

ASSESSMENT OF PROGRESSIVENESS OF POLISH AND ROMANIAN ENTERPRISES

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Abstract: The aim of this paper is to present the concept of construction and operation of progressive enterprises. The features and tasks of progressive organizations and the most important factors for their development have been presented. Based on a short genesis and characteristics of the data management systems, which are the basis for the functioning of any enterprise, the basic requirements of a modern and advanced data repositories have been formulated and the most important implementing and research problems have been highlighted. The directions of the development of research oriented towards the continuous improvement of data and information management technologies and their presentation to meet the knowledge needs necessary for the development of the organization have been also indicated. The essence of one of the emerging scientific disciplines, the infonomics, which gives rise to the new, now the most attractive professions, according to the Harvard Business Review (Davenport and Patil, 2012) magazine has been brought closer. The results of the conducted research allowed to evaluate the selected companies in terms of their level of progress and to determine the stage of their development towards progressive organizations.

Key words: progressive organization, ICT techniques and technologies, big data, digital business strategy

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Introduction

In the organizations of the modern world, continuous evolution of management tools, adapted to the dynamic social, economic and political changes taking place in the whole environment, as well as to the rapid development of information techniques and technologies, is necessary. The potential of innovative technologies and the increasing capabilities of digital communication tools and devices, while their prices fall, contribute to much larger increase in data and information than assumed by Gordon Moore, the founder of Intel. On the one hand, it gives enterprises enormous opportunities to build a competitive advantage as a result of forecasting business trends, access to valuable knowledge and improving communication skills, which in turn speeds up making right decisions and evolving them towards progressive organizations. On the other hand, it poses serious difficulties in mastering the phenomenon called Big Data and solving problems

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with the collection, processing, management, archiving and distribution of a huge amount of data and information of a diverse structure, coming from the dispersed environment of decentralized business entities. Acquired data and information, having a high degree of quality and usability, play a significant role in improving communication, enriching the individual knowledge of employees and contractors, establishing links with the environment, that is, in effective management of the progressive company, which seeks to minimize the risk of making decisions (Michalak, 2016; Rajnoha and Lesníková, 2016; Moraru, 2017).

The value of information is determined by the reference system, which is the determined decision situation, as well as the cost of obtaining it, to a large extent dependent on time. High cost of obtaining information diminishes its value for the company. The optimal solution is to make costs of obtaining information moderate, and their acquisition greatly improved the management's decision-making capabilities. Meeting this condition is not easy due to the issue of estimating the value of information. The information is rapidly aging, and there are no linear changes between the inputs, time of obtaining information and its quality. Inputs for obtaining information increase progressively, while the quality of decisions increases degressively. In practice, decision-making does not use full and comprehensive, i.e. complete information.

Typically, there is some information gap, which is the difference between full and available information. It is therefore necessary to have an effective system of managing data and information repositories in the company and efficient flow of data between all employees in order to avoid information noise and extract from the databases the most valuable information that is the basis for the development of any organization.

In response to the problems arising from the plethora of information, scientific disciplines oriented at improving management of information and their effective query are developing rapidly. The fastest growing domain in this area is infonomics, described in Polish as infonomika. This term in the Polish and Romanian literature of the subject is not widespread and often identified with the information economics, which is a discipline of microeconomic research. While the scope and subject matter of infonomics is much broader, as it concerns large amount of data and information used by organizations, ICT techniques and technologies (Information and Communication Technologies) used for this purpose and conducting research in the area of optimization of processing, analyzing, selecting, synthesis and presentation of information, than the economic information aspects.

In the face of ever-growing amounts of data and information, it is imperative to improve their management systems (Dima et al., 2013). Information obtained from data collected in various warehouses is usually unsuitable for managing entire organizations, and in particular, for supporting the process of making strategic decisions in progressive enterprises. The main reason is the dispersion of business environments and the lack of data homogeneity. The solution is to implement

innovative and intelligent solutions for data collection and management in line with the assumptions of the digital strategy of modern enterprises (Pohulak-Żołądowska, 2016).

