystano kwestionariusz ankiety.

Rys. 1. Etapy formułowania strategii w badanych organizacjach
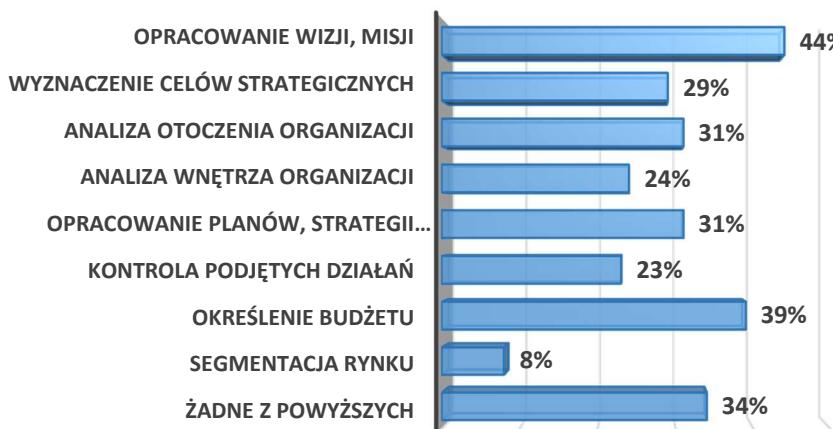
Źródło: opracowanie własne.

Organizacje pozarządowe formułując strategie kładą duży nacisk na takie jej wymiary jak struktury oraz misja[31]. Potwierdzają to wyniki badań własnych, na podstawie których można wskazać, że najczęściej występującym etapem formułowania strategii było opracowanie misji. Organizacje zostały poproszone o przybliżenie ich misji i ponad 92% respondentów określiło misję organizacji. Część badanych (39%) tworzyło budżet, a analizę otoczenia zewnętrznego organizacji przeprowadzało 31% ankietowanych. Podobny odsetek organizacji zadeklarował opracowywanie planów, strategii funkcjonalnych. W bardzo ograniczonym stopniu była stosowana segmentacja rynku, zaledwie przez 8% respondentów. Wśród badanych 35% organizacji określiło, że nie stosowało żadnych z wymienionych etapów planowania. W większości organizacji podkreślano, że pierwszym etapem planowania było opracowanie misji. Następnie organizacje wyznaczały cele strategiczne. Kolejnym etapem była analiza otoczenia wewnętrznego i zewnętrznego organizacji oraz opracowanie strategii. Kolejno tworzenie budżetu oraz kontrola podjętych działań.

Otrzymane wyniki częściowo korespondują z wynikami innego badania dotyczącego zarządzania strategicznego organizacji pozarządowych. Podobnie bardzo duży odsetek organizacji (89,5%) NGOs potwierdził opracowanie misji, a określanie długoterminowych celów zadeklarowało 57% respondentów[32]. Organizacje trzeciego sektora przypisują duże znaczenie misji, dlatego też można przypuszczać, że realizowały one strategię ideologiczną. Członkowie organizacji silnie identyfikowali się z działaniami, dążąc do realizacji misji.

Biorąc pod uwagę stosowane metody analizy strategicznej, to NGOs w małym stopniu znały i stosowały metody analizy strategicznej, rzadko dokonywały analizy otoczenia wewnętrznego i zewnętrznego. Wyjątek stanowiła analiza SWOT, stosowana przez 99 podmiotów na 200 badanych, a analiza kluczowych czynników sukcesu była stosowana przez 94 organizacje oraz analiza scenariuszowa była wykorzystywana przez 71 respon-

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[31] M.L. Rhodes, J.F. Keogan, *Strategic Choice in the Non-Profit Sector: Modelling the Dimensions of Strategy*, "Irish Journal of Management" 2005, 26, 1, s. 122–135 [za:] J. Domański, *Zarządzanie strategiczne oraz jego modele dla organizacji non profit...*, s. 343.