Methodology of Research

The main objective of this study is to present the most important assumptions of building and functioning of innovative data and information management systems with the possibility of modifying and expanding their intelligence, which are the basis of enterprise integration in a distributed environment and effective operation based on well-made decisions, especially in the field of solving weakly structured problems, which is the basis for the construction of modern progressive enterprises. Achieving the above goal was possible thanks to the implementation of specific objectives, which included theoretical tasks and objectives as well as empirical goals. The first of these included a review of Polish and foreign literature to systematize the facts regarding the size and types of currently generated information, existing and most commonly used data and information management systems, development of new scientific fields dealing with the amount of information used by economic organizations and technologies to improve collecting, searching, analyzing, processing information, sending and presenting them according to the needs of decision-makers. Using the knowledge accumulated in the course of achieving theoretical objectives, the empirical goals were achieved by selecting the surveyed enterprises with specific characteristics of progressive organizations and distinguished by the desire to apply innovative management technologies and accelerate analytical and diagnostic processes.

The intended results in this respect are possible due to adaptation of the actually needed storage areas, elimination of data duplication and modification of data management systems towards hybrid relational databases and Apache Hadoop (Urbanek, 2013) applications, an open programming platform designed, with the use of computer clusters, for parallel and distributed processing of giant data collections. Various research methods and techniques were used during the achievement of the assumed goals. By establishing theoretical facts, a thorough analysis of the latest developments regarding modern solutions in the company management and providing decision-makers with complete information in a manner adapted to their perception, was carried out. Based on the obtained theoretical knowledge, empirical studies were carried out in selected enterprises, using information gathering techniques including: analysis of the company's organization and review of the company's management methods, review of data and information management systems, observation, interview, evaluation of the use of software capabilities, questionnaire conducted among employees of selected enterprises.

The case study concerned 72 Polish and Romanian companies of various sizes and industries, but having similar visions, missions and objectives leading to continuous development and increasing market share. The research was carried out

from January to May 2017. Obtained results of the research allowed to evaluate the possessed tools to improve the development activity of diagnosed organizations in the area of applied information and communication techniques and technologies as well as knowledge, skills and competencies of employees.

The Concept and Features of the Progressive Organization

In the current realities of the weakening pace of economic growth in Poland and Romania as well as the deepening crisis in the EU, it is necessary to look for ways to increase the competitiveness of national economies. In this respect, the divergent approach in business management plays an important role in this respect, including analytical and creative thinking, continuous deepening of knowledge and creativity. It is the foundation for the development of business progressive organizations also known as organization of the future. In the literature of the subject, an unambiguous definition of this type of organization has not been formulated, and depending on the vision and strategic goals of the enterprise, the progressive management model is variously defined and characterized by different attributes. However, taking into account the metamorphosis of the paradigm of the existing forms of economic organizations presented in Table 1, it can be stated that the progressive organization is based on knowledge-oriented enterprises and gradually replaces organizations that are currently functioning by taking over their most important features.

Table 1. Typology of contemporary organizations (own work based on: Grudzewski and Hejduk, 2011; Grudzewski et al., 2009; Clarke and Clegg, 2000)

Author, publication	Year	Type of organization
Aaron Wildavsky: <i>The self-evaluating organization</i> . Public Administration Review Vol.32, No.5, 1972, p509-520.	1972	Self-assessing
Martin Landau: <i>On the Concept of a Self-Correcting Organization</i> . Public Administration Review Vol. 33, No. 6, 1973, p. 533-542.	1973	Self-correcting
Karl E. Weick: <i>Organization design: Organizations as self-designing systems</i> . Organizational Dynamics Vol. 6, 1976, p. 31-46.	1976	Self-designing
Barry M. Staw: <i>The experimenting organization</i> . Organizational Dynamics Vol. 6, 1977, p. 3-18.	1977	Experimenting
Peter Drucker: <i>The coming of the new organisation</i> . Harvard Business Review, No. 1-2, 1988, p.45-53.	1988	Network
Charles Handy: <i>The Age of Unreason</i> . Harvard Business School Press, Boston 1989, pp.92 inastępne	1989	Clover
Peter M. Senge: <i>The Fifth Discipline: The Art And Practice of the Learning Organization</i> . New York: Currency Doubleday, 1990.	1990	Learning
James P. Womack, Daniel T. Jones, Daniel Roos: <i>The Machine That Changed the World</i> . Publisher Free Press 1990.	1990	Slim
Peter G.W. Keen: <i>Redesigning the organization through information technology</i> . Planning Review, Vol. 19 Issue: 3, pp.8-9 and <i>Shaping the Future: Business Design Through Information Technology</i> , Harvard Business School Press, Boston 1991, p. 137-143.	1991	Relational

Daniel Q. Mills: <i>Rebirth of the Corporation</i> . John Wiley & Sons, New York, 1991.	1991	Cluster
Tom Peters: <i>Liberation Management</i> . New York: Macmillan 1992 and <i>Seminar: Crazy Times Call for Crazy Organizations</i> . New York: HarperCollins 1993.	1992	Crazy
William H. Davidow, Michael S. Malone: <i>The Virtual Corporation. Structuring and Revitalizing the Corporation for the 21st Century</i> . New York: HarperCollins 1992.	1992	Virtual
James B. Quinn: <i>Intelligent Enterprise</i> NY: Free Press, New York, and <i>The Intelligent Enterprise: A New Paradigm</i> , <i>Academy of Management Executive</i> , 6(4), 1992.	1992	Intelligent
Michael Hammer and James Champy: <i>Reengineering the Corporation: A Manifesto for Business Revolution</i> . New York: HarperCollins 1993.	1993	Reengineering corporation
Russell L. Ackoff: <i>The Democratic Organisation</i> . New York: Oxford University Press, 1994.	1994	Democratic
S.L. Goldman, Roger L. Nagel, K. Preiss: <i>Agile Competitors and Virtual Organizations: Strategies for Enriching the Customer</i> . Van Nostrand Reinhold 1995.	1995	Agile
Ikujiro Nonaka, Hirotaka Takeuchi: <i>The Knowledge creating Company</i> . Oxford: Oxford University Press. 1995.	1995	Knowledge enterprise
Arie P. de Geus: <i>The Living Company</i> . Harvard Business School Press, 1997	1997	Living enterprise
W.M. Grudzewski, I.K. Hejduk, A. Sankowska, M. Wańtuchowicz: <i>Zarządzanie zaufaniem w gospodarce opartej na wiedzy</i> . Wydawnictwo Wyższej Szkoły Ekonomicznej w Białymstoku. Białystok 2009, p.21-22	2007 /2008	Trust based

The concept of a progressive organization is a transparent vision of the future, towards which the company is gradually striving to intensify the change in the areas of: continuous intellectual development and corporate culture, openness to new ideas, application of innovative management methods, deepening awareness of permanent changes in business strategy in connection with expansion of digital infrastructure, that is, continuous expansion of business ecosystems. The basic features of a progressive company are shown in Figure 1.

Defining the nature of progressive organizations as a result of evolution, one should consider a set of specific features of both classic and modern types of enterprises, e.g. the *sharing economy* model subjected to the process of continuous improvement and acquiring new properties useful in development and achieving a credible position in the business ecosystem. Considering the features often mentioned in the literature, which modern organizations and those arising during the transformation of companies should have, the organization that deserves to be called progressive, can be described through the prism of its most important attributes, which include:

- Strategic flexibility involving understanding of current and future events in the environment and enabling the development of multiple versions of strategic plans of organizations and business models as the key elements of company

management that is, having many possible scenarios ensuring security of the company against risk and reducing uncertainty.



Figure 1. Characteristics of the progressive organization (own work based on: Bartusik, 2004; Nowosielski, 2013; Czerska and Szpitter, 2010; Zimniewicz, 2014; Karwala, 2009)

- Organizational restructuring based on the development of many versions of operational models skilfully suited to the pace of changes within the enterprise and the speed of changing conditions of unpredictable environment (e.g.: a diverse organizational structure adequate to the business profile – hybrid, network, changing organizational culture, that is, a basic set of assumptions, formulated and developed by the group during internal integration of the organization and adaptation to the environment).