[32] J. Domański, *Zarządzanie strategiczne organizacjami non profit w Polsce*, Warszawa 2010, s. 205.

dentów[33]. Wśród strategii funkcjonalnych największe znaczenie przy formułowaniu ogólnej strategii miała między innymi strategia finansowa (90% wskazań), strategia personelu (dla 76,5% przypadków) oraz strategia marketingowa (60,5%)[34]. Warto podkreślić, że duży procent badanych (81%) zadeklarował przeprowadzanie działań kontrolnych podejmowanych strategii[35].

Rozbieżności w otrzymanych wynikach badań mogą wynikać z doboru próby badawczej. Jarosław Domański przebadał organizacje pozarządowe, które mają status organizacji pożytku publicznego. Natomiast w badaniach własnych analizie poddano również organizacje, które nie miały statusu organizacji pożytku publicznego (48% przypadków). Organizacje pożytku publicznego charakteryzuje odpowiednia struktura, jawność danych finansowych oraz inne wymagania określone w ustawie o działalności pożytku publicznego i o wolontariacie. Podmioty te często działają na większą skalę oraz charakteryzuje je systematyczność oraz aktywność w podejmowanych działaniach. Powyższe elementy mogły mieć wpływ między innymi na większą wiedzę i umiejętności także odnośnie formułowania strategii.

Na podstawie badań własnych podjęto również próbę określenia, czy organizacje pozarządowe stosują strategie inkrementalne, czy też synoptyczne. W większości organizacji powstanie strategii było kombinacją strategii synoptycznej i inkrementalnej. Za strategią zamierzoną przemawiała kolejność poszczególnych etapów formułowania strategii. Najpierw określano założenia strategiczne, a później następowało ich wdrażanie. Ponadto, w przypadku około jednej trzeciej organizacji strategia była tworzona przez jej lidera i naczelne kierownictwo. Stosowano zatem sposób kolaboracyjnym budowania strategii. Ponadto, w większości przypadków mieliśmy do czynienia ze scentralizowanym ośrodek decyzyjnym (ponad 50% wskazań), a ich struktury i działania były sformalizowane, co również charakteryzuje strategie synoptyczne.

Natomiast o strategii inkrementalnej może świadczyć brak kontroli podejmowanych działań przez większość organizacji. Odnotowano również oddolny proces budowania strategii, ponieważ strategia była sumą indywidualnych propozycji pracowników różnego stopnia (38% wskazań).

Co więcej, blisko połowa organizacji zapewniła o elastyczności ich działań względem otoczenia. Elastyczność działań jest bardzo ważna w dynamicznym otoczeniu. Okazuje się, że tylko około 28% organizacji pozarządowych nie poszukuje szans rozwoju w obserwacji rynku i nie wykorzystuje nadarzających się okazji. Pozostali korzystają z takiej szansy (72%). Dodatkowo około 52% organizacji deklaruje, że szuka szans rozwoju w obserwacji rynku i wykorzystuje nadarzającą się okazję, ale nie ma wypracowanych sposobów reagowania na określone sytuacje rynkowe[36]. Otrzymane wyniki korespondują z wynikami ogólnopolskimi, które również wskazały, że duże znaczenie w działaniach większości organizacji miała umiejętność wykorzystania nadarzających się okazji (89% wskazań)[37].

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[33] Tamże, s. 222.

[34] Tamże, s. 241.

[35] Badanie przeprowadzone przez J. Domańskiego na próbie losowo dobranych 200 organizacji pozarządowych w 2009 r. – J. Domański, *Zarządzanie strategiczne organizacjami non profit w Polsce...*, s. 243–244.

[36] Wynik z badania pierwotnego.

[37] J. Domański, *Zarządzanie strategiczne organizacjami non profit w Polsce...*, s. 211.