- Innovative potential in all areas of enterprises' operations, which largely depends on inter-organizational relations and extending the network of these relations, which support continuous improvement of each organization's functioning as well as sustainable development, and thus achieving better economic and financial results and the dominant market position.
- Digital transformation and digitization of enterprises, requiring radical innovations in IT infrastructure in order to the strategical use of mobile technologies, Big Data, Cloud solutions together with modern software, operating systems and social media.
- The ability to use different ways of multidimensional and dynamic interaction with the environment in order to deepen knowledge, increase experience and marketing effectiveness, which results in increased satisfaction and customer loyalty.
- Creating company values thinking in ecosystem categories. Ecosystemic mentality leads to cooperation with the environment by establishing new, not only, business relationships, which ensure faster discovery of new solutions, deepening knowledge and the ability to manage and share it, trust, which means developing the potential of work. The right level of training and mentoring will provide high-class managers, leaders and employees for whom individual goals are synonymous with the goals of the organization. This results in the satisfaction of employees with the possibility of self-realization, self-assessment, self-control and decision-making as well as capitalization of the intellectual potential of the organization in value for stakeholders.
- Expenditure on innovations including financing of research and development works in the scope of production rationalization, processes, management methods, implementation of modern techniques, technologies and teleinformation tools and conducting market research as well as introducing product, process, organizational and marketing innovations.
- Capital expenditures for renovations and modernization of the enterprise.
- Research and development (R&D) activity consisting of having own research and development base or permanent cooperation with scientific and R&D organizations in order to draw knowledge and skills used in the implementation of innovative solutions in all areas of various sectors of economic units.
- Hard and soft competences of employees. The first type of competencies, also called basic ones, include: education, general and specialist knowledge, experience and availability. Especially useful in a progressive company are soft skills of employees, also defined as psychosocial ones, focusing on the level of personal culture, character traits, attitude and behavior of the employee in various circumstances and on interpersonal skills. The most important features of an effective employee of a progressive company in the field of soft competences are: initiative, creativity, and optimism, dynamism of action, goal orientation, passion and positive attitude to the job, agreeableness, flexibility, communication skills and teamwork.

These features of contemporary progressive organizations should be interdependent and influence the relationships and interactions between business processes and applied telematics techniques and technologies in all dimensions of strategy, structure and organizational culture, leading to the emergence of newer models of functioning of enterprises, based on digital technologies and the latest management methods.

Evaluation of Selected Enterprises in Terms of Progressiveness

The research was carried out using the PAPI technique, i.e. a direct interview with employees using a questionnaire and e-mail questionnaires. The analysis covered the knowledge and awareness of the management staff on the subject of: modernity and progressiveness of the company, tools improving management and decision making, and development opportunities towards modern business models. The research was divided into two stages.

The first stage consisted in providing personally, via e-mail or via traditional mail, questionnaires containing 34 questions to 358 Polish and Romanian enterprises selected from business databases. In the first part of the questionnaire, the purpose of the research was explained, the essence of the progressive company was clarified, the questionnaire questions and queries regarding the development of the company in terms of research, innovation, investment and having developed versions of strategic plans, business models and versions of plans and organizational models were included. In the second part of the questionnaire, the respondents were asked to rate 30 different characteristics in terms of their occurrence in the surveyed companies. The grading was made on a scale of 0 to 6, where 0 meant lack of the given feature, 1 and 2 indicated very low level of occurrence of the given feature in the examined enterprise, 3 for low level, 4 and 5 for the average, and 6 for very high level occurrence of individual features.

From 153 completed and collected questionnaires, 72 Polish and Romanian companies in equal numbers of 36 were finally qualified. They were characterized by the highest number of features identifying progressive enterprises. The structure of the surveyed enterprises and their scope of activity are presented in Table 2.

Table 1. Structure of the surveyed enterprises due to the scope of activity

Size of the entity due to the number of employees	Number of surveyed enterprises											
	Production		%		Trade		%		Services		%	
	PL	RO	PL	RO	PL	RO	PL	RO	PL	RO	PL	RO
Micro	0	0	0.00	0.00	0	0	0.00	0.00	2	0	5.56	0.00
Small	2	0	5.56	0.00	3	2	8.33	5.56	2	0	5.56	0.00
Medium	5	4	13.89	11.11	8	5	22.22	13.89	6	4	16.67	11.11
Big	3	8	8.33	22.22	3	6	8.33	16.67	2	7	5.56	19.44
Total	10	12	27.78	33.33	14	13	38.89	36.11	12	11	33.33	30.56

Graphic presentation of the structure of enterprises is presented in Figure 2. According to the above-mentioned criteria for business classification, a total of 29 big, 32 medium, 9 small and 2 micro enterprises were subject of questionnaire surveys, which, in the initial elimination had features of the progressive company. The Polish research group was dominated by medium and small enterprises, which constituted 72.23% of all surveyed Polish companies, micro-enterprises constituted 5.56%, and large 22.21%. The group of Romanian companies was dominated by large companies, which were 21 and accounted for 58.33% of all the units surveyed. Small and medium-sized enterprises accounted for 41.67%; micro-enterprises were not selected in the initial selection.

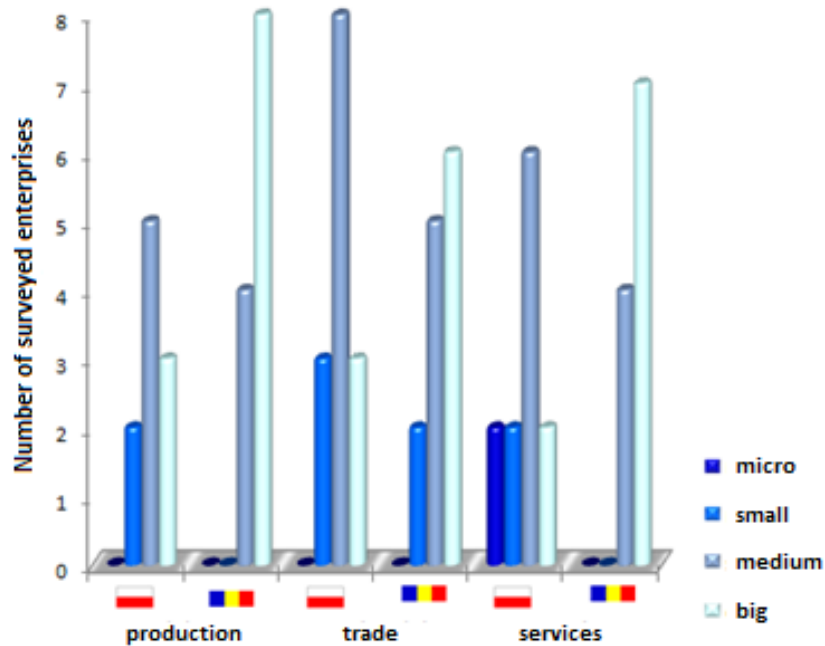


Figure 2. Number of surveyed enterprises and their types

Research on the level of progressiveness of enterprises has proven that almost 50% understands the essence of progressiveness and strives for continuous development and reconstruction of companies by increasing strategic and operational flexibility through the use of modern technologies, techniques and tools supporting real-time activities that intensify making the right decisions. On the basis of the responses obtained and based on adopted criteria regarding: type of activity, size, area of activity, share of expenditures on development and innovation, strategic and organizational flexibility, the division of selected companies into three groups was made, which are characterized in Table 3. The first group with the lowest level of

progressiveness was assigned to 10 Polish and 15 Romanian companies, the medium-progressive group contained 17 Polish and 15 Romanian enterprises, the highest level of progressiveness according to the adopted criteria was achieved by 9 Polish and 6 Romanian companies.