Ponadto okazuje się, że organizacje pozarządowe borykają się z podobnymi proble-mami odnośnie do formułowania strategii co organizacje sektora komercyjnego. Badania przedsiębiorstw wykazały, że przy formułowaniu, wdrażaniu i kontroli strategii występują pewne problemy m.in. przy „rozwijaniu" strategii, czyli przekładaniu celów kierunko-wych na zadania dla poszczególnych jednostek organizacyjnych[38]. Wynika to z braku odzwierciedlenia misji i strategii w podejmowanych działaniach organizacji. Dodatkowo brakuje kompleksowych wskaźników do przeglądu i oceny procesu wdrażania strategii. Nie gromadzi się też informacji zwrotnych, służących do monitorowania postępów w zakre-sie realizowania strategii. Z podobnymi problemami borykają się również organizacje poza-rządowe. Szczególnie słabym obszarem NGOs są mierniki oceny ich działalności[39].

5. PODSUMOWANIE

Dla organizacji pozarządowych formułowanie i wdrażanie strategii może być sposo-bem na zapewnienie wsparcia finansowego i pozafinansowego ich działań. Jednak do-tychczasowa wiedza i umiejętności formułowania i wdrażania strategii wśród organizacji pozarządowych wymagają doskonalenia. Cenne może być wykorzystanie metod formu-łowania strategii pochodzących z sektora prywatnego. Należy jednak pamiętać o koniecz-ności odpowiedniej ich adaptacji do specyficznych warunków funkcjonowania organizacji pozarządowych m.in. dużego zróżnicowania interesariuszy, często ograniczonego budże-tu, trudności kadrowych czy trudno mierzalnych efektów działań społecznych.

W przypadku formułowania strategii przez organizacje pozarządowe nadrzędne zna-czenie przypisuje się misji. Był to najczęściej występujący etap procesu formułowania strategii. Blisko 40% organizacji określało budżet, a 1/3 NGOs analizowała informacje płynące z otoczenia zewnętrznego, opracowywała strategie funkcjonalne oraz ustalała cele strategiczne i taktyczne. Najmniejszy odsetek organizacji dokonywał segmentacji intere-sariuszy oraz podejmował kontrolę podjętych działań. Można stwierdzić, że w przypadku organizacji pozarządowych, przy budowaniu strategii, wykorzystywano kombinację stra-tegii zamierzonej i niezamierzonej.

Na proces formułowania strategii duży wpływ mają między innymi zasoby osobowe organizacji pozarządowej. Przykłady organizacji pozarządowych ze Stanów Zjednoczo-nych pozwalają sądzić, że NGOs, pod wpływem specjalistów z zakresu zarządzania oraz jednostek biznesu działają bardziej profesjonalnie, coraz skuteczniej realizując założenia strategiczne. W związku z tym poszukiwanie pracowników lub wolontariuszy z odpo-wiednim wykształceniem może pomóc również polskim NGOs w procesie zarządzania strategicznego organizacją.

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STRATEGY FORMULATION IN NON-GOVERNMENTAL ORGANISATION

A considerable number of non-governmental organisations (NGOs) together with difficulties in gaining both financial and non-financial resources contribute to the search of new opportunities and solutions, also in the field of strategic management. It occurs that NGOs are highly interested in this type o management, although equally aware of their own lack of expertise and experience in this area. It is worth noting that they implement mere few methods of strategy formulation, whereas adequately designed strategy can allow any NGO to stand out, as far as entities of the third sector are concerned. It also ensures competitive advantage, helps to improve and stabilize financial performance and facilitate further development of NGOs. Additionally, Polish literature of the subject basically lacks the research on strategy formulating by Polish NGOs.

Only infrequent studies dealing with non-governmental sector in Poland focus on strategic management and issues concerning NGO strategy formulating. The aim of the article is to present methods of strategy formulating with regard to uniqueness of non-governmental organisations. It also attempts to identify ways in which the organisations formulate their strategies. The first part provides a theoretical background for a strategy and its formulation. The following parts present primary and secondary research outcomes in terms of strategy formulating by non-governmental organisations.

Moreover, in the article there are discussed the concepts of synoptic and incremental strategies. Based on primary research an attempt is made to establish whether the organisations implement deliberate or emergent strategies. Finally, particular stages in NGO strategy development are elaborated on.

Keywords: strategy, strategy formulation, non-governmental organisation, NGO

ADDITIONAL INFORMATION