Table 2. Characteristics of the surveyed enterprises in terms of the level of progressiveness

Basic identifiers of the progressive organization	Level of progressiveness in the surveyed enterprises					
	low		medium		high	
	PL(n=10)	RO(n=15)	PL(n=17)	RO(n=15)	PL(n=9)	RO(n=6)
Share of innovation expenditures in revenues						
from 1% to 3%	6	9	1	7	0	0
from 3% to 6%	1	2	7	4	2	0
from 6% to 9%	1	3	6	1	3	2
over 10%	2	1	3	3	4	4
Share of capital expenditures in revenues						
Research and development activity						
independent	2	9	7	6	6	5
in cooperation with other units	8	6	10	9	3	1
Strategic plans and business models						
developed	7	11	7	8	2	1
Developed and ready to implement	3	4	10	7	7	5
Plans and organizational models						
developed	6	10	5	6	1	0
Developed and ready to implement	4	5	12	9	8	6
Size of the company						
micro	0	0	0	0	2	0
small	5	3	2	0	0	0
medium	3	6	11	6	5	1
big	2	6	4	9	2	5
Type of activity						
services	2	6	6	5	4	0
trade	6	9	5	3	3	1
production	2	0	6	7	2	5

72 respondents from Polish and Romanian companies participated in the questionnaire survey, including 32 management board representatives, technical, economic and investment directors, as well as 16 tactical level managers and 24 micro, small and medium sized company owners. All surveyed employees were a relatively homogeneous group in terms of education and vocational training. The

vast majority, 94.44% of respondents had higher education, and 5.56% had secondary vocational education, which had four owners of medium-sized companies. The surveyed organizations represented different types of activities and different industries. Large enterprises included representatives of the energy, automotive, pharmaceutical, banking, global trade networks, IT and insurance companies. Medium and small enterprises were associated with information technology and communication, processing of vegetables and fruits, production of building materials, trade, accounting, financial and legal services. The micro-enterprises having a service character included: a law firm and a consulting company offering accounting, financial and training services.

The next stage of the research was to check the correlation between the level of progressiveness of the surveyed units and the score from 1 to 6 for individual identifications of the progressive organization, to verify the dependence of the advancement degree of the investigated enterprises on individual features, i.e. which of the features have the greatest impact on increasing progressiveness, which is illustrated in Table 4.

On the basis of the conducted research, it can be concluded, that the higher the level of progressiveness, the higher the features of progressive enterprises are assessed. The highest ratings were: strategic flexibility, the use of the latest techniques and information technologies, thinking in terms of the ecosystem, close cooperation with customers and suppliers, although cooperation with competitors is also important for companies with the high level of progressiveness. Other highly-rated features, especially among developing companies, are: trust within the organization as well as external entities, appropriate employee competences and the ability to organize organizational learning. For organizations with the high level of progressiveness, an increasingly significant feature, both among Polish and Romanian companies, is the development of research and development activities and intensification of outlays on this type of activity.







However, there are many attributes that are underestimated and in the research results have a small correlation with progressiveness, including cooperation with administrative units and the local community, as well as organizational flexibility. In enterprises with the lower level of progressiveness, the following are also underestimated: thinking in terms of the ecosystem and competences of employees, both innate and acquired along with education. Looking at the low value of the choline range, one can notice low variation in the scores given by the respondents in particular levels of progressiveness. The results of the analysis confirm that the level of progressiveness in the surveyed enterprises positively correlates with the majority of analyzed attributes of the progressive enterprise.

Summary

The organization's progressiveness is determined by many exo-and endogenous factors presented in the article. On the basis of the characteristics of the progressive enterprise, which regardless of the size of changes in its micro- and macro-

environment, can transform into the new generation organization, should combine the skills of using interdisciplinary methods and technologies to reach valuable data and information, which ensure continuous replenishment of knowledge and effective managing it.

Table 3. Correlation between the characteristics of the progressive enterprise and the level of progressiveness in the surveyed enterprises

Progressive organization identifiers	Level of progressiveness in the surveyed enterprises								
	low			medium			high		
									
	n=10	n=15		n=17	n=15		n=9	n=6	
\bar{X}	Me	Kr	\bar{X}	Me	Kr	\bar{X}	Me	Kr	
Strategic flexibility	3,76	4	2	4,06	4	1	5,11	5	2
Organizational restructuring	3,32	3	1	3,59	4	2	4,89	5	2
Innovative potential	3,56	3	2	3,94	4	2	4,22	4	1
Digital transformation and digitization of companies	4,32	4	1	4,47	4	1	5,44	5	1
Interaction with the environment:									
Customers:	4,32	4	1	4,53	5	1	5,11	5	1
Suppliers and contractors	3,44	3	1	4,06	4	1	4,89	5	2
Competitors	2,64	3	2	3,18	3	1	5,11	5	1
Scientific and research units	2,18	2	1	3,06	3	1	4,44	4	1
Public administration	2,55	2	2	3,24	3	1	4,33	4	1
Local society	2,84	3	2	3,18	3	1	4,33	4	1
Thinking in terms of the ecosystem	2,76	3	2	3,82	4	2	5,44	6	1
Development of research and development activity	2,44	2	2	2,82	3	2	5,22	5	1
Intensification of innovative expenditures	3,04	3	1	3,82	4	2	4,56	5	1
Intensification of capital expenditures	2,36	2	2	3,24	3	1	4,33	4	1
Hard and soft skills of employees	2,94	3	1	3,94	4	2	5,44	5	1
The ability to deepen an organizational knowledge	3,24	3	1	3,82	4	2	5,56	6	1
The growing importance of trust	3,36	3	1	4,12	4	2	5,33	5	1

\bar{X} - arithmetic average, Me – median, Kr - interquartile range

The modern concept of managing the progressive enterprise is not just about the integration of IT systems and building costly data bases and data warehouses, but above all, fast access to full and comprehensive information, conducting their efficient analysis and providing clear presentations of results for the purpose of making various decisions, both, strategic as well as operational ones in close correlations. Based on the results of the conducted research, it can be stated, that every company can be the progressive organization regardless of size and industry, provided that the features of modern enterprises are included, including enterprises: innovative, based on knowledge, with the high level of organizational learning and technologically advanced. The development of the model, that takes into account

the presented features for each type of enterprise, will be helpful in the evolution of organizations in the progressive direction. The basis of the progressive company is the use of available innovative techniques and technologies in the field of management and communication and principles of ecosystem mentality, which are equivalent to building communication channels, both, with contractors and with competitors in order to constantly supplement organizational knowledge and strive to achieve strategic goals, flexible to turbulent changes in the surroundings.

References

- Bartusik K., 2004, *Przegląd współczesnych koncepcji w zarządzaniu rozwojem firmy*, Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie.
- Clarke T., Clegg S., 2000, *Management paradigm for the new millennium*, "International Journal for Management Reviews", 2.
- Czerska M., Szpitter A.A., (Eds.), 2010, *Koncepcje zarządzania. Podręcznik akademicki*, Warszawa: Wydawnictwo C.H. Beck.
- Davenport T., Patil D.J., 2012, *Data Scientist: The Sexiest Job of the 21st Century*, "The Magazine Harvard Business Review", <https://hbr.org/magazine>, Access on 12.11.2016.
- Dima I.C., Man M., Grabara J., 2013, *Using the expert systems in the management of the technological process within the founding departments*, "Metalurgia International", 18(2)
- Grudzewski W.M., Hejduk I.K., Sankowska A., Wańtuchowicz M., 2009, *Zarządzanie zaufaniem w gospodarce opartej na wiedzy*, [In:] E. Sidorczuk, Pietraszko (Eds.), *Funkcjonowanie przedsiębiorstwa w warunkach zrównoważonego rozwoju i gospodarki opartej na wiedzy*, Wydawnictwo Wyższej Szkoły Ekonomicznej w Białymstoku.
- Grudzewski W.M., Hejduk I.K., 2011, *Przedsiębiorstwo przyszłości. Zmiany paradygmatów zarządzania*, "Master of Business Administration", 1.
- Karwala S.K., 2009, *Kształtowanie liderów jako strategia rozwoju organizacji inteligentnej*, Wyd. Uniwersytetu Ekonomicznego w Krakowie, <http://mentoring.com.pl/kl.pdf>, Access on 01.06.2017.
- Michalak A., 2016, *The cost of capital in the effectiveness assessment of financial management in a company*. "Oeconomia Copernicana", 7(2).
- Moraru, R.I., Cioca, L.-I., Babut, G.B. 2017, *Workforce active ageing case study in a Romanian manufacturing company*. MATEC Web of Conferences, 121, art. no. 11014
- Nowosielski S., 2013, *Orientacja procesowa w organizacjach. Personalne aspekty wdrażania*, [In:] J. Lichtarski (Ed.), *Współczesne koncepcje, metody i narzędzia zarządzania. Przykłady i problemy zastosowań*, Wydawnictwo Społecznej Akademii Nauk Przedsiębiorczość i Zarządzanie, Tom XIV, zeszyt 12, część III, Ostrów Wielkopolski, <http://piz.san.edu.pl> access on 01.06.2017.
- Piwowar-Sulej K., 2014, *Kultura organizacyjna i jej wpływ na działalność projektową – studium przypadku. Koncepcje procesowe i projektowe w zarządzaniu*, "Marketing i Rynek", 5.
- Pohulak-Żołędowska E., 2016, *Innovation in contemporary economies*. "Oeconomia Copernicana", 7(3).

- Rajnoha R., Lesniková P. 2016, *Strategic Performance Management System and Corporate Sustainability Concept - Specific Parametres in Slovak Enterprises*. "Journal of Competitiveness", 8(3).
- Urbanek W., 2013, *Dane niczym ropa naftowa*, businessman.pl, <http://businessman.pl/aktualnosci/dane-niczym-ropa-naftowa-6319.html>, Access on 15.09.2017.
- Zimmewicz K., 2014, *Współczesne koncepcje i metody zarządzania*, Warszawa: PWE.

OCENA POSTĘPOWOŚCI POLSKICH I RUMUŃSKICH PRZEDSIĘBIORSTW

Streszczenie: Celem niniejszego opracowania jest zaprezentowanie koncepcji budowy i funkcjonowania przedsiębiorstw postępowych. Przedstawiono cechy i zadania znamienne dla organizacji postępowych oraz najważniejsze czynniki sprzyjające ich rozwojowi. Na podstawie krótkiej genezy i charakterystyki systemów zarządzania danymi, które są podstawą funkcjonowania każdego przedsiębiorstwa, sformułowano podstawowe wymogi stawiane zaawansowanym i nowoczesnym repozytoriom danych oraz podkreślono najistotniejsze problemy badawcze i implementacyjne. Wskazano także kierunki rozwoju badań naukowych zorientowanych na ciągłe doskonalenie technologii zarządzania danymi i informacjami oraz sposobu ich prezentacji dla zaspokojenia potrzeb w zakresie wiedzy niezbędnej dla rozwoju organizacji. Przybliżono istotę jednej z powstających dyscyplin naukowych, jaką jest infonomics, dającej początek nowej profesji, obecnie najatrakcyjniejszej według magazynu Harvard Business Review (Davenport and Patil, 2012). Wyniki przeprowadzonych badań pozwoliły na ocenę wybranych przedsiębiorstw pod względem poziomu postępowości oraz ustalenie etapu ich rozwoju w kierunku organizacji postępowych.

Słowa kluczowe: organizacja postępową, techniki i technologie ICT, big Data, cyfrowa strategia przedsiębiorstwa

波兰和罗马尼亚企业的进步评估

摘要: 本文的目的是提出进步企业的建设和运作的概念。提出了进步组织的特点和任务及其发展的最重要因素。基于作为企业运行基础的数据管理系统的简要起源和特点，制定了现代和先进的数据存储库的基本要求，突出了最重要的实施和研究问题。还指出了面向不断改进数据和信息管理技术的研究的发展方向以及为满足组织发展所需的知识需求而提出的方向。根据“哈佛商业评论”(Davenport and Patil, 2012) 杂志的介绍，新兴的科学学科之一的精髓就是引入新的，现在最有吸引力的专业的信息系统。所进行的研究的结果允许评估选定的公司的进展水平，并确定他们发展进步组织的阶段